

Administration

Universal Controller 7.7.x

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Table of Contents

1	Properties	12
2	Configuration.....	13
3	Ports Configuration.....	14
4	Webhooks.....	15
5	Administration Overview	16
5.1	Universal Controller Administration.....	16
5.2	Universal Controller Security	17
6	Ports Configuration.....	18
6.1	Ports Configuration.....	18
7	Audits.....	19
7.1	Overview	19
7.2	Displaying Audits	20
7.2.1	Audit Details Field Descriptions.....	21
8	Business Services	24
8.1	Overview	24
8.1.1	Record Types for Business Services	24
8.2	Creating Business Services.....	25
8.2.1	Business Service Details	26
8.2.2	Business Service Details Field Descriptions	26
8.3	Business Service Membership Considerations for Create, Read, Update, Delete, and Execute.....	27
8.3.1	Create	27
8.3.2	Read.....	27
8.3.3	Update	28
8.3.4	Delete.....	28
8.3.5	Execute	28
9	Data Backup - Purge	29
9.1	Overview	29
9.2	Purge Rules for Task Instances	29

9.2.1	Task Instance Status	29
9.2.2	Purging by Retention Duration	30
9.3	Creating a Data Backup / Purge Record.....	31
9.3.1	Data Backup / Purge Details	31
9.3.2	Data Backup / Purge Details Field Descriptions	32
9.4	Running a Data Backup / Purge Manually	35
9.5	Importing Backed Up / Purged Data into the Controller.....	35
9.6	Returning Virtual Resources for Purged Task Instances in Failure Status	35
10	Filters	36
10.1	Overview	36
10.2	Creating a Filter	36
10.3	Global Filters	37
10.3.1	Filter Fields	38
10.3.2	Supported Record Types	38
10.4	Applying a Filter	39
10.4.1	Applying a New Filter	39
10.4.2	Applying an Existing Filter	39
10.5	Saving a Filter.....	40
10.6	Pinning a Filter	40
10.6.1	Unpinning a Filter	41
10.7	Filters List.....	41
10.8	Filter Details Field Descriptions	42
10.9	Unresolved and Variable Fields in a Filter List	44
10.9.1	Examples	44
10.10	Go To Filter	46
11	TrustStore.....	47
11.1	Overview	47
11.2	Configuring Universal Controller.....	47
11.3	Importing Server Certificates	47
12	TrustStore Settings.....	48
12.1	Overview	48

12.2	TrustStore Settings Details	48
12.2.1	TrustStore Settings Field Descriptions.....	49
12.3	Certificate Details	50
12.3.1	Certificate Details Field Description	50
12.4	Importing a Trusted Certificate.....	51
12.5	Examining a Certificate	52
12.6	Viewing Certificate Details for a Trusted Certificate Entry.....	54
12.7	Deleting a TrustStore Entry	55
13	LDAP Settings	56
13.1	Overview	56
13.2	Credentials for Running Tasks Authentication	56
13.3	User Login Authentication.....	57
13.4	LDAP Settings Field Descriptions	58
13.5	Mappings Tab	60
13.5.1	Mappings Tab Column Descriptions	60
13.5.2	Mapping Details	60
13.6	Best Practices	61
13.6.1	Determining your User OUs and Group OUs.....	61
13.6.2	Customizing Users and Groups Lists to see DN of LDAP Synchronized Users and Groups	62
13.6.3	LDAP Server Operations	62
13.6.4	LDAP Settings Fields	62
13.7	SSL/TLS Secured LDAP (LDAPS).....	65
14	Password Settings	67
14.1	Overview	67
14.2	Password Settings Details	67
14.3	Password Settings Field Descriptions.....	68
15	Personal Access Token	70
15.1	Overview	70
15.2	Creating a Personal Access Token.....	70
15.3	Personal Access Token Details	71

16	Properties	73
16.1	Overview	73
16.2	Universal Controller Start-up Properties (uc.properties)	74
16.2.1	Secrets Provider Properties	92
16.3	Universal Controller System Properties.....	96
16.3.1	Overriding Universal Controller System Properties	120
16.3.2	Deprecated System Properties	120
16.4	Command Line Interface (CLI) Properties	122
17	Server Operations	124
17.1	Overview	124
17.2	Running a Server Operation.....	124
17.3	Server Operation Completion	125
17.4	Server Operation Status.....	125
17.5	Server Operation Timeout	125
17.6	Server Operations Descriptions	126
17.7	Universal Controller Database Tables	132
18	SAML Single Sign-On	146
18.1	Overview	146
18.2	Terminology	147
18.3	Single Sign-On Login.....	147
18.3.1	Service Provider-Initiated Login	147
18.3.2	Identity Provider-Initiated Login	147
18.3.3	Action URLs	147
18.3.4	Session Expired.....	148
18.3.5	Administrator Account	150
18.4	Single Logout	150
18.4.1	User Sessions.....	151
18.5	User Provisioning	151
18.5.1	User Attribute Mapping	152
18.5.2	User Field Defaults.....	152
18.5.3	Group Membership Attribute Mapping.....	152

18.6	SAML Configuration	153
18.6.1	Service Provider Metadata	153
18.6.2	SAML Endpoints.....	153
18.6.3	Identity Provider Metadata	153
18.6.4	SAML KeyStore	154
18.6.5	Java Cryptography Extension (JCE)	155
18.6.6	Debugging	155
18.7	SAML Single Sign-On	155
18.7.1	SAML Single Sign-On Field Descriptions.....	156
18.7.2	Default Configuration	158
18.7.3	Security	158
18.7.4	Bulk Import/Export.....	158
18.8	Troubleshooting.....	159
18.8.1	NameID	159
18.8.2	Login Errors	159
19	OAuth Single Sign-On.....	161
19.1	Overview	161
19.2	Single Sign-On Login.....	161
19.2.1	Universal Controller Initiated Login.....	162
19.2.2	Identity Provider-Initiated Login	162
19.2.3	Action URLs	162
19.2.4	Session Expired.....	162
19.2.5	Administrator Account	164
19.3	Logout.....	164
19.3.1	User Sessions.....	164
19.4	User Provisioning	165
19.4.1	User Attribute Mapping	165
19.4.2	User Field Defaults.....	166
19.4.3	Group Membership Attribute Mapping.....	166
19.5	OAuth Single Sign-On.....	166
19.5.1	OAuth Single Sign-On Field Descriptions	167

19.5.2	Security	169
19.6	Troubleshooting.....	169
19.6.1	Login Errors	169
20	Universal Templates	171
20.1	Universal Templates	171
20.2	Universal Templates Overview.....	171
20.2.1	Introduction	171
20.2.2	Universal Template Scripts	172
20.2.3	Universal Template Fields	172
20.2.4	Universal Template Variables	173
20.2.5	Setting Up Universal Templates and Tasks	173
20.2.6	Importing / Exporting Universal Templates	174
20.2.7	List Import/Export.....	175
20.2.8	Restrictions on Universal Template Changes	175
20.3	Creating a Universal Template.....	178
20.3.1	Overview	179
20.3.2	Creating a Universal Template.....	179
20.3.3	Creating Universal Template Fields.....	188
20.3.4	Creating Universal Template Field Choices	198
20.3.5	Creating Commands.....	201
20.3.6	Creating Event Templates	202
20.4	Copying Universal Templates	205
20.4.1	Overview	205
20.4.2	Copying One or More Universal Templates from a Universal Templates List	205
20.4.3	Copying a Universal Template from the Universal Template Details	206
20.4.4	Copy Permissions	207
21	Universal Event Templates.....	208
21.1	Universal Event Templates.....	208
21.1.1	Global Universal Events	208
21.1.2	Local Universal Events.....	209
21.1.3	Global and Local Universal Events.....	210

21.2	Creating a Universal Event Template.....	211
21.2.1	Universal Event Template Details	212
21.2.2	Universal Event Template Details Field Descriptions	213
21.3	Pre-Defined Global Universal Event	217
21.3.1	System Property Changed Universal Event.....	217
21.3.2	Agent Changed Universal Event.....	218
21.3.3	Task SLA Universal Event.....	219
21.3.4	Task Status Changed Universal Event.....	221
22	Users and Groups	223
22.1	Overview	223
22.2	Default Users and Groups	223
22.2.1	Default User.....	223
22.2.2	Default Groups	223
22.3	Adding a User.....	224
22.3.1	User Details	225
22.3.2	User Details Field Descriptions	226
22.4	Adding a Group	229
22.4.1	Group Details.....	230
22.4.2	Group Details Field Descriptions.....	230
22.5	Additional Details	232
22.6	Assigning Users to Groups.....	232
22.7	Navigation Visibility for Users and Groups.....	235
22.8	Deleting a User	235
22.9	Impersonating a User	236
22.10	Copying Groups.....	236
22.10.1	Overview	236
22.10.2	Copying One or More Groups from a Groups List.....	237
22.10.3	Copying a Group from the Group Details	237
22.10.4	Copy Permissions	238
23	Roles and Permissions	239
23.1	Overview	239

23.2	Assigning Roles to Users or Groups	240
23.2.1	Description of Roles.....	243
23.3	Assigning Permissions to Users or Groups	246
23.3.1	General Permissions Field Descriptions	247
23.4	Types of Permissions	248
23.4.1	Agent Permissions.....	249
23.4.2	Agent Cluster Permissions.....	250
23.4.3	Application Permissions	252
23.4.4	Bundle Permissions	253
23.4.5	Calendar Permissions.....	254
23.4.6	Credential Permissions	255
23.4.7	Database Connection Permissions	256
23.4.8	Email Connection Permissions	257
23.4.9	Email Template Permissions	259
23.4.10	OAuth Client Permissions	260
23.4.11	OMS Server Permissions.....	261
23.4.12	PeopleSoft Connection Permissions.....	262
23.4.13	Promotion Target Permissions	263
23.4.14	SAP Connection Permissions	264
23.4.15	Script Permissions.....	266
23.4.16	SNMP Manager Permissions	267
23.4.17	Task Permissions	268
23.4.18	Task Instance Permissions.....	269
23.4.19	Trigger Permissions.....	271
23.4.20	Universal Event Permissions.....	272
23.4.21	Variable Permissions.....	274
23.4.22	Virtual Resource Permissions.....	276
23.4.23	Webhook Permissions.....	278
23.5	Exporting Permissions for a Group.....	279
24	Webhooks.....	280
24.1	Overview	280

24.2	Creating a Webhook	281
24.2.1	Webhook Details	282
24.2.2	Webhook Details Field Descriptions	284
24.3	URL Action	285
24.3.1	URL Action JSON Properties	286
24.3.2	URL Action JSON Examples	286

Overview

[Administration Overview](#)

Security

[Audits](#)

[Business Services](#)

Users and Groups

[Adding a User](#)

[Adding a Group](#)

[Assigning Roles to Users or Groups](#)

[Assigning Permissions to Users or Groups](#)

Universal Templates

[Universal Templates Overview](#)

[Creating a Universal Template](#)

[Universal Event Templates](#)

1 Properties

[Overview](#)

[Universal Controller Start-up Properties \(uc.properties\)](#)

[Universal Controller System Properties](#)

[Command Line Interface \(CLI\) Properties](#)

2 Configuration

[Data Backup / Purge](#)

[Filters](#)

[LDAP Settings](#)

[TrustStore](#)

[TrustStore Settings](#)

[Password Settings](#)

[OAuth Single Sign-On](#)

[SAML Single Sign-On](#)

[Server Operations](#)

3 Ports Configuration

[Ports Configuration](#)

4 Webhooks

[Webhooks](#)

5 Administration Overview

5.1 Universal Controller Administration

Administration of Universal Controller includes:

High Availability	Configuration of Universal Automation Center system as a redundant (multiple Universal Controller cluster node) system.
Ports Configuration	Configuration of ports for Universal Controller components and prerequisites.
Universal Controller Start-Up Properties	<p>These properties are required for Controller start-up, initialization, and operation.</p> <p>They are contained in the <code>uc.properties</code> file and have their values set during installation. To reset the values, you must stop the Controller, edit <code>uc.properties</code>, and restart the Controller.</p>
Universal Controller System Properties	<p>These properties define Controller system information and performance.</p> <p>They have their values set during installation. They are available, and can be reset, only via the user interface.</p>
LDAP Settings	<p>These settings enable you to enable the LDAP bridge.</p> <p>They have their values set only via the user interface; they are not set at installation.</p>
Universal Command Line Interface (CLI) Properties	CLI provides a sample configuration file, <code>cmdtools.props</code> , that you can use to pass CLI Global parameters to a CLI command. The file is created during installation of Universal Agent if the Universal Controller Command Line Interface has been selected to be installed.
Universal Templates	Creation of Universal Templates, on which Universal Tasks are based.
Data Backup/Purge	Configuration of automatic backups and/or purges of some or all of the Controller activity data.
Server Operations	Universal Controller server operations help you maintain and administer your Controller installation. Many of these operations should be run only by Technical Support or upon request by Technical Support.
Filters	Creation and application of filters to record lists throughout the Universal Controller user interface.
Users and Groups	Creation of Universal Controller users and user groups and the roles and permissions that can be assigned to them; Business Services that group Controller records into logical groups; and audits of all user interaction with the Controller.

5.2 Universal Controller Security

Setting up Universal Controller security involves the following steps:

- Creating [users](#) and assigning them passwords.
- Creating [groups](#) of users.
- Assigning [permissions](#) (access to Controller records) to users and groups.
- Assigning [roles](#) (permission to perform administrative functions) to users and groups.
- Creating [credentials](#) that allow the Controller to log in to remote machines and execute jobs.

See [LDAP Settings](#) for information on how to set up Universal Controller to use LDAP authentication for:

- [Credentials for running tasks](#)
- [User logins](#)

See [Single Sign-On Settings](#) for information on how to set up Universal Controller to use SAML authentication.

6 Ports Configuration

6.1 Ports Configuration

Ports configured for Universal Controller 7.7.x components and prerequisites cannot be blocked by a firewall.

The following table identifies the default ports, which you can change during installation or configuration:

Component or Prerequisite	Default Port
MySQL	3306
Microsoft SQL Server	1433
Oracle	1521
Universal Controller (Tomcat)	8080
Universal Message Service (OMS)	7878

7 Audits

- [Overview](#)
- [Displaying Audits](#)
 - [Audit Details Field Descriptions](#)

7.1 Overview

Audits are detailed records of all user interactions with the Controller, including before and after information related to any change and a description of the difference.

Audits are created when the user performs any of the following [actions](#):

- [Logging](#) actions: log in, log out, or login failure.
- Creates, updates, or deletes a [record](#).
- Issues an [action or command](#) (for example, Launch Task or Trigger Now).
- [Imports](#) or [exports](#) records on a list.

7.2 Displaying Audits

Step 1

From the [Administration](#) navigation pane, select **Audits**.

You can change the default time constraint for the display of audits on the list via the [Audit Time Constraint](#) user preference.

Audit Type	Source	Status	Description
Command	Scheduled	Success	Executing Command: RUN DATA BACKUP/PURGE on System Default - Activity (Table: Activity)
Command	User Interface	Success	Executing Command: LAUNCH on stonebranch-application-012 #QUERY#
Command	User Interface	Failure	Executing Command: TEST EMAIL CONNECTION on QA-Internal-Invalid-Email-User-Name
Command	User Interface	Failure	Executing Command: TEST EMAIL CONNECTION on B-02535_Email_Integration_Invalid
Command	User Interface	Failure	Executing Command: TEST EMAIL CONNECTION on stonebranch-emailconnection-01
Command	User Interface	Failure	Executing Command: TEST EMAIL CONNECTION on stonebranch-emailconnection-01
Command	User Interface	Failure	Executing Command: TEST EMAIL CONNECTION on stonebranch-emailconnection-01
Command	Scheduled	Success	Executing Command: RUN DATA BACKUP/PURGE on System Default - Activity (Table: Activity)
Command	Scheduled	Success	Executing Command: RUN DATA BACKUP/PURGE on System Default - History (Table: History)
Command	Scheduled	Success	Executing Command: RUN DATA BACKUP/PURGE on System Default - Audit (Table: Audit)
Command	User Interface	Success	Executing Command: PROMOTE
Command	User Interface	Success	Executing Command: PROMOTE
Command	User Interface	Success	Executing Command: PROMOTE
Command	User Interface	Success	Executing Command: PROMOTE
Command	User Interface	Success	Executing Command: PROMOTE
Command	User Interface	Success	Executing Command: PROMOTE
Command	Web Service	Failure	Executing Command: CREATE OMS SERVER on qa-opswise6:7878
Command	Web Service	Success	Executing Command: CHANGE USER PASSWORD on Administrator

Step 2

To display Details about a specified audit, click the icon next to the **Audit Type** for that audit, or click anywhere in the Audit row. The Audit Details for that audit then displays.

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↻

Audit
Child Audits

Details

Audit Type	Table Name
Command	ops_email_connection
Source	Table Key
User Interface	fff21ca5d8c740fbb737dad53f7e616f
Created	Table Record Name
2022-11-02 12:30:02 -0400	stonebranch-emailconnection-01
Created By	
Admin	
Node Id	Parent Audit
qa-opswise6:8080-qa-opswise6	
Node Mode	
Active	
Status	
Failure	
Description	
Executing Command: TEST EMAIL CONNECTION on stonebranch-emailconnection-01	
Before	
<pre>EmailConnectionBean { (authentication=false) (authentication_type=None) (default_pwd=*****) (default_user=null) (description=null) (email_addr=stonebranch@stonebranch.com) (imap=null) (imap_port=143) (imap_ssl=false) (imap_starttls=false) (is_authorized=false) (name=stonebranch-emailconnection-01) (oauth_client_id=null) (opswise_groups=null) (pop3=null) (pop3_port=110) (pop3_ssl=false) (smtp=server 1) (smtp_port=25) (smtp_ssl=false) (smtp_starttls=false) (sys_created_by=ops.admin) (sys_created_on=2014-06-13 15:30:39 -0400) (sys_id=fff21ca5d8c740fbb737dad53f7e616f) (sys_updated_by=ops.admin) (sys_updated_on=2014-06-13 15:30:39 -0400) (system_connection=false) (trash_folder=null) (type=Outgoing) (version=1)}</pre>	
After	
Difference	
Additional Information	
Could not send email using email connection 'stonebranch-emailconnection-01' (Couldn't connect to host, port: server 1, 25; timeout 60000).	

7.2.1 Audit Details Field Descriptions

The following table describes the fields and tabs that display in the Audit Details.

Field Name	Description
Details	This section contains detailed information about the audit.

Audits– 21

Audit Type	Type of audit for which this Audit record was created. Options: <ul style="list-style-type: none"> • CLI • Create • Command • Delete • Delete Override File • Delete Version • Email • Export • Import • Restore Version • Server Operation • Universal Event • Update • User Login • z/OS Auto-Restart
Table Name	Name of the table for which the user interaction was performed.
Source	Location of the user interaction. Options: <ul style="list-style-type: none"> • Agent Message • Command Line • Email Notification • Scheduled • Set Variable Action • Task Instance • User Interface • Web Service
Table Key	Encrypted key to the table for which the user interaction was performed.
Created	Date when this audit was created.
Table Record Name	Name of the table record for this user interaction was performed.
Created By	User that created this audit.
Node ID	URL of the cluster node on which this Audit was created.
Parent Audit	Parent audit for which this audit was created automatically.
Node Mode	Mode of the cluster node on which this Audit was created.
Status	Status of the audit.
Description	Description of the user interaction for which this audit was created.
Before	Image of data before the user interaction.
After	Image of data after the user interaction.
Difference	Difference in the data as a result of the user interaction
Additional Information	Any additional information captured for this user interaction.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.

Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Buttons	This section identifies the buttons displayed above and below the Audit Details that let you perform various actions.
Refresh	Refreshes any dynamic data displayed in the Audit Details.
Close	Closes the Audit Details.
Redo	For Command type Enable Trigger or Disable Trigger; Execute the same command again (Enable or Disable).
Undo	For Command type Enable Trigger or Disable Trigger; Execute Disable for Enable command and Enable for Disable command.
Tabs	This section identifies the tabs across the top of the Audit Details that provide access to additional information about the audit.
Child Audits	List of any child audits for this audit.

8 Business Services

- [Overview](#)
 - [Record Types for Business Services](#)
- [Creating Business Services](#)
 - [Business Service Details](#)
 - [Business Service Details Field Descriptions](#)
- [Business Service Membership Considerations for Create, Read, Update, Delete, and Execute](#)

8.1 Overview

The Universal Controller Business Services feature allows you to organize your data into groups of related information.

You can create Business Services that represent your organization and [assign individual records](#) of different [record types](#) to each Business Service. You can then sort and filter the lists of these record types based on the Business Services, as well as generate reports.

For example, you may want to place all records of different record types related to accounting in a Business Service named Accounting.

You also can take advantage of Business Services when you set up security by [assigning permissions](#) to users and groups for records that are members of specific Business Services.

You also can [promote Bundles](#) that include records from one or more specific Business Services.

8.1.1 Record Types for Business Services

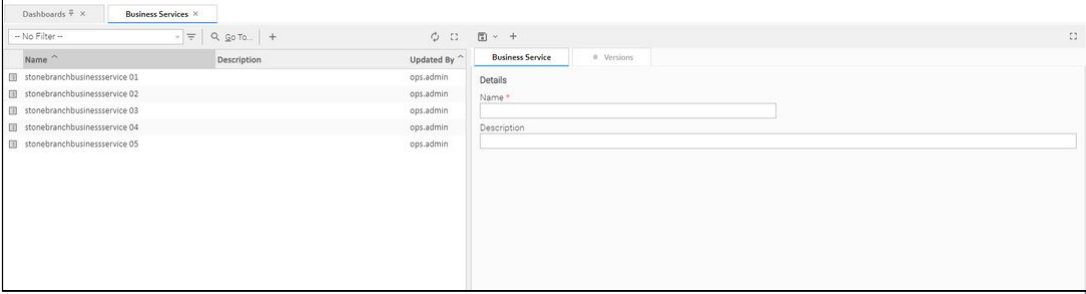
You can assign any record of the following record types to one or more Business Services:

- Agent
- Agent Cluster
- Application
- Calendar
- Credential
- Database Connection
- Email Connection
- Email Template
- PeopleSoft Connection
- SAP Connection
- Script
- SNMP Manager
- Task
- Task Instance
- Trigger
- Variable
- Virtual Resource

8.2 Creating Business Services

Note

You must be assigned the [ops_admin](#) role in order to perform this procedure.

<p>Step 1</p>	<p>From the Administration navigation pane, select Security > Business Services. The Business Services list displays.</p> <p>To the right of the list, Business Service Details for a new Business Service displays.</p> 
<p>Step 2</p>	<p>Enter/select Details for a new Business Service, using the field descriptions below as a guide.</p> <ul style="list-style-type: none"> • Required fields display an asterisk (*) after the field name. • Default values for fields, if available, display automatically. <p>To display more of the Details fields on the screen, you can either:</p> <ul style="list-style-type: none"> • Use the scroll bar. • Temporarily hide the list above the Details. • Click the New button above the list to display a pop-up version of the Details.
<p>Step 3</p>	<p>Click a Save button. The Business Service is added to the database, and all buttons and tabs in the Business Service Details are enabled.</p>

Note

To [open](#) an existing record on the list, either:

- Click a record in the list to display its record Details below the list. (To clear record Details below the list, click the **New** button that displays above and below the Details.)
- Clicking the [Details icon](#) next to a record name in the list, or right-click a record in the list and then click **Open** in the [Action menu](#) that displays, to display a pop-up version of the record Details.
- Right-click a record in the a list, or open a record and right-click in the record Details, and then click **Open In Tab** in the [Action menu](#) that displays, to display the record Details under a new tab on the record list page (see [Record Details as Tabs](#)).

8.2.1 Business Service Details

The following Business Service Details is for an existing Business Service. See the [field descriptions](#) below for a description of the fields that display in the Business Service Details.

For information on how to access additional details - such as [Metadata](#) and complete [database Details](#) - for Business Services (or any type of record), see [Records](#).

8.2.2 Business Service Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in the Business Service Details.

Field Name	Description
Details	This section contains detailed information about the Business Service.
Name	Name used within the Controller to identify this Business Service. It can contain a maximum of 40 alphanumeric characters.
Version	System-supplied; version number of the current record, which is incremented by the Controller every time a user updates a record. Click the Versions tab to view previous versions. For details, see Record Versioning .
Description	Description of this record. Maximum length is 255 characters.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Buttons	This section identifies the buttons displayed above and below the Task Details that let you perform various actions.
Save	Saves a new task record in the Controller database.

Save & New	Saves a new record in the Controller database and redisplay empty Details so that you can create another new record.
Save & View	Saves a record in the Controller database and continues to display that record.
New	Displays empty (except for default values) Details for creating a new record.
Update	Saves updates to the record.
Delete	<p>Deletes the current record.</p> <div style="border: 1px solid orange; padding: 10px; margin-top: 10px;"> <p>Note</p> <p>You cannot delete a Business Service if it has been assigned to one or more records.</p> </div>
Refresh	Refreshes any dynamic data displayed in the Details.
Close	For pop-up view only; closes the pop-up view of this task.
Tabs	This section identifies the tabs across the top of the Task Details that provide access to additional information about the task.
Versions	Stores copies of all previous versions of the current record. See Record Versioning .

8.3 Business Service Membership Considerations for Create, Read, Update, Delete, and Execute

When creating or updating a record, use the **Member of Business Services** field to select one or more Business Services for that record. This, in effect, assigns the record to that Business Service.

You cannot perform an operation (create, read, update, or delete) or issue a command (such as copy) on a record that is a member of a Business Service if you do not have a Permission defined for that record type that includes that operation/command and Business Service membership.

8.3.1 Create

When creating a record that is a member of one or more Business Services, the user must have Create permission that applies for each Business Service that the record is becoming a member of; otherwise, the operation will be prohibited.

8.3.2 Read

When reading/viewing a record (for example, a list or record Details), the user needs only Read permission for one of the Business Services that the record is a member of.

Note

Depending on the value of the [Strict Business Service Membership Read Constraints](#) system property, users may be granted implicit Read permission for specific record types. Refer to the property for more details.

8.3.3 Update

When updating a record, the user must have Update permission for both the original record and the updated record.

As long as an update is not changing the Business Service memberships of a record, the user needs only Update permission for one of the Business Services that the record is a member of.

If the update is adding or removing Business Service membership, further security constraints apply:

- For any added Business Service, the user must have Update permission for the modified record that applies explicitly for the Business Service being added.
- For any removed Business Service, the user must have Update permission for the original record that applies explicitly for the Business Service being removed.

8.3.4 Delete

When deleting a record that is a member of one or more Business Services, the user must have Delete permission that applies for each Business Service the record is a member of; otherwise, the operation will be prohibited.

8.3.5 Execute

At task instance run time, the task instance Execution User requires Execute permission, or Read permission if Execute permission is not applicable, for the following record type dependencies.

Tasks needing to read a Global Variable	Execution User requires Read permission for that Global Variable.
Tasks requiring a Connection	Execution User requires Execute permission for that required Connection (Email Connection, Database Connection, SAP Connection, PeopleSoft Connection, SNMP Manager).
Tasks requiring a Credential	Execution User requires Execute permission for that Credential. (References to Credentials can exist for both non agent-based and agent-based task types. Furthermore, agents can specify default Credentials, even if the Credentials are not directly defined on the task.)
Tasks requiring an Email Template	Execution User requires Read permission for that Email Template.
Tasks requiring a Virtual Resource	Execution User requires Execute permission for that Virtual Resource.
Tasks running a Script	Execution User requires Execute permission for that Script.
Tasks running on an Agent	Execution User requires Execute permission for that Agent.

9 Data Backup - Purge

- [Overview](#)
- [Purge Rules for Task Instances](#)
 - [Task Instance Status](#)
 - [Purging by Retention Duration](#)
- [Creating a Data Backup / Purge Record](#)
 - [Data Backup / Purge Details](#)
 - [Data Backup / Purge Details Field Descriptions](#)
- [Running a Data Backup / Purge Manually](#)
- [Importing Backed Up / Purged Data into the Controller](#)
- [Returning Virtual Resources for Purged Task Instances in Failure Status](#)

9.1 Overview

Universal Controller maintains a record of all system activity, including:

- [Audits](#)
- [Activity](#)
- [History](#)

The Data Backup / Purge feature allows you to configure automatic backups and/or purges of some or all of the Controller activity data. Depending on your organization's needs, you should schedule regular data backups. Depending on the volume of your installation, the amount of data in your Controller database could become unwieldy if you do not schedule regular purges of old data.

The data is written to XML files in the directory you specify.

Note

For instructions on how to purge user-created Controller records, see [Purging Old Versions of Records](#).

9.2 Purge Rules for Task Instances

The following rules apply for the purging of task instances.

9.2.1 Task Instance Status

A task instance (including a workflow task instance) can be purged only if it is in a [status](#) greater than 99:

- 110 (In Doubt)
- 120 (Start Failure)
- 125 (Confirmation Required)
- 130 (Cancelled)
- 140 (Failed)
- 180 (Skipped)
- 190 (Finished)
- 200 (Success)

A task instance within a workflow cannot be purged until its workflow task instance has been purged.

A workflow task instance cannot be purged if one or more of its task instances is in a status other than Skipped, Finished, or Success, because that will cause the workflow to be in a status which will not qualify it to be purged (for example: Running, Running/Problems), and therefore none of the task instances within the workflow will qualify for purge.

9.2.2 Purging by Retention Duration

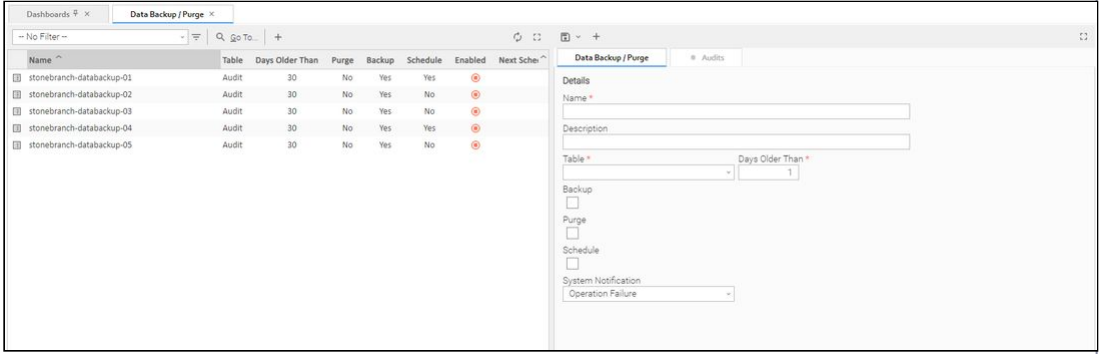


If Purge By Retention Duration has been specified for a trigger or a task, and the Purge By Retention Duration checkbox has been selected in the [Data Backup / Purge Details](#), all task instances launched by the trigger or task are eligible to be purged from the database as soon as the retention duration time specified in the trigger or task has been met.

When a purge is run, any task instances eligible to be purged by retention duration will be purged regardless of the [Days Older Than](#) value specified in the Purge Details.

Note


The Trigger Level (Purge By Retention Duration) feature is used for selectively purging instances earlier than the System Level (Days Older Than) purge and not intended for retaining instances longer than the System Level purge. The System Level purge will not take into consideration the Retention Duration and, therefore, setting a trigger Retention Duration longer than the configured System Level purge will not retain those instances longer.

9.3 Creating a Data Backup / Purge Record

<p>Step 1</p>	<p>From the Administration navigation pane, select Configuration > Data Backup / Purge. The Data Backup / Purge list displays.</p> <p>To the right of the list, Details for a new Data Backup / Purge record displays.</p> 
<p>Step 2</p>	<p>Enter / select Details for a new Data Backup / Purge record, using the field descriptions below as a guide.</p> <ul style="list-style-type: none"> • Required fields display an asterisk (*) after the field name. • Default values for fields, if available, display automatically. <p>To display more of the Details fields on the screen, you can either:</p> <ul style="list-style-type: none"> • Use the scroll bar. • Temporarily hide the list above the Details. • Click the  button above the list to display a pop-up version of the Details.
<p>Step 3</p>	<p>If you want the backup / purge to run automatically, enable the Schedule field and specify how often and what time it should run. Otherwise, you can run it manually.</p>
<p>Step 4</p>	<p>Click a  button to save the record. The record is added to the database, and all buttons and tabs in the Data Backup / Purge Details are enabled.</p>

Note

To [open](#) an existing record on the list, either:

- Click a record in the list to display its record Details below the list. (To clear record Details below the list, click the  button that displays above and below the Details.)
- Clicking the [Details icon](#) next to a record name in the list, or right-click a record in the list and then click **Open** in the [Action menu](#) that displays, to display a pop-up version of the record Details.
- Right-click a record in the a list, or open a record and right-click in the record Details, and then click **Open In Tab** in the [Action menu](#) that displays, to display the record Details under a new tab on the record list page (see [Record Details as Tabs](#)).

9.3.1 Data Backup / Purge Details

The following Data Backup / Purge Details is for an existing Data Backup / Purge record.

Depending on the values that you enter / select for these fields, more (or less) fields may display. See the [field descriptions](#), below, for a description of all fields that may display in the Data Backup / Purge Details.

For information on how to access additional details - such as [Metadata](#) and complete [database Details](#) - for Data Backup / Purge records (or any type of record), see [Records](#).

9.3.2 Data Backup / Purge Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in the Data Backup / Purge Details.

Field Name	Description
Details	This section contains detailed information about the record.
Name	Name of this backup specification.
Description	Description of this record. Maximum length is 255 characters.
Table	Specifies which records you want to back up and/or purge: <ul style="list-style-type: none"> • Audit • Activity • History
Days Older Than	Allows you to specify the minimum number of days you wish to retain data. The process will run according to the schedule you specify, only processing data that is older than the number of days you specify in this field.
Backup	If enabled, the process will write all the selected data to XML files.

<p>Export Path</p>	<p>If Backup is enabled, specifies the path to the directory to which you want the backed up data written. The data must be backed up to a location on the server's file system. It is written to a separate XML file for each record type, as shown in the following examples:</p> <div data-bbox="598 360 1541 524" style="border: 1px solid #ccc; padding: 5px; margin: 10px 0;"> <pre>AccessDenied Access DeniedVPS28SF95MVAP0CSnlq20qzvyCY7nNhLTLcRMIvX+P8lve6GEmLgMQII SbnGDEcwiQ BquJxMM64og4PpMaKKDhKih9s=</pre> </div> <div data-bbox="598 562 1541 792" style="border: 2px solid #ffc107; padding: 5px; margin: 10px 0;"> <p>Note</p> <p>If no path is specified, the system default path (opwise_backups under the Tomcat directory) is used, unless an alternate path is specified in the Universal Controller system property Data Backup/Purge Export Path. If a path is specified but does not exist as an "absolute" path, it will be assumed to be a "relative" path from Tomcat home.</p> </div>
<p>Purge</p>	<p>If enabled, the process will purge the selected data from your Universal Controller database.</p>
<p>Purge By Retention Duration</p>	<p>Specification for whether task instances qualifying to be purged by retention duration should be purged.</p>
<p>Schedule</p>	<p>If enabled, displays additional fields that allow you to specify an automated backup and/or purge schedule. If you do not select schedule, you must manually run the backup / purge process.</p>
<p>Next Scheduled Time</p>	<p>System-supplied; If Data Backup/Purge is enabled; the next scheduled time the that backup / purge process will run, based on the specifications in your schedule.</p>
<p>Every # Days</p>	<p>If Schedule is enabled, specifies the frequency (in number of days) of the backup / purge process. Default is 1.</p>
<p>Time</p>	<p>If Schedule is enabled, specifies the time of the backup / purge. Use 24:00 hour time.</p> <div data-bbox="598 1312 1541 1543" style="border: 2px solid #ffc107; padding: 5px; margin: 10px 0;"> <p>Note</p> <p>When enabling a Data Backup / Purge, or updating the Time for an enabled Data Backup / Purge, the backup / purge process will be scheduled for the specified Time on the current day if the current time is on or before the specified Time. Otherwise, the backup / purge process will be scheduled for the specified Time on the next day.</p> </div>

System Notification	<p>Specification for whether or not to receive system notifications for Data Backup / Purge operations.</p> <p>Options are:</p> <ul style="list-style-type: none"> • –None – • Operation Failure • Operation Success/Failure • Operation Success <div style="border: 1px solid yellow; padding: 5px; margin-top: 10px;"> <p>Note</p> <p>In order to receive system notifications, you must provide an email address in the Administrator Email Address system property and select the Use for System Notifications field on an Email Connection.</p> </div>
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Buttons	This section identifies the buttons displayed above and below the Data Backup / Purge Details that let you perform various actions.
Save	Saves a new record in the Controller database.
Save & New	Saves a new Data Backup/Purge record in the Controller database and redisplay empty Details so that you can create another Data Backup/Purge record.
Save & View	Saves a new Data Backup/Purge record in the Controller database and continues to display that record.
New	Displays empty (except for default values) Details for creating a new record.
Update	Saves updates to the record.
Enable	Enables these Backup / Purge instructions so that they will be processed by the Controller.
Disable	Disables these backup / purge instructions so they will not be processed by the Controller.
Run	Manually runs the backup / purge instructions.
Terminate	Terminates a running Data Backup/Purge operation.
Delete	Deletes the current record.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	For pop-up view only; closes the pop-up view of this record.
Tabs	This section identifies the tabs across the top of the Data Backup / Purge Details that provide access to additional information about the record.

Audits	Lists audits created for all scheduled runs of this data backup / purge operation.
---------------	--

9.4 Running a Data Backup / Purge Manually

If you want to manually run a data backup or purge, either:

- On the Backups list, right-click the **Name** of the Data Backup / Purge that you want to run and click **Run**.
- Display the Details of the Data Backup / Purge that you want to run and click the **Run** button.

9.5 Importing Backed Up / Purged Data into the Controller

If you want to import any of the XML files created by a Data Backup / Purge, you can copy the XML file(s) into the bulk export output path and run bulk import. See [Running an Import](#).

9.6 Returning Virtual Resources for Purged Task Instances in Failure Status

Task instances that have their **Hold Resources on Failure** field enabled will hold their renewable [virtual resources](#) if the task instance is in [Failed](#) status.

However, when these task instances are purged, the virtual resources are returned.

10 Filters

- [Overview](#)
- [Creating a Filter](#)
- [Global Filters](#)
 - [Filter Fields](#)
 - [Supported Record Types](#)
- [Applying a Filter](#)
 - [Applying a New Filter](#)
 - [Applying an Existing Filter](#)
- [Saving a Filter](#)
- [Pinning a Filter](#)
 - [Unpinning a Filter](#)
- [Filters List](#)
- [Filter Details Field Descriptions](#)
- [Unresolved and Variable Fields in a Filter List](#)
 - [Examples](#)
- [Go To Filter](#)

10.1 Overview

Universal Controller lets you apply filters to [lists](#) throughout the user interface.

You can:

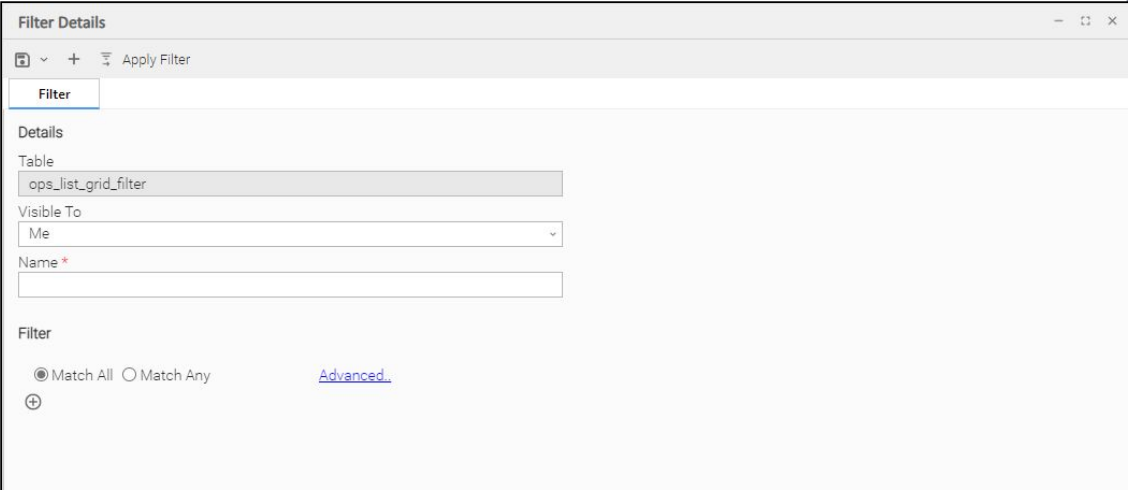
- Create a filter and either:
 - Apply it only to the list for which it was created.
 - Apply it to multiple record types (see [Global Filters](#)) .
- Create any number of Filters for a list, and any amount of criteria for each Filter.
- Create a Filter and apply it to a list without saving it; you will not be able to re-apply it to the list.
- Create a Filter and save it; the filter is automatically applied to the list and saved so that you will be able to re-apply it to the list at any time.
- Save a previously saved Filter under a different name. You can edit the re-named Filter and apply it to the same list as the original Filter at any time.

By default, no filtering is applied to a list. This is indicated by the default value (**-- No Filter --**) for the **Filter** field in the [List task bar](#). However, you can [pin](#) a saved Filter to a list to make that the default Filter for the list.

You also can create a quick, one-time filter (it is not saved) that allows you to sort a list by record name (see [Go To Filter](#)).

10.2 Creating a Filter

To create a Filter:

<p>Step 1</p>	<p>From the Services, select the record type list for which you want to apply a filter.</p>
<p>Step 2</p>	<p>Click the Filter... button in the List task bar that displays at the top of the list. A Filter Details pop-up dialog displays.</p> 
<p>Step 3</p>	<p>In the Visible To field, select whether you want the Filter to be visible to only to the logged in user, to any logged in user, or to any logged in user that belongs to the same user group as the logged in user.</p> <p>A user can apply any visible Filter to a list, and can modify any Filter that is visible to that user or that user group. A user may not be able to update a filter that is visible to all users, but can save/modify that filter local to the user.</p>
<p>Step 4</p>	<p>If you want the filter to be available for use for all record type that use filters, click the global checkbox.</p>
<p>Step 5</p>	<p>Using the field descriptions below as a guide, select criteria for the Filter.</p>
<p>Step 6</p>	<p>When you have selected the filter criteria, you can:</p> <ul style="list-style-type: none"> • Apply the filter to the list immediately. • Save the filter to apply it to the list immediately and save it so that it can be applied again at any time. • Apply the filter and then save it. <p>If you want to save the Filter, you must enter a Name for it. You do not have to enter a Name for a Filter if you only want to apply it.</p>

Note

You also can create a filter by viewing a saved filter on the [Filters list](#) and clicking the [Save As...](#) button. This new filter applies only to the record type list of the saved filter, but you can change any of its [filter criteria](#).

10.3 Global Filters

Global filters can be created from any supported record type and can be used/applied in any record types.

For example, you can create a global filter for a type of task and use that same filter in Triggers or any other supported records.

10.3.1 Filter Fields

You can create global filters with the following common fields and use them on any supported record types.

Whichever record type has all of these common fields, the global filter can be created and re-used from other record types.

Field	Description
Name	Name of the record
Description	Description
Member of Business Services	List of Business Services
Created	Created Date
Created By	Created By
Updated	Updated Date
Updated By	Updated By
UUID	UUID of the record

10.3.2 Supported Record Types

You can create global filters for the following record types.

- Agent
- Agent Cluster
- Application
- Bundle
- Bundle Target
- Calendar
- Credential
- Database Connection
- Email Connection
- Email Template
- OMS Sever
- Peoplesoft Connection
- SAP Connection
- Script
- SNMP Connection
- Task
- Task Instance
- Trigger
- Variable
- Virtual Resource

10.4 Applying a Filter

There are two ways to apply a Filter to a list:

1. [Apply a new Filter.](#)
2. [Apply an existing Filter.](#)
3. [Save a new Filter.](#)

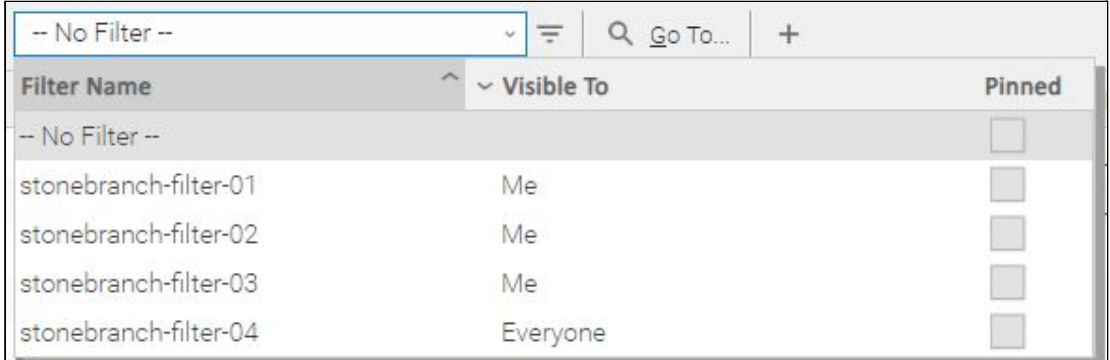
10.4.1 Applying a New Filter

To apply a new Filter to a list:

Step 1	After you have created a Filter , click the Apply Filter button. The list then displays only those records that match the selected criteria. The Filter is identified as --Unsaved 1-- in the Filter field on the List task bar .
Step 2	If you want to save the applied Filter so that it can be re-applied to this list at any time, click the Save button. The Filter now is listed on the Filters list . If you do not want to save the applied Filter, click the Close button.
Step 3	To remove the Filter from the list and redisplay all records, click -- No Filter -- in the Filter field.

10.4.2 Applying an Existing Filter

To apply an existing Filter to a list:

Step 1	<p>On the List task bar, click the Filter drop-down list arrow to display a list of all existing Filters for this list.</p>  <p>The list identifies the name of each Filter, to whom the Filter is visible, and whether or not the Filter is pinned.</p>
Step 2	Click the Filter that you want to apply to the list. The list displays only those records that match the criteria of the selected Filter, which now is identified in the Filter field.

10.5 Saving a Filter

Saving a Filter:

- Applies it to the list immediately.
- Saves it so that it can be applied again at any time.

Also, you must save a Filter if you want to [pin the Filter](#) to the list so that it replaces -- **No Filter** -- as the default Filter for the list.

To save a filter that you have [created](#), click the **Save** button in the Filter Details. The saved Filter:

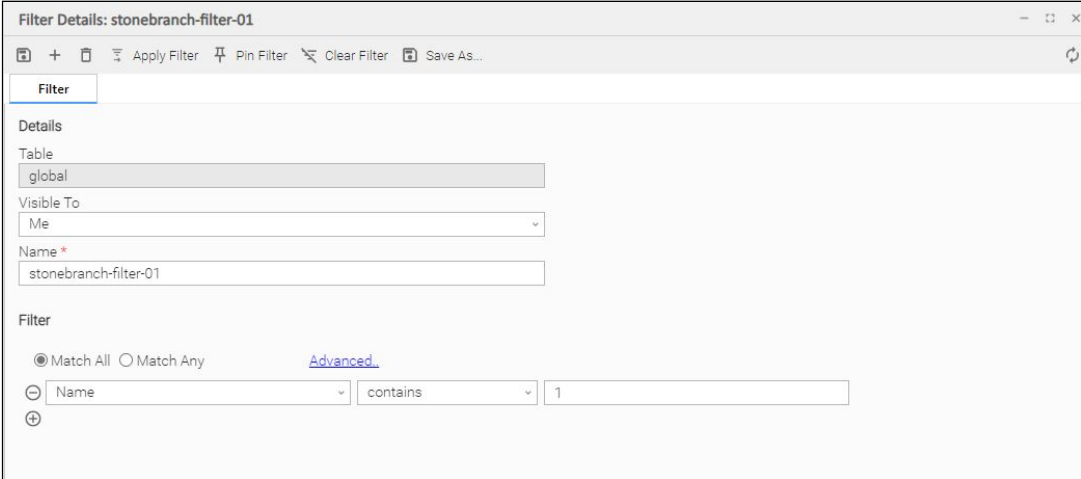
- Is applied to the list.
- Displays in the **Filter** drop-down list in the [List task bar](#).
- Displays in the [Filters list](#) of all Filters created for all list.

10.6 Pinning a Filter

You can pin a saved Filter to a list so that the pinned Filter replaces -- **No Filter** -- as the default Filter for the list. Only records in the list that match the criteria of the pinned Filter will be displayed, by default, on the list.

(Pinning a Filter to a list does not prevent you from selecting other Filters for the list.)

To pin a Filter to a list:

<p>Step 1</p>	<p>Create and save a Filter.</p>
<p>Step 2</p>	<p>Apply the Filter to the list. The Name of the Filter is identified in the Filter field of the List task bar.</p>
<p>Step 3</p>	<p>Click the Filter button in the List task bar to display the Filter Details for the applied Filter.</p> 
<p>Step 4</p>	<p>Click the Pin Filter button, and then click the Close button. (You do not have to click the Update button, as no changes were made to the details.) The pinned Filter has now become the default Filter for this list.</p>

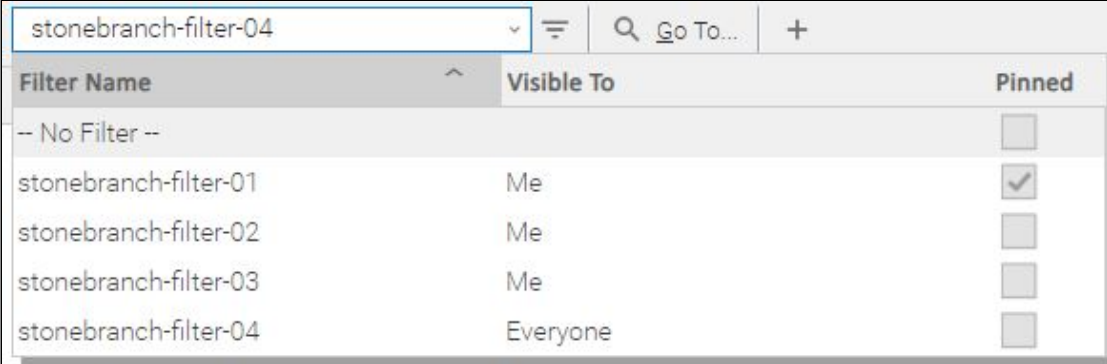
10.6.1 Unpinning a Filter

If you have pinned a saved Filter to a list so that it has become the default Filter for the list, only records in the list that match the pinned Filter criteria are displayed. You must unpin the Filter in order to select -- **No Filter** -- as the default Filter, which allows all records in the list to display.

To unpin a Filter to a list:

Note

If the pinned Filter is the Filter currently applied to the list, skip to Step 3.

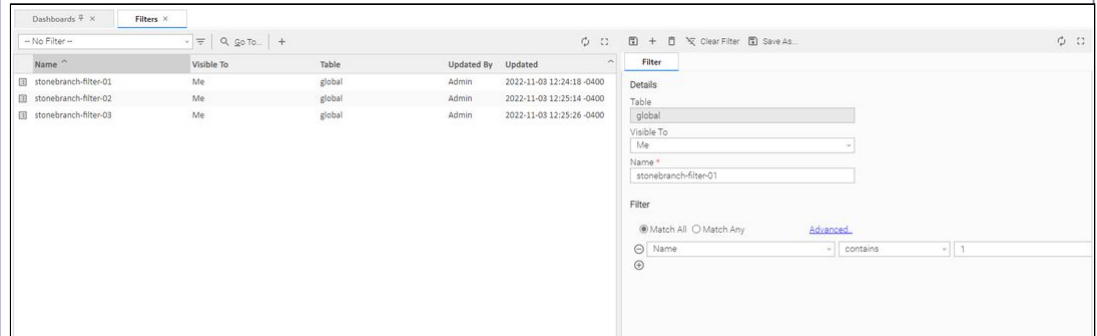
<p>Step 1</p>	<p>Click the Filter drop-down list arrow of the List task bar to display the list of all Filters for the list. The pinned Filter is identified with a check mark in the Pinned column.</p>  <table border="1" data-bbox="432 860 1544 1223"> <thead> <tr> <th>Filter Name</th> <th>Visible To</th> <th>Pinned</th> </tr> </thead> <tbody> <tr> <td>-- No Filter --</td> <td></td> <td><input type="checkbox"/></td> </tr> <tr> <td>stonebranch-filter-01</td> <td>Me</td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>stonebranch-filter-02</td> <td>Me</td> <td><input type="checkbox"/></td> </tr> <tr> <td>stonebranch-filter-03</td> <td>Me</td> <td><input type="checkbox"/></td> </tr> <tr> <td>stonebranch-filter-04</td> <td>Everyone</td> <td><input type="checkbox"/></td> </tr> </tbody> </table>	Filter Name	Visible To	Pinned	-- No Filter --		<input type="checkbox"/>	stonebranch-filter-01	Me	<input checked="" type="checkbox"/>	stonebranch-filter-02	Me	<input type="checkbox"/>	stonebranch-filter-03	Me	<input type="checkbox"/>	stonebranch-filter-04	Everyone	<input type="checkbox"/>
Filter Name	Visible To	Pinned																	
-- No Filter --		<input type="checkbox"/>																	
stonebranch-filter-01	Me	<input checked="" type="checkbox"/>																	
stonebranch-filter-02	Me	<input type="checkbox"/>																	
stonebranch-filter-03	Me	<input type="checkbox"/>																	
stonebranch-filter-04	Everyone	<input type="checkbox"/>																	
<p>Step 2</p>	<p>Click the pinned Filter to apply it to the list.</p>																		
<p>Step 3</p>	<p>Click the Filter button on the List task bar to display the Filter Details for the pinned Filter.</p>																		
<p>Step 4</p>	<p>Click the Unpin Filter button, and then click the Close button. (You do not have to click the Update button, as no changes were made to the details.) The pinned Filter is no longer the default Filter for this list (although the unpinned Filter remains as the currently selected Filter for the list).</p>																		

10.7 Filters List

The Filters list displays a list of all saved Filters for all lists.

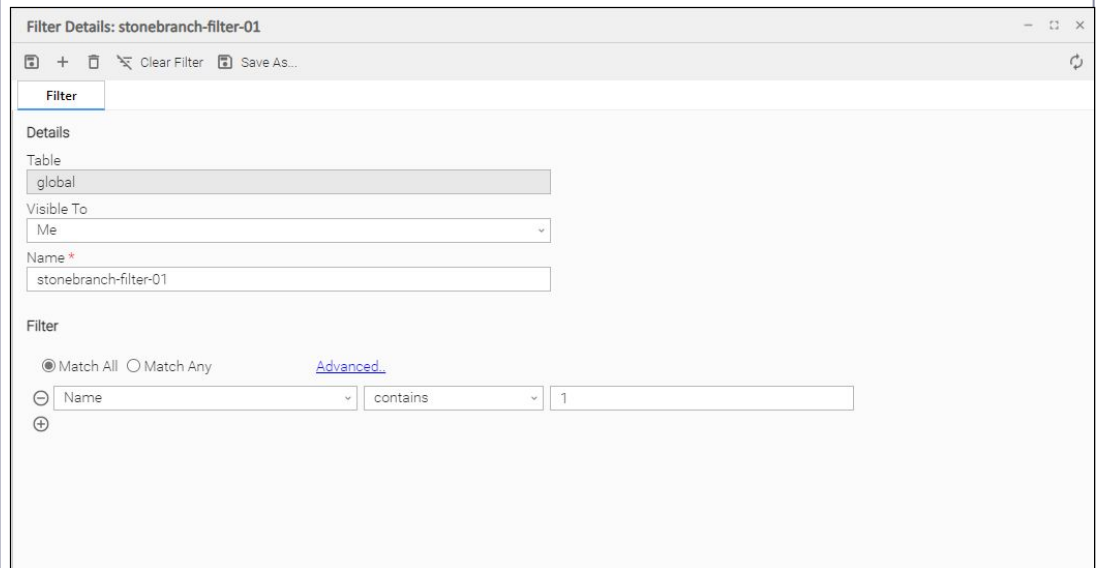
Step 1

From the **Administration** navigation pane, select **Configuration > Filters**. The Filters list displays.



Step 2

Click the Details icon next to a Filter Name or click anywhere in the Filter row to display Details for that Filter.



See the [field descriptions](#) below for a description of the fields and buttons in the Filter Details.

Note

If you want to apply a Filter to a list, you must select the Filter from the **Filter** field in the **List task bar** for that list. You cannot apply a Filter from the Filters list or from the Details of a Filter in the Filters list.

10.8 Filter Details Field Descriptions

The following table describes the fields and buttons that display in Filter Details.

Field Name	Description
Details	This section contains detailed information about the Filter record.

Table	Universal Controller table (record type) to which this Filter applies.
Global	Indication for whether or not this filter will be available for multiple record types (see Global Filters).
Visible To	<p>Users that can see this Filter in the Filters drop-down list and apply the Filter to the list.</p> <p>Options:</p> <ul style="list-style-type: none"> • Me User creating this Filter. • Everyone Any logged in user. • <group name> Any user in the specified group or groups, selected from a list of groups that the user creating this Filter is a member of or groups that this Report is currently already visible to. <div style="border: 1px solid orange; padding: 5px; margin-top: 10px;"> <p>If you unselect a group that you are not a member of from the Visible To column, and submit the change, you will not be able to add that group back. You can only select and unselect visibility for groups that you are a member of.</p> </div>
Name	Name of this Filter.
Filter	This section contains the criteria for the Filter.
Match All	Specifies that when this Filter is applied, the list will displays all records that match all of the criteria.
Match Any	Specifies that when this Filter is applied, the list will displays all records that match any of the criteria.
Add (+) icon (Filter Criteria fields)	<p>Allows you to add three criteria fields for this Filter:</p> <ol style="list-style-type: none"> 1. Field in the record Details for this record type on which to base the Filter. 2. Comparison operator. 3. Value(s) to compare the Field in the record Details with (not case-sensitive). <div style="border: 1px solid orange; padding: 5px; margin-top: 10px;"> <p>If you are filtering on date-related fields using the between (inclusive) comparison operator (SQL BETWEEN condition), the database query can produce unexpected results when the later date is specified before the earlier date.</p> </div>
Buttons	This section identifies the buttons displayed above and below the Filter Details that let you perform various actions.
Save	For a new Filter; applies the Filter to the list and saves a new Filter record in the Controller database.
Save As...	For saved Filters; Creates a copy of the filter with a different Name and/or Visible To fields.
Apply Filter	<p>For a new, unsaved Filter; applies the filter to the list.</p> <p>For an applied Filter; allows you to see the results of any changes made to the Filter criteria before updating the Filter.</p>
Pin Filter	For a Filter; allows you to pin (select) the Filter as the default Filter for the list.

Unpin Filter	For a Filter; allows you to unpin (de-select) the Filter as the default Filter for the list.
Clear Filter	For saved Filters; clears the Filter of all criteria field values.
Update	Saves updates to the record.
New	Displays empty (except for default values) Details for creating a new record.
Delete	Deletes the current record.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	For pop-up view only; closes the pop-up view of this Filter.

10.9 Unresolved and Variable Fields in a Filter List

For records that have one or more fields in which you can enter a variable instead of selecting a record type, the first of the three [Filter Criteria fields](#) includes two selections:

- **<record type>Variable**
- **<record type>Unresolved**

Variable refers to the **Variable** check mark field that is provided for a record type field. If you select **<record type>Variable**, a Comparison Operator, and a Value, and then apply the filter, the list will display only those records that have the **Variable** field check marked and which match the Comparison Operator and Value criteria.

Unresolved refers to the **<record type>** field itself in which a variable has been entered. If you select **<record type>Unresolved**, a Comparison Operator, and a Value, and then apply the filter, the list will display only those records that have the **Variable** field check marked and which match the Comparison Operator and Value criteria for the **<record type>** field.

10.9.1 Examples

The following examples illustrate **Variable** and **Unresolved** filter criteria being applied to a task list.

10.9.1.1 Example 1

Apply this filter criteria to list all tasks for which the **Agent Variable** field has been check marked.

- □ ×
Filter Details

📄 + ⌵ Apply Filter

Filter

Details

Table Global
ops_task_unix

Visible To
Me ▾

Name *

Filter

Match All
 Match Any
 [Advanced...](#)

⊖ Agent Variable ▾
equals ▾

⊕

10.9.1.2 Example 2

Apply this filter criteria to list all tasks for which the **Highest Instance Time in Seconds** is greater than **30** and the task **Name** contains the characters **stonebrach**.

- □ ×
Filter Details

📄 + ⌵ Apply Filter

Filter

Details

Table Global
ops_task_unix

Visible To
Me ▾

Name *

Filter

Match All
 Match Any
 [Advanced...](#)

⊖ Name ▾
contains ▾
stonebrach

⊖ Highest Instance Time In Seconds ▾
greater than ▾
30

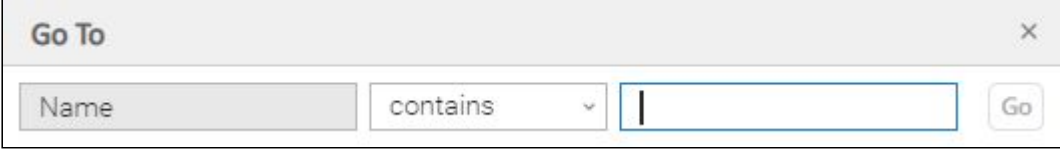
⊕

10.10 Go To Filter

You can create a quick filter for a list that will filter the list by full or partial record name.

You can filter for a specific record name or for record names matching a [Go To Operator](#) user preference: **contains**, **starts with**, or **equals**.

To create a Go To filter:

<p>Step 1</p>	<p>From the Services, select the record type list for which you want to apply a filter.</p>
<p>Step 2</p>	<p>Either:</p> <ul style="list-style-type: none"> • Click the Go To... button in the List task bar that displays at the top of the list. • Press the Access Key Combination that is appropriate for your browser / platform to highlight the Go To... button, and then press the Enter key. <p>A Go To pop-up dialog displays.</p> 
<p>Step 3</p>	<p>Select an operator for the Go To filter (the current value of the Go To Operator user preference displays by default), enter a full or partial record name, and click the Go button. The list then will display only records that match your Go To filter selections.</p> <div style="border: 2px solid orange; padding: 10px; margin-top: 10px;"> <p>Note</p> <p>Selecting an operator that is different than the current Go To Operator user preference value does not change that user preference value.</p> </div>

11 TrustStore

- [Overview](#)
- [Configuring Universal Controller](#)
- [Importing Server Certificates](#)

11.1 Overview

Universal Controller requires a truststore (keystore) in order to support SSL/TLS validation and encryption for LDAPS and HTTPS communications. The truststore will contain the server certificates or the root certificate (Certificate Authority) that issued the server certificate.

Universal Controller truststore uses the Oracle Java keystore format (JKS). By default, and without further configuration, the Java keystore will be used. The Java keystore (cacerts) is located in the `/lib/security` sub-directory of the JRE home directory.

Server certificates can be imported using the Oracle Java keytool utility, which can be found in the `bin` sub-directory of the JRE home directory.

JRE version-specific documentation for the keytool utility can be found at docs.oracle.com. For JRE 8, the documentation is available at <http://docs.oracle.com/javase/8/docs/technotes/tools/windows/keytool.html>.

You can also manage certificates through the controller UI by using [TrustStore Settings](#) on the administration navigation pane.

11.2 Configuring Universal Controller

If you choose not to use the JRE TrustStore, you must configure the following properties in the [Universal Controller Start-up Properties \(uc.properties\)](#) file:

- `uc.trustmanager.truststore`
- `uc.trustmanager.truststore.password`

These properties will take effect only after you restart Tomcat.

11.3 Importing Server Certificates

After you have obtained the certificate, you will need to import the certificate into the truststore. This can be done with the following example keytool command, which will create the keystore if it does not already exist:

```
keytool -keystore $JAVA_HOME/lib/security/cacerts -importcert -trustcacerts -file
server_ca_certificate.pem -alias serverca
```

You can also import certificates using [TrustStore Settings](#) on the administration navigation pane of the controller.

12 TrustStore Settings

- [Overview](#)
- [TrustStore Settings Details](#)
 - [TrustStore Settings Field Descriptions](#)
- [Certificate Details](#)
 - [Certificate Details Field Description](#)
- [Importing a Trusted Certificate](#)
- [Examining a Certificate](#)
- [Viewing Certificate Details for a Trusted Certificate Entry](#)
- [Deleting a TrustStore Entry](#)

12.1 Overview

TrustStore Settings, which allow you to manage the default TrustStore, are available through the user interface.

The user running the Tomcat process has to have write access to the TrustStore file to import trusted certificates, examine certificates or delete entries.

After importing or deleting an entry, restarting the controller may be required for the changes to take effect.

Deleting and importing is only for the current cluster node.

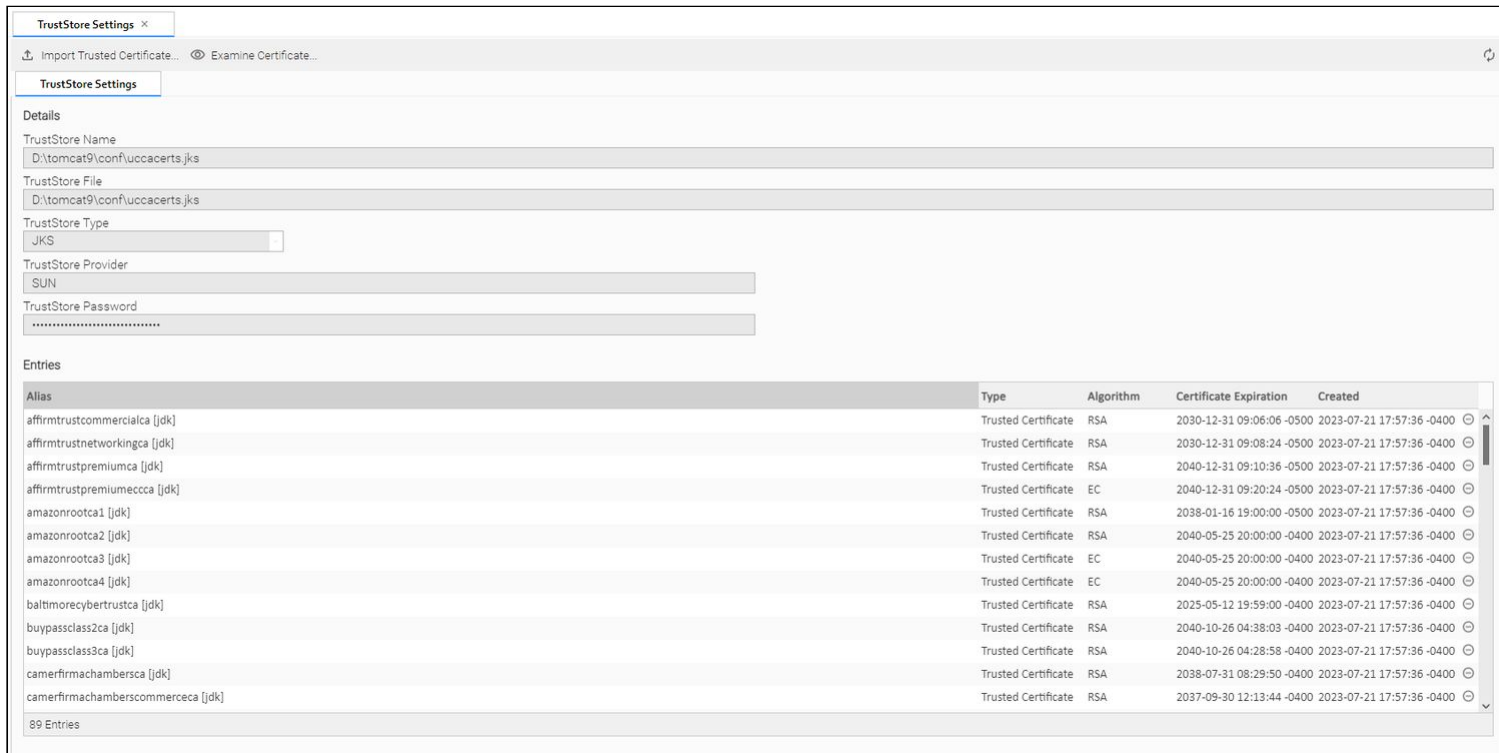
If you choose not to use the JRE TrustStore, you must configure the following properties in the [Universal Controller Start-up Properties \(uc.properties\)](#) file:

- [uc.trustmanager.truststore](#)
- [uc.trustmanager.truststore.password](#)

These properties will take effect only after you restart Tomcat.


12.2 TrustStore Settings Details

See the field descriptions below, for a description of all fields and buttons that display in the TrustStore Settings Details.



12.2.1 TrustStore Settings Field Descriptions

Field Name	Description
Details	This section contains information on the TrustStore details.
TrustStore Name	The name of the default TrustStore. This is determined by the uc.trustmanager.truststore property.
TrustStore File	The actual file name for the default TrustStore. In most cases, if the TrustStore Name is specified then the TrustStore File will be the same; however, if the TrustStore Name is not specified or is not accessible, then a different default TrustStore may be used (e.g. <code>java-home/lib/security/cacerts</code>). If the TrustStore File is blank, then no accessible TrustStore could be found and an empty immutable TrustStore will be used instead.
TrustStore Type	The type for the default TrustStore: <ul style="list-style-type: none"> • JKS • PKCS#12
TrustStore Provider	The provider for the default TrustStore.
TrustStore Password	The password for the default TrustStore. A masked value will be show if the TrustStore password is specified; otherwise, it will be blank.
Entries	This section contains information on the TrustStore entries.
Alias	Unique entry name.
Type	Entries can be one of the following types: <ul style="list-style-type: none"> • Private Key • Secret Key • Trusted Certificate

Field Name	Description
Algorithm	Key algorithm.
Certificate Expiration	The date and time that the certificate expires.
Created	The date and time that the entry was created.
Buttons	This section identifies the buttons displayed above the TrustStore settings.
Import Trusted Certificate...	Opens a dialog to import a trusted certificate.
Examine Certificate...	Opens details for the selected entry.
Delete 	Deletes selected entry from the TrustStore.

12.3 Certificate Details

Certificate Details For Entry: affirmtrustcommercialca [jdk]

Certificate

Details

Version:

Issuer:

Subject:

Serial Number:

Valid From: Valid Until:

Signature Algorithm: Public Key Algorithm:

Fingerprints

Algorithm	Fingerprint
SHA-1	F9:B5:B6:32:45:5F:9C:BE:EC:57:5F:80:DC:E9:6E:2C:C7:B2:78:B7
SHA-256	03:76:AB:1D:54:C5:F9:80:3C:E4:B2:E2:01:A0:EE:7E:EF:7B:57:B6:36:E8:A9:3C:9B:8D:48:60:C9:6F:5F:A7

12.3.1 Certificate Details Field Description

Field Name	Description
Details	This section contains information on the Certificate details.
Version	The version number (1, 2, or 3)

Field Name	Description
Issuer	The distinguished name (DN) of the certificate's issuer.
Subject	The distinguished name (DN) of the certificate's subject (owner).
Serial Number	The serial number generated by the certificate's issuer.
Valid From	The date and time that the certificate is valid from.
Valid Until	The date and time that the certificate is valid until.
Signature Algorithm	The algorithm used to sign the certificate.
Public Key Algorithm	The algorithm used for the public key.
Fingerprints	The SHA-1 and SHA-256 certificate fingerprints.

12.4 Importing a Trusted Certificate

The import does not perform a chain of trust check for the certificate being imported. It is the responsibility of the user to first examine the certificate and verify that the certificate can be trusted before importing it.

Step 1 From the [Administration](#) navigation pane, select **TrustStore Settings**. The TrustStore Settings page displays.

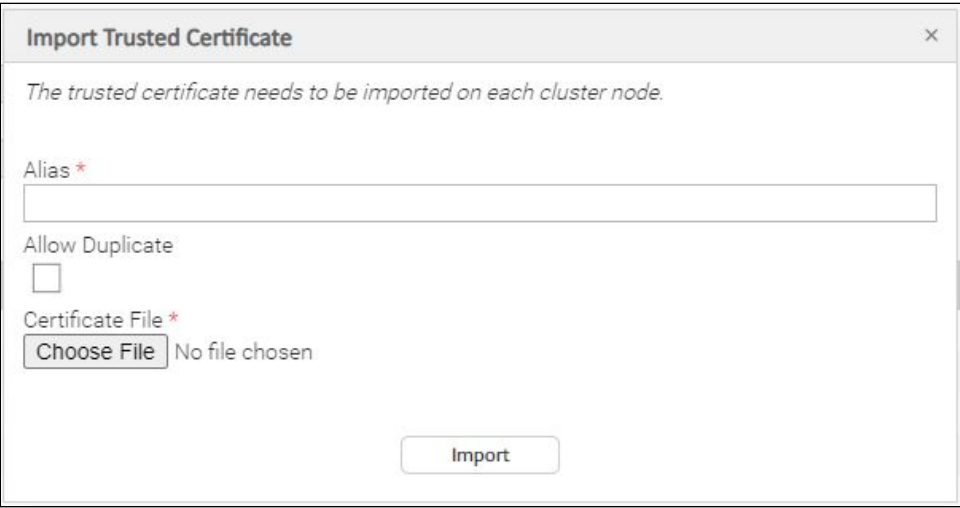
The screenshot shows the 'TrustStore Settings' page with the following details:

- TrustStore Name:** D:\tomcat9\conf\uccacerts.jks
- TrustStore File:** D:\tomcat9\conf\uccacerts.jks
- TrustStore Type:** JKS
- TrustStore Provider:** SUN
- TrustStore Password:** [Redacted]

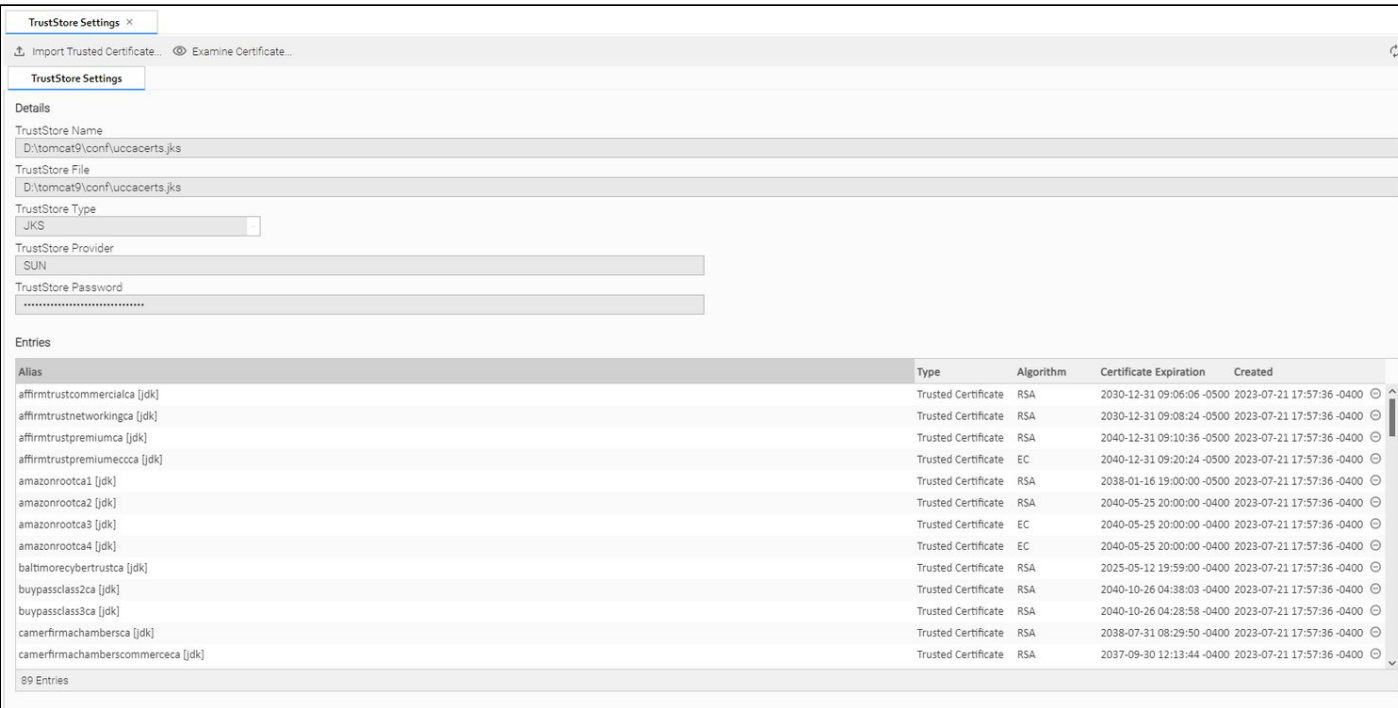
The 'Entries' section displays a table of trusted certificates:

Alias	Type	Algorithm	Certificate Expiration	Created
affirmtrustcommercialca [jdk]	Trusted Certificate	RSA	2030-12-31 09:06:06 -0500	2023-07-21 17:57:36 -0400
affirmtrustnetworkingca [jdk]	Trusted Certificate	RSA	2030-12-31 09:08:24 -0500	2023-07-21 17:57:36 -0400
affirmtrustpremiumca [jdk]	Trusted Certificate	RSA	2040-12-31 09:10:36 -0500	2023-07-21 17:57:36 -0400
affirmtrustpremiumeccca [jdk]	Trusted Certificate	EC	2040-12-31 09:20:24 -0500	2023-07-21 17:57:36 -0400
amazonrootca1 [jdk]	Trusted Certificate	RSA	2038-01-16 19:00:00 -0500	2023-07-21 17:57:36 -0400
amazonrootca2 [jdk]	Trusted Certificate	RSA	2040-05-25 20:00:00 -0400	2023-07-21 17:57:36 -0400
amazonrootca3 [jdk]	Trusted Certificate	EC	2040-05-25 20:00:00 -0400	2023-07-21 17:57:36 -0400
amazonrootca4 [jdk]	Trusted Certificate	EC	2040-05-25 20:00:00 -0400	2023-07-21 17:57:36 -0400
baltimorecybertrustca [jdk]	Trusted Certificate	RSA	2025-05-12 19:59:00 -0400	2023-07-21 17:57:36 -0400
buypassclass2ca [jdk]	Trusted Certificate	RSA	2040-10-26 04:38:03 -0400	2023-07-21 17:57:36 -0400
buypassclass3ca [jdk]	Trusted Certificate	RSA	2040-10-26 04:28:58 -0400	2023-07-21 17:57:36 -0400
camerfrmachambersca [jdk]	Trusted Certificate	RSA	2038-07-31 08:29:50 -0400	2023-07-21 17:57:36 -0400
camerfrmachamberscommerceca [jdk]	Trusted Certificate	RSA	2037-09-30 12:13:44 -0400	2023-07-21 17:57:36 -0400

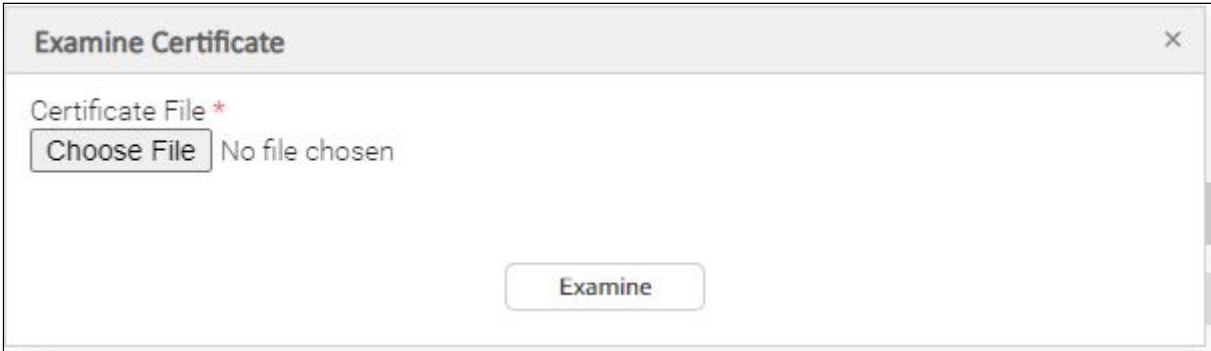
89 Entries

<p>Step 2</p>	<p>Click the Import Trusted Certificate... button at the top of the page. The Import Trusted Certificate pop-up dialog displays.</p> 
<p>Step 3</p>	<p>Click Choose File to select the trusted certificate to import and use the Alias field to specify a unique entry name.</p>
<p>Step 4</p>	<p>Click Import.</p>

12.5 Examining a Certificate

<p>Step 1</p>	<p>From the Administration navigation pane, select TrustStore Settings. The TrustStore Settings page displays.</p>  <table border="1" data-bbox="132 1570 1536 1883"> <thead> <tr> <th>Alias</th> <th>Type</th> <th>Algorithm</th> <th>Certificate Expiration</th> <th>Created</th> </tr> </thead> <tbody> <tr> <td>affirmtrustcommercialca [jdk]</td> <td>Trusted Certificate</td> <td>RSA</td> <td>2030-12-31 09:06:06 -0500</td> <td>2023-07-21 17:57:36 -0400</td> </tr> <tr> <td>affirmtrustnetworkingca [jdk]</td> <td>Trusted Certificate</td> <td>RSA</td> <td>2030-12-31 09:08:24 -0500</td> <td>2023-07-21 17:57:36 -0400</td> </tr> <tr> <td>affirmtrustpremiumca [jdk]</td> <td>Trusted Certificate</td> <td>RSA</td> <td>2040-12-31 09:10:36 -0500</td> <td>2023-07-21 17:57:36 -0400</td> </tr> <tr> <td>affirmtrustpremiumeccca [jdk]</td> <td>Trusted Certificate</td> <td>EC</td> <td>2040-12-31 09:20:24 -0500</td> <td>2023-07-21 17:57:36 -0400</td> </tr> <tr> <td>amazonrootca1 [jdk]</td> <td>Trusted Certificate</td> <td>RSA</td> <td>2038-01-16 19:00:00 -0500</td> <td>2023-07-21 17:57:36 -0400</td> </tr> <tr> <td>amazonrootca2 [jdk]</td> <td>Trusted Certificate</td> <td>RSA</td> <td>2040-05-25 20:00:00 -0400</td> <td>2023-07-21 17:57:36 -0400</td> </tr> <tr> <td>amazonrootca3 [jdk]</td> <td>Trusted Certificate</td> <td>EC</td> <td>2040-05-25 20:00:00 -0400</td> <td>2023-07-21 17:57:36 -0400</td> </tr> <tr> <td>amazonrootca4 [jdk]</td> <td>Trusted Certificate</td> <td>EC</td> <td>2040-05-25 20:00:00 -0400</td> <td>2023-07-21 17:57:36 -0400</td> </tr> <tr> <td>baltimorecybertrustca [jdk]</td> <td>Trusted Certificate</td> <td>RSA</td> <td>2025-05-12 19:59:00 -0400</td> <td>2023-07-21 17:57:36 -0400</td> </tr> <tr> <td>buypassclass2ca [jdk]</td> <td>Trusted Certificate</td> <td>RSA</td> <td>2040-10-26 04:38:03 -0400</td> <td>2023-07-21 17:57:36 -0400</td> </tr> <tr> <td>buypassclass3ca [jdk]</td> <td>Trusted Certificate</td> <td>RSA</td> <td>2040-10-26 04:28:58 -0400</td> <td>2023-07-21 17:57:36 -0400</td> </tr> <tr> <td>camerfirmachambersca [jdk]</td> <td>Trusted Certificate</td> <td>RSA</td> <td>2038-07-31 08:29:50 -0400</td> <td>2023-07-21 17:57:36 -0400</td> </tr> <tr> <td>camerfirmachamberscommerceca [jdk]</td> <td>Trusted Certificate</td> <td>RSA</td> <td>2037-09-30 12:13:44 -0400</td> <td>2023-07-21 17:57:36 -0400</td> </tr> </tbody> </table> <p>89 Entries</p>	Alias	Type	Algorithm	Certificate Expiration	Created	affirmtrustcommercialca [jdk]	Trusted Certificate	RSA	2030-12-31 09:06:06 -0500	2023-07-21 17:57:36 -0400	affirmtrustnetworkingca [jdk]	Trusted Certificate	RSA	2030-12-31 09:08:24 -0500	2023-07-21 17:57:36 -0400	affirmtrustpremiumca [jdk]	Trusted Certificate	RSA	2040-12-31 09:10:36 -0500	2023-07-21 17:57:36 -0400	affirmtrustpremiumeccca [jdk]	Trusted Certificate	EC	2040-12-31 09:20:24 -0500	2023-07-21 17:57:36 -0400	amazonrootca1 [jdk]	Trusted Certificate	RSA	2038-01-16 19:00:00 -0500	2023-07-21 17:57:36 -0400	amazonrootca2 [jdk]	Trusted Certificate	RSA	2040-05-25 20:00:00 -0400	2023-07-21 17:57:36 -0400	amazonrootca3 [jdk]	Trusted Certificate	EC	2040-05-25 20:00:00 -0400	2023-07-21 17:57:36 -0400	amazonrootca4 [jdk]	Trusted Certificate	EC	2040-05-25 20:00:00 -0400	2023-07-21 17:57:36 -0400	baltimorecybertrustca [jdk]	Trusted Certificate	RSA	2025-05-12 19:59:00 -0400	2023-07-21 17:57:36 -0400	buypassclass2ca [jdk]	Trusted Certificate	RSA	2040-10-26 04:38:03 -0400	2023-07-21 17:57:36 -0400	buypassclass3ca [jdk]	Trusted Certificate	RSA	2040-10-26 04:28:58 -0400	2023-07-21 17:57:36 -0400	camerfirmachambersca [jdk]	Trusted Certificate	RSA	2038-07-31 08:29:50 -0400	2023-07-21 17:57:36 -0400	camerfirmachamberscommerceca [jdk]	Trusted Certificate	RSA	2037-09-30 12:13:44 -0400	2023-07-21 17:57:36 -0400
Alias	Type	Algorithm	Certificate Expiration	Created																																																																			
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affirmtrustpremiumca [jdk]	Trusted Certificate	RSA	2040-12-31 09:10:36 -0500	2023-07-21 17:57:36 -0400																																																																			
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Step 2 Click the [Examine Certificate...](#) button at the top of the page. The **Examine Certificate** pop-up dialog displays.



Step 3 Click **Choose File** to select the certificate to examine.

Step 4 Click **Examine**. The **Certificate Details** for the selected file displays.



12.6 Viewing Certificate Details for a Trusted Certificate Entry

Step 1

From the [Administration](#) navigation pane, select **TrustStore Settings**. The TrustStore Settings page displays.

The screenshot shows the 'TrustStore Settings' page. At the top, there are tabs for 'TrustStore Settings' and 'Examine Certificate...'. Below the tabs, the 'Details' section contains the following information:

- TrustStore Name: D:\tomcat9\conf\jucacerts.jks
- TrustStore File: D:\tomcat9\conf\jucacerts.jks
- TrustStore Type: -JKS
- TrustStore Provider: SUN
- TrustStore Password: [Redacted]

The 'Entries' section displays a table with the following columns: Alias, Type, Algorithm, Certificate Expiration, and Created.

Alias	Type	Algorithm	Certificate Expiration	Created
affirmtrustcommercialca [jdk]	Trusted Certificate	RSA	2030-12-31 09:06:06 -0500	2023-07-21 17:57:36 -0400
affirmtrustnetworkingca [jdk]	Trusted Certificate	RSA	2030-12-31 09:08:24 -0500	2023-07-21 17:57:36 -0400
affirmtrustpremiumca [jdk]	Trusted Certificate	RSA	2040-12-31 09:10:36 -0500	2023-07-21 17:57:36 -0400
affirmtrustpremiumeccca [jdk]	Trusted Certificate	EC	2040-12-31 09:20:24 -0500	2023-07-21 17:57:36 -0400
amazonrootca1 [jdk]	Trusted Certificate	RSA	2038-01-16 19:00:00 -0500	2023-07-21 17:57:36 -0400
amazonrootca2 [jdk]	Trusted Certificate	RSA	2040-05-25 20:00:00 -0400	2023-07-21 17:57:36 -0400
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amazonrootca4 [jdk]	Trusted Certificate	EC	2040-05-25 20:00:00 -0400	2023-07-21 17:57:36 -0400
baltimorecybertrustca [jdk]	Trusted Certificate	RSA	2025-05-12 19:59:00 -0400	2023-07-21 17:57:36 -0400
buypassclass2ca [jdk]	Trusted Certificate	RSA	2040-10-26 04:38:03 -0400	2023-07-21 17:57:36 -0400
buypassclass3ca [jdk]	Trusted Certificate	RSA	2040-10-26 04:28:58 -0400	2023-07-21 17:57:36 -0400
camerfirmachambersca [jdk]	Trusted Certificate	RSA	2038-07-31 08:29:50 -0400	2023-07-21 17:57:36 -0400
camerfirmachamberscomerceca [jdk]	Trusted Certificate	RSA	2037-09-30 12:13:44 -0400	2023-07-21 17:57:36 -0400

At the bottom of the entries list, it indicates '89 Entries'.

Step 2

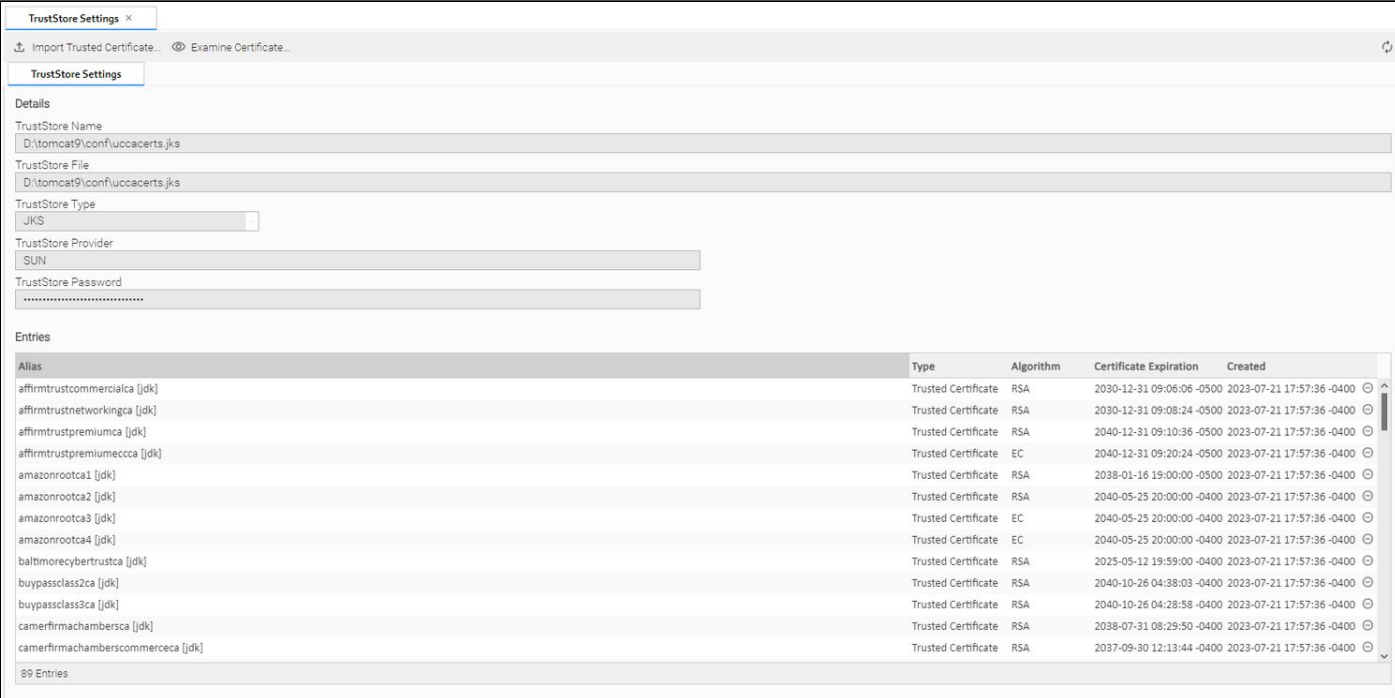
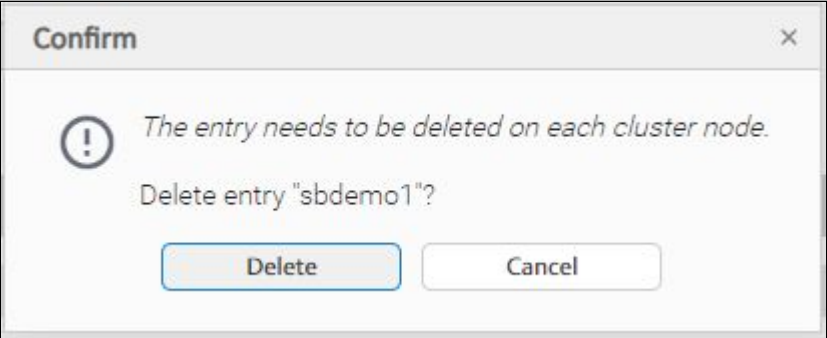
Right-click on an entry in the **Entries** section to display an action menu and click **View Certificate Details**. The Certificate Details for the selected entry displays.

The screenshot shows the 'Certificate Details For Entry: sbdemo1' window. It contains the following information:

- Certificate** (Tab)
- Details**
 - Version: 3
 - Issuer: CN=sbdemo1, O=Stonebranch, C=US
 - Subject: CN=sbdemo1, O=Stonebranch, C=US
 - Serial Number: 64ECD1A0
 - Valid From: 2023-08-28 12:56:00 -0400
 - Valid Until: 2024-08-27 12:56:00 -0400
 - Signature Algorithm: SHA256withRSA
 - Public Key Algorithm: 2048-bit RSA
- Fingerprints**

Algorithm	Fingerprint
SHA-1	2C:64:BF:16:BF:49:9F:D2:59:03:FD:2E:7D:F5:7B:99:6A:CD:EF:F4
SHA-256	02:54:B4:94:EE:C7:A7:C0:1E:5D:4B:15:38:94:49:E0:D2:47:65:78:1A:23:44:AF:F8:99:23:28:79:08:9A:93

12.7 Deleting a TrustStore Entry

<p>Step 1</p>	<p>From the Administration navigation pane, select TrustStore Settings. The TrustStore Settings page displays.</p>  <table border="1" data-bbox="153 779 1533 1111"> <thead> <tr> <th>Alias</th> <th>Type</th> <th>Algorithm</th> <th>Certificate Expiration</th> <th>Created</th> </tr> </thead> <tbody> <tr> <td>affirmtrustcommercialca [jdk]</td> <td>Trusted Certificate</td> <td>RSA</td> <td>2030-12-31 09:06:06 -0500</td> <td>2023-07-21 17:57:36 -0400</td> </tr> <tr> <td>affirmtrustnetworkingca [jdk]</td> <td>Trusted Certificate</td> <td>RSA</td> <td>2030-12-31 09:08:24 -0500</td> <td>2023-07-21 17:57:36 -0400</td> </tr> <tr> <td>affirmtrustpremiumca [jdk]</td> <td>Trusted Certificate</td> <td>RSA</td> <td>2040-12-31 09:10:36 -0500</td> <td>2023-07-21 17:57:36 -0400</td> </tr> <tr> <td>affirmtrustpremiummecca [jdk]</td> <td>Trusted Certificate</td> <td>EC</td> <td>2040-12-31 09:20:24 -0500</td> <td>2023-07-21 17:57:36 -0400</td> </tr> <tr> <td>amazonrootca1 [jdk]</td> <td>Trusted Certificate</td> <td>RSA</td> <td>2038-01-16 19:00:00 -0500</td> <td>2023-07-21 17:57:36 -0400</td> </tr> <tr> <td>amazonrootca2 [jdk]</td> <td>Trusted Certificate</td> <td>RSA</td> <td>2040-05-25 20:00:00 -0400</td> <td>2023-07-21 17:57:36 -0400</td> </tr> <tr> <td>amazonrootca3 [jdk]</td> <td>Trusted Certificate</td> <td>EC</td> <td>2040-05-25 20:00:00 -0400</td> <td>2023-07-21 17:57:36 -0400</td> </tr> <tr> <td>amazonrootca4 [jdk]</td> <td>Trusted Certificate</td> <td>EC</td> <td>2040-05-25 20:00:00 -0400</td> <td>2023-07-21 17:57:36 -0400</td> </tr> <tr> <td>baltimorecybertrustca [jdk]</td> <td>Trusted Certificate</td> <td>RSA</td> <td>2025-05-12 19:59:00 -0400</td> <td>2023-07-21 17:57:36 -0400</td> </tr> <tr> <td>buypassclass2ca [jdk]</td> <td>Trusted Certificate</td> <td>RSA</td> <td>2040-10-26 04:38:03 -0400</td> <td>2023-07-21 17:57:36 -0400</td> </tr> <tr> <td>buypassclass3ca [jdk]</td> <td>Trusted Certificate</td> <td>RSA</td> <td>2040-10-26 04:28:58 -0400</td> <td>2023-07-21 17:57:36 -0400</td> </tr> <tr> <td>camerfirmachambersca [jdk]</td> <td>Trusted Certificate</td> <td>RSA</td> <td>2038-07-31 08:29:50 -0400</td> <td>2023-07-21 17:57:36 -0400</td> </tr> <tr> <td>camerfirmachamberscommerceca [jdk]</td> <td>Trusted Certificate</td> <td>RSA</td> <td>2037-09-30 12:13:44 -0400</td> <td>2023-07-21 17:57:36 -0400</td> </tr> </tbody> </table>	Alias	Type	Algorithm	Certificate Expiration	Created	affirmtrustcommercialca [jdk]	Trusted Certificate	RSA	2030-12-31 09:06:06 -0500	2023-07-21 17:57:36 -0400	affirmtrustnetworkingca [jdk]	Trusted Certificate	RSA	2030-12-31 09:08:24 -0500	2023-07-21 17:57:36 -0400	affirmtrustpremiumca [jdk]	Trusted Certificate	RSA	2040-12-31 09:10:36 -0500	2023-07-21 17:57:36 -0400	affirmtrustpremiummecca [jdk]	Trusted Certificate	EC	2040-12-31 09:20:24 -0500	2023-07-21 17:57:36 -0400	amazonrootca1 [jdk]	Trusted Certificate	RSA	2038-01-16 19:00:00 -0500	2023-07-21 17:57:36 -0400	amazonrootca2 [jdk]	Trusted Certificate	RSA	2040-05-25 20:00:00 -0400	2023-07-21 17:57:36 -0400	amazonrootca3 [jdk]	Trusted Certificate	EC	2040-05-25 20:00:00 -0400	2023-07-21 17:57:36 -0400	amazonrootca4 [jdk]	Trusted Certificate	EC	2040-05-25 20:00:00 -0400	2023-07-21 17:57:36 -0400	baltimorecybertrustca [jdk]	Trusted Certificate	RSA	2025-05-12 19:59:00 -0400	2023-07-21 17:57:36 -0400	buypassclass2ca [jdk]	Trusted Certificate	RSA	2040-10-26 04:38:03 -0400	2023-07-21 17:57:36 -0400	buypassclass3ca [jdk]	Trusted Certificate	RSA	2040-10-26 04:28:58 -0400	2023-07-21 17:57:36 -0400	camerfirmachambersca [jdk]	Trusted Certificate	RSA	2038-07-31 08:29:50 -0400	2023-07-21 17:57:36 -0400	camerfirmachamberscommerceca [jdk]	Trusted Certificate	RSA	2037-09-30 12:13:44 -0400	2023-07-21 17:57:36 -0400
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<p>Step 2</p>	<p>Right-click on an entry in the Entries section to display an action menu and click Delete. The Confirm deletion dialog displays.</p> 																																																																						
<p>Step 3</p>	<p>Click Delete.</p>																																																																						

13 LDAP Settings

- [Overview](#)
- [Credentials for Running Tasks Authentication](#)
- [User Login Authentication](#)
- [LDAP Settings Field Descriptions](#)
- [Mappings Tab](#)
 - [Mappings Tab Column Descriptions](#)
 - [Mapping Details](#)
- [Best Practices](#)
 - [Determining your User OUs and Group OUs](#)
 - [Customizing Users and Groups Lists to see DN of LDAP Synchronized Users and Groups](#)
 - [LDAP Server Operations](#)
 - [LDAP Settings Fields](#)
- [SSL/TLS Secured LDAP \(LDAPS\)](#)

13.1 Overview

Note

The information provided on this page assumes you have a working knowledge of LDAP authentication.

LDAP Settings, which allow you to enable the LDAP bridge for both UNIX and Windows operating systems, are available through the user interface.

You can set up Universal Controller to use LDAP authentication for:

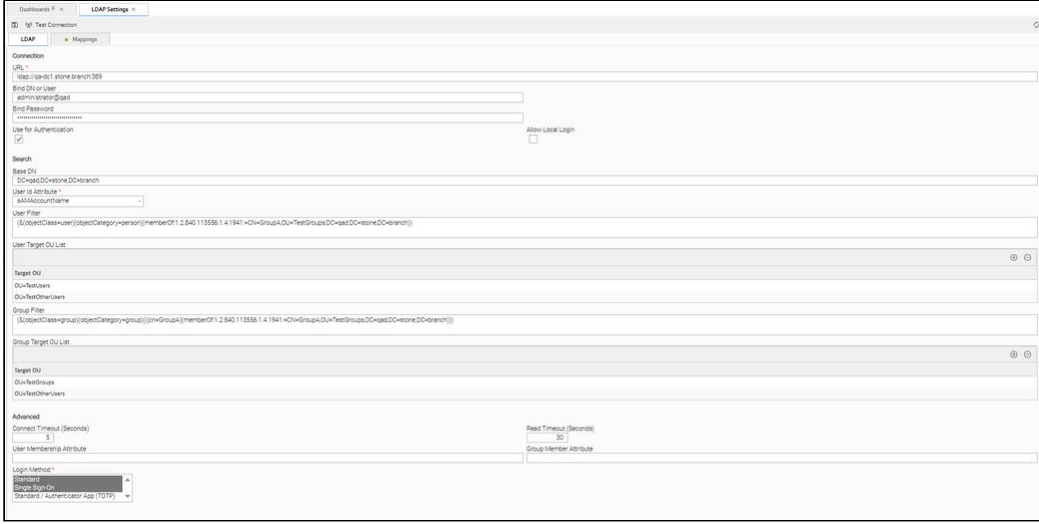

- [Credentials for running tasks](#)
- [User logins](#)

13.2 Credentials for Running Tasks Authentication

To use LDAP authentication for Universal Controller [user credentials](#):

<p>UNIX</p>	<p>If you want the credentials for Universal Agent to go through LDAP authentication, the UNIX machine on which the Agents reside require PAM. The Agents must be configured to use PAM, and PAM must be configured to use LDAP.</p> <p>The UNIX systems that support PAM authentication are AIX, HP-UX, Linux, and Solaris. Refer to Security of Universal Agent Components to see which Agent Server components can use PAM authentication on these systems.</p> <p>Set up your PAM configuration to use the PAM LDAP module. Depending on your LDAP version, some other configuration steps may be required. Once PAM is configured, tasks specifying credentials will authenticate over LDAP transparently.</p>
<p>Windows</p>	<p>While no set-up steps are required to specifically enable Domain/Active Directory credential authentication, the target system does need to belong to a Domain or Active Directory Forest. When you specify credentials for a task, use DOMAIN\user as the user name.</p>

13.3 User Login Authentication

<p>Step 1</p>	<p>From the Administration navigation pane, select Configuration > LDAP Settings. The LDAP Settings page displays.</p> 
<p>Step 2</p>	<p>Enter / select your LDAP Settings, using the field descriptions below as a guide.</p> <ul style="list-style-type: none"> • Required fields display an asterisk (*) after the field name. • Default values for fields, if available, display automatically.
<p>Step 3</p>	<p>Click the  button.</p>

For information on how to access additional details - such as [Metadata](#) and complete [database Details](#) - for LDAP Settings (or any type of record), see [Records](#).

Note

In order to log in to the Controller using LDAP, you must set the [LDAP Synchronization Enabled](#) Universal Controller System property (**Administration > Configuration > Properties** in the Controller user interface) to **true**.

13.4 LDAP Settings Field Descriptions

The following table describes the fields and buttons that display in the LDAP Settings.

Field Name	Description
Connection	This section contains information on the LDAP connection.
URL	<p>URL of the LDAP connection. For example:</p> <ul style="list-style-type: none"> • <code>ldap://ldap.stonebranch.com:389/</code> • <code>ldaps://192.202.185.90:636/</code> <p>To use SSL/TLS encryption (<code>ldaps://</code>), you will have to configure the Universal Controller truststore with an X.509 CA certificate in either of these formats:</p> <ul style="list-style-type: none"> • DER-encoded binary • Base64-encoded <div style="border: 1px solid yellow; padding: 10px; margin-top: 10px;"> <p>You can also specify a space-separated list of URLs. Universal Controller will attempt to use each URL in turn until a successful connection is created.</p> <p>For example, <code>ldap://ldap1.stonebranch.com:389/ ldap://ldap2.stonebranch.com:389/</code></p> </div>
Bind DN or User	Distinguished Name (DN) or User ID used for initial access to the LDAP server.
Bind Password	Password associated with the Bind ND or User.
Use for Authentication	If enabled, indicates that LDAP will be used for password authentication.
Allow Local Login	<p>If the LDAP Synchronization Enabled Universal Controller system property is false, or if it is true but the Use for Authentication field is not enabled, an administrator must explicitly specify Allow Local Login to allow local account login for users that were provisioned through LDAP synchronization.</p> <p>This option is intended only to provide temporary access while an LDAP directory is unavailable.</p> <p>An administrator will need to update the local account password for any LDAP-synchronized user who requires temporary local account login, as the provisioned password would be unknown.</p>
Search	This section contains search information.
Base DN	Starting point for searching the directory. For example: <code>dc=stonebranch,dc=com</code> . If you do not specify a Base DN, the search starts as the root of the directory tree.
User Id Attribute	<p>LDAP attribute for the specified User ID.</p> <p>Options:</p> <ul style="list-style-type: none"> • sAMAccountName • cn • uid • Other...

User Filter	<p>Search filter for users.</p> <p>If you do not specify a User Filter, the server uses <code>(&(objectClass=user)(objectCategory=person))</code>.</p>
User Target OU List	<p>Single- or multi-level target OU's (Organizational Units) within the Base DN directory to filter for user records.</p> <p>For example, <code>OU=Employees</code> or <code>OU=Employees,OU=Users</code>.</p> <p>If you do not specify one or more OU's, the entire sub-tree from the Base DN will be searched.</p>
Group Filter	<p>Search filter for groups.</p> <p>If you do not specify a Group Filter, the server uses <code>(&(objectClass=group)(objectCategory=group))</code>.</p>
Group Target OU List	<p>Single- or multi-level target OU's within the Base DN directory to filter for group records.</p> <p>For example, <code>OU=Universal Controller</code> or <code>OU=Universal Controller,OU=Groups</code>.</p> <p>If you do not specify one or more OU's, the entire sub-tree from the Base DN will be searched.</p>
Advanced	This section contains advanced information.
Connection Timeout (Seconds)	Timeout for connecting to the LDAP server.
Read Timeout (Seconds)	Timeout for reading from the LDAP server.
User Membership Attribute	LDAP attribute for the groups in which a user is a member. If you do not specify a User Membership Attribute, the LDAP server uses memberOf (see the <code>uc.ldap.users.synchronize_indirect</code> Universal Controller start-up property).
Group Member Attribute	LDAP attribute for the members of a group. If you do not specify a Group Member Attribute, the LDAP server uses member (see the <code>uc.ldap.groups.update_members</code> Universal Controller start-up property).
Login Method	<p>Login method(s) that an LDAP-provisioned user can authenticate with by default. The default is applied only at user creation time.</p> <p>You can use the Ctrl key to select multiple methods.</p> <p>Only one of Standard or Standard / Authenticator App (TOTP) can be selected, not both.</p> <p>Options:</p> <ul style="list-style-type: none"> • Standard • Single Sign-On • Standard / Authenticator App (TOTP)
Buttons	This section identifies the buttons displayed above and below the LDAP Settings that let you perform various actions.
Update	Saves updates to the record.
Test Connection	After saving the LDAP Settings to the database, click Test Connection to run a connection test.
Refresh	Refreshes any dynamic data displayed in the LDAP Settings.
Tabs	This section identifies the tabs across the top of the LDAP Settings page that provide access to additional information about the LDAP Settings.

Mappings	List of User and Group columns mapped to LDAP attributes that enables you to customize how the User/Group records get populated from LDAP.
-----------------	--

13.5 Mappings Tab

The Mappings tab of the LDAP Settings page displays a list of Controller columns mapped to LDAP attributes.

The screenshot shows the 'LDAP Settings' page with the 'Mappings' tab selected. It displays a table with 13 rows of mappings. Each row includes a 'Type' (User or Group), a 'Column', an 'Attribute', an 'Updated By' user, and an 'Updated' timestamp.

Type	Column	Attribute	Updated By	Updated
User	Manager	manager	ops.system	2014-09-25 20:00:00 -0400
User	Business Phone	telephoneNumber	ops.system	2014-09-25 20:00:00 -0400
User	Department	department	ops.system	2014-09-25 20:00:00 -0400
User	First Name	givenName	ops.system	2014-09-25 20:00:00 -0400
User	Last Name	sn	ops.system	2014-09-25 20:00:00 -0400
User	Mobile Phone	mobile	ops.system	2014-09-25 20:00:00 -0400
User	Home Phone	homePhone	ops.system	2014-09-25 20:00:00 -0400
User	Email	mail	ops.system	2014-09-25 20:00:00 -0400
User	Title	title	ops.system	2014-09-25 20:00:00 -0400
User	Middle Name	initials	ops.system	2014-09-25 20:00:00 -0400
Group	Manager	managedBy	ops.system	2014-09-25 20:00:00 -0400
Group	Email	mail	ops.system	2014-09-25 20:00:00 -0400
Group	Description	description	ops.system	2014-09-25 20:00:00 -0400

13.5.1 Mappings Tab Column Descriptions

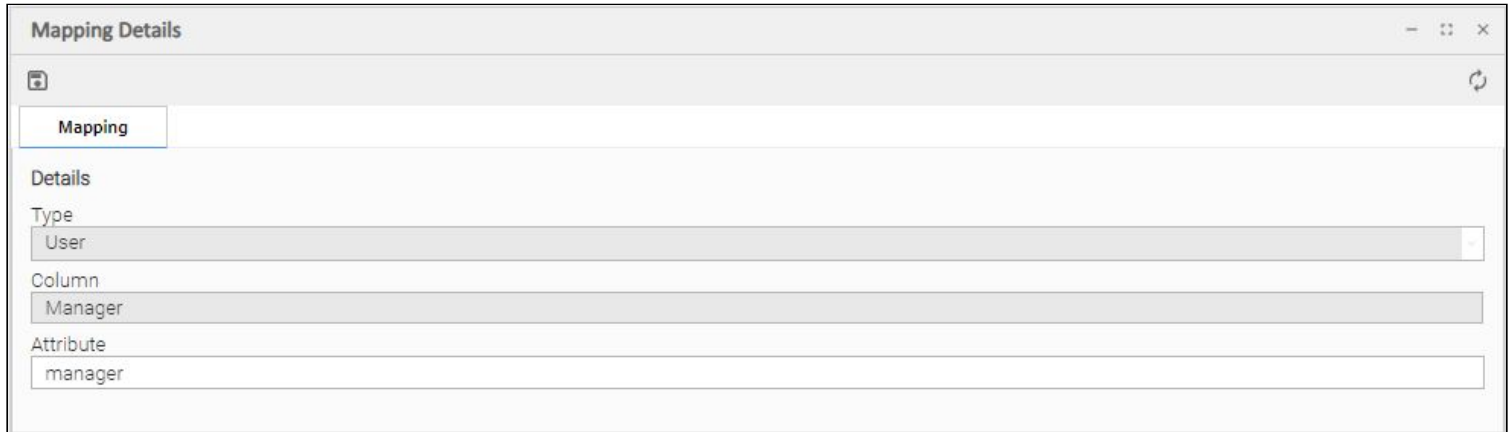
The following table describes the default columns displayed on the Mappings tab:

Type	Type of records.
Column	Controller column being mapped to LDAP attribute.
Attribute	LDAP attribute to which the Controller column is being mapped.
Updated By	User who last updated this record.
Updated	Date and time this record was last updated.

13.5.2 Mapping Details

To view the Mapping Details for a mapping on the list, click the Details icon next to that mapping.

For example:



13.6 Best Practices

The following best practices are provided to assist you in configuring LDAP.

13.6.1 Determining your User OUs and Group OUs

1. Determine which users/groups need to have access to Universal Controller.
2. Determine which Organizational Units (OUs) those users/groups belong to.
3. Build your list of user and group OUs.

Consider the following organizational units for required Users and Groups.

Users

OU=NorthAmerica,OU=CorporateUsers,OU=Corporate,DC=stonebranch,DC=com
OU=Students,OU=Corporate,DC=stonebranch,DC=com

Groups

OU=AtlantaGroup,OU=CorporateGroups,OU=Corporate,DC=stonebranch,DC=com
OU=OntarioGroup,OU=CorporateGroups,OU=Corporate,DC=stonebranch,DC=com
OU=OtherGroups,OU=Corporate,DC=stonebranch,DC=com

You specify the User and Group Target OUs relative from the [Base DN](#). In this case, the Base DN would be **OU=Corporate,DC=stonebranch,DC=com**.

For the [User Target OU List](#) LDAP Settings field, you would have the following entries:

OU=NorthAmerica,OU=CorporateUsers
OU=Students

For the [Group Target OU List](#) LDAP Settings field, you would have the following entries:

OU=AtlantaGroup,OU=CorporateGroups
OU=OntarioGroup,OU=CorporateGroups
OU=OtherGroups

13.6.2 Customizing Users and Groups Lists to see DN of LDAP Synchronized Users and Groups

For each User and Group object in the LDAP directory that matches the configured search and OU configuration in Universal Controller, a User and Group record are created in the Controller to represent those objects.

For each User and Group record in the Controller that represents a synchronized LDAP User or Group, the **Source** column on the [Users list](#) or [Groups List](#), respectively, contains the Distinguished Name of that User or Group in LDAP. (For Users and Groups created locally in the Controller, the **Source** column is blank.)

For example:

Source Column for a User	ldap:CN=Stonebranch User,OU=TestUsers,DC=qad,DC=stone,DC=branch
Source Column for a Group	ldap:CN=UnvControllerParent,OU=TestGroups,DC=qad,DC=stone,DC=branch

Note

By default, the **Source** column is not shown on either lists. For instructions on how to add the **Source** column, see [Selecting Columns / Column Locations for a List](#).

13.6.3 LDAP Server Operations

If LDAP is configured for Universal Controller, it refreshes every 24 hours.

Additionally, the Controller provides two [Server Operations](#) that let you force an LDAP refresh:

- **LDAP Refresh (Asynchronous)**
This server operation performs an LDAP refresh in the background and sends entries to the Universal Controller log.
- **LDAP Refresh**
This server operation perform an LDAP refresh that writes all log entries to the user interface as well as to the log, and prevents all other user activity while the process is running. If you estimate the refresh could take a considerable amount of time, we recommend you use the **LDAP Refresh (Asynchronous)** server operation.

13.6.4 LDAP Settings Fields

The following Best Practices should be followed for specific fields in the LDAP Settings.

13.6.4.1 URL

To avoid an inadvertent synchronization of LDAP using an incomplete LDAP configuration, refrain from providing a value for this setting until LDAP configuration has been completed.

Once LDAP configuration has been completed, you can utilize the [LDAP Refresh server operation](#) to verify your configuration.

13.6.4.2 Base DN

All directory searches are relative from the base object defined by the specified DN. The Base DN (or search entry point) should be the lowest base object in the directory for which both the User and Group OUs can be searched from.

If your Users are in:	OU=CorporateUsers,OU=Corporate,DC=stonebranch,DC=com
And your Groups are in:	OU=CorporateGroups,OU=Corporate,DC=stonebranch,DC=com
Your Base DN can be:	OU=Corporate,DC=stonebranch,DC=com

13.6.4.3 User Filter

This setting defines which objects the Controller considers as Users when it queries objects in the configured User OUs (see pointers on configuring User OUs).

By default, the server will use filter **(&(objectClass=user)(objectCategory=person))**.

For Active Directory (AD)	<p>At a minimum, specify the following:</p> <pre>(&(objectClass=user)(objectCategory=person))</pre> <p>This filter would match both user and inetOrgPerson objectClasses. objectCategory=person is added for two reasons:</p> <ul style="list-style-type: none"> • It is an indexed attribute, so the query performance is optimized. • Without it, Computer objects could be synchronized. <p>For example, in AD, a computer objectClass extends from a user objectClass, but a computer's objectCategory=computer, not person.</p>
----------------------------------	--

Note

Once an object (User or Group) is synchronized into the Controller, it will not be deleted if search filter/OU criteria are narrowed. However, broadening your search filter/OU scope will pull in new objects. After modifying your LDAP configuration to narrow the search scope, a Controller administrator will need to delete any Users and Groups that are no longer desired/match the LDAP configuration.

You can synchronize Users that belong only to a specific Group, such as one created for Universal Controller.

For example:

```
CN=UnvControllerGroup,OU=CorporateGroups,OU=Corporate,DC=stonebranch,DC=com
```

To ensure that only Users belonging to **UnvControllerGroup** are synchronized, modify the recommended minimum user search filter:

```
(&(objectClass=user)(objectCategory=person)
(memberOf=CN=UnvControllerGroup,OU=CorporateGroups,OU=Corporate,DC=stonebranch,DC=com))
```

You can synchronize Users that belong any Group that is a descendant of **UnvControllerGroup**.

For example:

- **UnvControllerGroupA** is a member of **UnvControllerGroup**.
- **UnvControllerGroupB** is a member of **UnvControllerGroupA**.
- **UnvControllerGroupC** is a member of **UnvControllerGroupB**.

To achieve this in AD, modify the search filter used to synchronize users that belong only to a specific Group:

```
(&(objectClass=user)(objectCategory=person)
(memberOf:1.2.840.113556.1.4.1941:=CN=UnvControllerGroup,OU=CorporateGroups,OU=Corporate,DC=stonebranch,DC=com)))
```

Essentially, replacing **memberOf** with **memberOf:1.2.840.113556.1.4.1941:** will ensure that nested groups are considered.

1.2.840.113556.1.4.1941 (Matching rule OID) is a special "extended match operator" that walks the chain of ancestry in objects all the way to the root until it finds a match (see [http://msdn.microsoft.com/en-us/library/windows/desktop/aa746475\(v=vs.85\).aspx](http://msdn.microsoft.com/en-us/library/windows/desktop/aa746475(v=vs.85).aspx)).

13.6.4.4 Group Filter

This setting defines which objects the Controller considers as Groups when it queries objects in the configured Group OUs (see pointers on configuring Group OUs).

By default, the server will use filter **(&(objectClass=group)(objectCategory=group))**.

<p>For Active Directory (AD)</p>	<p>It is recommended that you optimize the query performance by incorporating the indexed objectCategory attribute:</p> <pre>(&(objectClass=group)(objectCategory=group))</pre>
---	--

To limit the Groups synchronized from LDAP to a few specific Groups or Groups by name, adjust the Group search filter to include a query on the CN (common name) attribute.

For example, to synchronize a single group named **CN=UnvControllerGroup,OU=CorporateGroups,OU=Corporate,DC=stonebranch,DC=com**, modify the recommended minimum group search filter:

```
(&(objectClass=group)(objectCategory=group)(cn=UnvControllerGroup))
```

To synchronize only **UnvControllerGroupA**, **UnvControllerGroupB**, and **UnvControllerGroupC**, use the following filter:

```
(&(objectClass=group)(objectCategory=group)(|(cn=UnvControllerGroupA)(cn=UnvControllerGroupB)(cn=UnvControllerGroupC)))
```

To synchronize any Group that is a (direct) member of **UnvControllerGroup**, use the following search filter:

```
(&(objectClass=group)(objectCategory=group)(|(cn=UnvControllerGroup)
(memberOf=CN=UnvControllerGroup,OU=CorporateGroups,OU=Corporate,DC=stonebranch,DC=com)))
```

To synchronize any Group that is a descendant of **UnvControllerGroup** (multi-nested groups), use the following search filter:

```
(&(objectClass=group)(objectCategory=group)(|(cn=UnvControllerGroup)
(memberOf:1.2.840.113556.1.4.1941:=CN=UnvControllerGroup,OU=CorporateGroups,OU=Corporate,DC=stonebranch,DC=com)
))
```

Essentially, replacing **memberOf** with **memberOf:1.2.840.113556.1.4.1941:** will ensure that nested groups are considered.

1.2.840.113556.1.4.1941 (matching rule OID) is a special "extended match operator" that walks the chain of ancestry in objects all the way to the root until it finds a match (see [http://msdn.microsoft.com/en-us/library/windows/desktop/aa746475\(v=vs.85\).aspx](http://msdn.microsoft.com/en-us/library/windows/desktop/aa746475(v=vs.85).aspx)).

If you do not want to synchronize Groups:

1	Do not explicitly specify a value for the Group search filter.
2	Do not specify any target Group OUs (organizational units).
3	Ensure that the Universal Controller Start-up Properties file (<code>uc.properties</code>) contains the following property configuration: uc.ldap.groups.filter_indirect=true (If uc.ldap.groups.filter_indirect=true , any Groups synchronized indirectly - that is, through a User's memberOf attribute - will honor the Group Filter and Group Target OU List.)

Note

The `uc.ldap.groups.single_parent_per_child` start-up property should be set to **true** only if your Groups being synchronized from AD have at most one parent Group. When synchronizing Groups, the default Controller behavior is to copy the members of a Sub Group into the Parent Group. If this property is set to **true**, the Controller assumes that each Group has, at most, a single Parent Group and will use the Parent field on the Group definition to maintain the hierarchy instead of copying members.

13.7 SSL/TLS Secured LDAP (LDAPS)

Universal Controller supports the use of LDAPS instead of the non-encrypted LDAP connection.

It requires setting up a truststore (keystore) and setting the following properties in the [Universal Controller Start-up Properties \(uc.properties\)](#) file:

- `uc.trustmanager.truststore`
- `uc.trustmanager.truststore.password`

You must make sure that the LDAP server's certificate exists in the truststore that is referenced by these two properties.

When these configurations have been made, use `ldaps://` for the URL prefix in the [LDAP Settings Field Descriptions](#).

14 Password Settings

- [Overview](#)
- [Password Settings Details](#)
- [Password Settings Field Descriptions](#)

14.1 Overview

Password Settings lets you configure settings for all user passwords.

14.2 Password Settings Details

The following Password Settings Details is for the default Password Settings. See the [field descriptions](#) below, for a description of all fields that display in the Password Settings Details.

Password Settings

Password Complexity Characteristics

Must Include *

<p>Uppercase Letters [A-Z] <input checked="" type="checkbox"/></p> <p>Lowercase Letters [a-z] <input checked="" type="checkbox"/></p> <p>Numeric Characters [0-9] <input checked="" type="checkbox"/></p> <p>Special Characters <input checked="" type="checkbox"/></p> <p>Special Character Values * <input type="text" value="~!@#\$%^&*()_+ = - ? / > < { } [] ; : ."/></p>	<p>Uppercase Letters Minimum * <input type="text" value="1"/></p> <p>Lowercase Letters Minimum * <input type="text" value="1"/></p> <p>Numeric Characters Minimum * <input type="text" value="1"/></p> <p>Special Characters Minimum * <input type="text" value="1"/></p>
--	---

Password Restrictions

<p>Minimum Length <input type="text"/></p> <p>Disallow Username in Password <input checked="" type="checkbox"/></p> <p>Disallow Password Reuse <input checked="" type="checkbox"/></p>	<p>Maximum Length <input type="text" value="10"/></p> <p>Maximum Passwords In History * <input type="text" value="8"/></p>
--	--

Password Properties

<p>Password Expiration Enabled <input checked="" type="checkbox"/></p> <p>Lock Account After Maximum Login Attempts <input checked="" type="checkbox"/></p> <p>Maximum Login Attempts Use For LDAP Authentication <input type="checkbox"/></p>	<p>Password Expiration In Days * <input type="text" value="30"/></p> <p>Maximum Failed Login Attempts * <input type="text" value="5"/></p>
--	--

For information on how to access additional details - such as [Metadata](#) and complete [database Details](#) - for Database Connections (or any type of record), see [Records](#).

14.3 Password Settings Field Descriptions

The following table describes the fields and buttons that display in the Password Settings.

Field Name	Description
Password Complexity Characteristics	This section defines any requirements that passwords must conform to.
Must Include	Specification for how many of the enabled restrictions the password must include: Options: <ul style="list-style-type: none"> • All Enabled Characteristics • 1 of the Enabled Characteristics • 2 of the Enabled Characteristics • 3 of the Enabled Characteristics
Uppercase Letters (A-Z)	If enabled, the Uppercase Letters Minimum field displays.
Uppercase Letters Minimum	Minimum number of Uppercase Letters that a Password must contain.
Lowercase Letters (a-z)	If enabled, the Lowercase Letters Minimum field displays.
Lowercase Letters Minimum	Minimum number of Lowercase Letters that a Password must contain.
Numeric Characters (0-9)	If enabled, the Numeric Characters Minimum field displays.
Numeric Characters Minimum	Minimum number of Numeric Characters that a Password must contain.
Special Characters	If enabled, the Special Characters Minimum field and Special Character Values field display.
Special Characters Minimum	Minimum number of Special Characters that a Password must contain.
Special Character Values	Values that comprise the list of Special Characters that can be used in a Password. (Default is all Special Characters on the list.)
Password Restrictions	This section defines any restrictions that passwords must conform to.
Minimum Length	Minimum length of a Password. Value can be empty (null). If specified, it must be a positive integer and not greater than the Maximum Length .
Maximum Length	Maximum length of a Password. Value can be empty (null). If specified, it must be a positive integer and not less than the Minimum Length .
Disallow Username in Password	If enabled, the Username cannot appear within the Password.
Disallow Password Reuse	If enabled, a Password cannot be reused if it has been maintained in Password history, as specified by the Maximum Passwords In History field.
Maximum Passwords in History	Number of previous passwords that are maintained to prevent their reuse. (Maximum is 24.)

Field Name	Description
Password Properties	Properties for the Passwords. <div style="border: 2px solid orange; padding: 10px;"> <p>Note Prior to Universal Controller 6.8.x, these properties were included in the Universal Controller System Properties.</p> </div>
Password Expiration Enabled	If enabled, Passwords can automatically expire.
Password Expiration in Days	Number of days before a Password expires.
Lock Account After Maximum Login Attempts	If enabled, the user account is locked if the Maximum Failed Login Attempts is exceeded.
Maximum Failed Login Attempts	Maximum number of failed login attempts that is allowed.
Maximum Login Attempts Use For LDAP Authentication	If enabled, the user account is locked if the Maximum Failed Login Attempts is exceeded for LDAP.
Buttons	This section identifies the buttons displayed above and below the Password Settings that let you perform various actions.
Update	Saves updates to this record.
Refresh	Refreshes any dynamic data displayed in this record.

15 Personal Access Token

- [Overview](#)
- [Creating a Personal Access Token](#)
- [Personal Access Token Details](#)

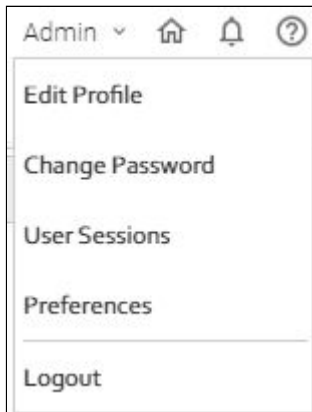
15.1 Overview

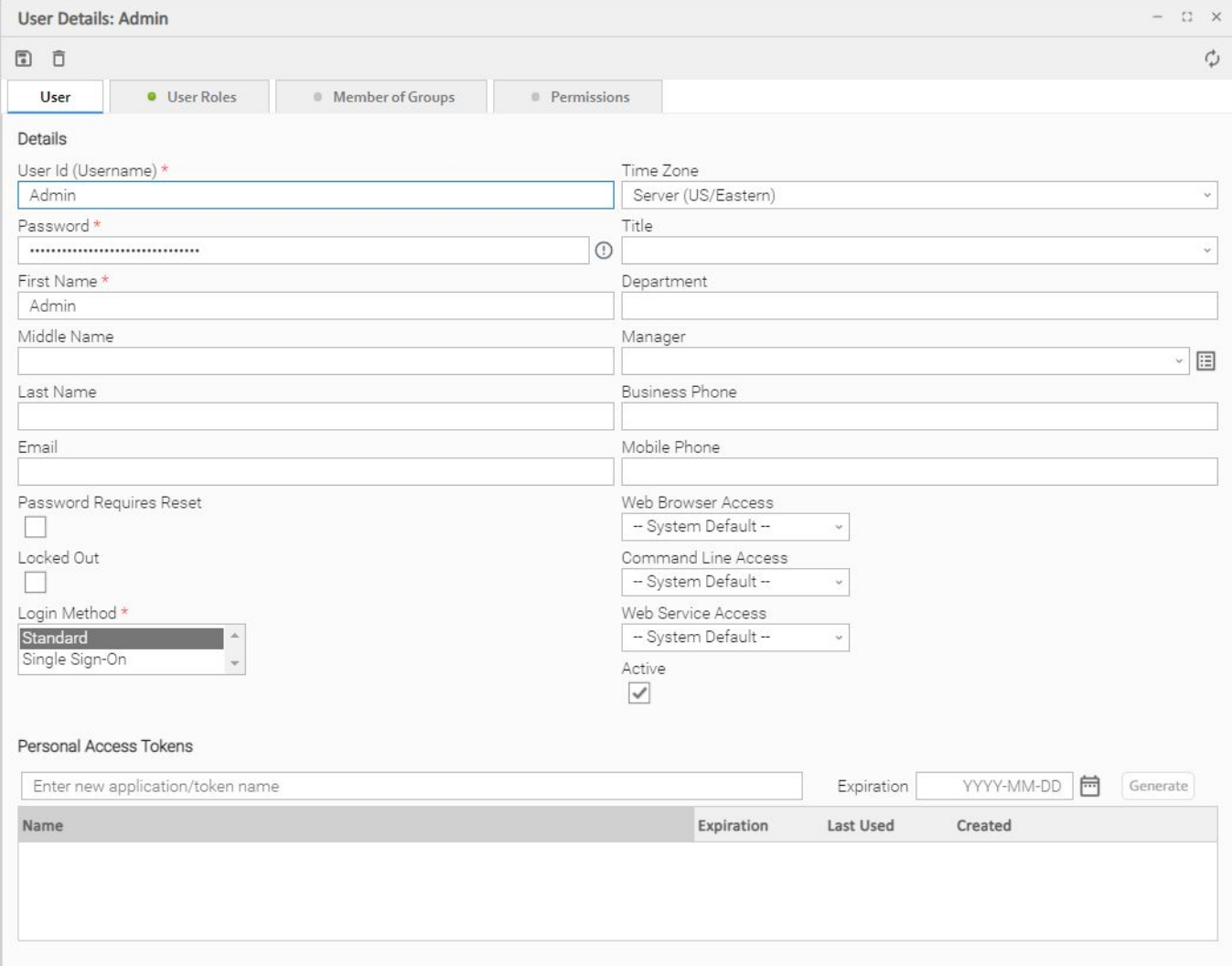

Personal Access Tokens allow users to invoke Web Service APIs by authenticating with a token rather than using their credentials (username and password). Additionally, it provides access to Web Service APIs for users provisioned through Single Sign-On, rather than locally provisioned, or provisioned through LDAP synchronization.

15.2 Creating a Personal Access Token

Step 1

On the [User task bar](#), click the [User Actions](#) drop-down list arrow to display a menu of user actions.



<p>Step 2</p>	<p>Click Edit Profile. The User Details dialog pops up.</p> 
<p>Step 3</p>	<p>At the bottom of the dialog window is the Personal Access Tokens section. Enter an application/token name, optionally specify an expiration, then click Generate.</p>
<p>Step 4</p>	<p>Copy the token immediately as there is no way to retrieve it again once the user details form is refreshed. Copy the token by selecting the text manually and using Ctrl+C, or by clicking the  icon next to the displayed token.</p>

15.3 Personal Access Token Details

<p>Name</p>	<p>Specifies the name of the application that will access the Universal Controller Web Service APIs using the personal access token.</p> <div style="border: 1px solid orange; padding: 10px; margin-top: 10px;"> <p>The name can be no more than 100 characters.</p> </div>
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<p>Expiration</p>	<p>Specifies when the personal access token expires. If left unspecified, the token never expires. Required if Web Service Personal Access Token Maximum Expiration In Days system property is defined.</p> <div style="border: 1px solid orange; padding: 5px; margin-top: 10px;"> <p>The date value will appear bold and red when the token is expired.</p> </div>
<p>Last Used</p>	<p>Specifies when the personal access token was last used for Web Service API authentication.</p>
<p>Created</p>	<p>Specifies when the personal access token was created.</p>

16 Properties

- [Overview](#)
- [Universal Controller Start-up Properties \(uc.properties\)](#)
 - [Secrets Provider Properties](#)
- [Universal Controller System Properties](#)
 - [Overriding Universal Controller System Properties](#)
 - [Deprecated System Properties](#)
- [Command Line Interface \(CLI\) Properties](#)

16.1 Overview

Universal Controller contains three types of configurable properties:

Universal Controller Start-up Properties (uc.properties)	<p>Universal Controller start-up properties are the default properties contained in the uc.properties file when the Controller is installed. These properties are required for Controller start-up and operation.</p> <p>The values for these properties are set during the installation process. Some of the values are based on information that you provide during the installation.</p> <p>You can reset these properties by stopping the Controller, editing <code>uc.properties</code>, and restarting the Controller. The changes will take effect after the restart (see Starting and Stopping Universal Controller).</p>
Universal Controller System Properties	<p>Universal Controller system properties define Controller system information and performance. They have their values set during installation.</p> <p>You can reset these properties at any time, without having to stop the Controller, via the user interface.</p> <div style="border: 1px solid orange; padding: 5px; margin-top: 10px;"> <p>Note</p> <p>In a High Availability environment, all Universal Controller cluster nodes share the same database; therefore, updating Universal Controller System Properties for one cluster node applies to all cluster nodes.</p> </div>
Command Line Interface (CLI) Properties	<p>CLI provides a sample configuration file, <code>cmdtools.props</code>, that you can use to pass CLI Global parameters to a CLI command.</p>

Note

Properties for Universal Message Service (OMS) are installed as [configuration file options](#) when OMS is installed as a component of Universal Agent. The values for these options are set during the installation. There are several [configuration methods](#) available for changing these values.

16.2 Universal Controller Start-up Properties (uc.properties)

The **uc.properties** file is read by the Controller, which is started by Tomcat.

The **uc.properties** file resides here:

```
[tomcat directory]\conf
```

Note

The backslash character in a property value must be escaped as a double backslash.

For example:

```
example.path=c:\\stonebranch\\uc
```

Property Name	Description	Default
For MySQL:		
<code>uc.db.mysql.character_encoding</code>	<p>Allows the retrieval of output with extended unicode characters. If the property is not set, character encoding will not be used in the JDBC URL.</p> <p>Examples:</p> <pre>uc.db.mysql.character_encoding=US-ASCII uc.db.mysql.character_encoding=Cp1252 uc.db.mysql.character_encoding=UTF-8</pre>	
<code>uc.db.rdbms=mysql</code>	Database type. Specify this property if you are using a MySQL database.	
<code>uc.db.url=jdbc:mysql://localhost/</code>	JDBC connect URL. Specify this property if you are using a MySQL database.	

Property Name	Description	Default
For SQLServer		
<code>uc.db.rdbms=sqlserver</code>	Database type. Specify this property if you are using a SQLServer database.	
<code>uc.db.url=jdbc:sqlserver://localhost:1433;DatabaseName=uc</code>	JDBC connect URL. Specify this property if you are using a SQLServer database.	
For Oracle		
<code>uc.db.rdbms=oracle</code>	Database type. Specify this property if you are using an Oracle database.	
<code>uc.db.url=jdbc:oracle:thin:@//localhost:1521/@oracle.db.name@</code>	JDBC connect URL. Specify this property if you are using an Oracle database.	
For All Databases		
<code>uc.db.name</code>	<div style="border: 2px solid red; padding: 5px;"> <p>IMPORTANT</p> <p>If you specify a database name in this property and in <code>uc.db.url</code>, the names must be the same.</p> </div> <p>Name for the Controller database.</p>	uc
<code>uc.db.password</code>	<p>Database password that will be replaced by <code>uc.db.password.encrypted</code> in the <code>uc.properties</code> file upon start-up.</p> <p>The <code>uc.properties</code> file is refreshed every 5 minutes to accommodate changes to this property without requiring a restart. Every 5 minutes, <code>uc.properties</code> is read, and if this property value has changed, then that new value will be used within the Controller.</p>	(none)
<code>uc.db.password.encrypted</code>	Encrypted version of <code>uc.db.password</code> that will replace <code>uc.db.password</code> in the <code>uc.properties</code> file upon start-up.	(none)
<code>uc.db.pooler.connections</code>	<p>Sets the minimum number of idle connections to maintain in the Server connection pool, or zero to create none.</p> <p>The Server connection pool is used by all internal database transactions.</p>	1

Property Name	Description	Default
<pre>uc.db.pooler.connections.Client</pre>	<p>Sets the minimum number of idle connections to maintain in the Client connection pool, or zero to create none.</p> <p>The Client connection pool is used by all user interface related database transactions.</p>	1
<pre>uc.db.pooler.connections.max</pre>	<p>Sets the maximum number of connections that can be allocated by the Server connection pool at a given time.</p> <p>The Server connection pool is used by all internal database transactions.</p> <div data-bbox="699 640 1334 835" style="border: 1px solid orange; padding: 5px; margin-top: 10px;"> <p>Note</p> <p>The installer overrides the default by configuring a maximum number of 40 in the <code>uc.properties</code> file.</p> </div>	30
<pre>uc.db.pooler.connections.max.Client</pre>	<p>Sets the maximum number of connections that can be allocated by the Client connection pool at a given time.</p> <p>The Client connection pool is used by all user interface related database transactions.</p>	30
<pre>uc.db.pooler.connections.max.Reserved</pre>	<p>Sets the maximum number of connections that can be allocated by the Reserved connection pool at a given time.</p> <p>The Reserved connection pool is used by all critical internal database transactions.</p>	30
<pre>uc.db.pooler.connections.Reserved</pre>	<p>Sets the minimum number of idle connections to maintain in the Reserved connection pool, or zero to create none.</p> <p>The Reserved connection pool is used by all critical internal database transactions.</p>	1

Property Name	Description	Default
<div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;">uc.db.secrets_provider</div>	<p>Specifies which secrets provider to use for the password.</p> <p>If left unspecified, Universal Controller is assumed to be the provider, and the controller will continue to load the password from the <code>uc.properties</code> using one of the following properties.</p> <ul style="list-style-type: none"> • <code>uc.db.password</code> • <code>uc.db.password.encrypted</code> <div style="border: 2px solid orange; padding: 10px; margin: 10px 0;"> <p>Note</p> <p>Property <code>uc.db.password</code> is immediately saved back as <code>uc.db.password.encrypted</code> with an encrypted value.</p> </div> <p>If property <code>uc.db.secrets_provider</code> is specified, it must be one of the following values, otherwise, a failure will be logged and <code>uc.properties</code> must be refreshed.</p> <ul style="list-style-type: none"> • <code>uc.db.secrets_provider=uc</code> (or not specified) - Universal Controller • <code>uc.db.secrets_provider=aws_secrets_manager</code> - AWS Secrets Manager • <code>uc.db.secrets_provider=azure_key_vault</code> - Azure Key Vault • <code>uc.db.secrets_provider=cyberark_credential_provider</code> - CyberArk Credential Provider • <code>uc.db.secrets_provider=cyberark_central_credential_provider</code> - CyberArk Central Credential Provider <p>The controller will then load all the properties associated with the specified provider.</p> <p>See Secrets Provider Properties for the properties associated with each provider.</p>	(none)
<div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;">uc.db.url.append.properties</div>	<p>Allows additional options to be appended to the JDBC URL generated by Universal Controller.</p> <p>Example:</p> <div style="border: 1px solid #ccc; padding: 10px; margin: 10px 0;"> <pre>AccessDenied Access Denied4TXP7R6QV5NJJVTRZ+qbZhbWk73v9QLvZ3cOoj02B qbz4NA/ mN9wHsflm0uLlnZZlydt5gNlIbAvCR5gBZcRRmVA8WUyhKkl VJQr6KhN5h0/+IDbKQx3jCNSB18=</pre> </div>	(none)
<div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;">uc.db.user</div>	<p>Login ID that the Controller will use to log in to your database.</p> <p>The <code>uc.properties</code> file is refreshed every 5 minutes to accommodate changes to this property without requiring a restart. Every 5 minutes, <code>uc.properties</code> is read, and if this property value has changed, then that new value will be used within the Controller.</p>	root
<p>For LDAP:</p>		

Property Name	Description	Default
<div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;">uc.ldap.groups.filter_indirect</div>	<p>When this property is set to true, any Groups synchronized indirectly (that is, through a User's memberOf attribute) will honor the Group search filter and Group OU filters under the LDAP Advanced Settings section.</p> <div style="border: 2px solid orange; padding: 10px; margin-top: 10px;"> <p>Note</p> <p>The code default for this property, which is used if this property is not set, is false.</p> </div>	true
<div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;">uc.ldap.groups.single_parent_per_child</div>	<div style="border: 2px solid red; padding: 10px; margin-bottom: 10px;"> <p>IMPORTANT</p> <p>This property should be set to true only if your Groups being synchronized from AD have at most one parent Group.</p> </div> <p>When synchronizing Groups, the default behavior in the Controller is to copy the members of a Sub Group into the Parent Group.</p> <p>When this property is set to true, the Controller assumes that each Group has, at most, a single Parent Group and will use the Parent field on the Group definition to maintain the hierarchy instead of copying members.</p>	false
<div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;">uc.ldap.groups.update_members</div>	<div style="border: 2px solid red; padding: 10px; margin-bottom: 10px;"> <p>IMPORTANT</p> <p>This property should be set to false only when synchronizing Groups from AD, and the number of values for the member attribute exceeds the <code>MaxValRange</code> LDAP policy (and the <code>MaxValRange</code> cannot be increased).</p> </div> <p>When synchronizing Groups, the default behavior in the Controller is to use the multi-valued member attribute to update the members for a Group; however, AD limits the number of values returned for an attribute, which can result in Group members being removed unexpectedly. This limit is determined by the <code>MaxValRange</code> LDAP policy (typically 1,500).</p> <p>When this property is set to false, the Controller will not use the member attribute values to update members when synchronizing Groups from AD. Group membership will continue to be updated based on the memberOf attribute values when synchronizing Users from AD.</p>	true

Property Name	Description	Default
<div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <code>uc.ldap.users.synchronize_by_range</code> </div>	<div style="border: 2px solid #f00; padding: 5px; margin-bottom: 10px;"> <p>IMPORTANT</p> <p>This property should be set to false only if your LDAP server supports paged results.</p> </div> <p>When synchronizing Users, the default behaviour in the Controller is to search based on ranges, using a filter like (&(uid>=a)(uid<=b)). To use the <= or >= operators in a filter, an ordering rule must be defined for the attribute in the LDAP schema.</p> <p>OpenLDAP's schema does not define an ordering rule for the User Id Attribute (for example, uid), so searches using filters like the above do not return any results.</p> <p>When this property is set to false, the Controller will not search based on ranges when synchronizing Users.</p>	true
<div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <code>uc.ldap.users.synchronize_indirect</code> </div>	<div style="border: 2px solid #f00; padding: 5px; margin-bottom: 10px;"> <p>IMPORTANT</p> <p>This property should be set to true only if your LDAP server does not support the User Membership Attribute (for example, memberOf).</p> </div> <p>Synchronizes LDAP users indirectly based on group membership. This only applies to groups that users are direct members of.</p> <p>When this property is set to true, the following will apply for the LDAP refresh (scheduled and server operations):</p> <ul style="list-style-type: none"> • Users will not be synchronized directly based on the User Filter and User Target OU List. • Groups will continue to be synchronized directly based on the Group Filter and Group Target OU List. • For each matching group, the Group Member Attribute (for example, member) will be used to synchronize users matching the User Filter and User Target OU List <div style="border: 2px solid #f00; padding: 5px; margin-bottom: 10px;"> <p>Note</p> <p>The <code>uc.ldap.groups.update_members</code> property will be ignored when indirect user synchronization is enabled.</p> </div> <div style="border: 2px solid #f00; padding: 5px;"> <p>Note</p> <p>There is currently no support for nested groups if the User Membership Attribute is not supported by the LDAP server.</p> </div>	false

Property Name	Description	Default
<div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 5px;">uc.ldap.users.update_memberships_on_login</div>	<div style="border: 2px solid #f00; padding: 5px; margin-bottom: 5px;"> <p>IMPORTANT</p> <p>This property should not be set to true if group membership for users is static, since there is extra overhead to process the groups, which may impact login performance.</p> </div> <p>When this property is set to true, LDAP group memberships for existing LDAP users are updated upon successful login.</p> <div style="border: 2px solid #f00; padding: 5px;"> <p>Note</p> <p>When dynamically creating a new LDAP user at login, the user will be added only to groups that it is a direct member of. Likewise, when updating an existing LDAP user at login, the user will be removed from any groups that it is not a direct member of. Therefore, it is not recommended that you enable this property if a group hierarchy exists, since the user will be removed from any parent groups when logging in. (Group membership for the parent groups will be restored the next time the LDAP refresh runs; however, this can take up to 24 hours.)</p> </div>	false
For OAuth Single Sign-On:		
<div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 5px;">uc.oauth.can_provision_local</div>	Specifies if a user authenticating through OAuth Single Sign-On can be updated using the Access / ID Token if the user was created manually.	false
<div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 5px;">uc.oauth.can_provision_any_idp</div>	Specifies if a user authenticating through OAuth Single Sign-On can be updated using the Access / ID Token of a provider that differs from the provider the user was originally provisioned by.	false
<div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 5px;">uc.saml.log.level</div>	<div style="border: 2px solid #f00; padding: 5px;"> <p>The <code>saml.log.level</code> property is used to configure the log level when OAuth Single Sign-On or SAML Single Sign-On is enabled.</p> </div>	INFO
For SAML Single Sign-On:		

Property Name	Description	Default
<code>uc.saml.log.level</code>	<p>Configures the log level for the Spring SAML2 Service Provider framework. Options are</p> <ul style="list-style-type: none"> • ALL • TRACE • DEBUG • INFO • WARN • ERROR <p>For backwards compatibility, property <code>saml.log.level</code> is still supported when property <code>uc.saml.log.level</code> is not specified.</p>	INFO
<code>uc.saml.metadata.refresh_interval</code>	The Identity Provider Metadata refresh interval in milliseconds; minimum = 30000, maximum = 2147483647.	120000
<code>uc.saml.signature_algorithm_uri</code>	<p>By default, the <code>saml2:AuthnRequest</code> will be signed using <code>rsa-sha256</code>, though some Identity Providers will require a different algorithm.</p> <p>To configure the algorithm automatically based on the Identity Provider's metadata, do not specify this property.</p> <p>Alternatively, you can manually override the default configuration by specifying this property.</p>	http://www.w3.org/2001/04/xmldsig-more#rsa-sha256 or as specified by the Identity Provider's metadata.
<code>uc.saml.authn_request.force_authn</code>	Specifies (true or false) whether the Identity Provider should force the user to reauthenticate.	false
<code>uc.saml.authn_request.want_signed</code>	<p>Set the <code>WantAuthnRequestsSigned</code> setting, indicating (true or false) the Identity Provider's preference that Service Providers should sign the <code>AuthnRequest</code> before sending.</p> <p>To configure the setting automatically based on the Identity Provider's metadata, do not specify the property.</p>	Specified by the Identity Provider's metadata.
<code>uc.saml.can_provision_local</code>	Specifies if a user authenticating through SAML Single Sign-On can be updated using the SAML Assertion if the user was created manually.	false
<code>uc.saml.can_provision_any_idp</code>	Specifies if a user authenticating through SAML Single Sign-On can be updated using the SAML Assertion of a provider that differs from the provider the user was originally provisioned by.	false
For TrustStore:		
<code>uc.trustmanager.truststore</code>	Location of the keystore which holds certificates and keys.	properties/cacerts

Property Name	Description	Default
<code>uc.trustmanager.truststore.type</code>	The default TrustStore type. The following case-insensitive values are supported: <ul style="list-style-type: none"> • JKS • PKCS12 	<code>KeyStore.getDefaultType()</code> (PKCS12 as of Java 8)
<code>uc.trustmanager.truststore.provider</code>	The default TrustStore provider.	(none)
<code>uc.trustmanager.truststore.password</code>	Password (if required) for the keystore that will be replaced by <code>uc.trustmanager.truststore.password.encrypted</code> in the <code>uc.properties</code> file upon start-up.	changeit
<code>uc.trustmanager.truststore.password.encrypted</code>	Encrypted version of <code>uc.trustmanager.truststore.password</code> that will replace <code>uc.trustmanager.truststore.password</code> in the <code>uc.properties</code> file upon start-up.	(none)
For OpenTelemetry: To configure all of your OpenTelemetry settings in the <code>uc.properties</code> , but disable the feature until required, you can add the following property. <pre>uc.otel.sdk.disabled=true</pre> To enable the feature while the controller is running, you only need to set the <code>uc.otel.sdk.disabled</code> to <code>false</code> by updating the <code>uc.properties</code> , or by using the Server Operation > Temporary Property Change from the user interface. If you choose to update the <code>uc.properties</code> , the controller refreshes the property file at a 10 minute interval. You can increase this interval by adding the following property to the <code>uc.properties</code> . <pre>uc.property.refresh_interval_in_seconds=60</pre> The update from Server Operation > Temporary Property Change initiates the reconfiguration immediately.		
<code>uc.otel.sdk.disabled</code>	If <code>true</code> , disable the OpenTelemetry SDK.	false
<code>uc.otel.traces.exporter</code>	If <code>none</code> , no traces exporter configured.	otlp

Property Name	Description	Default
<code>uc.otel.metrics.exporter</code>	If <code>none</code> , no metrics exporter configured.	otlp
<code>uc.otel.exporter.otlp.service.name</code>	Specifies a custom logical name for the service. If left unspecified, the service name is controller .	controller
<code>uc.otel.exporter.otlp.protocol</code>	The transport protocol to use on OTLP trace, and metric requests. Options include <code>grpc</code> and <code>http/protobuf</code> .	grpc
<code>uc.otel.exporter.otlp.traces.protocol</code>	The transport protocol to use on OTLP trace requests. Options include <code>grpc</code> and <code>http/protobuf</code> .	grpc
<code>uc.otel.exporter.otlp.metrics.protocol</code>	The transport protocol to use on OTLP metric requests. Options include <code>grpc</code> and <code>http/protobuf</code> .	grpc
<code>uc.otel.exporter.otlp.endpoint</code>	The OTLP traces, and metrics endpoint to connect to. Must be a URL with a scheme of either <code>http</code> or <code>https</code> based on the use of TLS. If protocol is <code>http/protobuf</code> the version and signal will be appended to the path (e.g. <code>v1/traces</code> , or <code>v1/metrics</code>). For example, http://localhost:4317 when protocol is <code>grpc</code> , and http://localhost:4318/v1/{signal} when protocol is <code>http/protobuf</code> .	(none)
<code>uc.otel.exporter.otlp.traces.endpoint</code>	The OTLP traces endpoint to connect to. Must be a URL with a scheme of either <code>http</code> or <code>https</code> based on the use of TLS. For example, http://localhost:4317 when protocol is <code>grpc</code> , and http://localhost:4318/v1/traces when protocol is <code>http/protobuf</code> .	(none)
<code>uc.otel.exporter.otlp.metrics.endpoint</code>	The OTLP metrics endpoint to connect to. Must be a URL with a scheme of either <code>http</code> or <code>https</code> based on the use of TLS. For example, http://localhost:4317 when protocol is <code>grpc</code> , and http://localhost:4318/v1/metrics when protocol is <code>http/protobuf</code> .	(none)
<code>uc.otel.exporter.otlp.certificate</code>	The path to the file containing trusted certificates to use when verifying an OTLP trace, or metric server's TLS credentials. The file should contain one or more X.509 certificates in PEM format.	By default, the host platform's trusted root certificates are used.
<code>uc.otel.exporter.otlp.traces.certificate</code>	The path to the file containing trusted certificates to use when verifying an OTLP trace server's TLS credentials. The file should contain one or more X.509 certificates in PEM format.	By default, the host platform's trusted root certificates are used.

Property Name	Description	Default
<code>uc.otel.exporter.otlp.metrics.certificate</code>	The path to the file containing trusted certificates to use when verifying an OTLP metric server's TLS credentials. The file should contain one or more X.509 certificates in PEM format.	By default, the host platform's trusted root certificates are used.
<code>uc.otel.exporter.otlp.client.key</code>	The path to the file containing private client key to use when verifying an OTLP trace, or metric client's TLS credentials. The file should contain one private key PKCS8 PEM format.	By default, no client key is used.
<code>uc.otel.exporter.otlp.traces.client.key</code>	The path to the file containing private client key to use when verifying an OTLP trace client's TLS credentials. The file should contain one private key PKCS8 PEM format.	By default, no client key file is used.
<code>uc.otel.exporter.otlp.metrics.client.key</code>	The path to the file containing private client key to use when verifying an OTLP metric client's TLS credentials. The file should contain one private key PKCS8 PEM format.	By default, no client key file is used.
<code>uc.otel.exporter.otlp.client.certificate</code>	The path to the file containing trusted certificates to use when verifying an OTLP trace, or metric client's TLS credentials. The file should contain one or more X.509 certificates in PEM format.	By default, no chain file is used.
<code>uc.otel.exporter.otlp.traces.client.certificate</code>	The path to the file containing trusted certificates to use when verifying an OTLP trace server's TLS credentials. The file should contain one or more X.509 certificates in PEM format.	By default, no chain file is used.
<code>uc.otel.exporter.otlp.metrics.client.certificate</code>	The path to the file containing trusted certificates to use when verifying an OTLP metric server's TLS credentials. The file should contain one or more X.509 certificates in PEM format.	By default, no chain file is used.
<code>uc.otel.exporter.otlp.headers</code>	Key-value pairs separated by commas to pass as request headers on OTLP trace, or metric requests.	(none)
<code>uc.otel.exporter.otlp.traces.headers</code>	Key-value pairs separated by commas to pass as request headers on OTLP trace requests.	(none)
<code>uc.otel.exporter.otlp.metrics.headers</code>	Key-value pairs separated by commas to pass as request headers on OTLP metrics requests.	(none)

Property Name	Description	Default
<code>uc.otel.exporter.otlp.compression</code>	The compression type to use on OTLP trace, and metric requests. Options include gzip.	By default, no compression will be used.
<code>uc.otel.exporter.otlp.traces.compression</code>	The compression type to use on OTLP trace requests. Options include gzip.	By default, no compression will be used.
<code>uc.otel.exporter.otlp.metrics.compression</code>	The compression type to use on OTLP metric requests. Options include gzip.	By default, no compression will be used.
<code>uc.otel.exporter.otlp.timeout</code>	The maximum waiting time, in milliseconds, allowed to send each OTLP trace, and metric batch.	10000
<code>uc.otel.exporter.otlp.traces.timeout</code>	The maximum waiting time, in milliseconds, allowed to send each OTLP trace batch.	10000
<code>uc.otel.exporter.otlp.metrics.timeout</code>	The maximum waiting time, in milliseconds, allowed to send each OTLP metric batch.	10000
<code>uc.otel.exporter.otlp.metrics.temporality.preference</code>	The preferred output aggregation temporality. Options include DELTA, LOWMEMORY, and CUMULATIVE. If CUMULATIVE, all instruments will have cumulative temporality. If DELTA, counter (sync and async) and histograms will be delta, up down counters (sync and async) will be cumulative. If LOWMEMORY, sync counter and histograms will be delta, async counter and up down counters (sync and async) will be cumulative.	CUMULATIVE
<code>uc.otel.exporter.otlp.metrics.default.histogram.aggregation</code>	The preferred default histogram aggregation. Options are: <ul style="list-style-type: none"> BASE2_EXPONENTIAL_BUCKET_HISTOGRAM EXPLICIT_BUCKET_HISTOGRAM. 	EXPLICIT_BUCKET_HISTOGRAM
For Prometheus Metrics:		
<code>uc.prometheus.metrics.uc_history_total.optional_labels</code>	Specifies optional labels for <code>uc_history_total</code> metric. The property value is specified as comma-delimited list of optional labels. Options are: <ul style="list-style-type: none"> agent_id task_name security_business_services task_instance_exit_code For example: <code>uc.prometheus.metrics.uc_history_total.optional_labels=agent_id,task_name</code>	(none)

Property Name	Description	Default
<code>uc.prometheus.metrics.uc_task_instance_duration_seconds.optional_labels</code>	Specifies optional labels for <code>uc_task_instance_duration_seconds</code> metric. The property value is specified as comma-delimited list of optional labels. Options are: <ul style="list-style-type: none"> • agent_id • task_name • security_business_services For example: <pre>uc.prometheus.metrics.uc_task_instance_duration_seconds.optional_labels =agent_id,task_name</pre>	(none)
<code>uc.prometheus.metrics.uc_task_instance_early_finish_total.optional_labels</code>	Specifies optional labels for <code>uc_task_instance_early_finish_total</code> metric. The property value is specified as comma-delimited list of optional labels. Options are: <ul style="list-style-type: none"> • agent_id • task_name • security_business_services For example: <pre>uc.prometheus.metrics.uc_task_instance_early_finish_total.optional_labels =agent_id,task_name</pre>	(none)
<code>uc.prometheus.metrics.uc_task_instance_late_finish_total.optional_labels</code>	Specifies optional labels for <code>uc_task_instance_late_finish_total</code> metric. The property value is specified as comma-delimited list of optional labels. Options are: <ul style="list-style-type: none"> • agent_id • task_name • security_business_services For example: <pre>uc.prometheus.metrics.uc_task_instance_late_finish_total.optional_labels =agent_id,task_name</pre>	(none)
<code>uc.prometheus.metrics.uc_task_instance_late_start_total.optional_labels</code>	Specifies optional labels for <code>uc_task_instance_late_start_total</code> metric. The property value is specified as comma-delimited list of optional labels. Options are: <ul style="list-style-type: none"> • agent_id • task_name • security_business_services For example: <pre>uc.prometheus.metrics.uc_task_instance_late_start_total.optional_labels =agent_id,task_name</pre>	(none)
<code>uc.prometheus.metrics.uc_task_instance_launch_total.optional_labels</code>	Specifies optional labels for <code>metrics.uc_task_instance_launch_total</code> metric. The property value is specified as comma-delimited list of optional labels. Options are: <ul style="list-style-type: none"> • agent_id • task_name • security_business_services For example: <pre>uc.prometheus.metrics.uc_task_instance_launch_total.optional_labels =agent_id,task_name</pre>	(none)

Property Name	Description	Default
<code>uc.prometheus.metrics.uc_universal_event_total.optional_labels</code>	Specifies optional labels for <code>uc_universal_event</code> metric. The property value is specified as comma-delimited list of optional labels. Options are: <ul style="list-style-type: none"> • <code>agent_id</code> • <code>task_name</code> • <code>security_business_services</code> For example: <pre>uc.prometheus.metrics.uc_universal_event_total.optional_labels =agent_id,task_name</pre>	(none)
<code>uc.prometheus.metrics.uc_task_instance_duration_seconds.buckets</code>	Specifies the buckets to use for the <code>uc_task_instance_duration_seconds</code> histogram. The property value is specified as comma-delimited list of double or integer values. For example: <pre>uc.prometheus.metrics.uc_task_instance_duration_seconds.buckets=1,2.5,5,10,15,30,45,60,150,300,600,900,1800,2700,3600</pre>	(none)
Other Properties:		
<code>jdk.xml.entityExpansionLimit</code>	Limits the number of XML entity expansions. Valid values are any positive integer. A value equal to 0 indicates no limit. If <code>jdk.xml.entityExpansionLimit</code> is not specified in uc.properties (or on start-up with <code>-Djdk.xml.entityExpansionLimit=<limit></code>), Universal Controller will initialize it to a default value of 1. <ul style="list-style-type: none"> • If <code>jdk.xml.entityExpansionLimit</code> is specified on start-up with <code>-Djdk.xml.entityExpansionLimit=<limit></code>, this takes precedence over the Universal Controller default value of 1. • If <code>jdk.xml.entityExpansionLimit</code> is specified in uc.properties, this takes precedence over specifying it on start-up with <code>-Djdk.xml.entityExpansionLimit=<limit></code>. 	1
<code>uc.date.formats</code>	Accepted input date formats for Date Functions and Stored Procedure parameters . For example: <code>uc.date.formats=yyyy/MM/dd;dd/MM/yyyy</code> . Formats can vary, but years must be defined with four digits (yyyy). Formats are used on a "first match" basis.	

Property Name	Description	Default
<code>uc.email.attachments.local.path</code>	<p>Directory location from where files can be attached for a specific Cluster Node / Server. You must specify a location in this property in order for the Attach Local File field to display in the Email Task and Email Notifications Details.</p> <p>The uc.properties file is refreshed every 5 minutes to accommodate changes to this property without requiring a restart. Every 5 minutes, uc.properties is read, and if this property value has changed, that new value then will be used within the Controller.</p> <div style="border: 1px solid orange; padding: 5px; margin-top: 10px;"> <p>This property is local to the Cluster Node and must be specified on each Node based upon the path for that Node. Each Node can have a different path, but they should point to the same shared physical location in order to achieve the expected behavior. Best practices would be to use the same path in each Node.</p> </div>	
<code>uc.action.email_notification.attach_output_subscription.timeout_in_seconds</code>	<p>Number of seconds for Email Notification output timeout.</p>	180
<code>uc.keymanager.algorithm</code>	<p>Java key manager algorithm.</p> <ul style="list-style-type: none"> • For IBM AIX, the value must be <code>IbmX509</code>. • For all other platforms, use the default value. <p>If no value is specified, the configured JVM default will be used.</p>	
<code>uc.keymanager.client.alias</code>	<p>If multiple certificates reside in the keystore that could match the OMS server's certificate request, specifying an alias ensures that the intended client certificate is presented to the OMS server.</p>	
<code>uc.keymanager.keystore</code>	<p>Location of the keystore which holds certificates and keys.</p>	
<code>uc.keymanager.keystore.password</code>	<p>Password (if required) for the keystore that will be replaced by uc.keymanager.keystore.password.encrypted in the uc.properties file upon start-up.</p>	
<code>uc.keymanager.provider</code>	<p>Java key manager provider.</p> <ul style="list-style-type: none"> • For IBM AIX, the value must be <code>IBMJSSE2</code>. • For all other platforms, use the default value. <p>If no value is specified, the configured JVM default will be used.</p>	

Property Name	Description	Default
<div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;">uc.logging.appenders</div>	<p>Location of STDOUT file logging. The property value is specified as comma-delimited list of optional labels. Options are:</p> <ul style="list-style-type: none"> • console • file • none <p>The default value when not configured will be <code>file</code> in order to behave the same as previous releases and would be the same as specifying the following:</p> <pre>uc.logging.appenders=file</pre> <p>For containers, or any situation that does not want logging to go to a rolling file, that want the logging strictly to the console (stdout), the following should be specified in the <code>uc.properties</code> file:</p> <pre>uc.logging.appenders=console</pre> <p>If no logging is required, then the following would be specified in the <code>uc.properties</code> file:</p> <pre>uc.logging.appenders=none</pre> <p>If the property is specified, but no valid entries above are in the property value, then the default value of <code>file</code> is used.</p>	file
<div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;">uc.mbean.catalina.manager.name</div>	<p>The Controller uses the <code>Catalina:type=Manager</code> MBean for the User Sessions feature.</p> <p>To determine the Manager MBean object name, the Controller dynamically determines the context. For example:</p> <pre>Catalina:type=Manager,context=/uc,host=localhost</pre> <p>If the following error appears in the Console while you are using the User Sessions feature, you may need to configure this property manually:</p> <pre>Universal Controller not configured for user session operations.</pre> <p>In the <code>uc.log</code>, you would see the following:</p> <pre>javax.management.InstanceNotFoundException: Catalina:type=Manager,context=/uc,host=localhost</pre>	
<div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;">uc.node.transient</div>	<p>Specifies (true or false) if the node is a transient Cluster Node.</p>	false

Property Name	Description	Default
<div data-bbox="86 353 373 383" style="border: 1px solid black; padding: 2px;">uc.oms.service_timeout</div>	<p>Sets the OMS service timeout value specifying the number of seconds of inactivity before a timeout exception will be thrown. For example, you will see the following in the uc.log:</p> <p>Default (180 seconds)</p> <pre data-bbox="724 488 1294 1151">2021-08-04-21:12:25:542 -0400 INFO [UC.OMS.Monitor.0] Created: OMSServerConnection [userName=null, clientId=ops.controller.f9a86ee2bd5 e4928b3173b186e0feb3c, clientInstance=15296bc7-e994-49eb- a6cf-0ecbf72d5f2f, transportAddresses=OMSTransportAddr ess [[localhost/127.0.0.1:7878]], nft=true, socketTimeout=30, serviceTimeout=180, authenticateServer=false, serverAddress=null, nextSessionId=0, isClosing=false, connectionInstance=1]</pre> <p>uc.oms.service_timeout=300</p> <pre data-bbox="724 1290 1294 1865">OMSServerConnection [userName=null, clientId=ops.controller.f9a86ee2bd5 e4928b3173b186e0feb3c, clientInstance=96e45eb5- c513-489a-8746-6223e962e901, transportAddresses=OMSTransportAddr ess [[localhost/127.0.0.1:7878]], nft=true, socketTimeout=30, serviceTimeout=300, authenticateServer=false, serverAddress=null, nextSessionId=0, isClosing=false, connectionInstance=1]</pre>	<p>180</p>

Property Name	Description	Default
<code>uc.overdue.timer.startup.threshold</code>	Maximum number of days after which an overdue trigger is considered "stale/expired."	2
<code>uc.servlet.port</code>	Port number used by Tomcat.	8080
<code>uc.task.sap.credential_type.required.compatibility_mode</code>	If the SAP Credential Type Required system property is enabled, specifies (true or false) if an SAP Task will continue to run (instead of ending in Start Failure) when referencing a non-SAP-type Credential (at the task level SAP Credentials or job step level SAP User Credentials).	false
<code>uc.task.sap.rpc.timeout</code>	Sets the timeout value in seconds for the SAP RPC calls.	120
<code>uc.task.sap.username.restricted.compatibility_mode</code>	If the SAP User Name Restricted system property is enabled, specifies (true or false) if an SAP Task will continue to run (instead of ending in Start Failure) when a job step specifies an SAP User Name.	false
<code>uc.task.zos.view_edit_jcl.timeout</code>	Sets the JCL service timeout value specifying the number of seconds to wait for the agent response before a timeout exception will be thrown.	60
<code>uc.trustmanager.algorithm</code>	Java trust manager algorithm. <ul style="list-style-type: none"> For IBM AIX, the value must be <code>ibmX509</code>. For all other platforms, use the default value. 	SunX509
<code>uc.trustmanager.provider</code>	Java trust manager provider. <ul style="list-style-type: none"> For IBM AIX, the value must be <code>IBMJSSE2</code>. For all other platforms, use the default value. 	SunJSSE
<code>uc.trustmanager.ssl.protocols</code>	Comma-separated list of SSL/TLS protocols that can be used for Controller/OMS communications. <ul style="list-style-type: none"> If the property does not contain a protocol list, a default SSL/TLS context will be referenced for building the SSL/TLS socket used for Controller/OMS communications. If the property is used, only those protocols will be enabled for the Controller/OMS session. If the property is not used, only the protocols specified in currently configured default SSL/TLS Context's default SSL/TLS protocol list will be enabled for the Controller/OMS session. 	

Property Name	Description	Default
<code>uc.ui.session_timeout</code>	Default browser session timeout, in minutes. To use the Tomcat session configuration (default 30 minutes), set this property to 0.	30
<code>uc.web_service.allow_unknown_properties</code>	Specifies (true or false) whether web service APIs will fail if the request payload contains unknown properties.	false
<code>uc.web_service.httpClient.socket.keep_alive</code>	Specifies (true or false) whether TCP socket keep-alive option is enabled for HTTP(S)/REST Web Service Tasks.	false

16.2.1 Secrets Provider Properties

The `uc.db.secrets_provider` property specifies which secrets provider the controller will use for the database password.

The controller will then load all the properties associated with the specified provider.

The properties that will be loaded by the controller for each provider are listed below.

16.2.1.1 AWS Secrets Manager

Property Name	Required	Description
<code>uc.db.secrets_provider.aws_secrets_manager.access_key_id</code>	true	The AWS access key, used to identify the user interacting with AWS.
<code>uc.db.secrets_provider.aws_secrets_manager.secret_access_key</code>	true	The AWS secret access key, used to authenticate the user interacting with AWS.
<code>uc.db.secrets_provider.aws_secrets_manager.region</code>	true	The region name (e.g., us-east-1).
<code>uc.db.secrets_provider.aws_secrets_manager.secret_id</code>	true	The ARN or name of the secret to retrieve.
<code>uc.db.secrets_provider.aws_secrets_manager.secret_password_key</code>	false	If this secret was created by using the console, then Secrets Manager stores the information as a JSON structure of key/value pairs. Specifies the key for the password in the JSON structure. <ul style="list-style-type: none"> If left unspecified, the password will evaluate to the entire secret value.
<code>uc.db.secrets_provider.aws_secrets_manager.secret_passphrase_key</code>	false	Specifies the key for the passphrase in the JSON structure. <ul style="list-style-type: none"> If left unspecified, the passphrase will be undefined.

Property Name	Required	Description
<code>uc.db.secrets_provider.aws_secrets_manager.secret_token_key</code>	false	Specifies the key for the token in the JSON structure. <ul style="list-style-type: none"> If left unspecified, the token will be undefined.
<code>uc.db.secrets_provider.aws_secrets_manager.cache_ttl</code>	false	The TTL (Time To Live), in seconds, for the cached secret before a new request to the provider is made. (default 3600 seconds / 1 hour)

16.2.1.2 Azure Key Vault

Property Name	Required	Description
<code>uc.db.secrets_provider.azure_key_vault.key_vault_name</code>	true	The name of the Key Vault used to build the vault URL to send HTTP requests to. <ul style="list-style-type: none"> <code>https://<your-key-vault-name>.vault.azure.net</code>
<code>uc.db.secrets_provider.azure_key_vault.secret_name</code>	true	The name of the secret.
<code>uc.db.secrets_provider.azure_key_vault.client_id</code>	true	The client (application) ID.
<code>uc.db.secrets_provider.azure_key_vault.tenant_id</code>	true	The Azure Active Directory tenant (directory) ID.
<code>uc.db.secrets_provider.azure_key_vault.client_secret</code>		The client secret used to authenticate. <ul style="list-style-type: none"> Only one of CLIENT_SECRET, CLIENT_ASSERTION, PEM_CERTIFICATE, or PFX_CERTIFICATE can be specified.
<code>uc.db.secrets_provider.azure_key_vault.client_assertion</code>		The client assertion used to authenticate. <ul style="list-style-type: none"> Only one of CLIENT_SECRET, CLIENT_ASSERTION, PEM_CERTIFICATE, or PFX_CERTIFICATE can be specified.
<code>uc.db.secrets_provider.azure_key_vault.pem_certificate</code>		The path of the PEM certificate used for authenticating. <ul style="list-style-type: none"> Only one of CLIENT_SECRET, CLIENT_ASSERTION, PEM_CERTIFICATE, or PFX_CERTIFICATE can be specified.
<code>uc.db.secrets_provider.azure_key_vault.pfx_certificate</code>		The path of the PFX certificate used for authenticating. <ul style="list-style-type: none"> Only one of CLIENT_SECRET, CLIENT_ASSERTION, PEM_CERTIFICATE, or PFX_CERTIFICATE can be specified.
<code>uc.db.secrets_provider.azure_key_vault.pfx_certificate_password</code>		The password for the PFX certificate. <ul style="list-style-type: none"> Required if the PFX_CERTIFICATE is specified.
<code>uc.db.secrets_provider.azure_key_vault.cache_ttl</code>	false	The TTL (Time To Live), in seconds, for the cached secret before a new request to the provider is made. (default 28800 seconds / 8 hours)

16.2.1.3 CyberArk Credential Provider

Property Name	Required	Description
uc.db.secrets_provider.cyberark_credential_provider.application_id	true	The unique ID of the application issuing the password request.
uc.db.secrets_provider.cyberark_credential_provider.safe	true	The name of the Safe where the password is stored.
uc.db.secrets_provider.cyberark_credential_provider.folder	true	The name of the folder where the password is stored.
uc.db.secrets_provider.cyberark_credential_provider.object	true	The name of the password object to retrieve.
uc.db.secrets_provider.cyberark_credential_provider.reason	false	The reason for retrieving the password.
uc.db.secrets_provider.cyberark_credential_provider.cache_ttl	false	The TTL (Time To Live), in seconds, for the cached secret before a new request to the provider is made. (default 5 seconds)

16.2.1.4 CyberArk Central Credential Provider

Property Name	Required	Description
uc.db.secrets_provider.cyberark_central_credential_provider.host	true	The hostname of the Central Credential Provider.
uc.db.secrets_provider.cyberark_central_credential_provider.port	true	The port of the Central Credential Provider.
uc.db.secrets_provider.cyberark_central_credential_provider.application_id	true	The unique ID of the application issuing the password request.
uc.db.secrets_provider.cyberark_central_credential_provider.safe	true	The name of the Safe where the password is stored.
uc.db.secrets_provider.cyberark_central_credential_provider.folder	true	The name of the folder where the password is stored.
uc.db.secrets_provider.cyberark_central_credential_provider.object	true	The name of the password object to retrieve.

Property Name	Required	Description
<code>uc.db.secrets_provider.cyberark_central_credential_provider.keystore</code>	true	The path of the keystore containing the client certificate used for authenticating.
<code>uc.db.secrets_provider.cyberark_central_credential_provider.keystore_password</code>	false	The password used to unlock the keystore.
<code>uc.db.secrets_provider.cyberark_central_credential_provider.keystore_type</code>	false	The type of keystore. (default PKCS12) <ul style="list-style-type: none"> • JKS <ul style="list-style-type: none"> • The proprietary keystore implementation provided by the SUN provider. • PKCS12 <ul style="list-style-type: none"> • The transfer syntax for personal identity information as defined in PKCS #12.
<code>uc.db.secrets_provider.cyberark_central_credential_provider.keystore_alias</code>	false	The name of a specific entry in the keystore to use.
<code>uc.db.secrets_provider.cyberark_central_credential_provider.cache_ttl</code>	false	The TTL (Time To Live), in seconds, for the cached secret before a new request to the provider is made. (default 5 seconds)

16.2.1.5 Sample uc.properties File

```
# DB
uc.db.rdbms=mysql
uc.db.url=jdbc:mysql://localhost/
# MYSQL
# uc.db.mysql.character_encoding=UTF-8
# uc.db.rdbms=mysql
# uc.db.url=jdbc:mysql://localhost/
# MS SQLSERVER
# uc.db.rdbms=sqlserver
# uc.db.url=jdbc:sqlserver://localhost:1433;DatabaseName=uc
# ORACLE
# uc.db.rdbms=oracle
# uc.db.url=jdbc:oracle:thin:@//localhost:1521/@oracle.db.name@
#
# COMMON
#
# trust manager algorithm & provider
# uc.trustmanager.algorithm=SunX509
# uc.trustmanager.provider=SunJSSE
# uc.trustmanager.ssl.protocols=TLSv1,TLSv1.1,TLSv1.2
#
uc.db.user=root
uc.db.password=pswd
uc.db.name=uc
```

```
uc.servlet.port=8080
uc.ui.session_timeout=30
```

16.3 Universal Controller System Properties

Properties for your Universal Controller system are set (in the Controller database) during Controller installation. These properties let you define Controller system information and performance.

Universal Controller system properties do not reside in a properties file; they are available only via the user interface.

Although you can reset these properties any time after the Controller is in operation without having to stop and restart the Controller, you should click the Reload current page icon in your browser taskbar after resetting a property.

Note

You must be assigned the [ops_admin](#) role in order to reset these properties.

Step 1	From the Available Services, select Administration > Properties . The Properties list displays.
Step 2	If you want to change the value of a property, click a its Value field and select/enter a new value.
Step 3	To filter the list of displayed properties, enter appropriate characters (not case-sensitive) in the empty fields above the Name and/or Value columns. For example, to display only properties elated to promotion, enter promotion (or PROMOTION, promo , etc.) in the empty field above the Name column.

The following table describes the Universal Controller system properties:

Name (Property Name)	Description	Default
Administrator Email Address (uc.admin.email_addr)	System administrator email address(es) specified as the recipient(s) for System Notifications . Addresses for multiple administrators should be specified in a comma-separated list.	(none)
Agent Address Information Restricted (uc.agent.address_info_restricted)	Specification (true or false) for whether or not to hide the IP address of an Agent from non-Administrator (ops_admin) users. If the property is set to true and the user is a non-Administrator, the IP Address field of Agents will display ***** instead of the actual value for that user.	true
Agent Cache Retention Period in Days (uc.agent.cache.retention)	Number of days that cache files (stdout, stderr) are retained by the system.	7
Agent Cluster Network Alias Cache Retention In Minutes (uc.agent_cluster.network_alias.cache_retention_in_minutes)	Amount of time (in minutes) that a resolved Network Alias will be used before attempting to resolve it again.	30

Name (Property Name)	Description	Default
Agent Cluster Network Alias Retry Interval In Minutes (uc.agent_cluster.network_alias.retry_interval_in_minutes)	Amount of time (in minutes) before automatically retrying the Network Alias resolution upon failure.	5
Agent Cluster Network Alias Uquery Port (uc.agent_cluster.network_alias.uquery_port)	Default port for an Agent Cluster with a Distribution method of Network Alias if no Agent Port is specified.	7887
Agent Credentials Required (uc.agent.credentials.required)	Specification (true or false) for whether or not Credentials are required for agent-based tasks and Application Resources .	false
Agent Credentials Required On Registration (uc.agent.credentials.required.registration)	Specification (Windows, Linux/Unix, z/OS) for whether the agent has to use the credentials or not.	(none)
Agent Heartbeat Grace Period in Seconds (uc.agent.heartbeat.grace_period_in_seconds)	Grace period in seconds (minimum 30, maximum 600) that the Controller will allow for a delayed heartbeat message.	60
Agent Heartbeat Interval in Seconds (uc.agent.heartbeat.interval.in.seconds)	Number of seconds between each heartbeat message sent by the agent to the Controller.	120
Agent Notification Disabled If Suspended (uc.agent.notification.disable_if_suspended)	Specification (true or false) for whether or not Agent notifications will not be processed (true) when a suspended Agent goes active/offline.	false
Agent Prefix (uc.agent.prefix)	Prefix appended to the Queue name for newly registered agents. A 4-digit number is appended to this prefix.	AGNT
Allow In Doubt Re-run (uc.task_instance.rerun.allow_in_doubt)	Specification (true or false) for whether or not the Controller will allow the re-run of a task instance if it is in the In Doubt status.	true
Audit Owner Read Permitted (uc.audit.owner.read.permitted)	Specifies if users without the ops_admin role or the ops_audit_view role can view their own audits, specifically, any audit indicating it was Created By their User Id (Username) .	true
Autofit Plain Large Text Fields (uc.universal_template.text_field.large.plain.auto_fit)	Specification (true or false) for whether or not the Controller will auto-fit Universal Task Large Text Fields when Text Type is Plain.	true
Automatically Create Versions (uc.version.automatically)	Specification (true or false) for whether or not the Controller will retain copies of previous versions. Affects system behavior when you make updates to records in your Controller database, such as changing a task definition.	true
Automatically Skip Conflicting Multi-Origin Paths (uc.workflow.skip_conflicting_multi_origin_paths)	Specification (true or false) for whether or not the Controller will automatically skip a task (within a workflow) that is connected to multiple predecessor tasks, where one or more of the predecessor tasks would cause the task to be run and one or more would cause the task to be skipped.	false
Banner Background Color (uc.banner.background_color)	Hexadecimal color code for the color of the Universal Controller user interface page banner. Valid values are #[0-9, a-f, A-F] (six characters) or transparent.	transparent For transparent, color will be based on Theme .

Name (Property Name)	Description	Default
Banner Logo (uc.banner.logo)	Name of the Banner Logo file to use in the Universal Controller user interface page banner (next to the Stonebranch logo). Enter the name of the logo file, excluding the path, from directory <code>../tomcat/uc_images/</code> . Valid logo files end in extension <code>.png</code> , <code>.jpg</code> , or <code>.gif</code> . <div style="border: 1px solid orange; padding: 5px; margin-top: 10px;"> <p>Note</p> <p>The banner logo is allocated a maximum width of 298px and a maximum height of 32px. The image will be scaled, preserving its ratio, to fit within its designated area.</p> </div>	(none)
Banner Logo URL (uc.banner.logo_url)	URL of a web resource that you want the Banner Logo to link to. The URL must begin with <code>http://</code> , <code>https://</code> , or <code>ftp://</code> and contain no spaces. (Banner Logo URL is not a valid URL.)	(none)
Broadcast On Hold If Cluster Suspended (uc.cluster_broadcast.hold_on_suspended)	Specification (true or false) for whether or not cluster broadcast tasks will be run if the agent cluster selected for the broadcast has been suspended .	true
Broadcast On Hold If Cluster Unresolved (uc.cluster_broadcast.hold_on_unresolved)	Specification (true or false), for a task instance defined within a workflow, if a broadcast cluster is specified, and Universal Controller is unable to find the broadcast cluster by id, or unable to resolve the broadcast cluster variable, or the Execution User cannot read the cluster due to security constraints, that the task instance should be Held, with an appropriate Hold Reason, rather than the instance becoming Undeliverable only when eligible to run.	true
Bulk Export Activity Permitted (uc.bulk_export.activity.permitted)	Specification (true or false) for whether or not to permit the Bulk Export Activity server operation to be run.	false
Bundle Exclude On Existence Picker Default (uc.bundle.exclude_on_existence.picker.default)	Default selection for the Exclude on Existence field in both the Bundle Details for a new Bundle and the Promote dialog when promoting one or more individual records, which identifies record types in the promotion payload that will not be updated if they exist on the target server. <p>Use the Shift and/or Ctrl keys to select multiple record types.</p>	(none)
Bundleless Promotion With Execute Permission Permitted (uc.promotion.bundleless.execute_permission.permitted)	Specifies whether or not a bundleless promotion should be limited to users with the ops_promotion_admin role, or if users with promotion target Execute permission should be permitted to perform a bundleless promotion.	false

Name (Property Name)	Description	Default
Business Service Visibility Restricted (uc.bsrvc.visibility_restricted)	<p>Specifies (true or false) if drop-down menus for selecting a Business Service, such as Member of Business Services, should be restricted to displaying only those Business Services for which a user has an assigned or inherited Permission or relevant Roles.</p> <p>If a user has any Permission, directly assigned or inherited, with Member of Any Business Service or Unassigned selected, the user will have no Business Service visibility restrictions.</p> <p>If user is assigned a Permission, directly assigned or inherited, with Not Member of Specific Business Services or Unassigned or Not Member of Specific Business Services selected, then visibility will be granted for every Specific Business Service not specified.</p> <p>For any Permission that the user has, directly assigned or inherited, with an explicit Business Service specified for Member of Business Services, visibility for that specific Business Service will not be restricted.</p> <p>The following Roles, directly assigned or inherited, provide a user with unrestricted Business Service visibility.</p> <ul style="list-style-type: none"> • ops_admin • ops_agent_cluster_admin • ops_bundle_admin • ops_dba • ops_email_admin • ops_oms_admin • ops_peoplesoft_admin • ops_promotion_admin • ops_sap_admin • ops_service • ops_snmp_admin • ops_user_admin <div style="border: 1px solid orange; padding: 10px; margin-top: 10px;"> <p>Note</p> <p>In cases where the user can Read a record that is a member of one or more Business Services, and visibility for one or more of those Business Services is restricted for that user, the user will be able to see the display name of those Business Services in the Member of Business Services field; however, the drop-down will not contain those Business Services for selection.</p> <p>Any attempt to modify the selection of the Member of Business Services field will result in the removal of restricted Business Services from the selection.</p> </div>	false
Calendar Preview Past Period In Months (uc.calendar.preview.past.months)	Number of months (going backwards) to show all Custom Days defined for a calendar in a Calendar Preview .	3
Calendar Preview Future Period In Years (uc.calendar.preview.years)	Number of years (starting from the end of the current year) to show all Custom Days defined for a calendar in a Calendar Preview .	2

Name (Property Name)	Description	Default
CLI/Web Service Result Limit (uc.cli.result_limit)	Maximum number of records that can be retrieved (or matched) for the following: <ul style="list-style-type: none"> • CLI List APIs excluding List Predecessors / Successors of a Task Instance in a Workflow CLI • CLI APIs for limiting matches: <ul style="list-style-type: none"> • Launch a Task • Export Trigger • Disable a Trigger • Enable a Trigger • Launch Trigger Tasks Now • Web Service List APIs: <ul style="list-style-type: none"> • List Task Instances • List Task Instances - Advanced • List Tasks • List Tasks - Advanced • List Triggers • List Triggers - Advanced • List Virtual Resources • List Virtual Resources - Advanced • List Variables • List Variables - Advanced 	1000
Client Export Fetch Limit (uc.export.client.fetch_limit)	Number of records to pre-fetch before performing an export to CSV, PDF, XLS (Excel), or XLSX . Before performing an export, the client will attempt to pre-fetch all list grid data. If after the pre-fetch, the list grid does not contain all matching rows, a warning displays, before continuing with the export, indicating that the export doesn't contain everything.	1000
Compress Bundle Promotion Payload (uc.bundle.payload_compression)	Specification (true or false) for whether or not the Controller will compress record bundles during a promotion.	false
Confirm Enable/Disable Trigger Command (uc.user.confirm.enable.disable.trigger.default)	Specification (yes or no) for whether or not a confirmation pop-up displays if a user selects to enable or disable a trigger.	yes
Confirm Exit (uc.browser.confirm_exit)	Specification (true or false) for whether or not a confirmation pop-up displays if a user navigates away from the Universal Controller user interface (or closes the browser without logging out).	true
Confirm Update For Tasks In Workflows (uc.task.confirm.workflow_update)	Specification (true or false) for whether or not a user, when updating a task , is prompted with a Confirmation dialog listing all Workflows containing that task, since those Workflows could be impacted by the task update.	false
Continue Monitoring Completed Workflows in Workflow Monitor (uc.workflow_monitor.monitor_completed)	Specification (true or false) for whether or not the Controller will continue monitoring completed Workflows in the Workflow Monitor.	false
Create Version On Related List Change (uc.version.on.related.list.change)	Specification (true or false) for whether or not a record version will be created if the user changes a record associated with the current record. For example, if true, the Controller will create a version of the task when the user changes a task variable.	true

Name (Property Name)	Description	Default
Critical Path Calculations Permitted (uc.cp.calculations.permitted)	Specification (true or false) for whether or not a user can use the Critical Path feature of the Controller. <ul style="list-style-type: none"> • If this property is true: <ul style="list-style-type: none"> • The Toggle Critical Path View displays in the Workflow Monitor Toolbar. • The Calculate Critical Path field displays in the Workflow Details. • If this property is false: <ul style="list-style-type: none"> • The Toggle Critical Path View does not display in the Workflow Monitor Toolbar. • The Calculate Critical Path field does not display in the Workflow Details, either to view or modify. • If this property changes from false to true, logged-in users must log off/on to use the Critical Path feature. • If this property changes from true to false, the Critical Path feature will not be honored. However, Workflow Details will be preserved. 	false
Critical Path Color (uc.cp.color)	Hexadecimal color code for the color of the vertices and edges along the Critical Path displayed within the Workflow Monitor while in Critical Path view. Valid values are #[0-9, a-f, A-F] (six characters).	#FF0000 (red)
Critical Path Dynamic Calculation Threshold In Seconds (uc.cp.calculations.dynamic.threshold_in_seconds)	When a task instance completes, if the difference between its end time and its projected end time is greater than or equal to the threshold specified in seconds, a critical path recalculation event will be dispatched. Valid values are 0-600.	0
Critical Path Monitor Polling Interval In Seconds (uc.cp.monitor.polling.interval_in_seconds)	Interval (in seconds) in which that Universal Controller queries for task instances with a status greater than WAITING, and less than SKIPPED, and have elapsed their projected end time. Valid values are 60+.	300
Critical Path Monitor Polling Threshold In Seconds (uc.cp.monitor.polling.threshold_in_seconds)	Threshold (in seconds) that Universal Controller uses to determine if a task instance has elapsed its projected end time when polling. Valid values are 60+.	60
Critical Path Projected Late Action Maximum (uc.cp.projected_late.action.maximum)	Number of times that a task instance can invoke Actions On Projected Late before being muted. As a task instance Projected End Time changes, the Projected Late flag can be set and cleared multiple times. In such situations, this property limits the number of Actions being performed On Projected Late, such as Email Notifications, for a particular instance.	5
Critical Path Projected Late Threshold In Minutes (uc.cp.projected_late.threshold_in_minutes)	Threshold beyond the Late Start Time, Late Start Duration, or Late Finish Time that the projected time must exceed in order for the task instance to be flagged as Projected Late .	5
Custom Day Global Permitted (uc.custom_day.global.permitted)	Specification (true or false) for whether to enable (true) or disable (false) global Custom Days . <div style="border: 1px solid orange; padding: 10px; margin-top: 10px;"> <p>Note</p> <p>You cannot set Custom Day Global Permitted to false if there are any existing global Custom Days.</p> </div>	true
Custom Day Local Indicator Enabled (uc.custom_day.local_indicator.enabled)	Specification (true or false) for whether to enable (true) or disable (false) the Local Custom Day indicator ({L}) for Trigger and Composite Trigger components, Task Run Criteria, and Calendar Preview.	true

Name (Property Name)	Description	Default
Custom Day Strict Mode (uc.custom_day.strict.mode)	Specification (true or false) for whether or not a Custom Day referenced in the Complex section of Task Run Criteria for a task in a workflow must belong to the Calendar in use at run time.	false
Data Backup/Purge Export Path (uc.backup.path)	Export path to use instead of the default export path (<code>uc_backups</code> under the Tomcat directory) for Data Backup/Purge operations.	(none)
Deployment Wait For Running Instances Timeout In Seconds (uc.extension.deployment.wait_timeout_in_seconds)	Specifies the number of seconds to wait before failing the tasks waiting for the deployment.	600
Disable Tab Indicators (uc.disable.tab.indicators)	Specification (true or false) for whether or not to disable the tab icons that indicate if tabs contain (green icon) or do not contain (gray icon) records.	false
Email Body Default Begin Marker (uc.email.body_begin_marker)	Default Begin Marker for Email Monitor Body Variables field.	-- BEGIN --
Email Body Default End Marker (uc.email.body_end_marker)	Default End Marker for Email Monitor Body Variables field.	-- END --
Email Credentials Permitted (uc.credentials.email.permitted)	Specification (true or false) for whether or not to enable the use of Email Credentials.	true
Email Monitor Polling Interval In Seconds (uc.email.monitor.polling.interval_in_seconds)	Number of seconds between each poll of a Mailbox Folder by an Email Monitor task.	120
Email Notification Audit (uc.email.notification.audit)	Specification (Success/Failed or Failed) for how to identify an Email Notification audit.	(none)
Exclude Holidays for Business Days (uc.calendar.exclude_holidays)	<p>Specification (true or false) for whether or not the Controller will consider a Business Day on which a holiday falls as a non-Business Day.</p> <ul style="list-style-type: none"> • If true, holidays that fall on Business Days are considered non-Business Days. • If false (the default), holidays that fall on Business Days are considered Business Days. <p>For example, if the default value (false) is used, and a job is defined to run on Business Days, the job will run on Christmas Day, even though it is a holiday.</p> <p>This behavior applies to Triggers, Task Run Criteria, and JavaScript functions that operate on Business Days, and provides a means to avoid having to specify a restriction or skip criteria for holidays.</p>	false
Expand Lists Automatically (uc.lists.expand_automatically.default)	Specification (Yes or No) for whether or not to Expand Lists by Default in the List / Details views.	No
Export Agent References (uc.export.agent_references)	Specification (true or false) for whether or not the Controller will export referenced Agents when exporting definition XMLs with the Export References feature.	false



Name (Property Name)	Description	Default
Export Path (uc.export.path)	<p>Pathname where exported XML files are written.</p> <p>All cluster nodes use their own local system default export path. You should set a value for Export Path only if the path is writable by all cluster nodes.</p> <div style="border: 2px solid orange; padding: 10px; margin-top: 10px;"> <p>Note</p> <p>Any bulk import or list import of an Export Path property (from version 6.1.1.0 or earlier) will result in the server resetting the database back to the default "unset" Export Path value.</p> <p>Both bulk export and list export will first look for a configured Export Path property. If a value has not been set, they will use the local system default path of <code><tomcat>/uc_export</code>.</p> </div>	(none)
Expose UDM Script (uc.infitran.expose_script)	<p>For debugging use only. Specification (true or false) for whether or not the Controller prepares a script when it launches a file transfer on a UDM installation. If troubleshooting is necessary, enabling this property allows you to view the script in the Output tab on the task instance.</p>	false
Expose Resolved Script (uc.script_library.expose_resolved_script)	<p>Specification (true or false) for whether or not to generate a SCRIPT output type capturing the resolved contents of the Scripts script for each task instance run attempt that utilizes a script from the Scripts. This property only applies to Scripts defined with the Resolve UAC Variables option checked. Any user with the task instance Read permission for a specific task instance will be able to view the SCRIPT output type content for that specific instance.</p> <p>To avoid generating unnecessary output, we recommend enabling this property only for debugging purposes. The unresolved script content can always be viewed from Scripts.</p> <hr/> <p>For Enhanced View SAP Tasks, Specification (true or false) for whether or not to generate a SCRIPT output type capturing the resolved content of the generated SAP Definition Script for each task instance run attempt of an Enhanced View SAP task.</p> <p>To avoid generating unnecessary output, we recommend enabling this property only for debugging purposes.</p>	false
File Transfer Task Exclude Protocols (uc.task.file_transfer.exclude_protocols)	<p>Specification for which protocols will be excluded from the Transfer Protocol field in the File Transfer Task Details:</p> <ul style="list-style-type: none"> • FTP • SFTP • UDM • FTPS • FTPES <p>You can select multiple, but not all, protocols. Also, you cannot exclude a protocol if it is specified in the Transfer Protocol field for any existing File Transfer Task or Task Instance.</p>	
Flatten Reference List Fields In Chart Reports (uc.report.flatten_references)	<p>Specification (true or false) for whether or not to flatten Business Services in Chart reports when grouping by Member of Business Services.</p>	false
Forecast Period in Days (uc.forecast.days)	<p>Number of days to be included in a trigger forecast. See Displaying Trigger Forecast Information.</p>	31
Inherit Actions On Defined For Insert Task (uc.inherit_actions.on_defined.insert_task)	<p>Specification (true or false) for whether or not a task inserted into a Workflow, whose initial inserted status will be Defined, will perform inherited Workflow Actions for the Defined status.</p>	false

Name (Property Name)	Description	Default
LDAP Synchronization Enabled (uc.security.ldap.enabled)	Specification (true or false) for whether or not LDAP synchronization is enabled. This allows you to retain your LDAP Settings while using or not using LDAP authentication, as desired.	false
License Key (uc.license)	License key for your installation; provided to you by your Universal Controller representative.	(none)
List Qualifying Times Format (uc.trigger.date.format.display)	Format that you want the Controller to use when listing qualifying times for Time and Cron Triggers. See List Qualifying Times .	EEEE, MMMMMM dd, yyyy HH:mm:ss z Z
Log File Retention Period in Days (uc.log.retention)	Number of days that the Controller retains its log files.	5
Log Level (uc.log.level)	Level of logging for the Controller: <ul style="list-style-type: none"> • ALL • TRACE • DEBUG • INFO • WARN • ERROR 	INFO
Login Disclaimer (uc.login.disclaimer)	Allows for the specification of free-form text to be displayed at the bottom of the Universal Automation Center Login page .	(none)
Login Notification (uc.login.notification)	Allows for the addition of a pop-up to be displayed on the Universal Automation Center Login page .	(none)
Maximum Extension Deployment Threads (uc.extension.deployment.max_threads)	Maximum number of concurrent threads to handle extension deployments; minimum =1, maximum = 20.	5
Maximum Nested Variable Depth (uc.variable.maximum_depth)	Maximum number of nested variables allowed.	25
Maximum Nested Variable Expansion (uc.variable.maximum_expansion)	Maximum number of nested variable characters allowed.	250000
Maximum Processing Threads (uc.threads.max)	Maximum number of processing threads used.	1000
Maximum Timer Threads (uc.timer.threads.max)	Maximum number of timer threads used.	300
Navigation Auto Collapse (uc.navigation.auto_collapse.default)	Specification (Yes or No) for whether or not the side Navigation Menu on the Home Dashboard collapses by default.	Yes
Navigation Bar Auto Collapse (uc.navigation.bar.auto_collapse.default)	Specification (Yes or No) for whether or not the side Navigation Bar collapses by default.	No
Node Time Display (uc.node_time.display.default)	Specification (Yes or No) for whether or not the User Task Bar will display the Cluster Node time by default.	Yes
Node Time Display Background Color (uc.node_time.display.background_color.default)	Default color to use for the Cluster Node time field background in the User Task Bar .	White
Node Time Display Color (uc.node_time.display.color.default)	Default color to use for the Cluster Node time field in the User Task Bar .	Black
Node Time Display Time Zone (uc.node_time.display.tz.default)	Specification (true or false) for whether to display the time zone of the Server or the User in the Cluster Node time field in the User Task Bar .	Server

Name (Property Name)	Description	Default
OMS Log Level (uc.oms.log.level)		INFO
Open Telemetry Visualization In IFrame (uc.otel.visualization_url.iframe)	Specification (true or false) for whether the Open Telemetry Visualization URL will open in an iframe embedded within a controller application tab (default) or open in a new browser tab.	true
Open Telemetry Visualization URL (uc.otel.visualization_url)	<p>When an Open Telemetry Visualization URL is specified, the Details > Show Trace right-click menu action for a task instance will open the trace visualization URL in an iframe and or new browser tab, depending on the configuration of Open Telemetry Visualization In IFrame.</p> <p>The following tokens are supported within the trace visualization URL.</p> <ul style="list-style-type: none"> • <code>\${traceId}</code> • <code>\${spanId}</code> <p>The URL will be resolved using the specific trace id and span id associated with the task instance.</p> <p>For example,</p> <pre>https://hostname:port/trace/\${traceId}?uiFind=\${spanId}&uiEmbed=v0 → https://hostname:port/trace/a629c8a23114d1a6fafc03291c672f68?uiFind=eb17913c4fa001f9&uiEmbed=v0</pre> <div style="border: 1px solid orange; padding: 5px; margin-top: 10px;"> This is only applicable if you have configured an Open Telemetry Trace exporter. </div>	(none)
Operational Memo Reset On Re-run uc.task_instance.operational_memo.reset_on_re-run	Specification (true or false) for whether or not to reset the Operational Memo field on a task instance re-run.	true
Perform Actions On Defined For Tasks Within Skipped Workflow (uc.perform_actions.on_defined.tasks_within_skipped_wf)	Specification (true or false) for whether or not tasks within a workflow that is being skipped due to trigger-time run criteria should perform Actions on Defined status and evaluate their own run criteria.	false
Perform Actions On Defined Workflow First (uc.perform_actions.on_defined.wf_first)	<p>Specification (true or false) for whether or not to allow a workflow, on Defined status, to process its own Actions prior to processing any Actions for its children task instances on Defined status.</p> <p>This might be leveraged if, on Defined status, a workflow initializes a variable using the Set Variable Action, and a child task instance, also on Defined status, leverages that same variable in its own Set Variable Action.</p>	false
Perform Actions On Halt (uc.perform_actions.on_halt)	Specification (true or false) for whether or not to allow the triggering of notifications for a task instance status change to Finished when issuing a Force Finish (Halt) or Force Finish/Cancel (Halt) command.	true
Picker Fetch Limit (uc.picker.fetch_limit)	<p>Fetch limit for all picker windows; minimum =200, maximum = 1000.</p> <p>For example, the value of this property determines how many tasks can be fetched at any one time for stonebranchbundle-01.</p>	200

Name (Property Name)	Description	Default
Platform Log Level (uc.platform.log.level)	Level of logging for the user interface framework: <ul style="list-style-type: none"> • ALL • TRACE • DEBUG • INFO • WARN • ERROR • OFF 	WARN
Promote By Business Service Membership Permitted (uc.bundle.promote_by_bsrvc_membership.permitted)	Specification (true or false) for whether or not you can promote a Bundle by Business Service Membership . You cannot set this property to false if the Promote Members of Business Services or Visible To field in any Bundle records has a non-empty value. Also, if the property is set to false: <ul style="list-style-type: none"> • If the Promote Members of Business Services or Visible To field in a Bundle record has a non-empty value, Bundle promotion (including schedule Bundle promotion) is prohibited for that record. • If the Promote Members of Business Services and Visible To field in a Bundle record has an empty/blank value, the Promote By Business Service Membership section will be hidden for this record. 	true
Promotion Follow References Permitted (uc.promotion.follow_references.permitted)	Specification (true or false) for whether or not to permit utilizing follow reference option for Promotion.	true
Promotion Follow Report References (uc.promotion.report.follow_references)	Specification (true or false) for whether or not to promote referenced reports in an email task or email notification when Follow References is true for the promotion.	true
Promotion History Retention Period in Days (uc.promotion_history.retention)	Number of days that the Controller retains Promotion History .	60
Promotion Schedule Retention Period In Days (uc.promotion_schedule.retention)	Number of days that a Promotion Schedule will remain available after the promotion has completed successfully.	7
Promotion Validate Report References (uc.promotion.report.validate_references)	Specification (true or false) for whether or not to implement report-related promotion validation . <div style="border: 2px solid orange; padding: 10px; margin: 10px 0;"> This property applies to the target system to which a promotion payload is being promoted. </div>	true
Purge Activity By Primary Key Limit (uc.backup.purge_by_primary_key.limit)	Number of task instances to purge per transaction while performing the Activity purge (by primary key).	500
Purge All Non-Default Users And Groups Permitted (uc.purge.non_default_users_and_groups.permitted)	Specification (true or false) for whether or not to allow the Purge All Non-Default Users And Groups Server Operation to be run.	false
Purge Dates From Custom Day List Older Than (uc.custom_day.purge_dates_older_than)	Number of days old (1-999) that a date in a Custom Day List of Dates will cause it to be purged automatically.	(none)
Re-run (Suppress Intermediate Failures) Permitted (uc.task_instance.rerun.suppress_intermediate_failures.permitted)	Specification (true or false) for whether or not you can manually Re-run a task instance specifying that intermediate failures be suppressed.	true

Name (Property Name)	Description	Default
Reconcile Built-In Universal Template Changes On Promotion (uc.promotion.universal_template.system_template.reconcile_changes)	Controls the promotion behavior when promoting a Universal Task based on a built-in Universal Template that has changed.	false

Name (Property Name)	Description	Default
<p>Record New In Tab (uc.record.new_in_tab.default)</p>	<p>Specification (Yes or No) for whether or not to display the new record editor under a new tab when clicking on the following icons:</p> <ul style="list-style-type: none"> •  for non-related record list •  from the Services menu • New Task... in workflow editor <p>Click here to see list of affected record types...</p> <ul style="list-style-type: none"> • Agent Cluster • Task • Trigger • Application • Back up & Purge • Bundle • Bundle Target • Calendar • Credentials • Custom Day • Database/Email/Peoplesoft/SAP Connection • Email Template • Business Services • Filter • OAuth Client • Oms Server • Report • Script • Simulation • Universal Event Template • Universal Template • User • Group • Global Variable • Virtual Resource • Webhook • Task Instance • Audit • Agent • Promotion History Item • Trigger Forecast • History • Widget • Color • Promo History • Promo Schedule • Cluster Node • Version (of the above types) 	<p>No</p>

Name (Property Name)	Description	Default
Record Open In Tab (uc.record.open_in_tab.default)	<p>Specification (Yes or No) for whether or not to display the record Details under a new tab when double clicking (or clicking on the icon) for a record in the following cases:</p> <ul style="list-style-type: none"> • Any non-related record list • Workflow tree • Workflow timeline <p>Click here to see list of affected record types...</p> <ul style="list-style-type: none"> • Agent Cluster • Task • Trigger • Application • Back up & Purge • Bundle • Bundle Target • Calendar • Credentials • Custom Day • Database/Email/Peoplesoft/SAP Connection • Email Template • Business Services • Filter • OAuth Client • Oms Server • Report • Script • Simulation • Universal Event Template • Universal Template • User • Group • Global Variable • Virtual Resource • Webhook • Task Instance • Audit • Agent • Promotion History Item • Trigger Forecast • History • Widget • Color • Promo History • Promo Schedule • Cluster Node • Version (of the above types) 	No

Name (Property Name)	Description	Default
Recurring Task Launch Skip Condition Default (uc.recurring.task.skip_condition.default)	Default value of the Task Launch Skip Condition field for a Recurring Task : <ul style="list-style-type: none"> • None • Active • Active By Recurring Task Instance 	None
Recurring Task Minimum Frequency In Seconds (uc.recurring.task.minimum_frequency_in_seconds)	Minimum duration, in seconds, that a Recurring Task can have for a Recurrence Interval . The minimum value is 0.	5
Reference New In Tab (uc.reference.new_in_tab)	Specifies whether to use the currently defined system default, or to select Yes or No , for whether or not to display the record Details under a new tab when creating a reference record.	No
Reference Open In Tab (uc.reference.open_in_tab.default)	Specification (Yes or No) for whether or not to display the record Details under a new tab when viewing a reference field.	No
Remote File Monitor Task Exclude Protocols (uc.task.ftp_file_monitor.exclude_protocols)	Specification for which protocols will be excluded from the Server Type field in the Remote File Monitor Task Details: <ul style="list-style-type: none"> • FTP • SFTP • FTPS • FTPES You can select multiple, but not all, protocols. Also, you cannot exclude a protocol if it is specified in the Server Type field for any existing Remote File Monitor Task or Task Instance.	
Report Average Color (uc.report.average_color.default)	Specification of the default hexadecimal color of the average line when using the Show Average option on Bar Chart/Horizontal and Bar Chart/Vertical reports .	#000000
Report Group Threshold (uc.report.group_threshold.default)	If the Group Threshold field on the Report is -- System Default --; Maximum number of groups to display on a Chart report . All groups above the threshold will be displayed in one group named Other. <div style="border: 1px solid orange; padding: 5px; margin-top: 10px;"> <p>Note This option formerly was named System Default Report Group Threshold.</p> </div>	10
Report Threshold Color (uc.report.threshold_color.default)	Specification of the default hexadecimal color of the threshold line when using the Show Threshold option on Bar Chart/Horizontal and Bar Chart/Vertical reports .	#000000
Resolvable Credentials Permitted (uc.credentials.resolvable.permitted)	Specification (true or false) for whether or not the use of Resolvable Credentials is enabled.	false
Retain Overridden Step Codes On z/OS Task Re-run (uc.task_instance.rerun.zos.retain_step_codes)	Specification (true or false) for whether or not a changed return code of a previously executed step in a z/OS task is retained when the task is re-run.	false
Retrieve Output Default Number Of Lines (uc.retrieve_output.maximum_lines)	Specifies the default value for the Number of Lines field on the Retrieve Output dialog. Additionally, if the Number of Lines field is blank, it specifies the limit for the number of lines retrieved when Automatic Output Retrieval is enabled on a task.	100
Retrieve Output Maximum Lines (uc.retrieve_output.maximum_lines.limit)	Specifies the maximum number of lines that can be requested when retrieving output .	(none)

Name (Property Name)	Description	Default
SAP Credential Type Required (uc.task.sap.credential_type.required)	Specification (true or false) for whether or not an SAP task will only accept SAP Credentials (as opposed to other Credential Types).	false
SAP Task ABAP Program Name Fetch Limit (uc.task.sap.abap_program.fetch_limit)	Specifies the maximum number of results (10-5000) that can be retrieved from the SAP system for ABAP Program Name dynamic choice select item.	500
SAP User Name Restricted (uc.task.sap.username.restricted)	Specification (true or false) for whether or not the SAP User Name for an SAP Job Step can only be specified by SAP User Credentials .	false
Scheduled Report 3D Pie Chart (uc.report.scheduled.3d_pie_chart.default)	Specification (Yes or No) for whether Pie Chart reports are rendered in 2D (No) or 3D (Yes).	No
Scheduled Report Fetch Limit (uc.report.scheduled.fetch_limit)	Maximum number of records to fetch for inclusion in a List report (minimum is 1; no maximum). The report will indicate if the specified maximum has been reached.	1,000
Scheduled Report Image Height (uc.report.scheduled.image_height.default)	Specification for the height (in pixels) of PNG chart report images.	500
Scheduled Report Image Width (uc.report.scheduled.image_width.default)	Specification for the height (in pixels) of PNG chart report images.	750
Scheduled Report Inline Image (uc.report.scheduled.inline_image.default)	Specification (Yes or No) for whether to inline chart report images within the email (Yes) or include them as attachments (No). If any other attachments, such as standard error and standard output, are included, this property does not apply; the chart report image will be delivered as an attachment.	Yes
Scheduled Report PDF Orientation (uc.report.scheduled.pdf.orientation.default)	Specification (Landscape or Portrait) for the page layout of the PDF.	Landscape
Scheduled Report PDF Size (uc.report.scheduled.pdf.size.default)	Specification (Letter, Legal, or A4) for the page size of the PDF.	Letter
Scheduled Report Time Zone (uc.report.scheduled.tz.default)	Specification for whether to obtain the time zone from the Server (Server) or from the User record of the Execution User (User). This property applies to all report types (List, Bar Chart/Horizontal, Bar Chart/Vertical, and Pie Chart).	Server
Script Resolve Variables Default (uc.script.variables.resolve.default)	Specification (true or false) for whether or not the Resolve UAC Variables option in scripts is enabled by default.	false
Show Last Login (uc.login.show_last_login)	Specification (true or false) for whether or not the last login time is shown in the console when logging into the user interface. For more information and examples, see Show Last Login .	true
Show Metadata (uc.form.show_metadata.default)	Specification (Yes or No) for whether or not the Metadata section displays automatically in the the Details of all Controller records. You can override this system default configuration by customizing the Show Metadata user preference.	No
Show Variables Fetch Global Automatically (uc.show_variables.fetch_global.default)	Specification (Yes or No) for whether or not to fetch and display Global Variables automatically for the Show Variables action. If No, the visibility of Global Variables in Show Variables can still be toggled, on demand, by the Show Global and Hide Global buttons. You can override this system default configuration by customizing the Show Variables Fetch Global Automatically user preference.	No

Name (Property Name)	Description	Default
SMTP Debug (uc.smtp.debug)	Specification (true or false) for whether or not additional debug information about any Email Connection issues (for example, Email Connection Test fails or errors while sending emails) will be included in the log.	false
SQL/ Stored Procedure Close Additional Results Sets (uc.sql_handler.close_additional_result_sets)	Specification (true or false) for whether or not to close any additional Result Sets if multiple Result Sets have been returned by SQL or Stored Procedure tasks. <div style="border: 1px solid orange; padding: 5px; margin-top: 10px;"> <p>Note</p> <p>You should not change this property to false unless there is a backwards compatibility issue.</p> </div>	true
SQL/ Stored Procedure Ignore Update Count If No Results (uc.sql_handler.update_count.ignore_if_no_results)	Specification (true or false) for whether or not to create a SQL Results record for rows affected when no results (result sets or update counts) are returned by SQL or Stored Procedure tasks.	false
SQL/Stored Procedure Maximum Rows (uc.sql_handler.maximum_rows)	Specifies the maximum number of rows that can be returned from an SQL task or Stored Procedure task .	(none)
Start Server Paused (uc.startup.paused)	Specification (true or false) for whether or not a Universal Controller cluster node should become paused when starting up. <div style="border: 1px solid orange; padding: 5px; margin-top: 10px;"> <p>Note</p> <p>This property is applicable only for a Universal Controller cluster node that is starting up. Any cluster node that has already started will not be impacted. Once a cluster node is in paused mode, it will remain in paused mode until running the Resume Cluster Node server operation for that specific cluster node.</p> </div>	false
Stop Unknown Application Monitors (uc.application.stop_unknown_monitors)	Specification (true or false) for whether or not to stop any application monitors currently running on an Agent if the Controller is no longer managing those monitors (Windows and Linux/Unix only).	false
Strict Dashboard Create Constraints (uc.dashboard.create_constraints.strict)	Specification (true or false) for whether or not to restrict dashboard creation only to users with the ops_admin, ops_report_admin, ops_dashboard_group, or ops_dashboard_global role .	false
Strict Report Create Constraints (uc.report.create_constraints.strict)	Specification (true or false) for whether or not to restrict report creation only to users with the ops_admin, ops_report_admin, ops_report_group, or ops_report_global role .	false
System Default Activity Quick Filters (uc.activity.quick_filters.default)	Task instance status types to include in the Active, Blocked, Completed, and Problem Quick Filters . You can add statuses to or delete statuses from any of these Quick Filter. You also can delete any of these Quick Filters and create your own Quick Filters.	Active=!180,!190,!200; Blocked=10,20,23,30,33,60; Completed=180,190,200; ; Problem=35,81,99,110,120,125,130,140

Name (Property Name)	Description	Default
System Default CLI Bulk Import Path (uc.bulk_import.path.default)	Pathname from where imported XML files are written.	<pre><tomcat-home>/uc_import or <tomcat-home>\uc_import</pre> <p>(<tomcat-home> is the base tomcat installation directory.)</p>
System Default Command Line Access (uc.user.command_line.default)	Specification (Yes or No) for all users whose Command Line access field in their User Details is set to -- System Default --, for whether or not to control a user's ability to access the Controller through the Command Line Interface (CLI).	Yes
System Default Confirm Launch Command (uc.user.confirm.launch.default)	Specification (Yes or No) for whether or not a user is prompted with a Confirmation dialog when issuing the Launch command. <div data-bbox="504 831 1291 1039" style="border: 1px solid orange; padding: 5px; margin-top: 10px;"> <p>Note</p> <p>If a task is launched that has been modified but not saved, a Confirmation dialog displays even if the System Default Confirm Launch Command is set to No.</p> </div>	Yes
System Default Confirm Task Instance Commands (uc.user.confirm.task_instance.commands.default)	Specification (Yes or No) for whether or not to enable command confirmations when issuing commands against task instances.	No
System Default Maximum Versions (uc.version.maximum.default)	Maximum number of version records (1 to 255) to maintain per definition.	100
System Default Trigger Simulate Forecast (uc.trigger.simulation)	Specification (true or false) for whether or not to simulate the launching of tasks when triggers are eligible to fire. If simulation is enabled, only the scheduled launch of the task by the trigger is inhibited. All other aspects of the trigger execution, including generation of forecast data, are enabled. <p>You can still force a trigger by using the Trigger Now command or launch a task by using the Launch command.</p>	false
System Default Update Virtual Resource Limit On Promotion (uc.promotion.virtual_resource.update_limit.default)	Specification (Yes or No) for whether or not virtual resource limits are updated as part of a promotion .	Yes
System Default Wait/Delay Workflow Only (uc.timewait.workflow.only.default)	Specification (Yes or No) for whether or not to apply Wait/Delay Options to a task only if it runs within a workflow.	Yes
System Default Web Browser Access (uc.user.browser.default)	Specification (Yes or No), for all users whose Web Browser access field in their User Details is set to -- System Default --, for whether or not to control a user's ability to access the Controller through the user interface.	Yes
System Default Web Service Access (uc.user.web_service.default)	Specification (Yes or No), for all users whose Web Service access field in their User Details is set to -- System Default --, for whether or not to control a user's ability to access the Controller through the RESTful Web Services API.	Yes

Name (Property Name)	Description	Default
System Details Database Information Restricted (uc.widget.system_details.db_info_restricted)	Specification (true or false) for whether or not the following database information on the System Details widget is visible only to users assigned the ops_admin role or ops_server_operation_admin role: <ul style="list-style-type: none"> • Database Type • Database Name • Database URL • Database Connections These restrictions apply no matter where the System Details widget is accessed from: <ul style="list-style-type: none"> • Home Dashboard • Custom Dashboard • Widget List Preview • System Identifier on User Task Bar • System Clock on User Task Bar 	
System Details Expanded Categories (uc.widget.system_details.expanded.default)	Specification for which System Details widget categories to expand by default: <ul style="list-style-type: none"> • Cluster Node • Release • Memory • License • Database 	Cluster Node
System Identifier (uc.system_identifier)	User-selected name displayed in the System Identifier field on the User Task Bar.	(none)
System Identifier Background Color (uc.system_identifier.background_color)	Background color for the System Identifier field on the User Task Bar.	black
System Identifier Color (uc.system_identifier.color)	Text color for the System Identifier field on the User Task Bar.	white
Task Automatic Output Retrieval Default (uc.task.output_return_type.default)	Default Automatic Output Retrieval field value for Windows and Linux/Unix tasks and for Universal Templates .	None
Task Field Resolution Required (uc.task.field.resolution.required)	Specification (true or false) for whether or not a task instance transitions to Start Failure if qualifying fields - such as Command, Script, Parameters (including z/OS Parameters), and Environment Variables - remain unresolved at runtime.	false
Task Instance Normalize Business Service Membership (uc.task_instance.normalize_bsrvc)	Indicates if the Universal Controller is normalizing Business Service membership for Task Instance and History records: <ul style="list-style-type: none"> • Disabled Business Service normalization is not enabled. • Enabled/Normalizing Business Service normalization is enabled. New Task Instance and History records are being normalized; however, existing Task Instance and History record normalization has not completed. • Enabled/Normalized Business Service normalization is enabled. New Task Instance and History records are being normalized, and normalization of existing Task Instance and History records has completed. <div style="border: 2px solid orange; padding: 10px; margin-top: 10px;"> <p>Note</p> <p>This property is read-only. It can be updated only by running the Enable Task Instance Business Service Normalization and Disable Task Instance Business Service Normalization server operations.</p> </div>	Disabled

Name (Property Name)	Description	Default
Task Launch Reason Required (uc.task.launch_reason.required)	Specification (true or false) for whether or not a new field, launch reason, will be added to the manual launch command of a task or trigger and these details will be added to the Notes section of the task instance details.	false
Task Output Path Functions Permitted (uc.task.output_path.functions.permitted)	Specification (true or false) for whether or not Output Path tokens generated by Task Instance Output Path and Sibling Task Instance Output Path functions are permitted.	true
Task Retry Maximum (uc.task.retry_maximum)	Specification for whether or not to enforce a maximum number of task instance retries. Valid values: <ol style="list-style-type: none"> 1. blank: No limit on Maximum Retries; Retry Indefinitely is permitted. 2. >=1: Limit on Maximum Retries; Retry Indefinitely is not permitted. <div style="border: 1px solid orange; padding: 5px; margin-top: 10px;"> <p>Note</p> <p>If any current tasks are in violation of the selected >=1 Task Retry Maximum, an error message will occur. To see which tasks have a Maximum Retries value specified, or have Retry Indefinitely selected, run a Report on all tasks or display the Maximum Retries and Retry Indefinitely columns on the All Tasks list.</p> </div>	blank
Task Simulation Permitted (uc.task.simulation.permitted)	Specification (true or false) for whether or not the simulation feature is enabled. When disabled: <ul style="list-style-type: none"> • Simulation service no longer available from Services menu. • Auto open for Simulation tab ignored. • Simulate option no longer available from Task, Task Instance and Trigger forms. • Simulate option no longer available from Launch with Variables... and Trigger Now... commands. 	true
Task Time Zone Preference (uc.task.time_zone_preference.default)	Specification (Server or Inherited) for whether the time zone for a task is evaluated on the time zone of the server or the time zone of the Parent Workflow or Trigger / Launch specification.	Server
Task Variable Path Function Permitted (uc.task.variable_path.function.permitted)	Specification (true or false) for whether or not task variable path function is permitted.	true
Task Wait For Output Timeout In Seconds (uc.task.wait_for_output.timeout_in_seconds)	If Wait For Output is enabled for a task where automatic output retrieval is selected (potentially, to be used by a successor task); Length of time (in seconds) that the task will wait (that is, remain Running) until the output is returned by the Agent so that the successor task does not run before the output is available.	60
Time Trigger Minimum Frequency In Seconds (uc.trigger.time.minimum_frequency_in_seconds)	Minimum frequency - in seconds - of the Time Interval for a Time Trigger.	5

Name (Property Name)	Description	Default
Track Counts For Unlimited Execution Limit (uc.execution_limit.unlimited.counts)	Specification (true or false) for enabling the tracking of task instances running concurrently if the Task Execution Limit field for an Agent or Agent Cluster is set to Unlimited . The following restrictions apply to this property: <ul style="list-style-type: none"> • If you change this property, all UI behavior based on this property will require logging out/logging in to take effect. • You cannot change this property from false to true while there are one or more task instances running against an Agent and/or Agent Cluster. • If you change this property from false to true, all Agents and Agent Clusters will begin tracking task counts. • If you change this property true to false, all Agents and Agent Clusters that are not Limited will have their Current Count column set to 0. • If this property is false, and an Agent or Agent Cluster is Unlimited, the Current Count column will display as blank in the list and will be hidden in the Agent / Agent Cluster Details. • If this property is true, and an Agent or Agent Cluster is Unlimited, the Current Count column will display the current count and the current count will be visible in the Agent / Agent Cluster Details. • If this property is false, and you change an Agent / Agent Cluster from Limited to Unlimited, the current count will be reset back to 0. • If this property is true or false, and you change an Agent / Agent Cluster from Unlimited to Limited, the current count will be reset back to 0. <div style="border: 1px solid orange; padding: 5px; margin-top: 10px;"> <p>Note For optimal performance, we recommend that you leave this property set to false.</p> </div>	false
Trigger Task Launch Skip Condition Default (uc.trigger.skip_condition.default)	Default value of the Task Launch Skip Condition field for all trigger types: <ul style="list-style-type: none"> • None • Active • Active By Trigger 	None
Universal Event Extension Publish Audit (uc.universal_event.publish.extension.audit)	Specification (true or false) for whether or not an audit record is generated for each Universal Event published through an Extension-based Universal Task Instance. <div style="border: 1px solid orange; padding: 5px; margin-top: 10px;"> <p>Note Enabling this property can cause a large amount of audit to be generated.</p> </div>	false
Universal Event Web Service Publish Audit (uc.universal_event.publish.web_service.audit)	Specification (True or false) for whether or not an audit record is generated for each Universal Event published through the Web Service API. <div style="border: 1px solid orange; padding: 5px; margin-top: 10px;"> <p>Note Enabling this property can cause a large amount of audit to be generated.</p> </div>	false
Universal Task Interact with Desktop Permitted (uc.task.universal.interact_with_desktop.permitted)	Specification (true or false) for whether or not to permit utilizing Interact with Desktop option for Universal Task.	false

Name (Property Name)	Description	Default
Universal Template Extension Maximum Bytes (uc.universal_template.extension.maximum_bytes)	Maximum number of bytes (6000000 - 1000000000) for a Universal Template Extension Archive. <div style="border: 1px solid red; padding: 10px;"> <p>If you are deploying large extensions, it is important that you configure the Java heap size adequately.</p> <p>Things to consider.</p> <ul style="list-style-type: none"> • # of agents configured to accept the extension(s). • # of agents configured to deploy on-registration and how many would be registering simultaneously. • # of parallel, on-demand deployments, where deployment happens the first time the extension needs to execute on a specific agent. </div>	6000000
URL Action Parameter Enabled (uc.url.action_parameter.enabled)	Specification (true or false) for whether or not to enable the URL Action parameter, which lets you automatically perform an action in the user interface.	true
Use Checksum Validation (uc.use.checksums)	Specification (true or false) for whether or not to implement checksum validation in order to prevent tampering of Controller data outside of the Controller system.	false
Use Dashboard Visibility Icons (uc.dashboard.use_visibility_icons.default)	Specification (Yes or No) of the system default for the Use Dashboard Visibility Icons user preference.	Yes
User Defined Task Field 1 Label (uc.task.custom_field1.label)	Label for this user-defined field that will display in the General Information section of the Details for all existing and new tasks and task instances.	(none)
User Defined Task Field 1 Required (uc.task.custom_field1.required)	Specification (true or false) for whether or not User Defined Task Field 1 is required.	false
User Defined Task Field 2 Label (uc.task.custom_field2.label)	Label for this user-defined field that will display in the General Information section of the Details for all existing and new tasks and task instances.	(none)
User Defined Task Field 2 Required (uc.task.custom_field2.required)	Specification (true or false) for whether or not User Defined Task Field 2 is required.	false
User Defined Trigger Field 1 Label (uc.trigger.custom_field1.label)	Label for this user-defined field that will display in the General Information section of the Details for all existing and new triggers.	(none)
User Defined Trigger Field 1 Required (uc.trigger.custom_field1.required)	Specification (true or false) for whether or not User Defined Trigger Field 1 is required.	false
User Defined Trigger Field 2 Label (uc.trigger.custom_field2.label)	Label for this user-defined field that will display in the General Information section of the Details for all existing and new triggers.	(none)
User Defined Trigger Field 2 Required (uc.trigger.custom_field2.required)	Specification (true or false) for whether or not User Defined Trigger Field 2 is required.	false

Name (Property Name)	Description	Default
User Interface Density (uc.user_interface.density.default)	Default density setting (font and control size offset) for the user interface: <ul style="list-style-type: none"> • Dense (-2) • Compact (-1) • Standard (0) • Expanded (+1) • Spacious (+2) When the User Interface Density user preference is – System Default –, this property specifies the density to be used.	Standard
User Interface Theme (uc.user_interface.theme.default)	Default display theme to use for the user interface: <ul style="list-style-type: none"> • Light • Dark When the User Interface Theme user preference is – System Default –, this property specifies the theme to be used.	Light
Virtual Page Fetch Limit (uc.virtual_page.fetch_limit)	Virtual page size to be used when scrolling in a list.	100
Virtual Page Pick List Fetch Limit (uc.virtual_page.pick_list.fetch_limit)	Virtual page size to be used when scrolling the options in a drop-down list that are bound by another data source (for example, the Task To Monitor drop-down list options in the Task Monitor Task Details).	100
Wait For Running Extensions To Complete Before New Deployment (uc.extension.deployment.wait_for_running_tasks)	Specification (true or false) for whether or not an extension deployment to an Agent will wait for any currently running Task Instances of that Template on that same Agent.	true
Web Service Application Concurrent Request Limit (uc.web_service.application.concurrent_request_limit)	Controls the number of concurrent requests for the application (that is, the Universal Controller server). The application-level concurrent request limit cannot be less than 1 or less than the user-level concurrent request limit (if specified).	(none; that is, no limit)
Web Service Basic Auth Permitted (uc.web_service.basic_auth.permitted)	Specification (true or false) for whether or not Basic Authentication is permitted for the controller Web service APIs.	true
Web Service Credentials Permitted (uc.credentials.web_service.permitted)	Allows enabling/disabling the use of Web Service credentials. <ul style="list-style-type: none"> • If false: <ul style="list-style-type: none"> • Creation of new Web Service credentials will be prohibited. • All Web Service Task Instances using authentication will transition into the Start Failure status. • If false on a target Controller to which you are promoting, the promotion will fail. 	true
Web Service Default Response Content (uc.web_service.response.content.default)	Default type of content, XML or JSON, for web service responses.	XML
Web Service Memory Utilization Threshold (uc.web_service.memory.utilization.threshold)	Percentage of allocated memory in use that defines a threshold for prohibiting access to the RESTful Web Service API. The threshold must be a whole number (integer) and cannot be less than 1 or more than 99.	(none; that is, no threshold)
Web Service Personal Access Token Auth Headers (uc.web_service.personal_access_token_auth_headers)	Specifies a comma-delimited list of alternative authorization headers where a Personal Access Token can be specified for Web Service authentication. See Web Service authentication examples.	(none)

Name (Property Name)	Description	Default
Web Service Personal Access Token Auth Permitted (uc.web_service.personal_access_token_auth.permitted)	Specification (true or false) for whether or not Personal Access Token Authentication is permitted for the controller Web Service APIs.	true
Web Service Personal Access Token Maximum Expiration In Days (uc.web_service.personal_access_token.maximum_expiration_in_days)	Controls the maximum expiration day for a web service personal access token. If specified, expiration for any newly generated Personal Access Token must be within the maximum.	(none; that is, no limit)
Web Service Task Insecure Permitted (HTTP) (uc.task.web_service.http.insecure.permitted)	Specification (true or false) for whether or not an Insecure field is added to Web Service tasks. which can allow the Web Service task to proceed with a TLS/SSL connection that is considered insecure. <div data-bbox="504 703 1291 887" style="border: 1px solid orange; padding: 5px; margin-top: 10px;"> <p>Note</p> <p>This property cannot be set to false if there are existing Web Service tasks with Insecure enabled.</p> </div>	false
Web Service Task Output MIME Type Exclusion List (HTTP) (uc.task.web_service.output.mime_type.exclusion_list)	List of content-types, such as binary, that are discarded to avoid being stored as Web Service Task output, which are not supported and can lead to task instance run failure.	image/*,audio/*,video/*,application/pdf
Web Service Task Resolvable Credentials Functions Permitted (uc.task.web_service.credentials.resolvable.functions.permitted)	Specification (true or false) for whether or not to permit Resolvable Credential functions support in Web Service tasks. <div data-bbox="504 1160 1291 1368" style="border: 1px solid orange; padding: 5px; margin-top: 10px;"> <p>Note</p> <p>In order to enable Resolvable Credential functions support for Web Service Task, this property and the Resolvable Credentials Permitted system property must set to true.</p> </div>	false
Web Service Task System Proxy Property Inheritance (HTTP) (uc.task.web_service.http.proxy_property_inheritance)	Specification (true or false) for whether or not to use the Java proxy system properties for HTTP Web Service tasks.	false
Web Service Task Timeout (uc.task.web_service.timeout)	Number of seconds to wait for the request to complete, if a Timeout value is not specified for a Web Service task.	60
Web Service Task URL Whitelist Regular Expression (uc.task.web_service.url.whitelist)	Regular Expression that specifies the URLs supported by the Web Service task. (The default value specifies that all URLs are supported.) <p>If you have a specific regex that you want to be case-insensitive, pre-pend the following option to the regex: <code>(?i)".(?)i</code></p>	^https?://.+
Web Service User Concurrent Request Limit (uc.web_service.user.concurrent_request.limit)	Controls the number of concurrent requests per unique user ID. <p>The user-level concurrent request limit cannot be less than 1 or greater than the application-level concurrent request limit (if specified).</p>	(none; that is, no limit)

Name (Property Name)	Description	Default
Windows/Linux Scripts Permitted (uc.script.distributed.permitted)	Specification (true or false) for whether to enable (true) or disable (false) the use of the Script type. <div style="border: 1px solid orange; padding: 5px; margin-top: 10px;"> <p>Note</p> <p>You can set Windows/Linux Scripts Permitted to false only if currently there are no Script types defined in the database.</p> </div>	true
Windows Task Interact with Desktop Permitted (uc.task.windows.interact_with_desktop.permitted)	Specification (true or false) for whether or not to permit utilizing Interact with Desktop option for Windows Task.	false
Workflow Monitor Task Description Enabled (uc.workflow.monitor.task.description.enabled)	Specification (true or false) for whether to enable (true) or disable (false) the display of a Task Description field in the Task Instance Details for a task instance in a Workflow Monitor.	true
Workflow Search Result Limit (uc.workflow.search_result_limit)	Results limit when querying for task records from the Task Find or Open Workflow pop-up.	200
z/OS Task Increment Number Of Override Instances On Force Finish (uc.task.zos.override_run_count.increment_on_force_finish)	Specifies (true or false) if the Number Of Override Instances should be incremented when a z/OS task instance is force finished, like it does when completed successfully. Once incremented, if the Number Of Override Instances is greater than or equal to the z/OS task instance Override Instance Count for Deletion , the controller will automatically request the agent delete the override JCL.	true

16.3.1 Overriding Universal Controller System Properties

You can override any Universal Controller system property by adding it to the [Universal Controller Start-up Properties \(uc.properties\)](#) file and [restarting the Controller](#).

Any Universal Controller system property added to `uc.properties` must be in the same format as the `uc.properties` properties: `<Property Name>=<value>`. For example: `uc.startup.paused=true`

When the restarted Controller reads the `uc.properties` file, it updates the database with the value of any Universal Controller system property included in the file. It then removes that property from the file.

16.3.2 Deprecated System Properties

The following system properties have been deprecated and hidden in Universal Controller. However, if you have upgraded Universal Controller from a release earlier than 7.1.0.0, you may still see them in your System Properties list.

Name (Property Name)	Description	Default	Release Deprecated
Promotion Accept Bundle Create/ Update Permission Required (opswise.promotion.accept_bundle.create_u pdate_permission.required)	Specification (true or false) for whether or not the <code>ops_promotion_admin</code> role additionally requires Create (or Update) permission , on the target Universal Controller, for any record type being promoted. Any user without the <code>ops_promotion_admin</code> role always will require Create (or Update) permission, regardless of this property.	true	6.9.0.0
Promotion Read Permission Required (opswise.promotion.read_permission.require d)	Specification (true or false) for whether or not the <code>ops_promotion_admin</code> role additionally requires Read permission , on the source Universal Controller, for any record type being promoted. Any user without the <code>ops_promotion_admin</code> role always will require Read permission, regardless of this property. <div style="border: 1px solid orange; padding: 5px; margin-top: 10px;"> <p>Note</p> <p>If false, any user with the <code>ops_promotion_admin</code> role automatically is granted Read permission for any record that can be promoted.</p> </div>	true	6.9.0.0
Promotion Strict Mode (uc.promotion.strict_mode)	Specification for whether or not to fail a promotion if a record being promoted matches both of the following target records conditions simultaneously : <ul style="list-style-type: none"> • Record with same name / different sysid • Record with different name / same sysid If the record being promoted matches a target record by only one of the above conditions , the Controller will allow the promotion to continue. Depending on which condition you match, you will see the following result. <ul style="list-style-type: none"> • If the record being promoted matches a target record with same name / different sysid, the id mismatch will be logged in this format: <div style="border: 1px solid gray; padding: 10px; margin-top: 10px;"> <pre>Promoted {type} with name "name" and id 3c7a1b3c422049cab796e98fb5420ff3 has a different id than the original "name" with id 7b91616ff0dc431b9ae011f6e795806e.</pre> </div> • If the record being promoted matches a target record with different name / same sysid, it is considered a name update and the name mismatch will not be logged. Valid values are 0 (allow) and 1 (fail).	1	7.4.0.0

Name (Property Name)	Description	Default	Release Deprecated
Strict Business Service Membership Read Constraints (opswise.read_constraints.bsvc_membership_strict)	<p>Specification (true or false) for whether the Controller will enforce explicit Read permission for the following record types:</p> <ul style="list-style-type: none"> • Agent • Agent Cluster • Calendar • Credential • Database Connection • Email Connection • Email Template • OMS Server • PeopleSoft Connection • SAP Connection • SNMP Manager • Trigger Forecasts • Virtual Resource <p>If the property is false, users have implicit Read permission for these record types.</p> <p>If the property is true, users can view these record types only if they are granted Read permission explicitly via an appropriate role or permission.</p> <div style="border: 1px solid orange; padding: 5px; margin-top: 10px;"> <p>Note</p> <p>For those record types, above, that have a corresponding permission type, when you create a permission, the Read operation checkbox automatically will be checked if the property is false.</p> </div>	true	6.9.0.0
Strict Connection Execute Constraints (opswise.connection.execute_constraints_strict)	<p>Specification (true or false) for whether Universal Controller will enforce Execute constraints for connections (Database Connections, Email Connections, SAP Connections, and SNMP Managers) during task instance execution.</p> <p>If Strict Connection Execute Constraints is false, only Read constraints for connections are enforced based on the configuration of the Strict Business Service Membership Read Constraints Universal Controller system property.</p> <p>If Strict Connection Execute Constraints is true, the Execution User for any task instance executing with a connection must have Execute permission for that connection; otherwise, the task instance will transition into a Start Failure status.</p>	true	6.9.0.0
Variable Security Enabled (opswise.security.variable.enabled)	Specification (true or false) for enabling enhanced Global Variable security.	true	6.9.0.0
Virtual Resource Security Enabled (opswise.security.virtual_resource.enabled)	Specification (true or false) for enabling enhanced Virtual Resource security.	true	6.9.0.0

16.4 Command Line Interface (CLI) Properties

A sample Command Line Interface (CLI) configuration file, `cmdtools.props`, is provided for your use to pass CLI [Global parameters](#) to a CLI function.

The file is created during installation of Universal Agent if the Command Line Interface (CLI) has been selected to be installed.

```
network.provider=  
network.omsservers=  
network.omsnft=  
network.transports=  
network.core=HUB01  
security.userid=  
security.password=  
config.timeout=
```

However, you can create a configuration file with any name; it must exist in the directory from where you are issuing the functions (see [Command Line Interface \(CLI\)](#)).

17 Server Operations

- [Overview](#)
- [Running a Server Operation](#)
- [Server Operation Completion](#)
- [Server Operation Status](#)
- [Server Operation Timeout](#)
- [Server Operations Descriptions](#)
- [Universal Controller Database Tables](#)

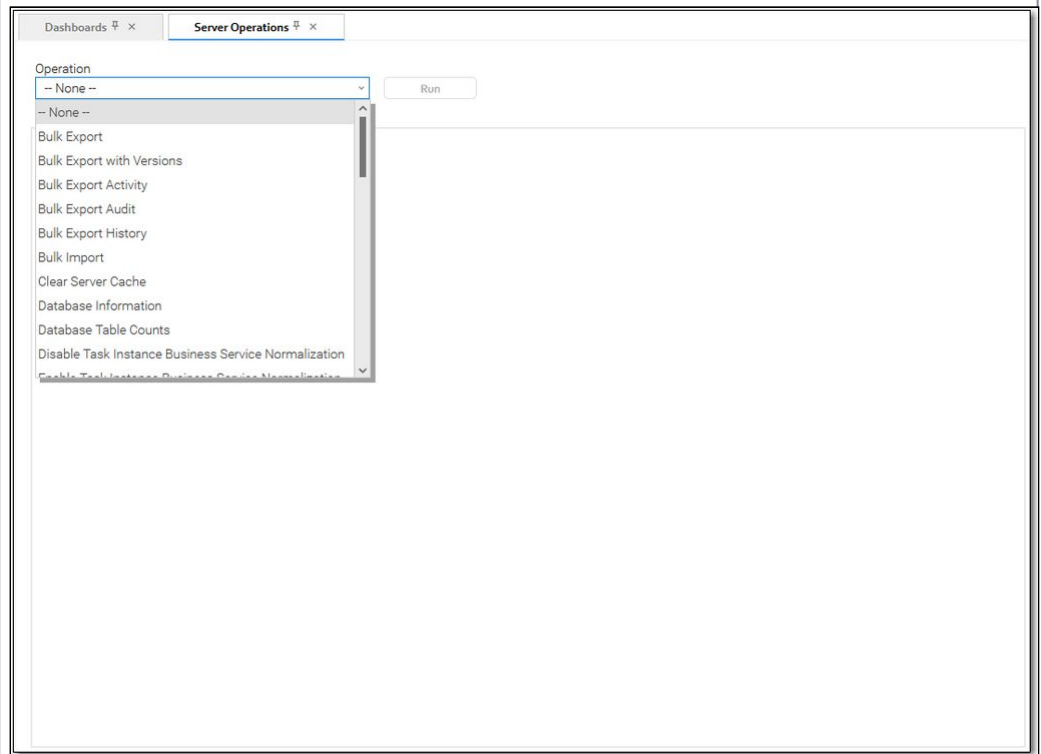
17.1 Overview

Universal Controller provides a set of server operations that help you maintain and administer your Controller installation. Many of the operations, as noted, should be run only by Technical Support or upon request by Technical Support.

17.2 Running a Server Operation

Step 1

From the [Administration](#) navigation pane, select **Configuration > Server Operations**. The Server Operations list displays.



Step 2Select an operation from the drop-down list and click **Run**.

17.3 Server Operation Completion

When a server operation has been run and completed, the Controller issues an INFO-level log message.

For example:

```
2018-03-31-09:24:58:957 -0400 INFO [http-8080-exec-4] Running Server Operation: Bulk Export
```

```
2018-03-31-09:25:12:357 -0400 INFO [http-8080-exec-4] Server Operation completed: Bulk Export in 1 Minute 37 Seconds
```

17.4 Server Operation Status

The status for a completed Server Operation is either Success or Failed. The [Audit Status](#) field for Server Operations can have one of the following values: Invoked, Failed, or Success.

All Server Operations can fail if the user invoking the Server Operation does not have sufficient permission or if the Server Operation is limited to one execution per node and it is already running.

Most Server Operations will complete successfully; however, if errors occur executing the Server Operation, the [Audit Status](#) field is set to Failed, and error messages may be added to the Additional Information field.

The Server Operation duration message will be added to the [Audit Additional Information](#) field regardless of the Server Operation status. For example:

```
Server Operation 'LDAP Refresh' completed in 0 Seconds at 2018-06-11 12:46:01 -0400
```

17.5 Server Operation Timeout

For potentially long running server operations, such as Bulk Import and Bulk Export, we set a request timeout of 30 minutes.

However, some browsers may timeout earlier, regardless. In the case where a server operation has timed out, you will see an error similar to the following in the [Console](#):

```
"No response from 'Bulk Import' server operation; check server log for details."
```

In the case of a request timeout, the server operation will continue to run on the server. You will have to confirm completion of the server operation from either the server log, **uc.log**, or from the [Audits](#) list.

View the log for the start and completion of the server operation, as well as any warnings/errors logged in between.



```

2018-03-31-09:24:58:957 -0400 INFO [http-bio-8080-exec-4] Running Server Operation:
Bulk Import
...
2018-03-31-09:25:12:357 -0400 INFO [http-bio-8080-exec-4] Server Operation completed:
Bulk Import in 11 Minutes 57 Seconds
    
```

Alternatively, you can view the server operation audit record; however, the log usually provides the most detailed information.

17.6 Server Operations Descriptions

The following table describes and, where appropriate, provides links for each server operation.

Script	Description and Links
Bulk Export	Exports all current record definitions, without versions, when migrating data to a new Universal Controller deployment.
Bulk Export Activity	<p>Exports all current Activity data from multiple Universal Controller database tables.</p> <div style="border: 1px solid orange; padding: 5px; margin: 10px 0;"> <p>Note</p> <p>In order to run this server operation, the Bulk Export Activity Permitted Universal Controller system property must be set to true.</p> </div> <p>If you choose to run this server operation, the following confirmation pop-up displays:</p> <div style="border: 1px solid gray; padding: 5px; margin: 10px 0;"> <p>Confirm ×</p> <p> "Bulk Export Activity" can run exceptionally long and increase server and database load.</p> <p>Run the "Bulk Export Activity" operation?</p> <p style="text-align: center;"> <input type="button" value="Run"/> <input type="button" value="Cancel"/> </p> </div>
Bulk Export Audit	Exports all current Audit records when migrating data to a new Universal Controller deployment.
Bulk Export History	<p>Exports all current History records when migrating data to a new Universal Controller deployment.</p> <p>If you choose to run this server operation, the following confirmation pop-up displays:</p> <div style="border: 1px solid gray; padding: 5px; margin: 10px 0;"> <p>Confirm ×</p> <p> "Bulk Export History" can run exceptionally long and increase server and database load.</p> <p>Run the "Bulk Export History" operation?</p> <p style="text-align: center;"> <input type="button" value="Run"/> <input type="button" value="Cancel"/> </p> </div>

Script	Description and Links
Bulk Export with Versions	Exports all current records along with older (non-current) versions of record definitions when migrating data to updated software.
Bulk Import	Imports all data from an exported file when migrating data to updated software.
Clear Server Cache	Clears the internal server cache. You can use this operation if you are experiencing unexpected behavior with the Controller system. For example, Technical Support may ask you to first run this operation to clear the server cache, then clear your browser cache.
Database Information	<p>Displays the following information for the Controller database:</p> <ul style="list-style-type: none"> • Type: MYSQL • Database Name: db_name • Database Product Name: MySQL • Database Product Version: 8.0.11 • Driver Name: MySQL Connector/J • Driver Version: mysql-connector-java-8.0.12 (Revision: 24766725dc6e017025532146d94c6e6c488fb8f1) • Configured JDBC URL: jdbc:mysql://hostname:port/ • Adjusted JDBC URL: jdbc:mysql://hostname:port/db_name?useUnicode=true&serverTimezone=US/Eastern&socketTimeout=1800000 • Connection Pool: Server (0/3) • Connection Pool: Reserved (0/3) • Connection Pool: Client (0/5)
Database Table Counts	<p>Displays the following information for Universal Controller database tables:</p> <ul style="list-style-type: none"> • Largest table • Number of tables • Number of rows • Number of rows in each table <p>See Universal Controller Database Tables, below, for a description of all tables.</p>
Disable Task Instance Business Service Normalization	<p>Disables normalization of Business Service membership for all:</p> <ul style="list-style-type: none"> • New Task Instance and History records. • Existing Task Instance and History records if it is still in progress. <p>All previously normalized Business Service membership records will not be removed until they qualify for Activity or History purge.</p> <p>Also, the Task Instance Normalize Business Service Membership property will be set to Disabled.</p>

Script	Description and Links
Enable Task Instance Business Service Normalization	<p>Commence normalization of Business Service membership for all existing Task Instance and History records, and begin normalizing Business Service membership for all new Task Instance and History records.</p> <ul style="list-style-type: none"> • Until all History and Task Instance Business Service membership normalization has completed for existing Task Instance and History records, the Task Instance Normalize Business Service Membership Universal Controller system property will be set to Enabled/Normalizing. • When all History and Task Instance Business Service membership normalization has completed for existing Task Instance and History records, the Task Instance Normalize Business Service Membership property will be set to Enabled/Normalized. <div style="border: 1px solid orange; padding: 10px; margin-top: 10px;"> <p>Note</p> <p>When deciding on enabling Business Service normalization, it should be noted that there is trade-off between the query performance on Task Instance/History Lists and the added insertion of normalization data at Task Instance/History record creation time.</p> <p>If the Controller is restarted and the Task Instance Normalize Business Service Membership property is Enabled/Normalizing, the Controller will resume normalization of Business Service membership for all existing Task Instance and History records.</p> </div>
Generate Server UUIDs Cache	For use only by Technical Support personnel or when you are requested to run it by Technical Support.
Health Check	Displays information about the current instance of the Controller.
Inspect Events	For use only by Technical Support personnel or when you are requested to run it by Technical Support.
Inspect Universal Events	<p>Limits the number of events displayed by the Inspect Events server operation.</p> <p>The events will display with the latest events first; that is, ordered by created time descending.</p> <p>Default is 1000.</p>
Inspect Output Message Queue	For use only by Technical Support personnel or when you are requested to run it by Technical Support.
Inspect Subscriptions	For use only by Technical Support personnel or when you are requested to run it by Technical Support.
Inspect Timers	For use only by Technical Support personnel or when you are requested to run it by Technical Support.
LDAP Refresh	If LDAP is configured for this installation, it refreshes every 24 hours. This server operation forces a refresh. The refresh writes all Controller log entries to the user interface as well as to the Controller log, and the response will not be returned until the process completes. If you estimate the refresh could take a considerable amount of time, we recommend you use LDAP Refresh (Asynchronous) .
LDAP Refresh (Asynchronous)	If LDAP is configured for this installation, it refreshes every 24 hours. This server operation forces a refresh. The refresh is performed in the background and sends Controller log entries to the Controller log.

Script	Description and Links
--------	-----------------------

List/Download Logs

Lists (and optionally lets you download) any existing UC log files for the Controller node that this operation is executed on.

The list identifies the name, last modification date, size of each log file, and - when you hover over the log file entry on the list - an icon that lets you download that file.

Dashboards x
Server Operations x


Operation

<input type="checkbox"/>	Name	Date	Size (KB)	
<input type="checkbox"/>	uc.log	2022-11-03 13:05:05 -0400	3,627	
<input type="checkbox"/>	uc.d20221102.t235955.log	2022-11-02 23:59:55 -0400	4,757	
<input type="checkbox"/>	uc.d20221101.t235956.log	2022-11-01 23:59:56 -0400	1,546	
<input type="checkbox"/>	uc.d20221101.t164354.log	2022-11-01 16:43:54 -0400	587	

4 Log Files

The icons at the bottom of the list let you perform the following:

- Download selected log files.
- Select all log files.

Script	Description and Links
	<ul style="list-style-type: none"> Deselect all log files. (You also can select / deselect all log files by clicking the Name checkbox at the top of the list.)
Load Demonstration Definitions	Loads base demonstration data into your database (for example: workflows, tasks, triggers).
Memory Usage	Displays a summary of Controller memory usage.
Overdue Timers Delete	Deletes any overdue timers, as listed by the Overdue Timers List operation.
Overdue Timers List	Lists any timers that are overdue (normally, no timers should be overdue).
Pause Cluster Node	Pauses the Controller, which prevents it from processing tasks and events. If an event or task is already running when you run this operation, the event or task will complete. The Controller remains in a paused state until you run the Resume Cluster Node operation.
Purge All Non-Default Users And Groups	<p>Purges all non-default Users and Groups and their associated data. There is one default User: Administrator (ops.admin). There are two default Groups: Administrator Group and Everything Group.</p> <p>This server operation will also clear the following:</p> <ul style="list-style-type: none"> Manager field for the Administrator user if it references a non-default user. Manager field for the Administrator Group and/or Everything Group if it references a non-default user. Parent field for the Administrator Group and/or Everything Group if it references a non-default group. Any Dashboards, Reports, or Filters that are visible to a non-default user will be purged. Any Dashboards, Reports, or Filters that are visible to one or more non-default groups will be purged. For any Dashboards, Reports, or Filters that are visible to one or more non-default groups as well as default groups, the non-default groups will be removed from the visibility. <p>The following is recommended before running this server operation:</p> <ul style="list-style-type: none"> Disable any triggers that are currently enabled by a non-default user. Unassign the Execution User for any triggers that are currently assigned a non-default user as the Execution User. Complete any active task instances that are currently assigned a non-default user as the Execution User. <div style="border: 2px solid orange; padding: 10px; margin: 10px 0;"> <p>Note</p> <p>To run this server operation, the Purge All Non-Default Users And Groups Permitted Universal Controller System Property must be set to true.</p> </div> <p>If you choose to run this server operation, the following confirmation pop-up displays:</p> <div style="border: 1px solid gray; padding: 10px; margin: 10px 0;"> <p>Confirm ×</p> <p> <i>"Purge All Non-Default Users And Groups" is not intended for a live production environment.</i></p> <p>Run the "Purge All Non-Default Users And Groups" operation?</p> <p style="text-align: center;"> <input type="button" value="Run"/> <input type="button" value="Cancel"/> </p> </div>

Script	Description and Links
Purge History	<p>Purges all records from the History table (ops_history).</p> <p>Any time a task instance goes into an end status (Cancelled, Failed, Skipped, Finished, Success), a copy of it is written to the History table. You can view your History table by selecting Automation Center > Task Instances > History from the navigation pane.</p> <div data-bbox="659 481 1540 739" style="border: 1px solid orange; padding: 5px;"> <p>Note</p> <p>If you do not need to keep or back up your task instance history, we recommend that you run this operation periodically; otherwise, make sure you schedule a routine Data Backup/Purge for history by selecting Administration > Data Backup/Purge from the navigation pane. Executing a Data Backup/Purge of an extremely large History table can seriously degrade Controller system performance.</p> </div>
Purge Instances	<p>Purges everything in the All Task Instances table (ops_exec), which contains all system activity, including task instances in any status (including end statuses). Records in the All Task Instances table (ops_exec) remain there until they are purged.</p> <div data-bbox="659 929 1540 1115" style="border: 1px solid red; padding: 5px;"> <p>Warning</p> <p>Running this operation will purge any live data; that is, task instances that have not completed.</p> </div>
Purge Logs and Cache	Sends a request to all active Agents to purge their logs and cache.
Purge Versions	Purges versions of records in excess of the maximum specified by the System Default Maximum Versions Universal Controller system property.
Refresh System Default List Layouts	<p>For Controller upgrades only; resets system defaults list layouts.</p> <p>You may be asked to run this server operation by Technical Support.</p>
Reset All Agent Cluster Task Counts	Resets the current number of tasks currently being run by all Agent clusters to 0 (see Resetting the Current Task Count).
Reset All Agent Task Counts	Resets the current number of tasks currently being run by all Agents to 0 (see Resetting the Current Task Count).
Restart Cluster Node	<p>Stops and restarts the Controller within the running Tomcat server. The Controller is effectively shut down and started up without stopping and starting Tomcat.</p> <div data-bbox="659 1704 1540 1890" style="border: 1px solid orange; padding: 5px;"> <p>Note:</p> <p>Restart Cluster Node will cause a failover to occur if it is executed on the Active node while another node is running as Passive.</p> </div>
Restore System Default List Layouts	Restores all lists to their default layouts.

Script	Description and Links
Resume Cluster Node	Resumes the Controller after it has been paused using the Pause Cluster Node operation, or paused by the Start Server Paused Universal Controller property on startup.
Roll Log	Renames the existing log to a timestamped log and opens a new log file.
Run Garbage Collection	Runs the "garbage collector." The gc method suggests that the Java Virtual Machine expend effort toward recycling unused objects in order to make the memory they currently occupy available for quick re-use. When control returns from the method call, the Java Virtual Machine has made a best effort to reclaim space from all discarded objects.
Server Information	Displays the following categories of information about the Universal Controller server: <ul style="list-style-type: none"> • Node • License • Server Deployment • Database Information • Memory Information
System Properties	Displays all properties of the operating system on which the Controller is running. You may be asked to run this server operation by Technical Support.
Temporary Property Change	Allows for the temporary setting of specific Universal Controller properties to be used for diagnosing problems. This operation and setting of properties should be performed only under the guidance of Stonebranch support.
Thread List	Captures information about internal Controller system processes. You may be asked to run this server operation by Technical Support.
Thread List by CPU	Captures information about internal Controller system processes. You may be asked to run this server operation by Technical Support.
Thread Stack Trace	Captures information about internal Controller system processes. You may be asked to run this server operation by Technical Support.

17.7 Universal Controller Database Tables

The following table identifies and describes all Universal Controller database tables, which are listed if you run the [Database Table Counts](#) server operation, above.

*The tables are in alphabetical order according to **Table Name**.*

See [Reportable Tables](#) for a list of these database tables that are available for creating [Report Details](#).

Table	Table Name	Description
Abort Actions	ops_abort_action	Contains details about Abort actions .
Abort Actions Versions	ops_abort_action_v	Contains details about previous versions of Abort actions . New versions of Abort Action records are created when a task record is updated.
All Agents	ops_agent	Displays a list of Agents Overview .

Table	Table Name	Description
All Agent Clusters	ops_agent_cluster	Contains details about Agent Clusters .
All Agent Clusters Versions	ops_agent_cluster_v	Contains details about previous versions of Agent Clusters .
All Agents Mapping	ops_agent_mapping	Shows all the agents connected to one or more Promotion Targets (as retrieved using the Refresh Target Agents button).
Linux/Unix Agents Mapping	ops_agent_mapping_unix	Shows the mapping specifications between local Linux/Unix agents and Linux/Unix agents on a Promotion Target (as retrieved using the Refresh Target Agents button).
Windows Agents Mapping	ops_agent_mapping_windows	Shows the mapping specifications between local Windows agents and Windows agents on a Promotion Target (as retrieved using the Refresh Target Agents button).
z/OS Agents Mapping	ops_agent_mapping_zos	Shows the mapping specifications between local z/OS agents and z/OS agents on a Promotion Target (as retrieved using the Refresh Target Agents button).
Applications	ops_application	Shows a list of Application Resources .
Applications Versions	ops_application_v	Contains details about previous versions of Application resources .
Audits	ops_audit	Contains details of events being written to the Audit history .
Backups	ops_backup	Contains Backup and Purge records.
Bundles	ops_bundle	Contains all Bundles records.
Bundles and Agent Clusters	ops_bundle_agent_cluster_join	Shows relationship information between Bundles and Agent Clusters ; that is, which agent clusters belong to which bundles.
Bundles and Applications	ops_bundle_application_join	Shows relationship information between Bundles and Application resources ; that is, which Application resources belong to which bundles.
Bundles and Calendars	ops_bundle_calendar_join	Contains relationship information between Bundles and Calendars ; that is, which Calendars belong to which Bundles.
Bundles and Credentials	ops_bundle_credentials_join	Contains relationship information between Bundles and Credentials ; that is, which Credential records belong to which bundles.
Bundles and Custom Days	ops_bundle_custom_day_join	Contains relationship information between Custom Days and Bundles ; that is, which Custom Days belong to which Bundles.
Bundles and Database Connections	ops_bundle_db_cntn_join	Contains information about the relationship between Bundles and Database Connections ; that is, which Database Connections belong to which Bundles.
Bundles and Email Connections	ops_bundle_email_cntn_join	Contains information about the relationship between Bundles and Email Connections ; that is, which Email Connections belong to which Bundles.
Bundles and Email Templates	ops_bundle_email_tmplt_join	Contains relationship information between Bundles and Email templates ; that is, which Email Templates belong to which Bundles.

Table	Table Name	Description
Bundles and Business Services	ops_bundle_generic_group_join	Contains relationship information between Bundles and Business Services ; that is, which Business Services belong to which Bundles.
Bundles and PeopleSoft Connections	ops_bundle_ps_cntn_join	Contains relationship information between Bundles and PeopleSoft Connection ; that is, which PeopleSoft Connection records are in which Bundles.
Bundles and Virtual Resources	ops_bundle_resource_join	Contains relationship information between Bundles and Virtual Resources ; that is, which Virtual Resources belong to which Bundles.
Bundles and SAP Connections	ops_bundle_sap_cntn_join	Contains relationship information between Bundles and SAP Connection ; that is, which SAP Connection records are in which Bundles.
Bundles and Scripts	ops_bundle_script_join	Contains relationship information between Bundles and Script ; that is, which Scripts belong to which Bundles.
Bundles and SNMP Managers	ops_bundle_snmp_cntn_join	Contains relationship information between Bundles and SNMP Manager ; that is, which SNMP Managers belong to which Bundles.
Promotion Targets	ops_bundle_target	Contains details about Promotion Target records.
Bundles and Tasks	ops_bundle_task_join	Contains relationship information between Bundles and Tasks ; that is, which Tasks are in which Bundles.
Bundles and Triggers	ops_bundle_trigger_join	Contains relationship information between Bundles and Triggers Overview ; that is, which Triggers are in which Bundles.
Bundles and Variables	ops_bundle_variable_join	Contains relationship information between Bundles and Global variables ; that is, which Global variables belong to which Bundles.
Calendar Custom Days	ops_cal_cust_join	Contains details about which Custom Days are associated with which Calendar records .
Calendar Custom Days Versions	ops_cal_cust_join_v	Contains previous versions of the association between Custom Days and Calendar records .
Calendars	ops_calendar	Contains details about Calendar records .
Calendars Versions	ops_calendar_v	Contains previous versions of Calendar records .
Chart Colors	ops_chart_color	Contains details about colors used in Chart reports .
Cluster Lock	ops_cluster_lock	(For internal use only.)
Cluster Nodes	ops_cluster_node	Provides details about cluster nodes .
Cluster Nodes Notifications	ops_cluster_notification	Contains Email and SNMP notification records associated with the cluster node .
Command	ops_command	(For internal use only.)
Command Response	ops_command_response	(For internal use only.)
Properties	ops_config	Contains Universal Controller System Properties .

Table	Table Name	Description
Connector Notifications	ops_connector_notification	Contains Email Notification and SNMP Notification data associated with Agents and OMS Servers .
Counter	ops_count	(For internal use only.)
Credentials	ops_credentials	Login credentials used by the Controller to access remote machines.
Credentials Versions	ops_credentials_v	Contains previous versions of Credentials records.
Custom Days	ops_custom_day	Contains details about defined Custom Days .
Custom Days Versions	ops_custom_day_v	Contains previous versions of Custom Days records.
Dashboards	ops_dashboard	Contains details about Dashboard Details .
Dashboards Portlets	ops_dashboard_portlet	Contains details about the content (Widgets) on the Dashboard Details .
Database Connections	ops_database_connection	Contains details about [Database Connections defined in the Controller database.
Database Connections Versions	ops_database_connection_v	Contains previous versions of [Database Connections records.
Email Notifications	ops_email_cluster_notification	Contains Email Notification records associated with Cluster Nodes .
Email Notifications	ops_email_conn_notification	Contains Email Notification-specific data associated with Agents and OMS Servers .
Email Connections	ops_email_connection	Contains details about Email Connections resources.
Email Connections Versions	ops_email_connection_v	Contains previous versions of Email Connections records.
Email Notifications	ops_email_notification	Contains details about Email Notifications associated with tasks .
Email Notifications Versions	ops_email_notification_v	Contains previous versions of Email Notifications associated with tasks . Note that a new version is created only when the task is updated.
Email Templates	ops_email_template	Contains details about Email templates .
Email Templates Versions	ops_email_template_v	Contains previous versions of Email template records.
Event Email	ops_event_email	(For internal use only.)
Event Exec Defined	ops_event_exec_defined	(For internal use only.)
Event Exec Resource Order Filled	ops_event_exec_ordfill	(For internal use only.)
Event Exec Exclusive Order Filled	ops_event_exec_ordfill_ex	(For internal use only.)
Event Exec Propagate State	ops_event_exec_prop_state	(For internal use only.)
Event Exec Skip Child	ops_event_exec_skip_child	(For internal use only.)
Event Exec Start	ops_event_exec_start	(For internal use only.)
Event Exclusive	ops_event_exclusive	(For internal use only.)

Table	Table Name	Description
Event Resource	ops_event_resource	(For internal use only.)
Event SNMP	ops_event_snmp	(For internal use only.)
Event SQL	ops_event_sql	(For internal use only.)
Event Trigger	ops_event_trigger	(For internal use only.)
Event Trigger Component	ops_event_trigger_comp	(For internal use only.)
Event UAC	ops_event_uac	(For internal use only.)
Event UAC Job Abend	ops_event_uac_jobabend	(For internal use only.)
Event UAC Job Complete	ops_event_uac_jobcomp	(For internal use only.)
Event UAC Job End	ops_event_uac_jobend	(For internal use only.)
Event UAC Job Log	ops_event_uac_joblog	(For internal use only.)
Event UAC Job Launch	ops_event_uac_joblaunch	(For internal use only.)
Event UAC Job Start	ops_event_uac_jobstart	(For internal use only.)
Event UAC Job Restart Confirmation	ops_event_uac_rstrt_conf	(For internal use only.)
Event UAC Step End	ops_event_uac_stepend	(For internal use only.)
Exclusive Requests	ops_exclusive_order	Contains any outstanding requests by a task instance to run mutually exclusively .
All Task Instances	ops_exec	Task instance activity (running tasks).
Application Control Task Instances	ops_exec_application_control	Contains details about Application Control task instances .
Email Task Instances	ops_exec_email	Contains details about Email task instances .
Email Monitor Task Instances	ops_exec_email_monitor	Contains details about Email Monitor task instances .
Advanced Criteria	ops_exec_email_criteria	Contains details about Email Monitor task instances Advanced Criteria .
Agent File Monitor Instances	ops_exec_file_monitor	Contains details about Agent File Monitor task instances .
File Transfer Task Instances	ops_exec_ftp	Contains details about File Transfer task instances .
Remote File Monitor Instances	ops_exec_ftp_file_monitor	Contains details about Remote File Monitor task instances .
Universal Command Task Instances	ops_exec_indesca	Contains details about Universal Command task instances .
License Instance History	ops_exec_license_history	Contains statistics relating to the number of task instance executions.
Manual Task Instances	ops_exec_manual	Contains details about Manual task instances .
Task Monitor Instances	ops_exec_monitor	Contains details about Task Monitor task instances .

Table	Table Name	Description
Output	ops_exec_output	Contains any output (such as STDOUT) attached to task instances.
PeopleSoft Task Instances	ops_exec_peoplesoft	Contains PeopleSoft task instance records.
PeopleSoft Task Parameters	ops_exec_peoplesoft_rt_param	Contains Parameter records associated with PeopleSoft task instances .
Recurring Task Instances	ops_exec_recurring	Contains details about Recurring task instances .
Task Instances Run Criteria	ops_exec_run_criteria	Contains run criteria information for task instances within a Workflow .
SAP Task Instances	ops_exec_sap	Contains SAP task instance records.
Timer Task Instances	ops_exec_sleep	Contains details about Timer task instances .
SQL Task Instances	ops_exec_sql	Contains details about SQL task instances .
Stored Procedure Task Instances	ops_exec_stored_proc	Contains details about Stored Procedure task instances .
Stored Procedure Task Parameters	ops_exec_stored_proc_param	Contains Parameter records associated with Stored Procedure task instances .
System Monitor Task Instances	ops_exec_system_monitor	Contains System Monitor task task instance records.
Task Instance Virtual Resources	ops_exec_to_resource	Contains relationship information between Virtual Resources and task instances; that is, which task instances are assigned to which Virtual Resources.
Universal Task Instances	ops_exec_universal	Contains details about Universal Task instances .
Linux/Unix Task Instances	ops_exec_unix	Contains details about Linux/Unix task instances .
Variable Monitor Task Instances	ops_exec_variable_monitor	Contains Variable Monitor task task instance records.
Windows Task Instances	ops_exec_windows	Contains details about Windows task instances .
Workflow Task Instances	ops_exec_workflow	Contains details about Workflow task instances .
Workflow Task Instance Dependencies	ops_exec_workflow_edge	Contains information about the conditions specified between task instances within workflows .
Workflow Task Instance Vertices	ops_exec_workflow_vertex	Contains relationship information between workflow instances and task instances; that is, which tasks are running in which workflows .
z/OS Task Instances	ops_exec_zos	Contains details about z/OS task instances .
Restart Confirmations	ops_exec_zos_confirm	Contains details about any restart confirmations performed on z/OS tasks .
Job Step Files Data	ops_exec_zos_files	Contains details about jobsteps in a z/OS task .
Restartable Job Steps	ops_exec_zos_jobsteps	Contains historical details about restartable job steps in a z/OS task .
Restartable Job Steps	ops_exec_zos_jobstepsui	Contains details about restartable job steps in a z/OS task .

Table	Table Name	Description
Restart Criteria	ops_exec_zos_rstrt_criteria	Contain information about z/OS task restart criteria .
Step Conditions	ops_exec_zos_stepcond	Contains details about z/OS task instance step conditions .
Externalizable	ops_externalizable	Contains an internal table for events.
Business Services	ops_generic_group	Contains details about Business Services .
Business Services Versions	ops_generic_group_v	Contains previous versions of Business Service records.
Group Roles	ops_group_has_role	Contains relationship information between Universal Controller User Groups and Roles ; that is, which Groups have been assigned which Roles.
History	ops_history	Contains a history of task activity .
LDAP	ops_ldap	Identifies where LDAP Settings are stored.
Licenses	ops_license	Contains information about the Controller license .
List Grid Filters	ops_list_grid_filter	Identifies where persistent filters are stored.
List Grid Pin Filters	ops_list_grid_pin_filter	Identifies where pinned filters are stored.
List Grid Preferences	ops_list_grid_pref	Contains information about list layouts.
Local Custom Days	ops_local_custom_days	Contains details about Local Custom Days .
Local Custom Days Versions	ops_local_custom_days_v	Contains previous versions of Local Custom Days .
Local Variables	ops_local_variable	Contains details about task and trigger variables (also called local variables), entered into the Variables tab on a task or trigger record.
Local Variables Versions	ops_local_variable_v	Contains previous versions of Local variables associated with tasks or triggers. (New version records are created only when a task or trigger is updated.)
Maps	ops_map	(For internal use only.)
Navigator	ops_nav_tree_pref	Contains Navigation Tree Configuration data.
Notes	ops_note	Contains details about Notes attached to Controller records.
Notes Versions	ops_note_v	Contains previous versions of Notes records.
All Actions	ops_notification	Contains details about all task actions: Abort Action , Email Notifications , Set Variable , SNMP Notification , and System Operation .
All Actions Versions	ops_notification_v	Contains details about previous versions of all task actions: Abort Action , Email Notifications , Set Variable , SNMP Notification , and System Operation . New versions of Action records are created when a task record is updated.
OMS Servers	ops_oms_server	Provides details about OMS Servers .
Output Messages	ops_output_msg	(For internal use only.)

Table	Table Name	Description
PeopleSoft Connections	ops_peoplesoft_connection	Contains PeopleSoft Connection records.
PeopleSoft Connections Versions	ops_peoplesoft_connection_v	Contains previous versions of PeopleSoft Connection records.
Permissions	ops_permission	Contains details about Universal Controller Permissions assigned to Universal Controller Users and Universal Controller User Groups .
Promotion History	ops_promotion_history	Contains a list of Bundles that have been promoted into the current database.
Promotion History Items	ops_promotion_history_item	Contains a list of records that have been promoted into the current database. If a record has been promoted more than once, each version is listed separately.
Promotion Schedule	ops_promotion_schedule	Contains a list of Promotion Schedules .
Reports	ops_report	Contains information about Controller Report Details .
Outstanding Requests	ops_resource_order	Contains any outstanding requests for a Virtual Resource by a task instance.
Currently In Use By	ops_resource_usage	Contains details about Virtual resource usage, as displayed in the Currently In Use By tab.
SAP Connections	ops_sap_connection	Contains SAP Connection records.
SAP Connections Versions	ops_sap_connection_v	Contains previous versions of SAP Connection records.
Schemas	ops_schema	Contains version information about database schemas.
Scripts	ops_script	Contains Script records.
Scripts Versions	ops_script_v	Contains previous versions of Script records.
Simulation	ops_simulation	Contains Simulation records.
Simulation Output	ops_simulation_output	Contains Simulation output records.
SNMP Notifications	ops_snmp_cluster_notification	Contains SNMP notifications defined for Cluster Nodes .
SNMP Notifications	ops_snmp_conn_notification	Contains SNMP Notification-specific data associated with Agents and OMS Servers .
SNMP Managers	ops_snmp_connection	Contains SNMP Manager records.
SNMP Managers Versions	ops_snmp_connection_v	Contains previous versions of SNMP Manager records.
SNMP Notifications	ops_snmp_notification	Contains SNMP notifications defined for Tasks .
SNMP Notifications Versions	ops_snmp_notification_v	Contains previous versions of SNMP notifications defined for Tasks . (Versions are created only when a task is updated.)
SQL Results Set	ops_sql_results	Contains output from SQL tasks .
SQL Warnings Set	ops_sql_warnings	Contains warnings returned by executed SQL statements.
Stored Procedure Parameters	ops_stored_proc_param	Contains Parameter records associated with Stored Procedure tasks .

Table	Table Name	Description
Stored Procedure Parameters Versions	ops_stored_proc_param_v	Contains previous versions of Parameter records associated with Stored Procedure tasks . (Versions are created only when the task is updated.)
Subscription	ops_subscription	(For internal use only.)
System Operations	ops_system_operation	Contains details about System Operation actions .
System Operations Versions	ops_system_operation_v	Contains details about previous versions of System Operation actions . (Versions of records are created only when a record is updated.)
All Tasks	ops_task	Contains details about tasks of every type , along with associated Task Instance information.
Application Control Tasks	ops_task_application_control	Contains details about Application Control tasks .
Application Control Task Versions	ops_task_application_control_v	Shows previous versions of Application Control tasks .
Email Tasks	ops_task_email	Contains details about Email tasks .
Email Task Versions	ops_task_email_v	Contains previous versions of Email task records.
Email Monitor Tasks	ops_task_email_monitor	Contains details about Email Monitor tasks .
Email Monitor Task Versions	ops_task_email_monitor_v	Contains previous versions of Email Monitor task records.
Advanced Criteria	ops_task_email_criteria	Contains details about Email Monitor task Advanced Criteria .
Agent File Monitors	ops_task_file_monitor	Contains details about Agent File Monitor tasks .
Agent File Monitor Task Versions	ops_task_file_monitor_v	Contains previous versions of Agent File Monitor task records.
File Transfer Tasks	ops_task_ftp	Contains details about File Transfer tasks .
File Transfer Task Versions	ops_task_ftp_v	Contains previous versions of File transfer task records.
Remote File Monitors	ops_task_ftp_file_monitor	Contains details about Remote File Monitor tasks .
Remote File Monitor Versions	ops_task_ftp_file_monitor_v	Contains previous versions of Remote File Monitor task records.
Universal Command Tasks	ops_task_indesca	Contains details about Universal Command tasks .
Universal Command Task Versions	ops_task_indesca_v	Contains previous versions of Universal Command task records.
Manual Tasks	ops_task_manual	Contains details about Manual tasks .
Manual Task Versions	ops_task_manual_v	Contains previous versions of Manual task records.
Task Monitors	ops_task_monitor	Contains details about Task Monitor tasks .
Task Monitor Versions	ops_task_monitor_v	Contains previous versions of Task Monitor task records.
PeopleSoft Tasks	ops_task_peoplesoft	Contains PeopleSoft task records.
PeopleSoft Parameters	ops_task_peoplesoft_rt_param	Contains Parameter records associated with PeopleSoft tasks .

Table	Table Name	Description
PeopleSoft Parameters Versions	ops_task_peoplesoft_rt_param_v	Contains previous versions of Parameter records associated with PeopleSoft tasks . (Versions are created only when the task is updated.)
PeopleSoft Task Versions	ops_task_peoplesoft_v	Contains previous versions of PeopleSoft task records.
Recurring Tasks	ops_task_recurring	Contains Recurring task records.
Recurring Task Versions	ops_task_recurring_v	Contains previous versions of Recurring task records.
Task Run Criteria	ops_task_run_criteria	Contains run criteria information for tasks within Workflows .
Task Run Criteria Versions	ops_task_run_criteria_v	Contains previous versions of run criteria information for tasks within Workflow . (Versions are created only when the Workflow task is updated.)
SAP Tasks	ops_task_sap	Contains SAP task records.
SAP Tasks Versions	ops_task_sap_v	Contains previous versions of SAP task records.
Timer Tasks	ops_task_sleep	Contains details about Timer tasks .
Timer Task Versions	ops_task_sleep_v	Contains previous versions of Timer tasks records.
SQL Tasks	ops_task_sql	Contains details about SQL tasks .
SQL Task Versions	ops_task_sql_v	Contains previous versions of SQL tasks records.
Mutually Exclusive	ops_task_to_exclusive	Contains relationship information between tasks and mutually exclusive tasks; that is, which tasks are mutually exclusive with each other.
Mutually Exclusive Versions	ops_task_to_exclusive_v	Contains previous versions of relationship information between tasks and mutually exclusive tasks.
Stored Procedure Tasks	ops_task_stored_proc	Contains details about Stored Procedure tasks .
Stored Procedure Tasks Versions	ops_task_stored_proc_v	Contains previous versions of Stored Procedure tasks records.
System Monitors	ops_task_system_monitor	Contains System Monitor task records.
System Monitor Versions	ops_task_system_monitor_v	Contains previous versions of System Monitor task records.
Task Virtual Resources	ops_task_to_resource	Contains relationship information between Virtual Resources and tasks; that is, which tasks are assigned to which Virtual Resources.
Task Virtual Resources Versions	ops_task_to_resource_v	Contains previous versions of relationship information between Virtual Resources and tasks.
Universal Tasks	ops_task_universal	Contains details about Universal tasks .
Universal Task Versions	ops_task_universal_v	Contains previous versions of Universal task records.
Linux/Unix Tasks	ops_task_unix	Contains details about Linux/Unix tasks .
Linux/Unix Task Versions	ops_task_unix_v	Contains previous versions of Linux/Unix task records.
All Tasks Versions	ops_task_v	Contains previous versions of all task records.

Table	Table Name	Description
Variable Monitor Tasks	ops_task_variable_monitor	Contains details about Variable Monitor tasks .
Variable Monitor Task Versions	ops_task_variable_monitor_v	Contains previous versions of Variable Monitor task records.
Windows Tasks	ops_task_windows	Contains details about Windows tasks .
Windows Task Versions	ops_task_windows_v	Contains previous versions of Windows task records.
Workflow Tasks	ops_task_workflow	Contains details about Workflow tasks .
Task Workflow Dependencies	ops_task_workflow_edge	Contains information about the conditions specified between tasks in workflows .
Workflow Task Edges	ops_task_workflow_edge_v	Contains previous versions of information about the conditions specified among tasks in workflows . (New versions of records are created only when the Workflow task is updated.)
Workflow Task Versions	ops_task_workflow_v	Contains previous versions of workflow task records.
Workflow Tasks Vertices	ops_task_workflow_vertex	Contains relationship information between tasks and workflows; that is, which tasks are in which workflows .
Workflow Tasks Vertices Versions	ops_task_workflow_vertex_v	Contains previous versions of the relationship between tasks and workflows. (Versions are created only when the workflow task is updated.)
z/OS Tasks	ops_task_zos	Contains details about z/OS tasks .
Restart Criteria	ops_task_zos_rstrt_criteria	Contain information about z/OS task restart criteria .
Restart Criteria	ops_task_zos_rstrt_criteria_v	Contains previous versions of z/OS task restart criteria .
Step Conditions	ops_task_zos_stepcond	Contains details about z/OS task step conditions
Step Conditions	ops_task_zos_stepcond_v	Contains previous versions of z/OS task step conditions
z/OS Task Versions	ops_task_zos_v	Contains previous versions of z/OS task records.
Time Zones	ops_time_zone	Stores information on time zones.
Timer	ops_timer	(For internal use only.)
All Triggers	ops_trigger	Contains details about triggers of every type .
Application Monitor Triggers	ops_trigger_appl_monitor	Contains details about Application Monitor triggers .
Application Monitor Triggers Versions	ops_trigger_appl_monitor_v	Contains details about previous versions of Application Monitor triggers .
All Components	ops_trigger_component	Contains details about all Composite trigger components.
Email Monitor Components	ops_trigger_component_em	Contains details about Email Monitor components of Composite Triggers.
Email Monitor Components	ops_trigger_component_em_v	Contains details about previous versions of Email Monitor components of Composite Triggers.
File Monitor Components	ops_trigger_component_fm	Contains details about File Monitor components of Composite Triggers.

Table	Table Name	Description
File Monitor Components	ops_trigger_component_fm_v	Contains details about previous versions of File Monitor components of Composite Triggers.
Time Components	ops_trigger_component_time	Contains details about Time components of Composite Triggers.
Time Components	ops_trigger_component_time_v	Contains details about previous versions of Time components of Composite Triggers.
Variable Monitor Components	ops_trigger_component_vm	Contains details about Variable Monitor components of Composite Triggers.
Variable Monitor Components	ops_trigger_component_vm_v	Contains details about previous versions of Variable Monitor components of Composite Triggers.
Task Monitor Components	ops_trigger_component_tm	Contains details about Task Monitor components of Composite Triggers.
Task Monitor Components	ops_trigger_component_tm_v	Contains details about previous versions of Task Monitor components of Composite Triggers.
All Components	ops_trigger_component_v	Contains details about previous versions of all Composite trigger components .
Composite Triggers	ops_trigger_composite	Contains details about Composite trigger records.
Composite Triggers	ops_trigger_composite_v	Contains details about previous versions of Composite trigger records.
Cron Triggers	ops_trigger_cron	Contains details about Cron trigger records.
Cron Trigger Versions	ops_trigger_cron_v	Contains previous versions of Cron trigger records.
Email Monitor Triggers	ops_trigger_em	Contains details about Email Monitor trigger records.
Email Monitor Trigger Versions	ops_trigger_em_v	Contains previous versions of Email Monitor trigger records.
File Monitor Triggers	ops_trigger_fm	Contains details about File Monitor triggers .
File Monitor Triggers Versions	ops_trigger_fm_v	Contains previous versions of File Monitor trigger records.
Forecasts	ops_trigger_forecast	Contains details about trigger forecasts .
Manual Triggers	ops_trigger_manual	Contains Manual trigger records.
Manual Trigger Versions	ops_trigger_manual_v	Contains previous versions of Manual trigger records.
Temporary Triggers	ops_trigger_temp	Contains details about Temporary triggers .
Temporary Triggers Versions	ops_trigger_temp_v	Contains previous versions of Temporary trigger records.
Time Triggers	ops_trigger_time	Contains details about Time triggers .
Time Triggers Versions	ops_trigger_time_v	Contains previous versions of Time trigger records.
Task Monitor Triggers	ops_trigger_tm	Contains details about Task Monitor triggers .
Task Monitor Triggers Versions	ops_trigger_tm_v	Contains previous versions of Task Monitor trigger records.
All Triggers Versions	ops_trigger_v	Contains previous versions of Trigger records.

Table	Table Name	Description
Variable Monitor Triggers	ops_trigger_vm	Contains details about Variable Monitor triggers .
Variable Monitor Triggers Versions	ops_trigger_vm_v	Contains previous versions of Variable Monitor trigger records.
Linux/Unix Agents	ops_unix_agent	Contains details about Linux/Unix agent resources .
Linux/Unix Agent Clusters	ops_unix_agent_cluster	Contains details about Linux/Unix agent clusters .
Linux/Unix Agents In Cluster	ops_unix_agent_cluster_join	Shows relationship information between Unix agents and Unix agent clusters , that is, which agents belong to which clusters.
Linux/Unix Agents In Cluster Versions	ops_unix_agent_cluster_join_v	Shows previous versions of relationship information between Unix agents and Unix agent clusters .
Linux/Unix Agent Clusters Versions	ops_unix_agent_cluster_v	Contains previous versions of Linux/Unix cluster records.
Universal Templates	ops_unv_tmplt	Contains details about Universal Templates.
Universal Template Fields	ops_unv_tmplt_field	Contains details about Universal Template Fields.
Universal Template Field Choice Values	ops_unv_tmplt_field_choice	Contains details about Universal Templates . (Requires ops_admin or ops_universal_template_admin role.)
Users	ops_user	Contains details about User records .
Group Members	ops_user_grmember	Contains relationship information between Universal Controller User Groups and Universal Controller Users ; that is, which Users belong to which Groups.
Groups	ops_user_group	Contains details about Universal Controller User Groups .
User Roles	ops_user_has_role	Contains details about Users and Roles , including which Users have which Roles.
User Preferences	ops_user_preference	Contains information about Universal Controller User Preferences .
User Roles	ops_user_role	Contains information about available user roles .
User Roles Contains	ops_user_role_contains	Contains information about roles that comprise parent roles user roles .
User Tokens	ops_user_token	Contains information about user sessions .
Variables	ops_variable	Contains details about Global variables , entered by selecting Variables from the Navigation pane.
Set Variables	ops_variable_action	Contains details about Set Variable actions .
Set Variables	ops_variable_action_v	Contains previous versions of Set Variable actions.
Variables Versions	ops_variable_v	Contains previous versions of Global variables .
Virtual Resources	ops_virtual_resource	Contains details about Virtual resource records.
Virtual Resources Versions	ops_virtual_resource_v	Contains previous versions of Virtual resources .
Widgets	ops_widget	Contains details about all Widgets .

Table	Table Name	Description
Widgets Activity	ops_widget_activity	Contains details about Activity Widgets .
Widgets Report	ops_widget_report	Contains details about Report Widgets .
Widgets System	ops_widget_system	Contains details about System Widgets .
Windows Agents In Cluster	ops_win_agent_cluster_join	Shows relationship information between Windows agents and Windows agent clusters , that is, which agents belong to which clusters.
Windows Agents In Cluster Versions	ops_win_agent_cluster_join_v	Shows previous versions of relationship information between Windows agents and Windows agent clusters .
Windows Agents	ops_windows_agent	Contains details about Windows agents .
Windows Agent Clusters	ops_windows_agent_cluster	Contains details about Windows agent clusters .
Windows Agent Clusters Versions	ops_windows_agent_cluster_v	Contains previous versions of Windows Agent Cluster records.
z/OS Agents	ops_zos_agent	Contains details about z/OS agents .
All Step Actions	ops_zos_step_action	Contains details about z/OS step actions .
System Operations	ops_zos_step_action_sysop	Contains details about z/OS System Operation step actions .
System Operations Versions	ops_zos_step_action_sysop_v	Contains details about previous versions of z/OS System Operation step actions . (Versions are created only when a record is updated.)
Step Actions	ops_zos_step_action_v	Contains previous versions of z/OS step actions . (Versions are created only when a record is updated.)

18 SAML Single Sign-On

- [Overview](#)
- [Terminology](#)
- [Single Sign-On Login](#)
 - [Service Provider-Initiated Login](#)
 - [Identity Provider-Initiated Login](#)
 - [Action URLs](#)
 - [Session Expired](#)
 - [Administrator Account](#)
- [Single Logout](#)
 - [User Sessions](#)
- [User Provisioning](#)
 - [User Attribute Mapping](#)
 - [User Field Defaults](#)
 - [Group Membership Attribute Mapping](#)
- [SAML Configuration](#)
 - [Service Provider Metadata](#)
 - [SAML Endpoints](#)
 - [Identity Provider Metadata](#)
 - [SAML KeyStore](#)
 - [Java Cryptography Extension \(JCE\)](#)
 - [Debugging](#)
- [SAML Single Sign-On](#)
 - [SAML Single Sign-On Field Descriptions](#)
 - [Default Configuration](#)
 - [Security](#)
 - [Bulk Import/Export](#)
- [Troubleshooting](#)
 - [NameID](#)
 - [Login Errors](#)

18.1 Overview

The information provided on this page assumes you have a working knowledge of SAML Single Sign-On.

Universal Controller enables Web Browser Single Sign-On (SSO) through Security Assertion Markup Language 2.0 (SAML 2.0). SAML 2.0 is an XML-based protocol for exchanging security information between a SAML Identity Provider and a SAML Service Provider.

As a SAML Service Provider, Universal Controller accepts authentication assertions from a configured SAML Identity Provider compliant with the SAML 2.0 Web Browser Single Sign-On profile.

SAML Single Sign-On eliminates the need for application-specific passwords. Universal Controller issues an authentication request to the configured Identity Provider, through the web browser, for any unauthenticated user accessing the Universal Controller web application through the SAML Login URL.

Universal Controller uses SAML Single Sign-On for authentication and [User Provisioning](#). All user and group authorization must be configured within Universal Controller through [Permission](#) and [Role](#) assignment.

18.2 Terminology

IdP	Identity Provider (for example, Okta)	Third-party system that pre-authenticates SAML users.
SAML	Security Assertion Markup Language	SAML is an XML-based protocol for exchanging security information between a SAML Identity Provider and a SAML Service Provider.
SP	Service Provider (for example, Universal Controller)	Receives and accepts authentications via SAML Single Sign-On.
SSO	Single Sign-On	Method of authentication.

18.3 Single Sign-On Login

SAML Single Sign-On can be initiated by either Universal Controller, as the Service Provider, or the Identity Provider.

Only users designated with **Single Sign-On** as a [Login Method](#) can authenticate using SAML Single Sign-On. However, users designated with both **Standard** and **Single Sign-On** as a Login Method can continue to log into the Universal Controller using the standard application URL (see [Logging In](#)).

18.3.1 Service Provider-Initiated Login

Universal Controller, as a Service Provider, will initiate the SAML Single Sign-On login flow when an unauthenticated user accesses the web application through the following URL.

```
http(s)://<server:port>/uc/saml
```

18.3.2 Identity Provider-Initiated Login

Identity Provider-initiated SAML Single Sign-On begins at the Identity Provider, typically by accessing an application-specific Identity Provider URL. Once authenticated, the user will be taken to the Universal Controller web application.

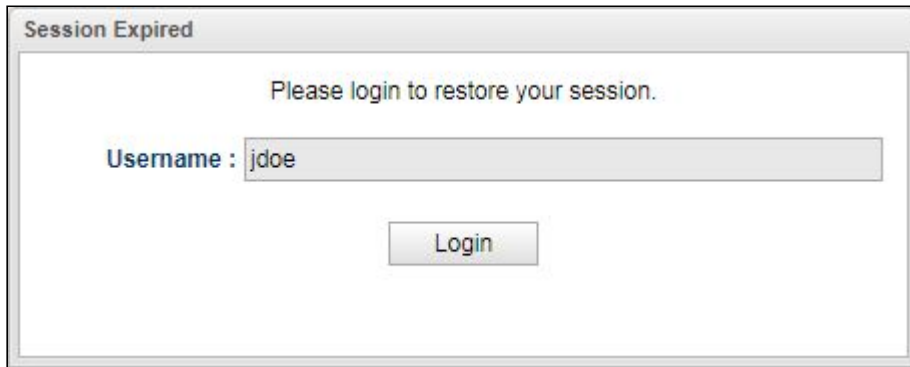
18.3.3 Action URLs

Any action URL parameters on the URL used by the SAML-authenticated user to access the Universal Controller web application are restored when the Service Provider-initiated SAML SSO authentication flow has completed successfully and the user has been redirected back to the Universal Controller web application.

This is not applicable for an Identity Provider-initiated login.

18.3.4 Session Expired

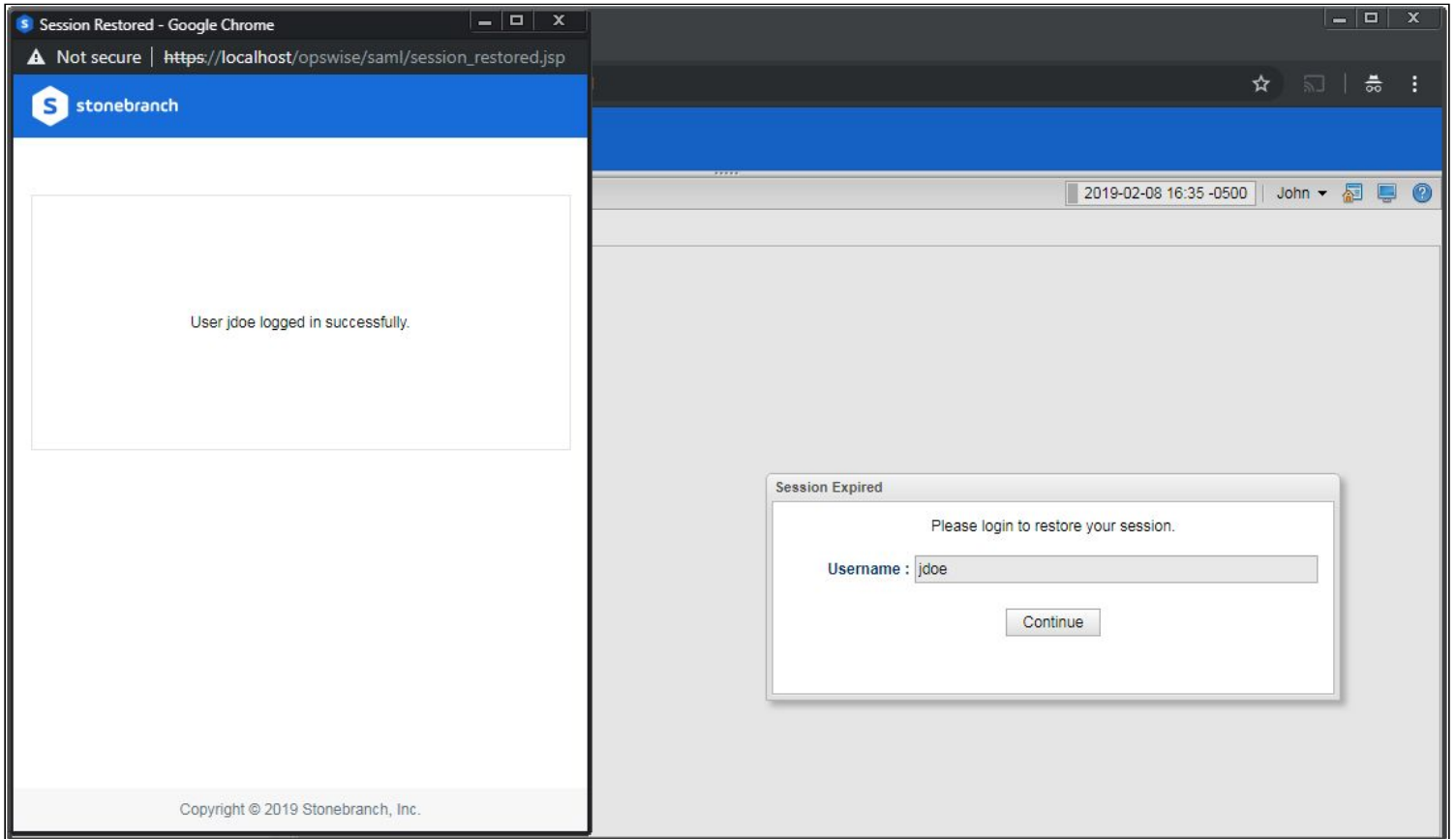
Universal Controller allows you to restore an HTTP session without leaving the application (or losing data) by prompting you to re-enter your login credentials in a Session Expired pop-up:



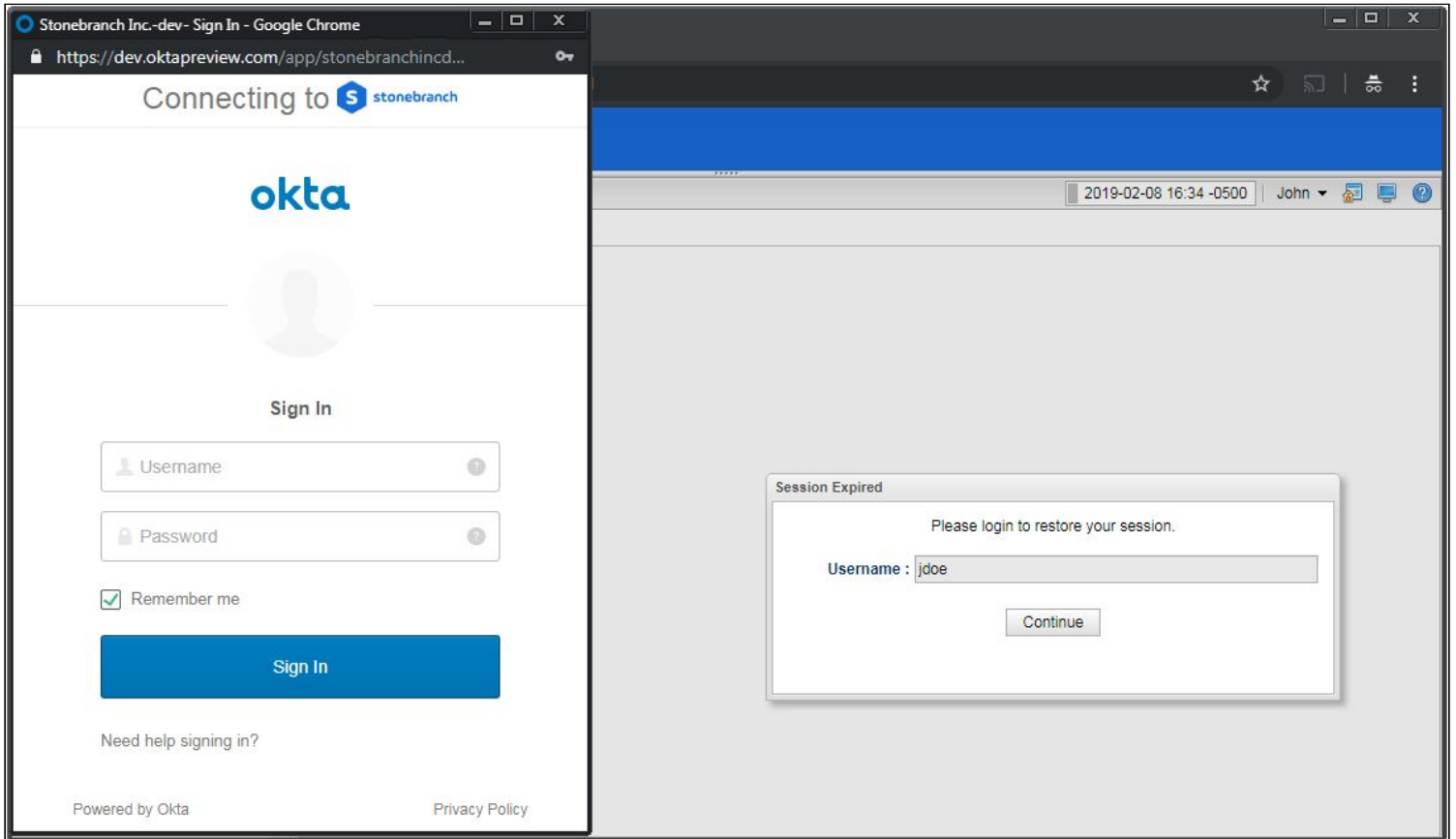
The image shows a dialog box titled "Session Expired". Inside the dialog, the text "Please login to restore your session." is centered. Below this text, there is a label "Username:" followed by a text input field containing the value "jdoe". At the bottom center of the dialog, there is a button labeled "Login".

If you are a SAML-enabled user, the Controller allows you to initiate the SAML Single Sign-On authentication flow without leaving the application. On the Session Expired pop-up, instead of entering your login credentials, simply click the Login button to initiate the SAML SSO authentication flow.

If only your Universal Controller session has expired, and not your session with the Identity Provider, you are logged in without being prompted for your credentials. Click Continue on the original dialog to proceed, which closes the SAML SSO authentication flow window.



If your session with the Identity Provider has expired, you are prompted for its login credentials.



When the Identity Provider has authenticated you and the SAML SSO authentication flow has completed, click Continue on the original dialog to proceed, which closes the SAML SSO authentication flow window.

18.3.5 Administrator Account

Modification of the ops.admin account Login Method is not permitted; therefore, the account will always be accessible for cases where, for example, SAML Single Sign-On are incorrectly configured or the Identity Provider is inaccessible.

18.4 Single Logout

Universal Controller supports SAML Single Logout for SAML-authenticated users, in accordance with the SAML 2.0 Single Logout profile.

By initiating the [Logout](#) menu option, a SAML-authenticated user is initiating Single Logout.

The Single Logout profile terminates the session at the originating Service Provider (Universal Controller), the Identity Provider session, and, potentially, sessions at other Service Providers connected to the same Identity Provider session, depending on the Identity Provider implementation.

Note

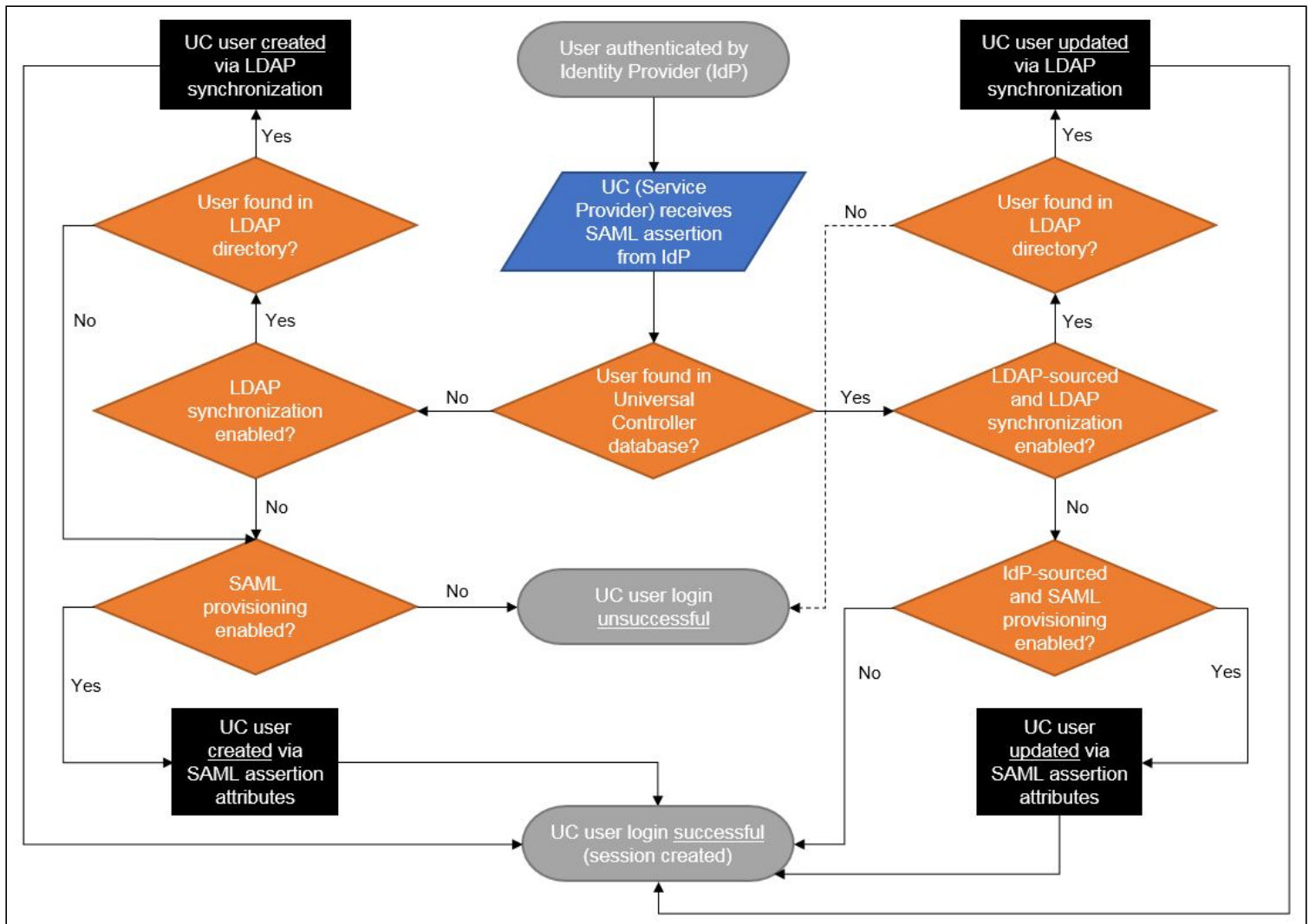
It is required that the configured Identity Provider metadata declares a Single Logout endpoint.

18.4.1 User Sessions

The administrative functionality in the user interface that allows for management of [User Sessions](#) is applicable only for local Universal Controller sessions; therefore, expiring a user's session through this interface is only expiring the local Universal Controller session.

18.5 User Provisioning

The following diagram illustrates the expectations in Universal Controller for provisioning users from attributes available in the SAML assertion:



As illustrated, when LDAP synchronization is enabled, provisioning of users through LDAP synchronization takes precedence over provisioning of users through the SAML assertion during the Single Sign-On process.

During the next scheduled LDAP refresh, consistent with locally created users and groups, any Identity Provider-sourced user or group matching a user or group synchronized from the LDAP automatically is converted to an LDAP-sourced user or group.

Once a user has been provisioned (created) in the Universal Controller database, its Source (ldap:dn or idp:remote-entity-id) determines how the user record is refreshed during the next login through single sign-on.

18.5.1 User Attribute Mapping

For Universal Controller to correlate SAML assertion attributes with Universal Controller user fields, Universal Controller must provide a way to configure a mapping between Universal Controller User fields and SAML assertion attributes.

The following Universal Controller [user](#) fields are mappable.

- User Id (Required)
(This field automatically is mapped to the SAML Subject NameID from the SAML assertion and cannot be changed.)
- First Name (Required)
- Middle Name
- Last Name
- Email
- Title
- Department
- Manager
(This field is a reference to another user and is mapped only if the attribute value contains the [Name](#) of a valid Universal Controller user.)
- Business Phone
- Mobile Phone
- Home Phone
- Active

Any user created by SAML assertion attributes, during the single sign-on process, is considered an Identity Provider-sourced user. See [Attribute Mappings](#) in [Single Sign-On Settings](#).

18.5.2 User Field Defaults

Single Sign-On provisioned [users](#) are created with the following default field values:

Field	Value
User Password	random, 32-characters
Password Requires Reset	true
Login Method	Single Sign-On
Web Browser Access	-- System Default --
Command Line Access	-- System Default -- Applies only to users designated to use the Standard login method.
Web Service Access	-- System Default -- Applies only to users designated to use the Standard login method.

18.5.3 Group Membership Attribute Mapping

An additional configuration is provided to allow for assigning group membership using the SAML assertion. Universal Controller allows configuring which SAML assertion attribute contains the user's group membership.

To support multiple groups, the attribute is multi-valued, where each attribute value specifies the [Group Name](#) of a Universal Controller group for which the user belongs. If the Universal Controller group is not already provisioned, it is provisioned automatically as an Identity Provider-sourced group.

If a group membership attribute mapping is specified, any time that an Identity Provider-sourced user authenticates using SAML Single Sign-On, its group membership will be updated based on the group attribute value in the accepted SAML assertion. The user will be added to, or removed from, groups accordingly.

18.6 SAML Configuration

18.6.1 Service Provider Metadata

Universal Controller is configured for automatic generation of Service Provider metadata. By default, the Service Provider Entity ID for a Universal Controller deployment is: <https://uc.stonebranch.com/sp>.

However, Universal Controller allows an administrator to customize the Service Provider Entity ID by specifying a Service Provider Entity ID Subdomain in the [Single Sign-On Settings](#) in the user interface.

For example, an Service Provider Entity ID Subdomain value of `dev` would allow for a Service Provider Entity ID of <https://dev.uc.stonebranch.com/sp>.

18.6.2 SAML Endpoints

To generate the SAML endpoints for the Service Provider metadata, an SP Entity Base URL for Universal Controller must be determined. By default, Universal Controller uses information from first request after the Controller has been initiated to automatically generate a Service Provider Entity Base URL in the format `scheme://server:port/contextPath`.

For example: <https://example.stone.branch:443/uc>

To configure the SP Entity Base URL to a specific value, an administrator can specify the Service Provider Entity Base URL from the [Single Sign-On Settings](#) in the user interface.

The following table documents the SAML endpoints, and their supported bindings, contained within the Universal Controller Service Provider metadata.

SAML Profile	Binding	Endpoint
Web Single Sign-on	HTTP-POST	<code>scheme://server:port/contextPath/saml/SSO</code>
Single Logout	HTTP-POST, HTTP-Redirect	<code>scheme://server:port/contextPath/saml/SingleLogout</code>

Universal Controller provides a [Service Provider Metadata](#) link, from the SAML Single Sign-On, for downloading the Universal Controller Service Provider metadata file.

Alternatively, you can download the metadata file directly using the following URL:

`http(s)://<server:port>/uc/saml/metadata`

18.6.3 Identity Provider Metadata

Universal Controller requires the Identity Provider configuration provided in the form of an IdP metadata XML file.

You can download the Identity Provider metadata file from the Identity Provider and save it under the Tomcat `conf/` directory, in a `saml/` subdirectory.

You can specify the location of the Identity Provider metadata file in the [Single Sign-On Settings](#) Details of the user interface. By default, on initial start-up, the Controller automatically populates the Identity Provider metadata file setting with a value of `${catalina.base}/conf/saml/idp.xml`.

For example, if `${catalina.base}` resolves to `/opt/tomcat`, the Identity Provider metadata file setting would be populated with `/opt/tomcat/conf/saml/idp.xml`.

18.6.4 SAML KeyStore

SAML message exchanges required for the Web Browser SSO profile and the Single Logout profile involve usage of cryptography for the signing and encryption of data.

The Universal Controller requires a single JKS keystore that contains all private and public keys. The keystore must have one default private key.

To create the JKS keystore file, with the default private key, assuming your Identity Provider does not require keys be signed by a specific certification authority, you can use the Java utility `keytool` command to generate a self-signed key, entering the distinguished name information when prompted.

```
keytool -genkeypair -keyalg RSA -sigalg SHA256withRSA -alias ucsaml -keypass ucsaml
-keystore samlKeystore.jks -storepass ucsaml -storetype JKS
```

To import a key signed by a certification authority, which are typically provided in `.p12/.pfx` format (or can be converted to `.p12/.pfx` format using OpenSSL), you can use the following `keytool` command.

```
keytool -importkeystore -srckeystore key.p12 -srcstoretype PKCS12 -srcstorepass password
-alias alias -destkeystore samlKeystore.jks -destalias ucsaml -destkeypass ucsaml
```

To determine the alias available in the p12 file, you can use the following command.

```
keytool -list -keystore key.p12 -storetype pkcs12
```

If your Identity Provider metadata is signed, to verify trust of the signature, Universal Controller will use all keys found in the configured keystore. To import the public certificate of the metadata signature, you can use the following `keytool` command.

```
keytool -importcert -alias alias -keystore samlKeystore.jks -file signature.cer
```

The location of the KeyStore File can be specified from the SAML Single Sign-On in the user interface. However, by default, Universal Controller automatically populates the KeyStore File setting with a value of `${catalina.base}/conf/saml/samlKeystore.jks` on initial start-up.

For example, if `${catalina.base}` resolves to `/opt/tomcat`, the KeyStore File setting would be populated with `/opt/tomcat/conf/saml/samlKeystore.jks`.

The JKS keystore password, the default private key alias, and the default private key password can also be specified from the SAML Single Sign-On in the user interface. Each of these settings are populated with a default value of `ucsaml` on initial start-up.

If your Identity Provider requires that you upload the public key certificate for the SAML Single Logout profile, you can export the certificate from the JKS keystore as follows.

```
keytool -exportcert -alias ucsaml -file ucsaml.cer -keystore samlKeystore.jks -storepass ucsaml -storetype JKS
```

18.6.5 Java Cryptography Extension (JCE)

Universal Controller is configured to use signature algorithm SHA256withRSA and digest method algorithm SHA-256.

Use of SAML Single Sign-On requires installation of the Java Cryptography Extension (JCE) [Unlimited Strength Jurisdiction Policy Files](#) for JDK/JRE 8 to remove limitations on cryptography capabilities.

Note

Starting with Java 1.8.0_162, JCE unlimited policy is enabled by default. You no longer need to install the policy file in the JRE or set the security property `crypto.policy`.

18.6.6 Debugging

The `uc.saml.log.level` property can be configured in the `uc.properties` to enable debug logging for the SAML framework. However, as a best practice, `saml.log.level` should remain at INFO under normal operation.

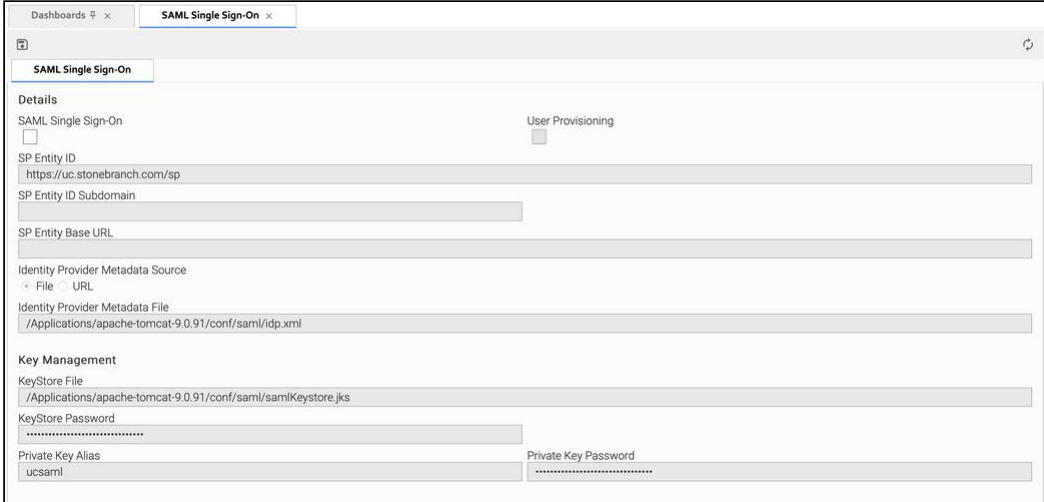

18.7 SAML Single Sign-On

An administrator can turn on/off and configure SAML Single Sign-On through the user interface.

Note

Each Universal Controller cluster node maintains its own SAML Single Sign-On configuration, associated by Node Id. Therefore, you must complete the SAML Single Sign-On configuration for each deployed cluster node, including the Active node and any Passive nodes.

The Identify Provider Metadata File and KeyStore File, by default located under `${catalina.base}/conf/saml/`, must be accessible to each cluster node.

<p>Step 1</p>	<p>From the Administration navigation pane, select SAML Single Sign-On. The SAML Single Sign-On page displays.</p> 
<p>Step 2</p>	<p>Enter / select your SAML Single Sign-On, using the field descriptions below as a guide.</p> <ul style="list-style-type: none"> • Required fields display an asterisk (*) after the field name. • Default values for fields, if available, display automatically.
<p>Step 3</p>	<p>Click the  button.</p>

For information on how to access additional details - such as [Metadata](#) and complete [database Details](#) - for SAML Single Sign-On (or any type of record), see [Records](#).

18.7.1 SAML Single Sign-On Field Descriptions

The following table describes the fields and buttons that display in the SAML Single Sign-On.

Field Name	Description
<p>Details</p>	<p>This section contains detailed information on the SAML Single Sign-On.</p>
<p>SAML Single Sign-On</p>	<p>If enabled, turns on SAML Single Sign-On. If disabled, all fields are read-only.</p>
<p>User Provisioning</p>	<p>If enabled, turns on the provisioning of users through SAML assertion attributes.</p>
<p>SP Entity ID</p>	<p>Read-only; Unique identifier of the Universal Controller Service Provider.</p>
<p>SP Entity ID Subdomain</p>	<p>Customize the SP Entity ID with a unique subdomain.</p>

SP Entity Base URL	Base URL to construct SAML endpoints from; must be a URL with protocol, server, port, and context path. If one is not specified, it defaults to values from the initial request in this format: <code>scheme://server:port/contextPath</code>
Identity Provider Metadata Source	<p>Specifies Identity Provider Metadata Source:</p> <ul style="list-style-type: none"> • File • URL <div style="border: 1px solid orange; padding: 5px; margin-top: 10px;"> <p>The <code>uc.saml.metadata.refresh_interval</code> property can be configured in <code>uc.properties</code> to specify the refresh interval of Identity Provider Metadata.</p> </div>
Identity Provider Metadata File	If Identity Provider Metadata Source = File; Identity Provider metadata file location.
Identity Provider Metadata URL	If Identity Provider Metadata Source = URL; Identity Provider metadata URL location.
Service Provider Metadata	Link to download the Service Provider metadata for the Universal Controller node.
Key Management	
KeyStore File	Keystore file location.
KeyStore Password	Password used to protect the integrity of the keystore. Default is <code>ucsaml</code> .
Private Key Alias	Alias of the private key (with either self-signed or CA-signed certificate) used to digitally sign SAML messages. Default is <code>ucsaml</code> .
Private Key Password	Password used to protect the integrity of the private key. Default is <code>ucsaml</code> . See SAML KeyStore .
Attribute Mappings	<p>If User Provisioning is enabled; This section allows you to configure a mapping between user fields and attributes from the attribute statement of a SAML assertion. It is displayed only when User Provisioning is enabled. See User Attribute Mapping for more details.</p> <p>In addition to user fields, you can specify an attribute mapping for Groups allowing for automatic provisioning of a user's group membership. See Group Membership Attribute Mapping for more details.</p>
First Name	Name of an attribute, of type <code>xs:string</code> or <code>xs:any</code> , from the attribute statement of the SAML assertion containing the First Name of the user.
Middle Name	Name of an attribute, of type <code>xs:string</code> or <code>xs:any</code> , from the attribute statement of the SAML assertion containing the Middle Name of the user.
Last Name	Name of an attribute, of type <code>xs:string</code> or <code>xs:any</code> , from the attribute statement of the SAML assertion containing the Last Name of the user.
Email	Name of an attribute, of type <code>xs:string</code> or <code>xs:any</code> , from the attribute statement of the SAML assertion containing the Email of the user.

Active	Name of an attribute, of type <code>xs:boolean</code> , <code>xs:string</code> or <code>xs:any</code> , from the attribute statement of the SAML assertion containing the Active condition of the user. Non-boolean type values that evaluate to true are "true", "1", "yes", and "on." All other non-boolean type values evaluate to false .
Groups	Name of a multi-valued attribute, of type <code>xs:string</code> or <code>xs:any</code> , from the attribute statement of the SAML assertion containing the Group Name of each group that the user is a member of.
Title	Name of an attribute, of type <code>xs:string</code> or <code>xs:any</code> , from the attribute statement of the SAML assertion containing the Title of the user.
Department	Name of an attribute, of type <code>xs:string</code> or <code>xs:any</code> , from the attribute statement of the SAML assertion containing the Department of the user.
Manager	Name of an attribute, of type <code>xs:string</code> or <code>xs:any</code> , from the attribute statement of the SAML assertion containing the Name of the Manager of the user.
Business Phone	Name of an attribute, of type <code>xs:string</code> or <code>xs:any</code> , from the attribute statement of the SAML assertion containing the Business Phone of the user.
Mobile Phone	Name of an attribute, of type <code>xs:string</code> or <code>xs:any</code> , from the attribute statement of the SAML assertion containing the Mobile Phone of the user.
Home Phone	Name of an attribute, of type <code>xs:string</code> or <code>xs:any</code> , from the attribute statement of the SAML assertion containing the Home Phone of the user.
Buttons	This section identifies the buttons displayed above and below the SAML Single Sign-On that let you perform various actions.
Update	Saves updates to the record.
Refresh	Refreshes any dynamic data displayed in the SAML Single Sign-On.

18.7.2 Default Configuration

Upon initial start-up of Universal Controller, a default SAML Single Sign-On record is created and associated with the Universal Controller node by node id. The settings are specific to the Universal Controller node, as the SP Entity ID, Base URL, and File paths may differ between each Universal Controller node. See [SAML Single Sign-On Field Descriptions](#), above, for the default configuration.

18.7.3 Security

SAML Single Sign-On can be viewed only by users with the [ops_admin](#) role, regardless of Navigation Visibility; therefore, only users with the [ops_admin](#) role can update SAML Single Sign-On.

18.7.4 Bulk Import/Export

Any SAML Single Sign-On record in the database that has a corresponding Universal Controller node is exported to `ops_single_sign_on.xml` during the [Bulk Export](#) server operation.

SAML Single Sign-On being updated through the [Bulk Import](#) server operation are applied immediately; however, you can update the SAML Single Sign-On only for the node you are performing the Bulk Import on.

18.8 Troubleshooting

18.8.1 NameID

The SAML Subject NameID from the SAML assertion received from the Identity Provider correlates directly to the User ID field of a user record in the Universal Controller database.

- If User Provisioning is off, the NameID must match with the User ID field of an existing user record in the Universal Controller database.
- If User Provisioning is on, any provisioned user record will be assigned a User ID equivalent to the NameID.

18.8.2 Login Errors

Universal Controller Uninitialized	<p>While the Universal Controller web application is initializing, the user login flow cannot proceed. Any users attempting to authenticate with SAML at this time receive the following error:</p> <p>Universal Controller is being initialized. Please try again later.</p>
User Account Not Found	<p>Any SAML-authenticated user who cannot be linked to a user account in the Universal Controller database is prohibited from accessing the application and receives the following error:</p> <p>User 'username' not synchronized with Universal Controller. Please check with your administrator.</p> <p>Additionally, the uc.log will contain the following warning:</p> <p>User 'username' authenticated by identity provider 'remote-entity-id' not synchronized with a Universal Controller account.</p>
User Account Not Active	<p>Any SAML-authenticated user linked to a Universal Controller user account that is not Active is prohibited from accessing the application and receives the following error:</p> <p>User 'username' not synchronized with Universal Controller. Please check with your administrator.</p> <p>Additionally, the uc.log will contain the following warning:</p> <p>User 'username' authenticated by identity provider 'remote-entity-id' is synchronized with an inactive Universal Controller account.</p>
Login Method	<p>Any SAML-authenticated user linked to a Universal Controller user account that is not designated to use Single Sign-On login method is prohibited from accessing the application and receives the following error:</p> <p>User 'username' not synchronized with Universal Controller. Please check with your administrator.</p> <p>Additionally, the uc.log will contain the following warning:</p> <p>User 'username' authenticated by identity provider 'remote-entity-id' is not permitted to use Single Sign-On login method.</p>
User Account Locked	<p>Any SAML-authenticated user linked to a Universal Controller user account that is locked is prohibited from accessing the application and receives the following error:</p> <p>User account 'username' is locked. Please check with your administrator.</p>

No Web Browser Access

Any SAML-authenticated user linked to a Universal Controller user account designated with the Single Sign-On login method, but without Web Browser Access, is prohibited from accessing the application and receives the following error:

User 'username' not permitted to login through the web browser. Please check with your administrator.

19 OAuth Single Sign-On

- [Overview](#)
- [Single Sign-On Login](#)
 - [Universal Controller Initiated Login](#)
 - [Identity Provider-Initiated Login](#)
 - [Action URLs](#)
 - [Session Expired](#)
 - [Administrator Account](#)
- [Logout](#)
 - [User Sessions](#)
- [User Provisioning](#)
 - [User Attribute Mapping](#)
 - [User Field Defaults](#)
 - [Group Membership Attribute Mapping](#)
- [OAuth Single Sign-On](#)
 - [OAuth Single Sign-On Field Descriptions](#)
 - [Security](#)
- [Troubleshooting](#)
 - [Login Errors](#)

19.1 Overview

Universal Controller enables Web Browser Single Sign-On (SSO) through OAuth 2.0 (with OpenID Connect).

OAuth 2.0 authorization framework is a protocol that allows a user to grant a third-party web site or application access to the user's protected resources, without necessarily revealing their long-term credentials or even their identity.

OpenID Connect (OIDC) is an identity layer built on top of OAuth 2.0. It extends OAuth 2.0 to include user authentication, enabling clients to verify the identity of the user and obtain basic profile information.

Universal Controller uses OAuth Single Sign-On for authentication and User Provisioning. All user and group authorization must be configured within Universal Controller through [Permission](#) and [Role](#) assignment.

19.2 Single Sign-On Login

OAuth Single Sign-On can be initiated by either Universal Controller or the Identity Provider.

Only users designated with **Single Sign-On** as a [Login Method](#) can authenticate using OAuth Single Sign-On. However, users designated with both **Standard** and **Single Sign-On** as a Login Method can continue to log into the Universal Controller using the standard application URL (see [Logging In](#)).

19.2.1 Universal Controller Initiated Login

Universal Controller will initiate the OAuth Single Sign-On login flow when an unauthenticated user accesses the web application through the following URL.

`http(s)://<server:port>/uc/oauth2`

19.2.2 Identity Provider-Initiated Login

Identity Provider-initiated OAuth Single Sign-On begins at the Identity Provider, typically by accessing an application-specific Identity Provider URL. Once authenticated, the user will be taken to the Universal Controller web application.

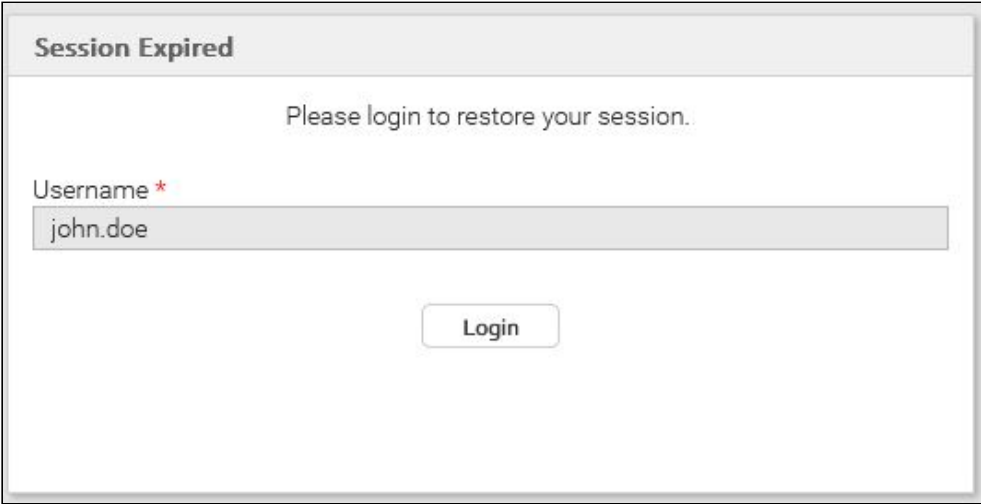
19.2.3 Action URLs

Any action URL parameters on the URL used by the OAuth-authenticated user to access the Universal Controller web application are restored when the Service Provider-initiated OAuth SSO authentication flow has completed successfully and the user has been redirected back to the Universal Controller web application.

This is not applicable for an Identity Provider-initiated login.

19.2.4 Session Expired

Universal Controller allows you to restore an HTTP session without leaving the application (or losing data) by prompting you to re-enter your login credentials in a Session Expired pop-up.



Session Expired

Please login to restore your session.

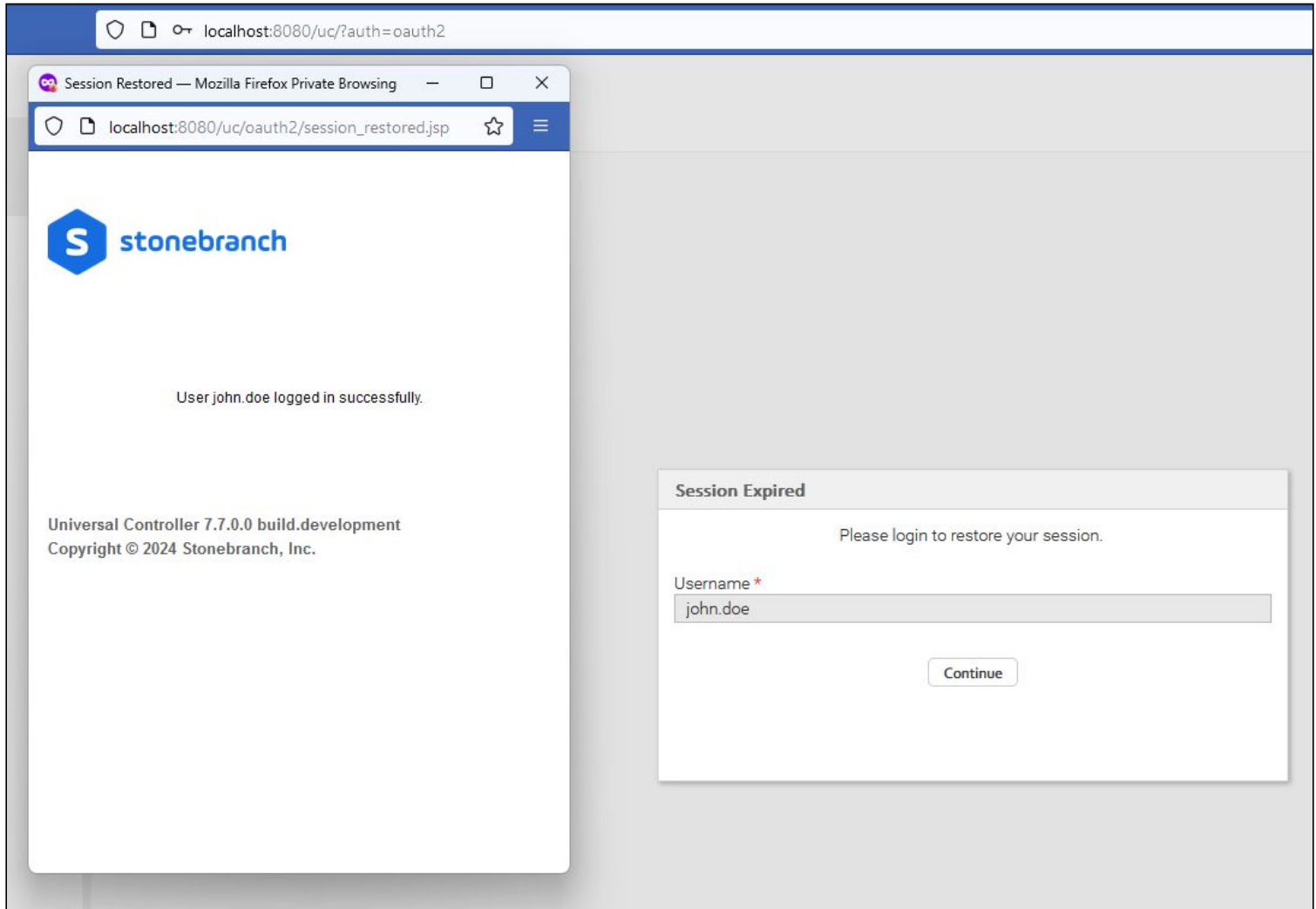
Username *

john.doe

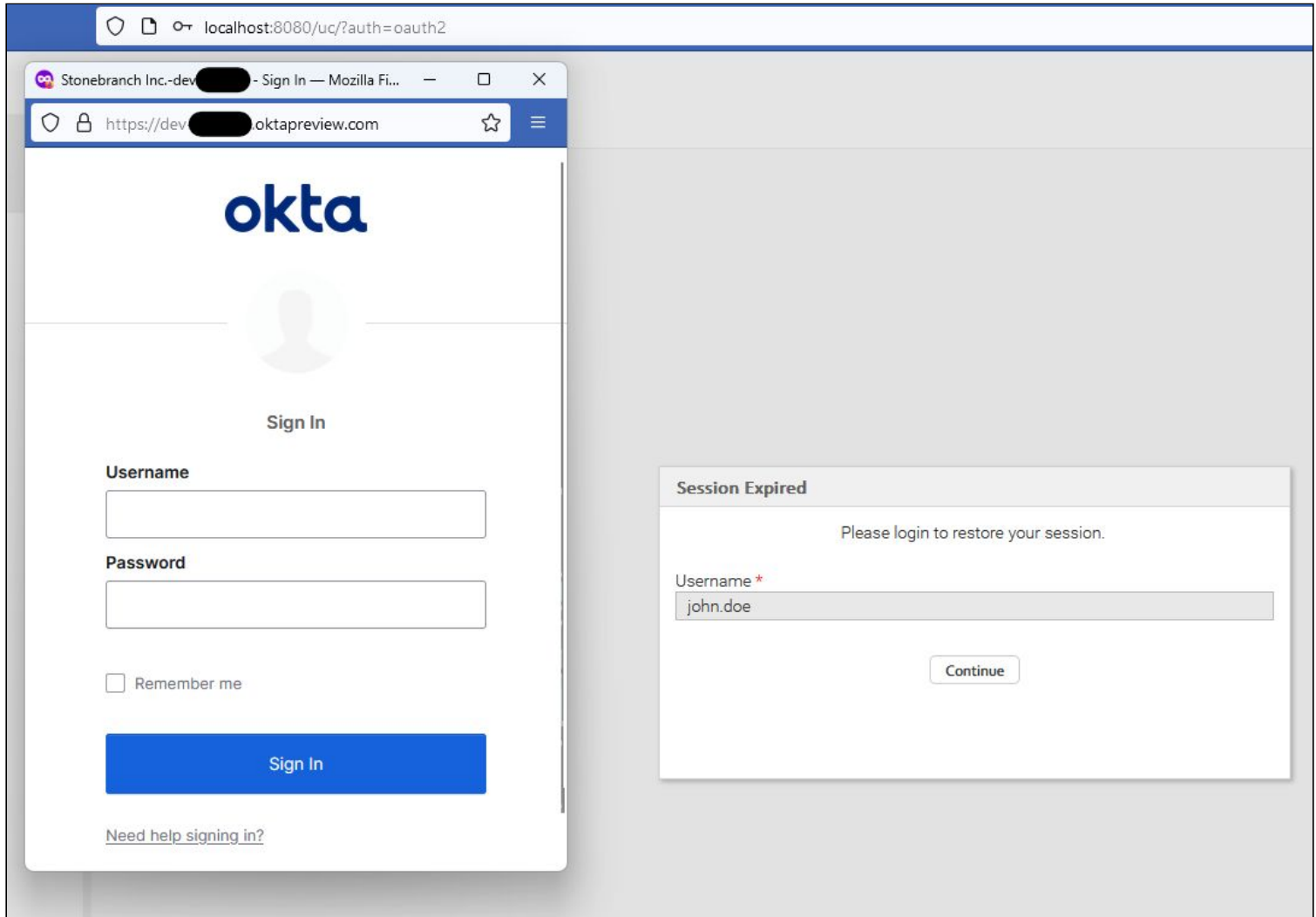
Login

If you are a OAuth-enabled user, the Controller allows you to initiate the OAuth Single Sign-On authentication flow without leaving the application. On the Session Expired pop-up, instead of entering your login credentials, simply click the Login button to initiate the OAuth SSO authentication flow.

If only your Universal Controller session has expired, and not your session with the Identity Provider, you are logged in without being prompted for your credentials. Click Continue on the original dialog to proceed, which closes the OAuth SSO authentication flow window.



If your session with the Identity Provider has expired, you are prompted for its login credentials.



When the Identity Provider has authenticated you and the OAuth SSO authentication flow has completed, click Continue on the original dialog to proceed, which closes the OAuth SSO authentication flow window.

19.2.5 Administrator Account

Modification of the ops.admin account Login Method is not permitted; therefore, the account will always be accessible for cases where, for example, OAuth Single Sign-On are incorrectly configured or the Identity Provider is inaccessible.

19.3 Logout

By initiating the [Logout](#) menu option, an OAuth-authenticated user is only logged out of the Universal Controller.

19.3.1 User Sessions

The administrative functionality in the user interface that allows for management of [User Sessions](#) is applicable only for local Universal Controller sessions; therefore, expiring a user's session through this interface is only expiring the local Universal Controller session.

19.4 User Provisioning

The following diagram illustrates the expectations in Universal Controller for provisioning users from attributes available in the Access / ID Token:



When LDAP synchronization is enabled, provisioning of users through LDAP synchronization takes precedence over provisioning of users through the Access / ID Token during the Single Sign-On process.

During the next scheduled LDAP refresh, consistent with locally created users and groups, any Identity Provider-sourced user or group matching a user or group synchronized from the LDAP automatically is converted to an LDAP-sourced user or group.

Once a user has been provisioned (created) in the Universal Controller database, its Source (ldap:dn or idp:remote-entity-id) determines how the user record is refreshed during the next login through single sign-on.

19.4.1 User Attribute Mapping

For Universal Controller to correlate Access / ID Token attributes with Universal Controller user fields, Universal Controller must provide a way to configure a mapping between Universal Controller User fields and Access / ID Token attributes.

The following Universal Controller [user](#) fields are mappable.

- User Id (Username)
(By default, this field is automatically mapped to the OAuth Subject identifier (sub) from the Access / ID Token, however, you can override this by specifying a **User Id (Username) Claim Name**.)
- First Name (Required)
- Middle Name
- Last Name
- Email

- Title
- Department
- Manager (This field is a reference to another user and is mapped only if the attribute value contains the [Name](#) of a valid Universal Controller user.)
- Business Phone
- Mobile Phone
- Home Phone
- Active

Any user created by [Access / ID Token](#) attributes, during the single sign-on process, is considered an Identity Provider-sourced user.

19.4.2 User Field Defaults

OAuth Single Sign-On provisioned [users](#) are created with the following default field values:

Field	Value
User Password	random, 32-characters
Password Requires Reset	true
Login Method	Single Sign-On
Web Browser Access	-- System Default --
Command Line Access	-- System Default -- Applies only to users designated to use the Standard login method.
Web Service Access	-- System Default -- Applies only to users designated to use the Standard login method.

19.4.3 Group Membership Attribute Mapping

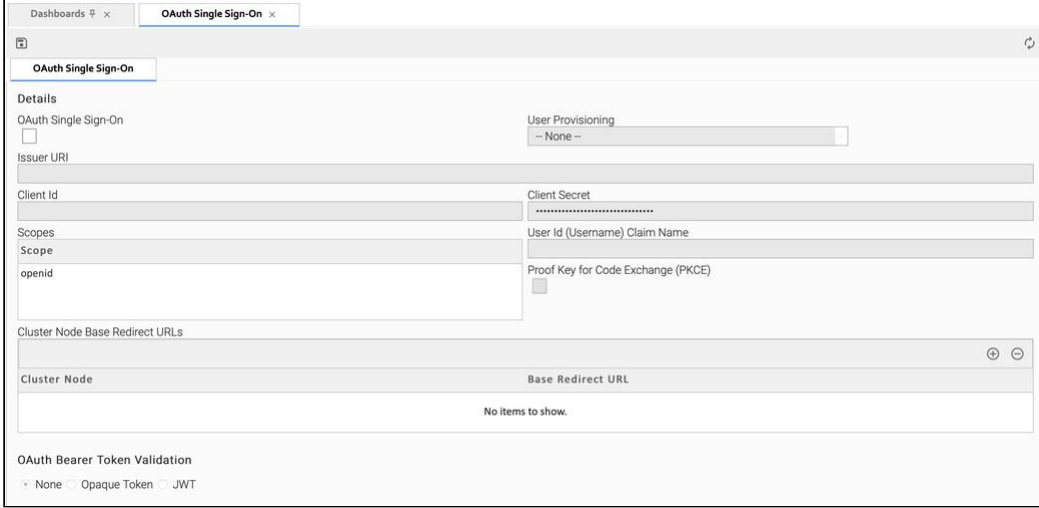

An additional configuration is provided to allow for assigning group membership using the [Access / ID Token](#). Universal Controller allows configuring which [Access / ID Token](#) attribute contains the user's group membership.

To support multiple groups, the attribute is multi-valued, where each attribute value specifies the [Group Name](#) of a Universal Controller group for which the user belongs. If the Universal Controller group is not already provisioned, it is provisioned automatically as an Identity Provider-sourced group.

If a group membership attribute mapping is specified, any time that an Identity Provider-sourced user authenticates using OAuth Single Sign-On, its group membership will be updated based on the group attribute value in the accepted [Access / ID Token](#). The user will be added to, or removed from, groups accordingly.

19.5 OAuth Single Sign-On

An administrator can turn on/off and configure OAuth Single Sign-On through the user interface.

<p>Step 1</p>	<p>From the Administration navigation pane, select OAuth Single Sign-On. The OAuth Single Sign-On page displays.</p> 
<p>Step 2</p>	<p>Enter / select your OAuth Single Sign-On, using the field descriptions below as a guide.</p> <ul style="list-style-type: none"> • Required fields display an asterisk (*) after the field name. • Default values for fields, if available, display automatically.
<p>Step 3</p>	<p>Click the  button.</p>

For information on how to access additional details - such as [Metadata](#) and complete [database Details](#) - for OAuth Single Sign-On (or any type of record), see [Records](#).

19.5.1 OAuth Single Sign-On Field Descriptions

Field Name	Description
Details	This section contains detailed information on the OAuth Single Sign-On.
OAuth Single Sign-On	If enabled, turns on OAuth Single Sign-On. If disabled, all fields are read-only.
User Provisioning	Turn on or off the provisioning of users through Access or ID Token attributes. Select the application access method(s) you want User Provisioning to be applied.
Issuer URI	Universal Controller uses the Issuer URI for discovery of the OpenID Connect / OAuth 2.0 protocol endpoints for authenticating users. One of the following must be a supported endpoint for the authorization server, referred to as a Provider Configuration endpoint or a Authorization Server Metadata endpoint. <code>{Issuer URI}/.well-known/openid-configuration</code> <code>{Issuer URI Host}/.well-known/openid-configuration/{Issuer URI Path}</code> <code>{Issuer URI Host}/.well-known/oauth-authorization-server/{Issuer URI Path}</code>
Scopes	List of OAuth scopes. Default is "openid".
Client Id	Client identifier for the Universal Controller Web Application required for OAuth flows.

Field Name	Description
Client Secret	Client secret used for client authentication with the authorization server.
Proof Key for Code Exchange (PKCE)	Authorization Code grant type requires PKCE as additional verification.
User Id (Username) Claim Name	Specifies the name of a specific claim / attribute to identify the Universal Controller User Id (Username) . If left unspecified will default to the Subject identifier (sub).
Cluster Node Base Redirect URLs	Cluster Node Base Redirect URLs are used to construct the sign-in redirection endpoint for each Cluster Node and are specified as a URL with protocol, server, port, and context path <code>scheme://server:port/contextPath</code> If not specified, defaults to values from the request using the <code>Host</code> header value, if any, or the resolved server name (or server IP address) and server port the client connection was accepted on. It is recommended that you specify the <code>Base Redirect URL</code> for each Cluster Node rather than rely on the <code>Host</code> header value for redirection endpoint resolution. The fully qualified sign-in redirection endpoint for each Cluster Node will be: <code>{Cluster Node Base Redirect URL}/login/oauth2/code/default</code> Each Cluster Node's fully qualified sign-in redirection endpoint must be added to your registered application in the authorization server.
OAuth Bearer Token Validation	Choose the type of OAuth2 Bearer Token authentication supported for Universal Controller Web Service API endpoints. <ul style="list-style-type: none"> • None • Opaque Token • JWT If None , then only Basic and Personal Access Token authentication are supported.
Introspection URI	If OAuth Bearer Token Validation = Opaque Token; The introspection endpoint URI.
JWK Set URI	If OAuth Bearer Token Validation = JWT; Specifies a JSON Web Key (JWK) endpoint that contains public keys used for Access and ID Token verification. If left unspecified, Universal Controller will use the Issuer URI to query the Provider Configuration or Authorization Server Metadata endpoint for the JWK Set URI .
Audience Claim Value	If OAuth Bearer Token Validation = JWT; Recommended specification of the expected audience claim value so the Universal Controller can validate the Token audience (aud) matches.
Attribute Mappings	If User Provisioning = Web Browser Access and/or Web Service Access; This section allows you to configure a mapping between user fields and attributes.
First Name	Name of an attribute from the Access or ID Token containing the user's First Name .
Middle Name	Name of an attribute from the Access or ID Token containing the user's Middle Name .
Last Name	Name of an attribute from the Access or ID Token containing the user's Last Name .
Business Phone	Name of an attribute from the Access or ID Token containing the user's Business Phone .
Home Phone	Name of an attribute from the Access or ID Token containing the user's Home Phone.
Mobile Phone	Name of an attribute from the Access or ID Token containing the user's Mobile Phone .
Email	Name of an attribute from the Access or ID Token containing the user's Email .

Field Name	Description
Title	Name of an attribute from the Access or ID Token containing the user's Title .
Manager	Name of an attribute from the Access or ID Token containing the user's Manager Name .
Department	Name of an attribute from the Access or ID Token containing the user's Department .
Active	Name of an attribute from the Access or ID Token containing the user's Active condition.
Groups	Name of a multi-valued attribute from the Access or ID Token containing the Group Names the user is a member of.

19.5.2 Security

OAuth Single Sign-On can be viewed only by users with the [ops_admin](#) or [ops_sso_admin](#) role, regardless of Navigation Visibility; therefore, only users with the [ops_admin](#) or [ops_sso_admin](#) role can update OAuth Single Sign-On.

19.6 Troubleshooting

The OAuth Single Sign-On **User Id (Username) Claim Name** specifies the name of a specific claim / attribute to identify the Universal Controller [User Id \(Username\)](#). If left unspecified, will default to the Subject identifier (sub).

The claim value received from the Identity Provider for the specified **User Id (Username) Claim Name** correlates directly to the Universal Controller [User Id \(Username\)](#) field of a user record in the Universal Controller database.

If [User Provisioning](#) is off, the claim value must match with the [User Id \(Username\)](#) field of an existing user record in the Universal Controller database.

If [User Provisioning](#) is on, any provisioned user record will be assigned a [User Id \(Username\)](#) equivalent to the claim value.

19.6.1 Login Errors

Universal Controller Uninitialized	<p>While the Universal Controller web application is initializing, the user login flow cannot proceed. Any users attempting to authenticate with OAuth at this time receive the following error:</p> <p>Universal Controller is being initialized. Please try again later.</p>
User Account Not Found	<p>Any OAuth-authenticated user who cannot be linked to a user account in the Universal Controller database is prohibited from accessing the application and receives the following error:</p> <p>User 'username' not synchronized with Universal Controller. Please check with your administrator.</p> <p>Additionally, the uc.log will contain the following warning:</p> <p>User 'username' authenticated by identity provider 'issuer' not synchronized with a Universal Controller account.</p>
User Account Not Active	<p>Any OAuth-authenticated user linked to a Universal Controller user account that is not Active is prohibited from accessing the application and receives the following error:</p> <p>User 'username' not synchronized with Universal Controller. Please check with your administrator.</p> <p>Additionally, the uc.log will contain the following warning:</p> <p>User 'username' authenticated by identity provider 'issuer' is synchronized with an inactive Universal Controller account.</p>

<p>Login Method</p>	<p>Any OAuth-authenticated user linked to a Universal Controller user account that is not designated to use Single Sign-On login method is prohibited from accessing the application and receives the following error:</p> <p>User 'username' not synchronized with Universal Controller. Please check with your administrator.</p> <p>Additionally, the uc.log will contain the following warning:</p> <p>User 'username' authenticated by identity provider 'issuer' is not permitted to use Single Sign-On login method.</p>
<p>User Account Locked</p>	<p>Any OAuth-authenticated user linked to a Universal Controller user account that is locked is prohibited from accessing the application and receives the following error:</p> <p>User account 'username' is locked. Please check with your administrator.</p>
<p>No Web Browser Access</p>	<p>Any OAuth-authenticated user linked to a Universal Controller user account designated with the Single Sign-On login method, but without Web Browser Access, is prohibited from accessing the application and receives the following error:</p> <p>User 'username' not permitted to login through the web browser. Please check with your administrator.</p>

20 Universal Templates

20.1 Universal Templates

The following pages are provided for Universal Templates:

- [Universal Templates Overview](#)
- [Creating a Universal Template](#)
- [Copying Universal Templates](#)
- [Integrations](#)

20.2 Universal Templates Overview

- [Introduction](#)
- [Universal Template Scripts](#)
- [Universal Template Fields](#)
- [Universal Template Variables](#)
- [Setting Up Universal Templates and Tasks](#)
- [Importing / Exporting Universal Templates](#)
 - [Release Levels](#)
- [List Import/Export](#)
- [Restrictions on Universal Template Changes](#)
 - [Restriction Conditions](#)
 - [List of Restrictions](#)

20.2.1 Introduction

Universal Templates allows you to create the templates on which [Integrations](#) are based.

Within each Universal Template, you:

- Enter either:
 - A script that will be executed by any Universal Task based on that Universal Template.
 - An Extension that will be executed by any Universal Task based on that Universal Template through the [Universal Extension](#) framework.
- Create [Fields](#) that the Universal Controller:
 - Assigns matching [variables](#) for use in the Universal Template [script](#).
 - Adds matching fields to the Details of any Universal Task that you create based on that Universal Template.

When you create a Universal Template, the Controller creates a Universal Task type, under the Universal Tasks folder in the [Automation Center](#) navigation pane, based on that Universal Template.

When you create a Universal Task for that Universal Task type, its Details display - among other fields - the fields that you created in the Universal Template.

When you run the Universal Task, it executes the script in the Universal Template, and the variables in the script are resolved to the user-defined values of their matching fields in the Universal Task instance.

Note

Administration of Universal Templates requires the [ops_universal_template_admin](#) or [ops_admin](#) role.

20.2.2 Universal Template Scripts

A Universal Template can contain any user-defined script. Any script [variables](#) to be resolved to Universal Task field values when the task executes the script must be in a specific [format](#).

If you change the script in a Universal Template, the Universal Tasks based on that template execute that changed script when they are run. With Universal Task / Universal Template, you do not have to change the scripts in multiple tasks, just in the template.

20.2.3 Universal Template Fields

For each [Field](#) that you create for a Universal Template, the Controller:

- Assigns it a matching [variable](#) for use in the Universal Template [script](#).
- Adds a matching field to the Details of all [Integrations](#) based on that template.

When a Universal Task is run, it executes the script, and the system-assigned script variables are resolved to the user-defined values of their matching fields in the Universal Task instance.

You can enter seven types of Fields in a Universal Template:

- Text
- Integer
- Boolean
- Choice
- Credential
- Script
- Array

For each Field, you specify information regarding its appearance in the task Details for any Universal Task based on that template, including:

- Value
- Location
- Required or optional

Note

You must [refresh the list](#) of Universal Tasks that are based on a Universal Template in order for any changes to the Universal Template Fields to be applied to the Universal Task Details.

For detailed information about these Fields, see [Creating Universal Template Fields](#).

20.2.4 Universal Template Variables

For each [Field](#) that you create for a Universal Template, the Controller assigns it a variable and adds the Field to the Details of all Universal Tasks based on that template.

These system-assigned variables are provided for use in the Universal Template [script](#). When a Universal Task based on the template is run, it executes the script in the template, and all system-assigned variables in the script are resolved to the values of their matching fields in the Universal Task.

The system-assigned variables that are available for use in a Universal Template script must be in this format:

`ops_<Variable Prefix>_<Field Name>`

<code>ops_</code>	Controller prefix used for all built-in variables and system-assigned variable.
<code><Variable Prefix></code>	Value of the user-defined Variable Prefix field in the Universal Template Details , followed by an underscore (<code>_</code>) character.
<code><Field Name></code>	Name (not Label) of the user-defined Universal Template field to which the Controller assigns this variable.

Note

If a Universal Template Field is required (either directly via the [Required](#) field in the Universal Template Field Details or indirectly via the [Required If Field](#) field), and its matching field in the Details of a Universal Task Instance is undefined after variable resolution, the Universal Task Instance will transition into the [Start Failure](#) status.

If a Universal Template Field is not Required, and its matching field in Details of a Universal Task Instance is undefined after variable resolution, the system-assigned variable for that Field will resolve to blank.

If a Universal Template Field with [Type](#) = Choice has a [Choice](#) with a NULL (or blank) [Value](#) at run time, a Universal Task Instance will transition into the [Start Failure](#) status.

20.2.5 Setting Up Universal Templates and Tasks

Step 1	Create a Universal Template , which includes selecting the type of Agent(s) on which Universal Tasks based on this Universal Template can be run, and a variable prefix used for script variables that you want resolved when a Universal Task executes the script in this Universal Template.
Step 2	Enter a script in the Universal Template that all Universal Tasks based on this Universal Template will execute when they are run.

Step 3	After you have entered/selected any other desired values in the Universal Template Details , save the Universal Template.
Step 4	For each parameter in the script that you want to replace with a variable, create a Universal Template Field of an appropriate Field type. The Controller automatically assigns a variable (format: ops_<Variable Prefix>_<Field Name>) to each Field, using the variable prefix that you specified in Step 1, and will place those Fields in the Details of all Universal Tasks based on this Universal Template.
Step 5	Replace the appropriate parameters in the script with the system-assigned variables.
Step 6	Update the Universal Template. Now that the Universal Template has one or more defined Fields, the Controller creates a Universal Task type for it and adds the Universal Task type to the Automation Center navigation pane. (You must refresh the Automation Center navigation pane in order to see the new Universal Task type.
Step 7	Create a Universal Task for that Universal Task type. The Universal Task Details will contain the fields that you created in the Universal Template for that Universal Task type.
Step 8	Enter/change values in the Universal Task fields that match the Universal Template fields, based on how you want their matching variables in the script to be resolved.
Step 9	Run the task, which executes the script. The variables in the script are resolved to the values of their matching fields in the Universal Task.

20.2.6 Importing / Exporting Universal Templates

The Import/Export Universal Template feature supports importing/exporting a Universal Template as a zip file.

A Universal Template zip file includes the following entries:

File Name	Description	Optional
template.json	The Universal Template definition in JSON format.	No
template_icon.png	The Universal Template Icon in PNG format. <div style="border: 1px solid orange; padding: 5px; margin: 10px 0;"> <p>Note Icon metadata will be set as attributes in the Universal Template JSON.</p> </div>	Yes
extension_archive.zip	The Universal Template Extension Archive in ZIP format.	Yes

Export	To export an existing Universal Template as a zip file, click the Export Template button in the Universal Template Details. (You can also click Export Template in the Action menu that displays for that Universal Template record.) The exported Universal Template has the following filename format: unv_tmplt_UniversalTemplateName-extensionVersion.zip <div style="border: 1px solid orange; padding: 5px; margin-top: 10px;"> Any character in the <i>UniversalTemplateName</i> that is not an alphanumeric or underscore, will be replaced with an underscore. </div>
Import	To import a Universal Template zip file, click the Import Template... button on the Universal Templates list.

20.2.6.1 Release Levels

Export Template sets the following release level attributes in the Universal Template JSON:

Attribute	Description
minReleaseLevel	The minimum Universal Controller release level required to import the Universal Template. "minReleaseLevel" : "7.0.0.0"
exportReleaseLevel	The release level of the Universal Controller that the Universal Template was exported from. "exportReleaseLevel" : "7.0.0.0"

Import Template validation prevents importing a Universal Template if the Universal Controller does not meet the minimum release level requirement:

Cluster Node release level is 7.0.0.0, which does not meet the minimum release level of 7.0.0.1 for the Template.

20.2.7 List Import/Export

The [List Import/Export](#) feature continues to support exporting the Universal Task and Universal Template, as it has in previously releases.

Comparable to the Universal Template **Icon**, the **Extension Archive** will be encoded in the XML as base64.

List Import validation prevents an extension name from being associated with more than one Universal Template:

The template 'template-name1' specifies an extension name 'extension-name' that is already associated with template 'template-name2'.

20.2.8 Restrictions on Universal Template Changes

There are restrictions on the changes that you can make on Universal Templates, because some changes (such as adding a new field with a default value), can automatically change existing Universal Task and Universal Task Instances based on that Template.

Some Universal Template changes are restricted, based on the existence of Universal Tasks and Universal Task Instances.

Universal Templates do not have versioning; therefore, reverting a Universal Template change must be done manually, and the restrictions still apply.

Some changes cannot be reverted; for example, you cannot broaden the Agent Type, and then narrow it. Universal Tasks do have versioning, but changes to a Universal Template that automatically change a Universal Task, such as adding a new field with a Default Value, do not generate a new version.

Any promoted Bundle that includes Universal Template changes cannot be restored.

20.2.8.1 Restriction Conditions

Restrictions on changing Universal Templates (see [List of Restrictions](#), below) depend on the following conditions:

Condition	Restrictions
Both Universal Tasks and Universal Task Instances exist.	All restrictions apply.
Universal Tasks exist, but no Universal Task Instances exist.	All restrictions apply.
Universal Task Instances exist, but no Universal Tasks exist.	All restrictions apply if the Universal Task Instances are still active .
Neither Universal Tasks nor Universal Task Instances exist.	None of the restrictions apply unless otherwise noted.

20.2.8.2 List of Restrictions

Action	Restriction
For Universal Templates	The following Delete and Update actions refer to Universal Templates and the fields in Universal Template Details.
Delete a Template	<ul style="list-style-type: none"> Prohibited.
Update a Template	
<ul style="list-style-type: none"> Name 	<ul style="list-style-type: none"> Allowed.
<ul style="list-style-type: none"> Variable Prefix 	<ul style="list-style-type: none"> Allowed; Requires a corresponding Script change.
<ul style="list-style-type: none"> Agent Type 	<ul style="list-style-type: none"> Broadening Allowed (Windows to Any, Linux/Unix to Any) Narrowing Not Allowed (Any to Windows, Any to Linux/Unix, Windows to Linux/Unix, Linux/Unix to Windows)
<ul style="list-style-type: none"> Use Common Script Script Linux/Unix Script Windows Script Windows Script Type 	<ul style="list-style-type: none"> Allowed.
For Universal Template Fields	The following Add, Delete, and Update actions refer to the user-defined Fields that are added to a Universal Template.
Add a Field	<ul style="list-style-type: none"> Allowed (with conditions); Requires a corresponding Script change. Prohibited if either Required or Required If Field/Required If Field Value(s) are specified. Default Value applied to all Universal Tasks, but not to Universal Task Instances.

<p>Delete a Field</p>	<ul style="list-style-type: none"> • Allowed (with conditions); Requires a corresponding Script change. <ul style="list-style-type: none"> • Update the only Field. • Create a new Field prior to deleting the only Field. Prohibited if the Field is the only Field in the Universal Template Details; User can either: <div style="border: 2px solid orange; padding: 10px; margin: 10px 0;"> <ul style="list-style-type: none"> • This restriction applies regardless of the existence of Universal Task/ Task Instances associated with the Universal Template. </div> <ul style="list-style-type: none"> • NULL value is applied to deleted Text, Integer, Choice, and Credential Fields in all Universal Tasks, but not Universal Task Instances. • A boolean False value is applied to a deleted Boolean Field for all Universal Tasks, but not Universal Task Instances.
<p>Update a Field</p>	
<ul style="list-style-type: none"> • Name 	<ul style="list-style-type: none"> • Prohibited.
<ul style="list-style-type: none"> • Required 	<ul style="list-style-type: none"> • Allowed (with conditions). • Unchecking the Required field; Allowed (without conditions). • Checking the Required field; Allowed only if all Universal Tasks based on the Template have a value specified for this Template Field (does not apply to Universal Task Instances).
<ul style="list-style-type: none"> • Require If Field • Require If Field Value(s) 	<ul style="list-style-type: none"> • Allowed (with conditions). • Removing a Require If Field specification; Allowed (without conditions). • Adding a Require If Field specification; Allowed only if all Universal Tasks based on this Template have a value specified for this Template Field (condition does not apply to Universal Task Instances).
<ul style="list-style-type: none"> • Type 	<ul style="list-style-type: none"> • Prohibited.
<ul style="list-style-type: none"> • Mapping 	<ul style="list-style-type: none"> • Prohibited.
<ul style="list-style-type: none"> • Default Value 	<ul style="list-style-type: none"> • Allowed. • No Universal Task data will be updated; multi-update can be performed to apply any required changes to pre-existing Universal Task data.
<ul style="list-style-type: none"> • Length 	<ul style="list-style-type: none"> • Allowed. • No Universal Task data will be updated, as it may not comply with updated Length constraint.
<ul style="list-style-type: none"> • Minimum • Maximum 	<ul style="list-style-type: none"> • Allowed. • No Universal Task data will be updated, as it may not comply with updated Minimum/ Maximum constraint.
<ul style="list-style-type: none"> • Boolean Value Type • Boolean Yes Value • Boolean No Value 	<ul style="list-style-type: none"> • Allowed.

<ul style="list-style-type: none"> • Field Display: <ul style="list-style-type: none"> • Label • Hint • Sequence • Form Column Span • Form Start Row • Form End Row • Add To Default List View 	<ul style="list-style-type: none"> • Allowed.
For Universal Template Field Choices	The following Add, Delete, and Update actions refer to the Choices that are defined for a Universal Template Field type of Choice .
Add a Choice	<ul style="list-style-type: none"> • Allowed.
Delete a Choice	<ul style="list-style-type: none"> • Allowed (with conditions). • Update the Choice Value. • Create a new Choice prior to removing the Choice.
Update a Choice	
<ul style="list-style-type: none"> • Value 	<ul style="list-style-type: none"> • Allowed • Any Universal Task using the previous value will be updated with the new value, but not Universal Task Instances.
<ul style="list-style-type: none"> • Use Value For Label 	<ul style="list-style-type: none"> • Allowed.
<ul style="list-style-type: none"> • Label 	<ul style="list-style-type: none"> • Allowed.
<ul style="list-style-type: none"> • Sequence 	<ul style="list-style-type: none"> • Allowed.

20.3 Creating a Universal Template

- [Overview](#)
- [Creating a Universal Template](#)
 - [Universal Template Details](#)
 - [Universal Template Details Field Descriptions](#)
- [Creating Universal Template Fields](#)
 - [Field Details Field Descriptions](#)
- [Creating Universal Template Field Choices](#)
 - [Choice Details Field Descriptions](#)
- [Creating Commands](#)
 - [Command Details Field Descriptions](#)
 - [Command Permission](#)
 - [Command Output](#)
- [Creating Event Templates](#)
 - [Event Template Details Field Descriptions](#)
 - [Auditing Universal Events](#)

20.3.1 Overview

This page tells you how to create a [Universal Template](#), [Universal Template Fields](#), [Universal Template Field Choices](#), and [Universal Template Event Templates](#).

You must create Universal Templates in order to create [Integrations](#). For each Universal Template that you create, Universal Controller creates a Universal Task type for which you can create one or more Universal Tasks.

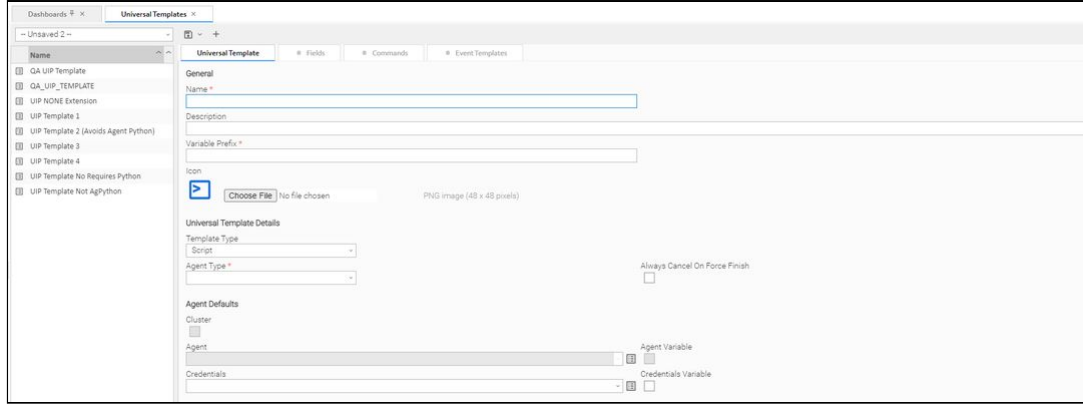
Each Universal Field that you create for a Universal Template becomes a field in every Universal Task based on the corresponding Universal Task type.

If the Universal Template Field that you create is a Choice (drop-down list) field, you must create the choices.

If the Universal Template [Template Type](#) is [Extension](#), you can create [Event Templates](#) for the Universal Template .

For detailed information on Universal Templates and Fields, see [Universal Templates Overview](#).

20.3.2 Creating a Universal Template

<p>Step 1</p>	<p>From the Administration navigation pane, select Universal Templates. The Universal Templates list displays.</p> <div data-bbox="454 922 1541 1104" style="border: 1px solid orange; padding: 5px;"> <p>Note</p> <p>The System Template column, which does not display by default, identifies any Built-In Universal Templates that have been loaded from the List/Load Built-In Universal Templates server operation.</p> </div> <p>To the right of the list, Universal Template Details for a new Universal Template displays.</p> 
<p>Step 2</p>	<p>Enter / select Details for a new Universal Template, using the field descriptions below as a guide.</p> <ul style="list-style-type: none"> • Required fields display an asterisk (*) after the field name. • Default values for fields, if available, display automatically. <p>To display more of the Details fields on the screen, you can either:</p> <ul style="list-style-type: none"> • Use the scroll bar. • Temporarily hide the list above the Details. • Click the New button above the list to display a pop-up version of the Details.
<p>Step 3</p>	<p>Click a Save button. The template is added to the database, and all buttons and tabs in the Universal Template Details are enabled.</p>

Note

To [open](#) an existing record on the list, either:

- Click a record in the list to display its record Details below the list. (To clear record Details below the list, click the **New** button that displays above and below the Details.)
- Clicking the [Details icon](#) next to a record name in the list, or right-click a record in the list and then click **Open** in the [Action menu](#) that displays, to display a pop-up version of the record Details.
- Right-click a record in the a list, or open a record and right-click in the record Details, and then click **Open In Tab** in the [Action menu](#) that displays, to display the record Details under a new tab on the record list page (see [Record Details as Tabs](#)).

20.3.2.1 Universal Template Details

The following Universal Template Details is for a new Universal Template, which does not yet contain any user-defined Fields. (See [Creating Universal Template Fields](#) for an existing Universal Template Details containing user-defined fields.)

Depending on the values that you enter / select for these fields, more (or less) other fields may display. See the [field descriptions](#), below, for a description of all fields that may display in the Universal Template Details.

The screenshot shows the 'Universal Template' configuration page with the following sections and fields:

- General:** Name, Description, Variable Prefix, Icon (with 'Choose File' button and 'No file chosen' status).
- Universal Template Details:** Template Type (Script), Agent Type, Always Cancel On Force Finish (checkbox).
- Agent Defaults:** Cluster, Agent, Credentials, Agent Variable, Credentials Variable (checkboxes).
- Defaults:** Runtime Directory, Environment Variables table (Name, Value) showing 'No items to show'.
- Result Processing Defaults:** Exit Code Processing (Success Exitcode Range), Exit Codes, Automatic Output Retrieval (None).
- Field Restrictions:** Agent Fields, Environment Variables Field, Automatic Output Retrieval Fields, Credential Fields, Exit Code Processing Fields.

For information on how to access additional details - such as [Metadata](#) and complete [database Details](#) - for Universal Templates (or any type of record), see [Records](#).

20.3.2.2 Universal Template Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in the Universal Template Details.

Field Name	Description
General	This section contains general information about the template.
Name	Name of this Universal Template.
Extension	If Template Type is Extension; Python Extension name.
Description	Description of this record. Maximum length is 255 characters.
Variable Prefix	<p>Variable prefix to append to the default prefix (ops_) for the system-assigned variables that are provided for the user-defined Fields in this Universal Template. The format of a system-assigned variable is: <code>ops_</code>, followed by the specified Variable Prefix, followed by the underscore character <code>_</code>, followed by the Name (not the Label) of the user-defined Field. For example: <code>ops_oeps_username</code>.</p> <p>System-assigned variables are meant to be incorporated into the Script specified for the Universal Template. All system-assigned variables embedded in a Universal Template Script will be resolved when the Universal Task created from the template executes the Script.</p>
Icon	<p>Icon used for all Universal Tasks based on this Universal Template. The icon displays in the following locations:</p> <ul style="list-style-type: none"> Workflow Editor <p>A default icon displays in the Icon field for every Universal Template (see Universal Template Details, above).</p> <p>If you want to select a custom icon, click the Browse button and then search and select that icon. Any custom icon must be a PNG image, 48 x 48 pixels.</p> <div style="border: 1px solid yellow; padding: 10px; margin: 10px 0;"> <p>Note</p> <p>The button that lets you search for an icon file, and the text message alongside it, is browser-dependent. In this example, which shows a Browse... button and No file selected. text, the browser was Firefox.</p> </div> <p>After you select a custom icon, the file name for that icon displays next to the Browse button. When you save / update the Universal Template, the icon displays in the Icon field, but the file name no longer displays.</p> <p>If you selected a custom icon but want to restore the default icon, right-click anywhere in the Universal Template Details and, in the Action menu, click Restore Default Icon.</p>
Log Level	If Template Type is Extension; Log Level for Universal Extension logging. Specify Inherited to inherit the Agent Log Level setting
Universal Template Details	This section contains assorted detailed information about the template.

Template Type	Type of Universal Template. Options: <ul style="list-style-type: none"> • Script Universal Template will be executed as a Script. • Extension Universal Template will be executed through the Universal Extension framework.
Send Extension Variables	If Template Type is Extension; Specification for whether the Extension should be provided with task instance variable data when launched. Options: <ul style="list-style-type: none"> • None Do not provide the Extension with task instance variable data. • Local Provide the Extension with task instance variable data.
Agent Type	Type of Agent(s) on which Universal Tasks based on this template can be run. Options: <ul style="list-style-type: none"> • Linux/Unix • Windows • IBM i IBM i can only be selected if Template Type is Extension.
Always Cancel On Force Finish	Specification for whether or not to always perform a Cancel when Force Finishing a Universal Task for this template.
Use Common Script	If Template Type is Script and both Linux/Unix Agent Type and Windows Agent Type are selected; Indication that the specified Script can be executed by both Linux/Unix and Windows Agents.
Script	If Use Common Script is enabled; Script to be executed by the specified Agent.
Linux/Unix Script	If Template Type is Script and Linux/Unix Agent Type is selected (and Use Common Script is not enabled); Script to be executed by the Linux/Unix Agent.
Windows Script	If Template Type is Script and Windows Agent Type is selected (and Use Common Script is not enabled); Script to be executed by the Windows Agent.
Windows Script File Type	If Template Type is Script and Windows Agent Type is selected; Type of Windows script to be executed by the Windows Agent. Options: <ul style="list-style-type: none"> • bat • cmd • js • ps1 • py • uapy • vbs • wsf • Other... (any user-specified script file type)
Agent Defaults	This section contains Agent default fields that will display for every Universal Task based on this template.
Cluster	Indication that selecting an Agent Cluster is required and selecting Broadcast , which lets you select a Cluster Broadcast , is optional. If Cluster is selected, selecting an Agent is not required unless Agent Variable is selected.
Broadcast	Displays only if Cluster is selected; Indication that selecting a Cluster Broadcast is required. Selecting Broadcast hides the Agent and Agent Cluster fields; you cannot select values for them.
Agent	Name of the Agent resource that identifies the machine where the operation will run.

Agent Cluster	Group of Agents, one of which the Controller will choose to run this task (compare with Cluster Broadcast). You can specify an agent cluster in addition to or in place of a specific Agent. If you specify an Agent and an agent cluster, the Controller first tries to run the task on the specific agent. If the Agent is not available, the Controller reverts to the agent cluster. See Agent Clusters for more information.
Agent Variable	Indication of whether the Agent field is a reference field for selecting a specific Agent (unchecked) or a text field for specifying the Agent as a variable (checked). Use the format: <code>\${variable name}</code> . The variable must be a supported type as described in Variables and Functions . <div style="border: 1px solid orange; padding: 10px; margin-top: 10px;"> <p>Note</p> <p>When updating multiple Tasks, to change from using an Agent reference to using an Agent variable, you must change the Agent Variable field to Yes and specify the Agent variable in the Agent Unresolved field. Conversely, to change from using an Agent variable to using an Agent reference, you must change the Agent Variable field to No and specify the Agent reference in the Agent field.</p> </div>
Agent Cluster Variable	Indication of whether the Agent Cluster field is a reference field for selecting a specific Agent Cluster (unchecked) or a text field for specifying the Agent Cluster as a variable (checked). Use the format: <code>\${variable name}</code> . The variable must be a supported type as described in Variables and Functions . <div style="border: 1px solid orange; padding: 10px; margin-top: 10px;"> <p>Note</p> <p>When updating multiple Tasks, to change from using an Agent Cluster reference to using an Agent Cluster variable, you must change the Agent Cluster Variable field to Yes and specify the Agent Cluster variable in the Agent Cluster Unresolved field. Conversely, to change from using an Agent Cluster variable to using an Agent Cluster reference, you must change the Agent Cluster Variable field to No and specify the Agent Cluster reference in the Agent Cluster field.</p> </div>
Credentials	<p>Credentials under which an Agent runs this task. These Credentials override any Credentials provided in the Agent Details for any Agent running this task.</p> <p>If the user does not have a login shell, add a - character in front of the runtime credentials name. The Controller will provide a shell for that user and strip the - character from the name.</p>
Credentials Variable	Indication of whether the Credentials field is a reference field for selecting a specific Credential (unchecked) or a text field for specifying the Credential as a variable (checked). Use the format: <code>\${variable name}</code> . The variable must be a supported type as described in Variables and Functions . <div style="border: 1px solid orange; padding: 10px; margin-top: 10px;"> <p>Note</p> <p>When updating multiple Tasks, to change from using a Credentials reference to using a Credentials variable, you must change the Credentials Variable field to Yes and specify the Credentials variable in the Credentials Unresolved field. Conversely, to change from using a Credentials variable to using a Credentials reference, you must change the Credentials Variable field to No and specify the Credentials reference in the Credentials field.</p> </div>
Cluster Broadcast	Group of Agents, all of which will run this task (compare with Agent Cluster). If Broadcast is selected for a task, you must select a Cluster Broadcast instead of a specific Agent and/or agent cluster. Each instance of the task running on its own Agent becomes a separate task instance record in the database and displays separately on the Activity Monitor.
Cluster Broadcast Variable	Indication of whether the Cluster Broadcast field is a reference field for selecting a specific Cluster Broadcast (unchecked) or a text field for specifying the Cluster Broadcast as a variable (checked). Use the format: <code>\${variable name}</code> . The variable must be a supported type as described in Variables and Functions .

Run with Highest Privileges	<p>If Agent Type is Windows or Any; Execute the task using an elevated privileges token, rather than one subject to User Account Control (UAC) restrictions. An elevated token allows a process to execute with all the privileges available to its specified credentials. For example, a task executed with an administrative account will behave as though it received permission via a UAC dialog to perform a privileged operation.</p> <p>This option will not give a user account privileges that have are not already granted to it. For example, taking ownership of a file is a privileged operation by default. A task will still fail even with this option selected if it is run with a regular user account that has not been granted the ability to change file ownership.</p> <div style="border: 1px solid orange; padding: 5px; margin-top: 10px;"> <p>Note</p> <p>This option only will affect tasks executed on Windows systems that support User Account Control (UAC). It will have no affect on tasks run on Windows releases prior to Vista (for example, Windows XP, Server 2003).</p> </div>
Interact with Desktop	<p>If Universal Task Interact with Desktop Permitted system property = true; Specification for whether or not a task that runs an application with a GUI requires some manual actions from a user (for example, clicking buttons or entering values).</p> <div style="border: 1px solid orange; padding: 5px; margin-top: 10px;"> <p>When using this option to display GUI applications on any version of Windows that enforces session 0 desktop isolation (that is, Windows Vista and later), the GUI will only be accessible from the interactive console session. Further, the task will execute using the credentials of the user logged into that session.</p> <p>This means that any GUI-based application executed via a Windows task will not be visible from a remote desktop session. It will be visible only from console of the interactive session that exists on the system itself (that is, the session you would see from a monitor attached directly to the Windows machine or by logging in via a VM's host UI).</p> </div>
Create Console	<p>If Interact with Desktop is enabled; Specification for whether or not to allocate a new console for the process, rather than having it inherit one.</p>
Template Defaults	<p>This section contains template-specific default fields that will display for every Universal Task based on this template.</p>
Runtime Directory	<p>Directory from which the application should be executed. Variables supported.</p>
Environment Variables	<p>Allows you to enter environment variables needed by the program to run.</p> <p>To add a variable, click the + icon and enter a Name and Value. To delete a variable, select in the list of variables and click the - icon.</p> <p>You can add a maximum of 4,000 characters for the combined Names and Values of all variables. The variable is listed in the space underneath.</p>
Send Environment Variables	<p>Specifies which type of operations should send the extension the Environment Variables.</p> <p>Environment Variables will always be sent for the Launch operation, however, sending them for the Dynamic Choice and Dynamic Command operations is optional.</p> <p>If your Dynamic Choice or Dynamic Command operations do not require the Environment Variables, you should leave these options unselected.</p> <div style="border: 1px solid orange; padding: 5px; margin-top: 10px;"> <p>Variables and Functions are supported for the Environment Variables option in Dynamic Choice or Dynamic Command.</p> </div>
Result Processing Defaults	<p>This section contains assorted detailed information about result processing defaults for this task.</p>

Exit Code Processing	<p>Specifies how the Controller should determine whether the executed command failed or completed successfully.</p> <p>Options:</p> <ul style="list-style-type: none"> • Success Exitcode Range Command is considered completed successfully if its exit code falls within the range specified in the Exit Codes field. • Failure Exitcode Range Command is considered failed if its exit code falls within the range specified in the Exit Codes field. • Success Output Contains Command is considered completed successfully if its output contains the text specified in the Scan Output For field. • Failure Output Contains Command is considered failed if its output contains the text specified in the Scan Output For field. • Step Conditions (z/OS only) Command is considered completed successfully/failed if any of its specified condition codes falls within the range specified under the Step Conditions tab (see Creating Step Conditions).
Output Type	<p>Required if Exit Code Processing = Success Output Contains or Failure Output Contains; type of output.</p> <p>Options:</p> <ul style="list-style-type: none"> • Standard Output (STDOUT) • Standard Error (STDERR) • File • Extension
Content Type	<p>If Output Type is Extension; Output type that the Result Processing mechanism should assume when evaluating the output.</p> <p>If the expected output is XML or JSON, it is valid to specify Text. However, when specifying XML or JSON, the output must be XML or JSON respectively; otherwise, the parsing will fail and the path expression evaluation will return no matches.</p>
Path Expression	<p>XPath Expression if Content Type is XML, or the JsonPath Expression if Content Type is JSON, to be used when evaluating the Extension output.</p>
Operator	<p>If Output Type is Extension; Condition Operator to evaluate in combination with the specified condition Value.</p>
Value	<p>If Output Type is Extension; Condition Value to evaluate in combination with the specified condition Operator.</p>
Strategy	<p>If Content Type is XML or JSON; Strategy to take when applying the condition Operator and Value against the Path Expression matches when Content Type is XML or JSON.</p>
Auto Cleanup	<p>Enables the auto cleanup of Extension output upon task instance completion or, if the task instance is within a workflow, when the top level workflow instance completes.</p>
Scan Output For	<p>Required if Exit Code Processing = Success Output Contains or Failure Output Contains; text for which the Controller should scan the output file. The Controller will process this field as a regular expression.</p>
Output File (for Creating a Universal Template#Exit Code Processing)	<p>Required if Output Type = File; path and file name of the output file that should be scanned for the text in the Scan Output For field.</p>
Exit Codes	<p>Required if Exit Code Processing = Success Exitcode Range or Failure Exitcode Range; range of exit codes. Format: Numeric. Use commas to list a series of exit codes; use hyphens to specify a range. Example: 1,5, 22-30.</p> <p>Variables are supported.</p>

Automatic Output Retrieval	<p>Specifies whether you want the Controller to automatically retrieve any output from the job and attach it to the task instance record.</p> <p>The Task Automatic Output Retrieval Default Universal Controller system property specifies the default value for this field.</p> <p>Options:</p> <ul style="list-style-type: none"> • None Do not attach any output to the task instance record. • Standard Output Attach all standard output. • Standard Error Attach standard error output. • File Attach the file specified in the Output File field. • Standard Output/Error Attach all standard output and standard error output. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Note</p> <p>Tasks specifying Automatic Output Retrieval will fail with Start Failure if the Agent Output Prohibited field is true in the Details of the specified Agent.</p> </div>
Wait For Output	<p>If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error, and Failure Only is not enabled (checked); Specification that the task should wait for the requested output before completing.</p>
Failure Only	<p>If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error, and Wait For Output is not enabled (checked); Indication for whether output should be retrieved on task failure only.</p>
Start Line	<p>If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error; Instructs the Controller to retrieve data beginning at the line indicated.</p> <ul style="list-style-type: none"> • If a Start Line value is not specified, the default is 1. • If the Start Line value is -1, data will be retrieved starting at the end of the file.
Number of Lines	<p>If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error; Allows you to limit the retrieved data to the number of lines specified. If a Number of Lines value is not specified, the default is the value of the Retrieve Output Default Number Of Lines Universal Controller system property.</p>
Scan Text	<p>If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error; Regex pattern that the Controller will search for a match for in STDOUT/STDERR or a specified file. The Controller will include the Number of Lines above and below the first line matched.</p> <p>if the Regex pattern is not found, the following message is returned: OPSWISE WARNING - Scan text string not found.</p>
Output File (for Creating a Universal Template#Automatic Output Retrieval)	<p>Required if Automatic Output Retrieval = File; path and file name containing the output that you want automatically retrieved and attached to the task instance.</p>

Field Restrictions	<p>This section lets you specify how fields in the Defaults section of the Universal Template are displayed in Universal Tasks based on the template.</p> <p>The Field Restrictions section places the fields in the Default section into five groups, as shown below: Agent, Credential, Environment Variables, Exit Code Processing, Automatic Output Retrieval. All fields in a field group share the same restriction.</p> <p>The Restriction options are the same for each field group:</p> <ul style="list-style-type: none"> • No Restriction No restrictions apply to any fields in this group. (This is the default selection for all field groups.) • Read Only All fields in the field group display as Read Only in the Universal Task. • Hidden All fields in the field group are hidden in the Universal Task. <div style="border: 1px solid orange; padding: 10px; margin-top: 10px;"> <p>The Hidden option is meant to minimize what is displayed on the Universal Task form and not meant as a means to prevent a user from viewing the field information. A user can still use the Details > Show Details to view the Hidden field information. Furthermore, Hidden fields appear as Read Only on any Dynamic Choice and Dynamic Command windows.</p> </div>
Agent Fields	Restriction for the following Agent fields: Agent, Agent Variable, Agent Cluster, Agent Cluster Variable, and Cluster Broadcast.
Credential Fields	Restriction for the following Credential fields: Credentials, Credentials Variable, Run with Highest Privileges, and Runtime Directory.
Environment Variables Fields	Restriction for the following Environment Variable field: Environment Variables.
Exit Code Processing Fields	Restriction for the following Exit Code Processing fields: Exit Code Processing, Exit Codes, Output Type, Scan Output for, and Output File.
Automatic Output Retrieval Fields	Restriction for the following Automatic Output Retrieval Fields: Automatic Output Retrieval, Wait For Output, Failure Only, Start Line, Number of Lines, Scan Text, and Automatic Output File.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Extension Checksum	SHA-256 checksum for the Python Extension Archive.
Extension Version	Version of the Extension.
Extension API Level	API level that the Extension is compatible with.
Extension Requires Python	Python version(s) that the Python Extension Archive is guaranteed to be compatible with.
Extension Python Extra Paths	List of paths to add to the search path for Python modules.
Extension Zip Safe	When true, specifies the extension should run as a zip file. (default) When false, specifies the extension should run from a folder with the extracted extension and platform dependency wheel.

Extension Owner	Author of the Extension.
Extension Organization	Organization of the Author.
Extension Comments	(Any comments about the Extension.)
Buttons	This section identifies the buttons displayed above and below the Universal Template Details that let you perform various actions.
Save	Saves a new Universal Template record in the Controller database.
Save & New	Saves a new Universal Template record in the Controller database and redisplay empty Details so that you can create another Universal Template.
Save & View	Saves a new Universal Template record in the Controller database and continues to display that record.
New	Displays empty (except for default values) Details for creating a new record.
Update	Updates the Universal Template record in the Controller database.
Delete	Delete the currently open Universal Template.
Refresh	Refreshes any dynamic data displayed in the Universal Template Details.
Close	For pop-up view only; closes the pop-up view of this Universal Template.
Tabs	This section identifies the tabs across the top of the Universal Template Details that provide access to additional information about the template.
Fields	Allows you to create the user-defined fields that will display in the Universal Tasks based on this template.
Commands	If Template Type is Extension; additional commands (operations) supported against a task instance (see Creating Commands ,

20.3.3 Creating Universal Template Fields

Universal Template [Fields](#) are assigned variables to be used in the Universal Template script and placed in the Details of any Universal Task based on the Universal Template.

Step 1	From the Administration navigation pane, select Configuration > Universal Templates . The Universal Templates list displays.
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Step 2

Open an existing Universal Template for which you want to create Fields.

The screenshot shows the configuration interface for a Universal Template. The 'Fields' tab is active. The interface is divided into several sections:


- General:** Includes fields for Name (UIP Template 1), Extension (qaextension11), Description, Variable Prefix (qaextension11), and Icon (Choose File).
- Universal Template Details:** Includes Template Type, Agent Type, Send Extension Variables, and Always Cancel On Force Finish.
- Agent Defaults:** Includes Cluster, Agent, Credentials, and Run with Highest Privileges.
- UIP Template 1 Defaults:** Includes Runtime Directory and Environment Variables.
- Result Processing Defaults:** Includes Exit Code Processing, Success Exitcode Range, Exit Codes, and Automatic Output Retrieval.
- Field Restrictions:** Includes Agent Fields, Environment Variables Field, Automatic Output Retrieval Fields, Credential Fields, and Exit Code Processing Fields.

Step 3

Click the **Fields** tab to display the Fields list.

The screenshot shows the 'Fields' tab selected, displaying a list of 34 fields. The table has the following columns: Name, Label, Type, Mapping, Restriction, Add To Default List View, Updated By, and Updated.

Name	Label	Type	Mapping	Restriction	Add To Default List View	Updated By	Updated
text_no_res	Text No Restriction	Text	Text Field 1	No Restriction	No	Imathews	2021-05-21 14:09:56 -0400
text_output_only	Text Output Only	Text	Text Field 2	Output Only	No	Imathews	2021-05-21 14:09:56 -0400
large_text_no_res	Large Text	Text	Large Text Field 1	No Restriction	No	Imathews	2021-05-21 14:09:57 -0400
large_text_output_only	Large Text Output Only	Text	Large Text Field 2	Output Only	No	Imathews	2021-05-21 14:09:57 -0400
json_text_no_res	JSON	Text	Text Field 19	No Restriction	No	Imathews	2021-05-21 14:09:57 -0400
json_text_output_only	JSON Output Only	Text	Text Field 17	Output Only	No	Imathews	2021-05-21 14:09:57 -0400
yaml_text_no_res	YAML	Text	Text Field 4	No Restriction	No	Imathews	2021-05-21 14:09:57 -0400
yaml_text_output_only	YAML Output Only	Text	Text Field 18	Output Only	No	Imathews	2021-05-21 14:09:57 -0400
integer_no_res	Integer No Restriction	Integer	Integer Field 1	No Restriction	No	Imathews	2021-05-21 14:09:57 -0400
sleep_cycles_output_only	Sleep Cycles Output Only	Integer	Integer Field 7	Output Only	No	Imathews	2021-05-21 14:09:57 -0400
integer_output_only	Integer Output Only	Integer	Integer Field 2	Output Only	No	Imathews	2021-05-21 14:09:57 -0400
float_no_res	Float No Restriction	Float	Float Field 1	No Restriction	No	Imathews	2021-05-21 14:09:57 -0400
float_output_only	Float Output Only	Float	Float Field 4	Output Only	No	Imathews	2021-05-21 14:09:57 -0400
boolean_no_res_custom	Boolean No Restriction Custom	Boolean	Boolean Field 3	No Restriction	No	Imathews	2021-05-21 14:09:57 -0400
boolean_no_res_tf	Boolean No Restriction T/F	Boolean	Boolean Field 1	No Restriction	No	Imathews	2021-05-21 14:09:57 -0400
boolean_no_res_10	Boolean No Restriction 1/0	Boolean	Boolean Field 2	No Restriction	No	Imathews	2021-05-21 14:09:57 -0400
boolean_output_only_tf	Boolean Output Only T/F	Boolean	Boolean Field 4	Output Only	No	Imathews	2021-05-21 14:09:57 -0400

<p>Step 4</p>	<p>Click the  button to display Field Details for a new Field.</p> <div data-bbox="432 304 1551 1283" style="border: 1px solid gray; padding: 5px;"> <p>Field Details</p> <p>Field Choices</p> <p>General</p> <p>Name * <input type="text"/> Label * <input type="text"/></p> <p>Hint <input type="text"/></p> <p>Add To Default List View <input type="checkbox"/></p> <p>Field Details</p> <p>Type <input type="text" value="Text"/> Mapping <input type="text" value="Text Field 2"/></p> <p>Text Type <input type="text" value="Plain"/></p> <p>Default Value <input type="text"/></p> <p>Restriction <input checked="" type="radio"/> No Restriction <input type="radio"/> Output Only</p> <p>Validation</p> <p>Required <input type="checkbox"/></p> <p>Require If Field <input type="text" value="-- None --"/></p> <p>Show If Field <input type="text" value="-- None --"/></p> <p>Length <input type="text"/></p> <p>Regex <input type="text"/></p> <p>Form Layout</p> <p>Start Row <input type="checkbox"/> Column Span <input type="text" value="1"/></p> <p>End Row <input type="checkbox"/></p> </div>
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20.3.3.1 Field Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in the Field Details.

Field Name	Description
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General	This section contains general information about the Field.
Name	Name of this Field in the Controller database. (Name is used as the suffix for the Universal Template Variable based on this Field.) <ul style="list-style-type: none"> • Maximum 28 characters. • Name must begin with an alphabetic character and can consist of: alphabets (a-z, A-Z), numerics 0-9, _ (underscore). • White spaces are not permitted. • Names are not case-sensitive.
Label	Name of this Field to be displayed in the Controller user interface.
Hint	Field hint for this Field in the Controller user interface. <div style="border: 1px solid yellow; padding: 10px; margin-top: 10px;"> <p>If Regex is specified for a Text field, a message describing the Regex requirement for the field will be appended to the field hint.</p> </div>
Add To Default List View	If enabled; Specification that the Label of this Field will display, by default, in the list of Universal Tasks based on this template.
Field Details	This section contains detailed information about the Field.
Type	Field type for this Field. <p>Options:</p> <ul style="list-style-type: none"> • Text (default) • Integer • Boolean • Choice • Credential • Script • Array • Float • SAP Connection • Database Connection
Text Type	For Extension-based Universal Templates only; Content type of Text field: <ul style="list-style-type: none"> • Plain • JSON • YAML
Restriction	If Type is Text, Integer, or Boolean: <p>Options:</p> <ul style="list-style-type: none"> • No Restriction • Output Only

<p>Mapping</p>	<p>Field, from a pool of available fields provided for use in a Universal Template, that this Field is mapped to.</p> <p>Options:</p> <ul style="list-style-type: none"> • If Type is Text: Text Field 1 - Text Field 20, Large Text Field 1 - Large Text Field 4. • If Type is Integer: Integer Field 1 - Integer Field 10. • If Type is Boolean: Boolean Field 1 - Boolean Field 15. • If Type is Choice: Choice Field 1 - Choice Field 15. • If Type is Credential: Credential Field 1 - Credential Field 6. • If Type is Script: Script Field 1 - Script Field 4. • If Type is Array: Array Field 1 - Array Field 4. • If Type is Float: Float Field 1 - Float Field 4. • If Type is SAP Connection: Sap Connection Field 1. • If Type is Database Connection: Database Connection Field 1. <div style="border: 1px solid orange; padding: 5px; margin-top: 10px;"> <p>Note</p> <p>A field (from the pool of fields provided for use in a Universal Template) that is mapped to a Universal Template Field is not available to be mapped to any other Universal Template Field.</p> </div>
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<p>Default Value</p>	<p>If Type is Text, Integer, Choice, or Float; Default value for this Field. (Text and Choice: Maximum length = 255; Large Text: Maximum Length = 25000, Integer: Maximum length = 11; Float: maximum length = 17.)</p> <p>Also if Type is Choice; In order for a Choice to display as the default for this Field in the Universal Task Details, Default Value must be the Choice Value, not the Choice Label.</p> <p>If Type is Boolean; Specification (a check mark) that the Yes value for this field is the default.</p> <p>If Type is Credential; Default Credential to be used for this Universal Template Field. You can select a Credential from the Default Value drop-down list or click the Details icon next to the Default Value field to create a new Credential.</p> <div style="border: 1px solid orange; padding: 10px; margin: 10px 0;"> <p>Note</p> <p>Since only Resolvable Credentials can be embedded in a Universal Template script or used by a Universal Extension, only Resolvable Credentials display in the Default Value drop-down list for a Credential. If you click the Details icon to create a new Credential, Resolvable is pre-selected for the Type field in the Credential Details and cannot be changed.</p> </div> <p>If Type is Script; Default Script to be used for this Universal Template Field. You can select a Script from the Default Value drop-down list or click the Details icon next to the Default Value field to create a new Script.</p> <div style="border: 1px solid orange; padding: 10px; margin: 10px 0;"> <p>Note</p> <p>Since only Data Scripts can be embedded in a Universal Template script or used by a Universal Extension, only Data Scripts display in the Default Value drop-down list for a Script. If you click the Details icon to create a new Script, Data is pre-selected for the Type field in the Script Details and cannot be changed.</p> </div> <p>If Type is Array; You can specify the default array variables, which can be assigned to the appropriate field while creating the task.</p> <p>If Type is SAP Connection; Default SAP Connection to be used for this Universal Template Field. You can select an SAP Connection from the Default Value drop-down list or click the Details icon next to the Default Value field to create a new SAP Connection.</p> <p>If Type is Database Connection; Default Database Connection to be used for this Universal Template Field. You can select a Database Connection from the Default Value drop-down list or click the Details icon next to the Default Value field to create a new Database Connection.</p>
<p>Boolean Value Type</p>	<p>If Type is Boolean: Type of Boolean value for this Field.</p> <p>Options:</p> <ul style="list-style-type: none"> • true/false (default) • 1/0 • Custom
<p>Yes Value:</p>	<p>If Boolean Value Type is Custom; Boolean Yes value for this Field. (Maximum length = 255 characters).</p>
<p>No Value:</p>	<p>If Boolean Value Type is Custom; Boolean No value for this Field. (Maximum length = 255 characters).</p>
<p>Choice Sort Option</p>	<p>If Type is Choice; Specification for how Choices will be listed in the Choice field drop-down list in the Universal Task Details.</p> <p>Options:</p> <ul style="list-style-type: none"> • Sequence: Choices will be displayed in the sequence they were created. You can change this sequence manually on the Choices list. • Label: Choices will be displayed alphabetically by Label. <p>Default is Sequence.</p>

Allow Empty Choice	If Type is Choice; Specification for whether or not an empty (blank) option is available for this Choice field in any Universal Task based on this template, allowing the user to clear the value of this field.
Allow Multiple Choices	If Type is Choice; Specification for whether or not more than one choice can be selected at a time. When multiple choices are selected, the built-in field variable will resolve to a comma-delimited String of choice values.
Allow Variable	If Type is Credential, Script, SAP Connection, Database Connection, or static Choice; Specification for whether or not the field value can be defined dynamically by a variable and/or function .
Name Title	If Type is Array; Option to change the default Name column for the Array field on any Universal Task based on this template to any other column title (for example, Customer Name).
Value Title	If Type is Array; Option to change the default Value column for the Array field on any Universal Task based on this template to any other column title (for example, Customer ID).
Restriction	If Type is Text, Integer, Boolean, or Float; Specification for whether or not to place an Output Only restriction on the field, which will render it as read-only on a Universal Task Instance Details but not shown on the Universal Task Details.
Preserve Output On Re-run	If Restriction specifies Output Only; Specification for whether or not an Output Only field should preserve its value on a Re-run instead of being cleared.
Extension Status	If Restriction specifies Output Only; Specification for whether or not an Output Only field is designated as Extension Status for a task instance. <div style="border: 1px solid orange; padding: 10px; margin: 10px 0;"> Only a single field can be designated as an Extension Status. </div>
Dynamic Choice	If Type is Choice; Specification that the field will request its choices dynamically from the Extension.
Dependent Fields	If Dynamic Choice is specified; Fields that should be included when requesting the dynamic choices.
Validation	This section contains validation information about the Field.
Required	If Type is Text, Integer, Credential, Float, SAP Connection, Database Connection or Script; Specification for whether this Field in the template is required (checked) or optional (not checked). If it is required, it will display in boldface in any Universal Tasks based on this template. <div style="border: 1px solid orange; padding: 10px; margin: 10px 0;"> <p>Note</p> If you modify a Universal Template Field to add a Required condition, review and assign an appropriate field value to any Universal Tasks that are no longer in compliance to avoid a Start Failure. </div>

<p>Require If Field</p>	<p>If Required is not checked and a Show If Field is not specified; Specification that this Field in the template will be required in any Universal Tasks based on this template if the Choice Field (Choice Field 1-15) or the Boolean Field (Boolean Field 1-15) selected as the Require If Field has a value corresponding to the value(s) defined in the Require If Field Value(s) field.</p> <p>The Require If Field Value(s) field is not available until you make a Require If Field selection.</p> <p>Options:</p> <ul style="list-style-type: none"> • – None – • Boolean Field 1 - Boolean Field 15. • Choice Field 1 - Choice Field 15. <div style="border: 1px solid orange; padding: 5px; margin-top: 10px;"> <p>Note</p> <p>If you modify a Universal Template Field to add or augment a Require If Field condition, review and assign an appropriate field value to any Universal Tasks that are no longer in compliance to avoid a Start Failure.</p> </div>												
<p>Require If Field Value(s)</p>	<p>If Require If Field is a Choice field, Require If Field Value(s) is a comma-separated list of Choice values.</p> <p>For example:</p> <table border="1" data-bbox="336 869 1540 1335"> <thead> <tr> <th>Require If Field Value(s)</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Field is required if the Require If Field has a choice value of 1 selected.</td> </tr> <tr> <td>1,2</td> <td>Field is required if the Require If Field has a choice value of 1 or 2 selected.</td> </tr> <tr> <td></td> <td>Field is required if the Require If Field has the empty choice selected.</td> </tr> <tr> <td>,1</td> <td>Field is required if the Require If Field has the empty choice selected or a choice value of 1 selected.</td> </tr> <tr> <td>,1,2</td> <td>Field is required if the Require If Field has the empty choice selected or a choice value of 1 or 2 selected.</td> </tr> </tbody> </table> <p>If Require If Field is a Boolean field, Require If Field Value(s) is either true or false.</p>	Require If Field Value(s)	Description	1	Field is required if the Require If Field has a choice value of 1 selected.	1,2	Field is required if the Require If Field has a choice value of 1 or 2 selected.		Field is required if the Require If Field has the empty choice selected.	,1	Field is required if the Require If Field has the empty choice selected or a choice value of 1 selected.	,1,2	Field is required if the Require If Field has the empty choice selected or a choice value of 1 or 2 selected.
Require If Field Value(s)	Description												
1	Field is required if the Require If Field has a choice value of 1 selected.												
1,2	Field is required if the Require If Field has a choice value of 1 or 2 selected.												
	Field is required if the Require If Field has the empty choice selected.												
,1	Field is required if the Require If Field has the empty choice selected or a choice value of 1 selected.												
,1,2	Field is required if the Require If Field has the empty choice selected or a choice value of 1 or 2 selected.												
<p>Show If Field</p>	<p>If Required is not checked and a Require If Field is not specified; Specification that this Field in the template will be visible in any Universal Tasks based on this template if the Choice Field (Choice Field 1-15) or the Boolean Field (Boolean Field 1-15) selected as the Show If Field has a value corresponding to the value(s) defined in the Show If Field Value(s) field.</p> <p>The Show If Field Value(s) field is not available until you make a Show If Field selection.</p> <p>Options:</p> <ul style="list-style-type: none"> • – None – • Boolean Field 1 - Boolean Field 15. • Choice Field 1 - Choice Field 15. 												

<p>Show If Field Value(s)</p>	<p>If Show If Field is a Choice field, the Show If Field Value(s) is a comma-separated list of Choice values. For example:</p> <table border="1" data-bbox="336 320 1540 757"> <thead> <tr> <th>Show If Field Value(s)</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Field is visible if the Show If Field has a choice value of 1 selected.</td> </tr> <tr> <td>1,2</td> <td>Field is visible if the Show If Field has a choice value of 1 or 2 selected.</td> </tr> <tr> <td></td> <td>Field is visible if the Show If Field has the empty choice selected.</td> </tr> <tr> <td>,1</td> <td>Field is visible if the Show If Field has the empty choice selected or a choice value of 1 selected.</td> </tr> <tr> <td>,1,2</td> <td>Field is visible if the Show If Field has the empty choice selected or a choice value of 1 or 2 selected.</td> </tr> </tbody> </table> <p>If Show If Field is a Boolean field, the Show If Field Value(s) is either true or false.</p>	Show If Field Value(s)	Description	1	Field is visible if the Show If Field has a choice value of 1 selected.	1,2	Field is visible if the Show If Field has a choice value of 1 or 2 selected.		Field is visible if the Show If Field has the empty choice selected.	,1	Field is visible if the Show If Field has the empty choice selected or a choice value of 1 selected.	,1,2	Field is visible if the Show If Field has the empty choice selected or a choice value of 1 or 2 selected.
Show If Field Value(s)	Description												
1	Field is visible if the Show If Field has a choice value of 1 selected.												
1,2	Field is visible if the Show If Field has a choice value of 1 or 2 selected.												
	Field is visible if the Show If Field has the empty choice selected.												
,1	Field is visible if the Show If Field has the empty choice selected or a choice value of 1 selected.												
,1,2	Field is visible if the Show If Field has the empty choice selected or a choice value of 1 or 2 selected.												
<p>Require If Visible</p>	<p>If Show If Field is not -- None -- ; If enabled, specification that the Field is required if it is visible (see Show If Field).</p> <div data-bbox="336 965 1540 1149" style="border: 2px solid orange; padding: 10px;"> <p>Note</p> <p>If you modify a Universal Template Field to add a Require If Visible condition, review and assign an appropriate field value to any Universal Tasks that are no longer in compliance to avoid a Start Failure.</p> </div>												
<p>No Space If Hidden</p>	<p>If Show If Field is not -- None -- ; If enabled, specification that a space should not be reserved in place of the hidden field.</p>												
<p>Preserve Value If Hidden</p>	<p>If Show If Field is not -- None -- ; If enabled for a hidden field,</p> <ul style="list-style-type: none"> • The value of this field will not be reset upon an update. • Any variable related to that field will resolve to the field value. <div data-bbox="336 1458 1540 1682" style="border: 2px solid orange; padding: 10px;"> <p>Note</p> <p>A Field with Preserve Value If Hidden = true will be validated even if the Field is hidden.</p> <p>Also, if a Field's Show If Field or Require If Field specifies a field (for example, Boolean Field 1) that has Preserve Value If Hidden = true, when validating whether the Field is visible or required, Boolean Field 1's value is considered visible.</p> </div>												
<p>Length</p>	<p>If Type is Text or Integer; Length of this Field.</p> <p>Maximum Lengths:</p> <ul style="list-style-type: none"> • Text = 255 • Large Text = 25000 • Integer = 11 												
<p>Regex</p>	<p>If Type is Text; Regex that the text in the field must match. If Regex is specified, the field hint will include "{field label} must match regex pattern "{REGEX}"".</p>												

Minimum	If Type is Integer; Minimum value for this field.
Maximum	If Type is Integer; Maximum value for this field.
Form Layout	<p>This section contains information about the location of this Field in the Details of Universal Tasks based on this template.</p> <div style="border: 1px solid yellow; padding: 10px; margin: 10px 0;"> <p>Note</p> <p>All user-defined Fields in a Universal Template will be located between the Credentials Variable and Runtime Directory fields in the Details section of Universal Tasks based on this template.</p> </div>
Start Row	If enabled; Specification that this Field will start a new row.
End Row	If enabled; Specification that this Field will end the current row.
Column Span	<p>Number of columns (width) in the Universal Task Details for this Field.</p> <p>Options:</p> <ul style="list-style-type: none"> • 1 • 2 • 3 <p>Default is 1.</p>
Sequence	<p>For existing Fields only; System-defined; Sequence of this Field among all user-defined Universal Template Fields to be displayed in the Universal Task Details. Starting sequence is 0 for the first defined Field.</p> <div style="border: 1px solid yellow; padding: 10px; margin: 10px 0;"> <p>Note</p> <p>You can change the Sequence of user-defined Universal Template Fields by dragging them to new locations on the Fields list.</p> </div>
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Buttons	This section identifies the buttons displayed above and below the Field Details that let you perform various actions.
Save	Saves a new Field record in the Controller database.
Save & New	Saves a new Field record in the Controller database and redisplay empty Details so that you can create another Field.
Save & View	Saves a new Field record in the Controller database and continues to display that record.
New	Displays empty (except for default values) Details for creating a new Field.

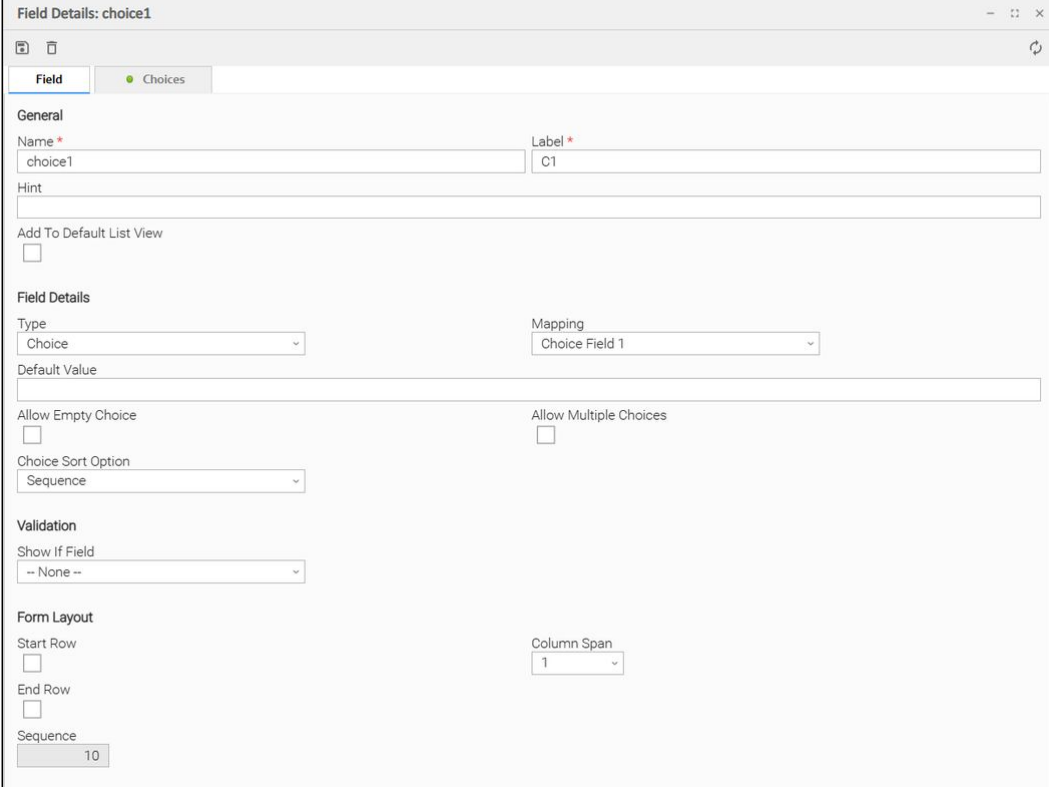
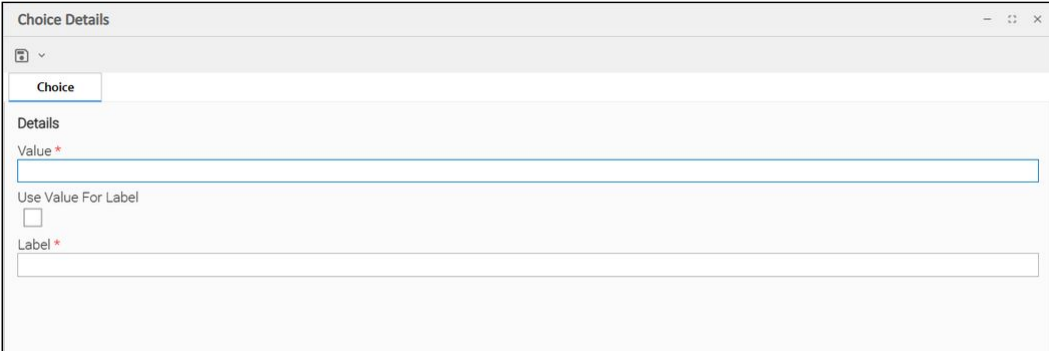
Update	Updates the Field record in the Controller database.
Delete	<p>Delete the currently open Field.</p> <div style="border: 1px solid orange; padding: 5px; margin-top: 10px;"> <p>Note You cannot delete a field if it is the only field in the Template.</p> </div>
Refresh	Refreshes any dynamic data displayed in the Field Details.
Close	Closes the Field Details.
Tabs	This section identifies the tabs across the top of the Field Details that provide access to additional information about the Field.
Choices	If Type is Choice; Allows you to define the Choices for this Field in the template.

20.3.4 Creating Universal Template Field Choices

If you created a Choice Field ([Type](#) = Choice) for a Universal Template, you must create Choices for that Choice Field that will display in a drop-down list in all Universal Tasks based on this Universal Template.

- If you click the **Save** button after creating the Choice Field, the Choices tab (under which is an empty Choices list) is enabled, and an empty [Choice Details](#) automatically displays, which lets you create your first Choice.
- If you click the **Save & New** button after creating a Choice Field, so that you can immediately create one or more other Fields, you will have to manually open that Choice Field, click the enabled Choices tab, and then click the **New** button to create your first Choice.

The following procedure assumes that you have created a Choice Field but not yet created any Choices for it.

<p>Step 1</p>	<p>On the Fields list for the Universal Template, open the Choice Field (Type = Choice) whose Choices you want to create.</p> 
<p>Step 2</p>	<p>Click the Choices tab to display an empty Choices list.</p>
<p>Step 3</p>	<p>Click New to display Choice Details for a new Choice.</p> 
<p>Step 4</p>	<p>Enter Details for a new Choice Field, using the field descriptions below as a guide.</p>
<p>Step 5</p>	<p>Click a Save button. Each Choice that you define is added to the Choices list.</p>

20.3.4.1 Choice Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in the Choice Details.

Field Name	Description
General	This section contains general information about the Field.
Value	Value of this Choice. (Maximum length = 255 characters.)
Use Value For Label	If the Value field value is 50 characters or less; Use the Value field value as the Label field value (which is a maximum 50 characters).
Label	If Use Value For Label is not checked; Name that will display for this Choice in the drop-down list on a Universal Task. (Maximum = 50 characters.)
Sequence	For existing Choices only; System-defined sequence of this Choice among all Choices defined for this Field. Starting sequence is 0 for the first defined Choice. <div style="border: 1px solid orange; padding: 10px;"> <p>Note</p> <p>If you select Sequence in the Choice Sort Option field in the Details for this Choice Field, you can sort the Choices by clicking and dragging them to any position on the Choices List.</p> <p>In the Details of any Universal Task based on this Universal Template, the Labels for these Choices will display in the Choice Field drop-down list in the order you select.</p> </div>
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Buttons	This section identifies the buttons displayed above the Choice Details that let you perform various actions.
Save	Saves a new Choice record in the Controller database.
Save & New	Saves a new Choice record in the Controller database and redisplay empty Details so that you can create another Choice.
Save & View	Saves a new Choice record in the Controller database and continues to display that record.
New	Displays empty (except for default values) Details for creating a new Choice.
Update	Updates the Choice record in the Controller database.

Delete	Deletes the currently open Choice. <div style="border: 1px solid orange; padding: 5px;">Note You cannot delete a Choice if it is the only Choice for the Field.</div>
Refresh	Refreshes any dynamic data displayed in the Choice Details.
Close	Closes the Choice Details.

20.3.5 Creating Commands

Commands allow you to define additional operations against a task instance.

Command Details
- ☐ ×

☰

Command

Details

Name *

Label *

Supported Status(es) *

Dependent Fields

Timeout (Seconds)

Execution Option

20.3.5.1 Command Details Field Descriptions

The following table describes the fields and buttons that display in the Command Details.

Field Name	Description
Name	Unique name of this command, adhering to the same naming convention as a Universal Template field name.
Label	User-friendly display name for the command, to be displayed within the client.
Supported Status(es)	Task instance status(es) that the dynamic command should be enabled for.
Dependent Fields	Universal Template fields (if any) that are required by the command. The values of those fields are included in the command request.

Field Name	Description
Timeout (Seconds)	Optional command timeout, in seconds, if the command requires longer than the System-level default of 60 seconds. If the Controller (server) does not receive a command response from the Extension prior to the timeout being reached, a timeout message will be sent to the client (user interface), and displayed in the console. However, the server-side handling of the command response, like the persistence of command output, will still be handled by the server after the timeout occurs.
Execution Option	Specification for whether the command runs out-of-process execution or in-process execution. Options: <ul style="list-style-type: none"> • Out Of Process • In Process Default is Out Of Process.
Asynchronous	If Execution Option is In Process; Specification for whether the command runs synchronously or asynchronously.
Buttons	This section identifies the buttons displayed above and below the Field Details that let you perform various actions.
Save	Saves a new Field record in the Controller database.
Save & New	Saves a new Field record in the Controller database and redisplay empty Details so that you can create another Field.
Save & View	Saves a new Field record in the Controller database and continues to display that record.
Close	Close the Command Details.

20.3.5.2 Command Permission

Users must have **Universal** (or **ALL**) command permission and **Read** permission for the Universal Task Instance, assigned by the **Task Instance** permission type, for authorization to execute a Universal dynamic command.

20.3.5.3 Command Output

Optionally, a dynamic command can return output in the response, which would be displayed immediately to the user who issued the command.

A user can view the output generated by the command later by going to the **Task Instance > Output** tab.

The **Type** will show as **COMMAND**, and to allow for better correlation, a new **Command Name** field will display the label of the command that generated the output.

20.3.6 Creating Event Templates

Universal Events are administrator-defined events with administrator-defined attributes.

Universal Events can be defined:

Globally	In a Universal Event Template .
Locally	As part of a Universal Extension-based Universal Template.

If the Universal Extension can generate a non-global Universal Event, you must define the Universal Event here to allow the event to be monitored by an Universal Monitor.

Note

When publishing Universal Events through an Extension-based Universal Task Publisher, take into consideration both Universal Controller server and Database server sizings.

20.3.6.1 Event Template Details Field Descriptions

The following table describes the fields and buttons that display in the Event Template Details.

Field Name	Description
Name	Name of this Universal Event.
Label	User-friendly display name for this event, to be displayed within the client. The Label must be unique for Global Events and unique within Local Events..
Description	Description of this event.

Field Name	Description
Time To Live	<p>Default value for the length of time, in minutes, that the Universal Event data is valid. This value can be unspecified (null).</p> <p>The Time To Live value can be overridden in the published event.</p> <p>If the Time To Live does not exist in the published event, then this value, if defined, will be used.</p> <p>If neither value exists, the Time To Live is 0, which means the event is deleted as soon as it is published.</p>
Unmapped Attributes Policy	<p>Defines how unmapped/unknown attributes that are in the published event are handled.</p> <ul style="list-style-type: none"> • Prohibit Universal Event If the published event has any attributes that have not been defined in the template, the publish is rejected and not allowed. • Include Attributes Any extra attributes will be allowed and passed through as variables. • Exclude Attributes Any extra attributes are excluded and ignored. They will not be passed along as variables.
Attributes	<p>Name, Label, and Type of each attribute.</p> <ul style="list-style-type: none"> • Name Unique name for this attribute. • Label User-friendly display name for this attribute, to be displayed within the client. • Type Type of attribute: <ul style="list-style-type: none"> • Text • Integer • Float • Boolean
System Event	Indication if this type of event is a System Event.

20.3.6.2 Auditing Universal Events

The [Universal Event Extension Publish Audit](#) lets you specify whether or not an audit record is generated for each Universal Event published through an Extension-based Universal Task Instance.

(The [Universal Event Web Service Publish Audit](#) lets you specify whether or not an audit record is generated for each Universal Event published through the [Universal Event Web Services](#).)

Note

Enabling these audit properties can generate a large quantity of audit.

20.4 Copying Universal Templates

- [Overview](#)
- [Copying One or More Universal Templates from a Universal Templates List](#)
- [Copying a Universal Template from the Universal Template Details](#)
- [Copy Permissions](#)

20.4.1 Overview

You can make copies of all Universal Controller records, including Universal Templates, using the standard method for [Copying a Record](#): selecting **Insert** on the [Action menu](#).

However, you also can use the Copy action on the Universal Template [Action menu](#) or the Copy button in the Universal Template Details.

Copying a Universal Template will copy the following:

- Universal Template record.
- Universal Template Field records for the Universal Template parent record.
- Universal Template Field Choice records for the Choice type Universal Template Field parent records.

20.4.2 Copying One or More Universal Templates from a Universal Templates List

Step 1	From the Administration navigation pane, select Configuration> Universal Templates to display the Universal Templates list.
Step 2	Locate the Universal Template(s) you want to copy (see Filtering).

<p>Step 3</p>	<p>Copy the Universal Template(s):</p> <p>Copy One Universal Template</p> <ol style="list-style-type: none"> 1. Right-click the Universal Template Name. 2. On the Action menu, select Copy. A Copy Universal Template pop-up dialog displays. <div data-bbox="507 409 1549 683" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p style="text-align: center;">Copy Universal Template - x</p> <p>Enter a new name for the Universal Template and click Submit.</p> <p>Name *</p> <input style="width: 100%;" type="text" value="stonebranch-template-01"/> <div style="text-align: right; margin-top: 10px;"> <input type="button" value="Submit"/> <input type="button" value="Cancel"/> </div> </div> <ol style="list-style-type: none"> 3. Enter a new name for the Universal Template. 4. Click Submit to create a copy of the Universal Template. <p>Copy Multiple Universal Templates</p> <ol style="list-style-type: none"> 1. Ctrl-Click the Universal Templates you want to copy. 2. Right-click any of the selected Universal Templates. 3. On the Action menu, select Copy. 4. On the Confirmation pop-up that displays, click OK. The copied Universal Templates are added to the list, with - Copy added as a suffix to the Universal Template Name for each Universal Template. If a Universal Template with that - Copy name already exists, another copy is not created.
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20.4.3 Copying a Universal Template from the Universal Template Details

<p>Step 1</p>	<p>Select a Universal Template from the Universal Template list. The Universal Template Details for that Universal Template displays.</p>
<p>Step 2</p>	<p>Either:</p> <ul style="list-style-type: none"> • Click the Copy button. • Right-click the Details to display the Action menu, and then click Copy. <p>A Copy Universal Template pop-up dialog displays.</p> <div data-bbox="499 1536 1544 1814" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p style="text-align: center;">Copy Universal Template - x</p> <p>Enter a new name for the Universal Template and click Submit.</p> <p>Name *</p> <input style="width: 100%;" type="text" value="stonebranch-template-01"/> <div style="text-align: right; margin-top: 10px;"> <input type="button" value="Submit"/> <input type="button" value="Cancel"/> </div> </div>
<p>Step 3</p>	<p>Enter a new name for the Universal Template.</p>
<p>Step 4</p>	<p>Click Submit to create a copy of the Universal Template.</p>

20.4.4 Copy Permissions

To copy a Universal Template, you must have either the [ops_admin](#) or [ops_universal_template_admin](#) role.

21 Universal Event Templates

- [Universal Event Templates](#)
 - [Global Universal Events](#)
 - [Local Universal Events](#)
 - [Global and Local Universal Events](#)
- [Creating a Universal Event Template](#)
 - [Universal Event Template Details](#)
 - [Universal Event Template Details Field Descriptions](#)
- [Pre-Defined Global Universal Event](#)
 - [System Property Changed Universal Event](#)
 - [Agent Changed Universal Event](#)
 - [Task SLA Universal Event](#)
 - [Task Status Changed Universal Event](#)

21.1 Universal Event Templates

Universal Events are administrator-defined events with administrator-defined attributes.

Universal Events can be defined:

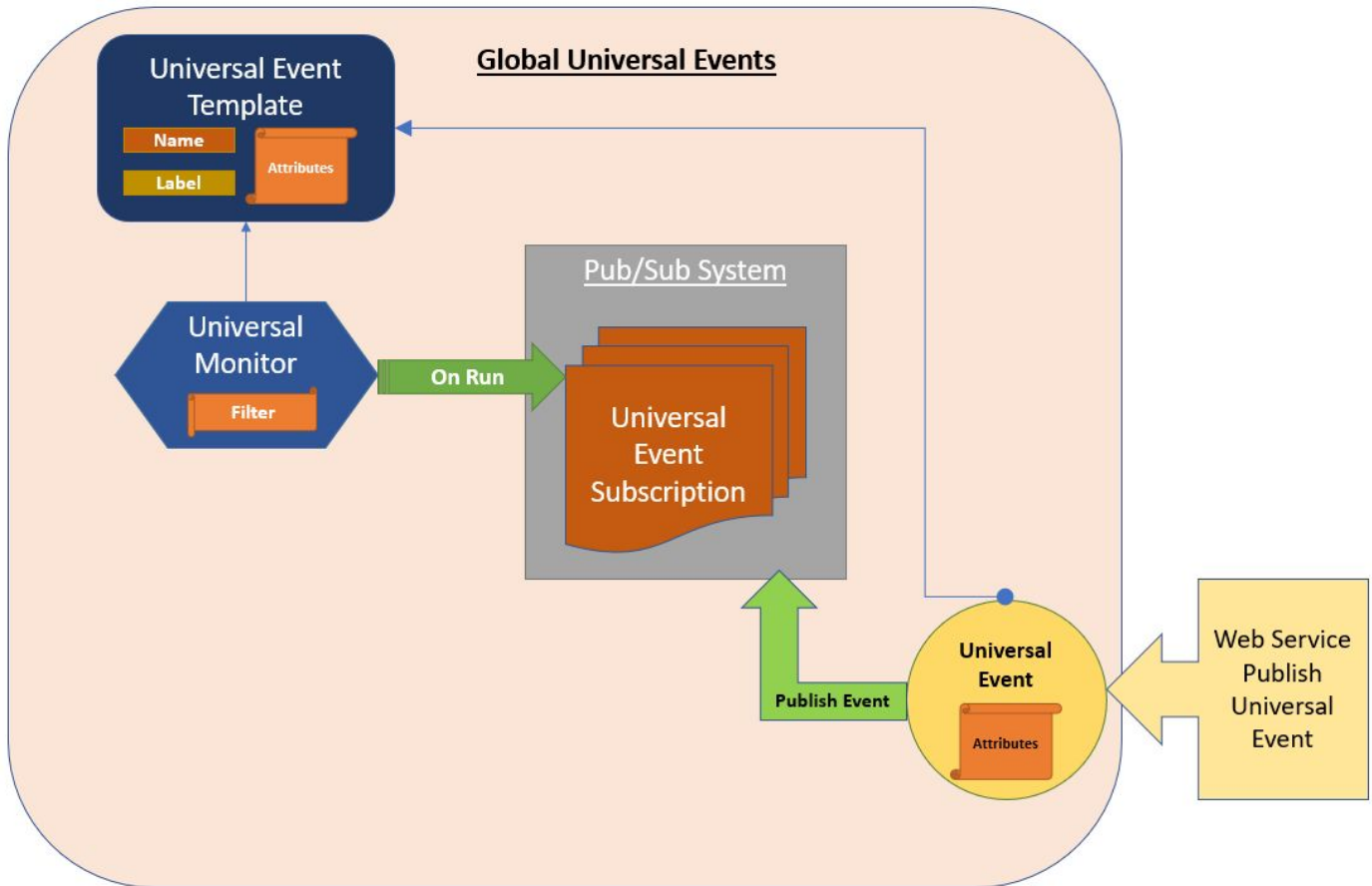
Globally	In a Universal Event Template.
Locally	As part of a Universal Extension-based Universal Template.

Note

When publishing Universal Events through the Web Service API or an extension-based Universal Task Publisher, take into consideration both Universal Controller server and Database server sizings.

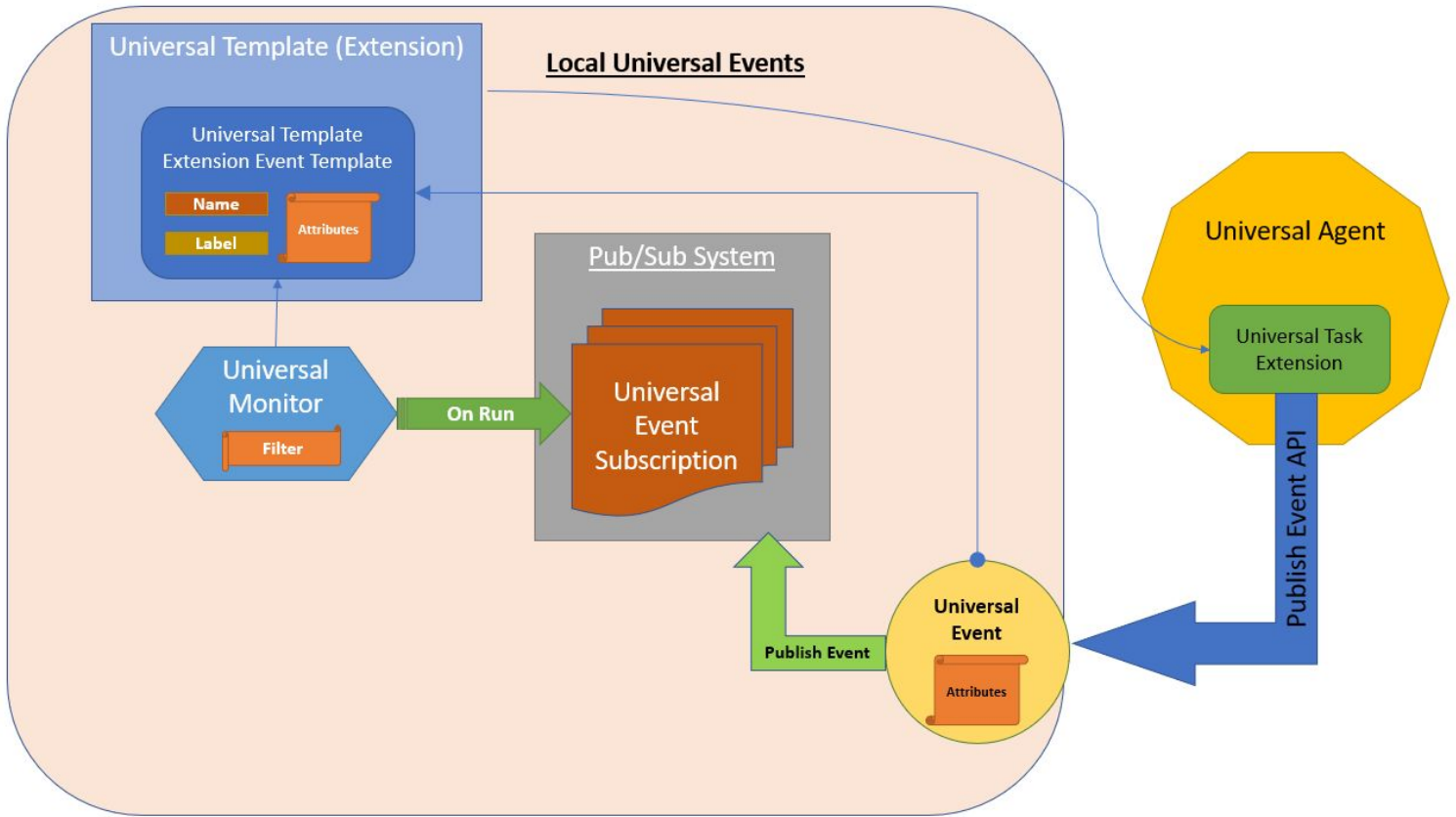
21.1.1 Global Universal Events

For any global Universal Event, you must define a Universal Event Template for it to allow the event to be monitored by a Universal Monitor.



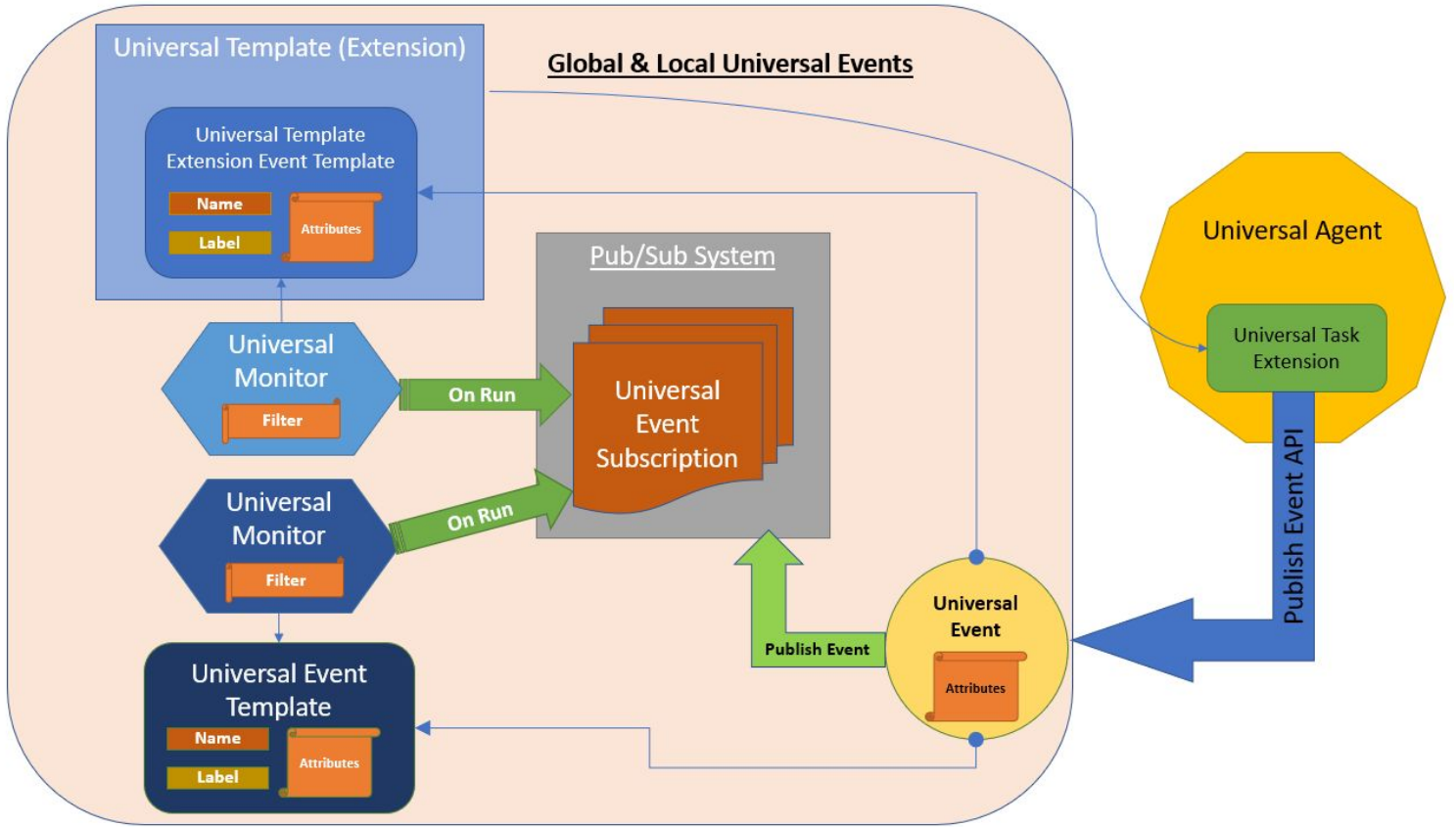
21.1.2 Local Universal Events

If a Universal Template type is Extension, and the Universal Extension can generate a local Universal Event, you must identify the Event by using the Event Templates tab on the Universal Template Details to allow the event to be monitored by an Universal Monitor.



21.1.3 Global and Local Universal Events

Additionally, Extension-based Universal Templates can publish global Universal Events.



21.2 Creating a Universal Event Template

Step 1

From the [Automation Center](#) navigation pane, select **Configuration > Universal Event Templates**. The Universal Event Templates list displays a list of all existing Universal Event Templates.

Below the list, Universal Event Template Details for a new Universal Event Template displays.

Name	Label	Description
uac_agent_changed	UAC - Agents Changed	Universal Event for changes related to Universal Agents.
uac_property_changed	UAC - Property Changed	Universal Event for a Universal Controller property change.
uac_task_run	UAC - Task Run	Universal Event for Task Run
uac_task_status_changed	UAC - Task Status Changed	Universal Event for Task Status Changes

Universal Event Template

Details

Name: Label:

Description:

Time To Live: Unmapped Attributes Policy:



Attributes:

Attributes

Name	Label	Type
No items to show.		

Metrics

Metric Type:

<p>Step 2</p>	<p>Enter / select Details for a new Universal Event Template, using the field descriptions below as a guide.</p> <ul style="list-style-type: none"> • Required fields display an asterisk (*) after the field name. • Default values for fields, if available, display automatically. <p>To display more of the Details fields on the screen, you can either:</p> <ul style="list-style-type: none"> • Use the scroll bar. • Temporarily hide the list above the Details. • Click the  button above the list to display a pop-up version of the Details.
<p>Step 3</p>	<p>Click a  button. The task is added to the database, and all buttons and tabs in the Universal Task Details are enabled.</p>

Note

To [open](#) an existing record on the list, either:

- Click a record in the list to display its record Details below the list. (To clear record Details below the list, click the **New** button that displays above and below the Details.)
- Clicking the [Details icon](#) next to a record name in the list, or right-click a record in the list and then click **Open** in the [Action menu](#) that displays, to display a pop-up version of the record Details.
- Right-click a record in the a list, or open a record and right-click in the record Details, and then click **Open In Tab** in the [Action menu](#) that displays, to display the record Details under a new tab on the record list page (see [Record Details as Tabs](#)).

21.2.1 Universal Event Template Details

The following Universal Event Template Details is for a new Universal Event Template.

Depending on the values that you enter / select for these fields, more (or less) fields may display. See the [field descriptions](#), below, for a description of all fields that may display in the Universal Event Template Details.

Universal Event Template

Details

Name * Label *

Description

Time To Live Unmapped Attributes Policy
 Prohibit Universal Event

Attributes

Name	Label	Type
No items to show.		

Metrics

Metric Type

21.2.2 Universal Event Template Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in the Universal Event Template Details.

Field Name	Description
Details	This section contains assorted detailed information about a Universal Event Template.
Name	Name of this Universal Event.
Label	User-friendly display name for this event, to be displayed within the client. The Label must be unique for Global Events and unique within Local Events.
Description	Description of this event.
Time To Live	Default value for the length of time, in minutes, that the Universal Event data is valid. This value can be unspecified (null). The Time To Live value can be overridden in the published event. If the Time To Live does not exist in the published event, then this value, if defined, will be used. If neither value exists, the Time To Live is 0, which means the event is deleted as soon as it is published.

Field Name	Description
Unmapped Attributes Policy	<p>Defines how unmapped/unknown attributes that are in the published event are handled.</p> <ul style="list-style-type: none"> • Prohibit Universal Event If the published event has any attributes that have not been defined in the template, the publish is rejected and not allowed. • Include Attributes Any extra attributes will be allowed and passed through as variables. • Exclude Attributes Any extra attributes are excluded and ignored. They will not be passed along as variables.
Attributes	<p>Name, Label, and Type of each attribute.</p> <ul style="list-style-type: none"> • Name Unique name for this attribute. • Label User-friendly display name for this attribute, to be displayed within the client. • Type Type of attribute: <ul style="list-style-type: none"> • Text • Integer • Boolean • Float • Text Array • Integer Array • Boolean Array • Float Array
System Event	<p>Indication if this type of event is a System Event.</p>
Metrics	<p>This section contains information about configuring metrics for a Universal Event Template.</p> <div style="border: 1px solid black; padding: 10px; margin-top: 10px;"> <p>To enable OpenTelemetry metrics, you must configure an Open Telemetry metrics exporter in uc.properties , otherwise, a noop meter provider is used.</p> </div>
Metric Type	<p>Specifies the type of metric to instrument. Options are:</p> <ul style="list-style-type: none"> • None • Counter • UpDownCounter • Histogram

Field Name	Description
Metric Name	<p>Specifies the metric name.</p> <p>The metric name can be a maximum of 63 characters and should be universally unique, for example:</p> <pre><event_name>[.<value_attribute>]</pre> <pre><extension>.<event_name>[.<value_attribute>]</pre> <p>The universal event Description will be used as the metric description.</p> <p>The following namespaces (prefixes) are reserved and cannot be used for user-defined metric names.</p> <ul style="list-style-type: none"> • uc. and uc_ • ua. and ua_ • uac. and uac_
Metric Value Attribute	<p>Specifies the name of an Integer or Float universal event attribute to use for the metric value when incrementing the counter or recording a histogram value.</p> <p>If left unspecified, a counter will be incremented by 1, and a histogram will record a value of 1, for each published universal event.</p>
Metric Unit	<p>Specifies an optional unit of measure.</p> <p>Maximum length of 63 ASCII characters. Units should follow the Unified Code for Units of Measure.</p>
Metric Label Attributes	<p>Specifies a comma-delimited list of universal event attribute names to use for metric labels.</p> <p>For example, attribute1,attribute2,attribute3</p> <p>At most 8 label attributes can be specified.</p> <div style="border: 1px solid red; padding: 10px; margin-top: 10px;"> <p>Do not specify attributes with high cardinality (many different attribute values) or attributes that may contain sensitive information.</p> </div>
Optional Metric Labels	<p>Specifies which system-supplied metric labels to include.</p> <ul style="list-style-type: none"> • Agent Id <ul style="list-style-type: none"> • Label: agent.id • Business Services <ul style="list-style-type: none"> • Label: security.business_services • Task Name <ul style="list-style-type: none"> • Label: task.name <div style="border: 1px solid yellow; padding: 10px; margin-top: 10px;"> <p>The Task Name value will be represented by the unresolved task name at launch time to avoid the high cardinality of resolved task instance names.</p> <p>If multiple business services are assigned to the universal event, the Business Services value will be represented as a comma-delimited list of business services in alphabetical order. Be mindful that the Business Services metric label could have high cardinality depending on how you assign business service membership.</p> </div>

21.2.2.1 User-Defined Metric Name and Labels

If the [OTEL metrics](#) exporter is [configured](#), for each Universal Event Template or Universal Template Event Template with a metrics designation, the following metric will be exported.

<p>Name</p>	<p><code><metric-name>_<metric-unit>_total</code></p> <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px;"> <p>The metric name and labels may differ depending on the metric type and/or any normalization you are using, for example, Prometheus Normalization.</p> </div>
<p>Type</p>	<p>Counter, UpDownCounter, or Histogram</p>
<p>Description</p>	<p>The metric description is inherited from the Universal Event Template or Universal Template Event Template.</p>
<p>Default Labels</p>	<ul style="list-style-type: none"> • <code>exported_instance</code> • <code>exported_job</code> • <code>universal_event_name</code> • <code>universal_template_name</code> • <code>universal_extension_name</code>
<p>Optional Labels</p>	<ul style="list-style-type: none"> • <code>label_attr_1, ..., label_attr_n</code> • <code>agent_id</code> • <code>task_name</code> • <code>security_business_services</code>
<p>Example</p>	<p>The <code>universal_template_name</code> and <code>universal_extension_name</code> label values are non-empty for published local Universal Events (defined by a Universal Template Event Template) and empty for published global Universal Events (defined by a Universal Event Template).</p> <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px;"> <pre> <metric-name>_<metric-unit>_total { exported_instance="<service-instance-id>", exported_job="<service-namespace>/<service-name>", universal_event_name="<unv-event-name>", universal_template_name="<unv-template-name>", universal_extension_name="<unv-extension-name>", [label_attr_1="<attr-1-value>",] ..., [label_attr_n="<attr-n-value>",] [agent_id="<agent-id>",] [task_name="<task-name>",] [security_business_services="<security-business-services>"]} </pre> </div>

21.3 Pre-Defined Global Universal Event

Universal Controller is pre-populated with global Universal Event system templates:

- System Property Changed
- Agent Changed
- Task SLA
- Task Status Changed

(System Templates are read-only and cannot be deleted. During a new installation or a maintenance update, System Templates are imported.)

21.3.1 System Property Changed Universal Event

Whenever a [Universal Controller system property](#) is updated (from an active or passive node), a UAC - Property Changed Universal Event will be published.

The event attributes are shown below.

Universal Event Template Details: UAC - Property Changed
- ☰ ×

Universal Event Template

Details

Name * Label *

Description

Time To Live Unmapped Attributes Policy

Attributes

Name	Label	Type
name	Name	Text
property_name	Property Name	Text
before_value	Before Value	Text
before_value_int	Before Value / Integer	Integer
before_value_boolean	Before Value / Boolean	Boolean
after_value	After Value	Text
after_value_int	After Value / Integer	Integer
after_value_boolean	After Value / Boolean	Boolean
updated_by	Updated By	Text
updated	Updated	Text

System Template

Metrics

Metric Type

21.3.2 Agent Changed Universal Event

A UAC - Agent Changed Universal Event will be published if one of the following conditions is met.

- Active - Agent becomes Active.
- Decommissioned - Agent gets marked as Decommissioned.
- Deleted - Agent is Deleted.
- Offline - Agent goes Offline.
- Suspended - Agent gets Suspended.
- Registered - New Agent is Registered into the system.
- Resumed - Agent is Resumed.
- Updated - Agent is updated, for example any update from the UI or Web Service to any of the Agent fields (Name, Description, Business Services, Log Level, Heartbeat info, Task Execution info, Credentials).

The event attributes are shown below.

Universal Event Template Details: UAC - Agent Changed
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Universal Event Template

Details

Name * Label *

Description

Time To Live Unmapped Attributes Policy

Attributes

Name	Label	Type
event_type	Event Type	Text
name	Name	Text
agent_type	Agent Type	Text
status	Status	Text
uuid	UUID	Text
agent_id	Agent Id	Text
host_name	Host Name	Text
ip_address	IP Address	Text
log_level	Log Level	Text
hb_intvl	Heartbeat Interval	Integer
hb_grace_period	Heartbeat Grace Period	Integer
version	Version	Text
build	Build	Text
suspended	Suspended	Boolean
transient	Transient	Boolean
decommissioned	Decommissioned	Boolean
updated_by	Updated By	Text
updated	Updated	Text
agent_cluster_ids	Agent Cluster Ids	Text Array
agent_clusters	Agent Clusters	Text Array

System Template

Metrics
Metric Type

21.3.3 Task SLA Universal Event

A UAC - Task SLA Universal Event will be published if any task instance has a Late Start, Late Finish or Early Start SLA violation. The event attributes are shown below.

Universal Event Template Details: UAC - Task SLA

Universal Event Template

Details

Name * Label *

Description

Time To Live Unmapped Attributes Policy

Attributes

Name	Label	Type
sla_type	SLA Type	Text
instance_id	Instance Id	Text
instance_number	Instance Number	Integer
instance_name	Instance Name	Text
security_name	Security Name	Text
description	Description	Text
type	Type	Text
type_value	Type Value	Integer
status	Status	Text
status_value	Status Value	Integer
status_description	Status Description	Text
execution_user	Execution User	Text
launch_source	Launch Source	Text
invoked_by	Invoked By	Text
source_version	Source Version	Integer
task_id	Task Id	Text
template_id	Template Id	Text
trigger_id	Trigger Id	Text
calendar_id	Calendar Id	Text
workflow_definition_id	Workflow Definition Id	Text
workflow_id	Workflow Id	Text
top_level_workflow_id	Top Level Workflow Id	Text
state_changed_time	State Changed Time	Text
trigger_time	Trigger Time	Text
launch_time	Launch Time	Text
created	Created	Text
start_time	Start Time	Text
end_time	End Time	Text
workflow_start_time	Workflow Start Time	Text
exit_code	Exit Code	Text
duration	Duration	Text
duration_in_seconds	Duration In Seconds	Integer
attempt	Attempt	Integer
maximum_retries	Maximum Retries	Integer
retry_indefinitely	Retry Indefinitely	Boolean
current_retry_count	Current Retry Count	Integer
next_retry_time	Next Retry Time	Text
early_finished	Early Finished	Boolean
late_finished	Late Finished	Boolean
late_started	Late Started	Boolean
simulate	Simulate	Boolean
custom_field_1	Custom Field 1	Text
custom_field_2	Custom Field 2	Text
critical	Critical	Boolean

21.3.4 Task Status Changed Universal Event

A UAC - Task Status Changed Universal Event will be published if the task instance status changes.

The event attributes are shown below.

Universal Event Template Details: UAC - Task Status Changed
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Universal Event Template

Details

Name * uac_task_status_changed	Label * UAC - Task Status Changed
Description Universal Event for Task Status Changes	
Time To Live <input style="width: 80%;" type="text"/>	Unmapped Attributes Policy Include Attributes

Attributes

Name	Label	Type
instance_id	Instance Id	Text
instance_number	Instance Number	Integer
instance_name	Instance Name	Text
security_name	Security Name	Text
description	Description	Text
type	Type	Text
type_value	Type Value	Integer
status	Status	Text
status_value	Status Value	Integer
status_description	Status Description	Text
execution_user	Execution User	Text
launch_source	Launch Source	Text
invoked_by	Invoked By	Text
source_version	Source Version	Integer
task_id	Task Id	Text
template_id	Template Id	Text
trigger_id	Trigger Id	Text
calendar_id	Calendar Id	Text
workflow_definition_id	Workflow Definition Id	Text
workflow_id	Workflow Id	Text
top_level_workflow_id	Top Level Workflow Id	Text
state_changed_time	State Changed Time	Text
trigger_time	Trigger Time	Text
launch_time	Launch Time	Text
created	Created	Text
start_time	Start Time	Text
end_time	End Time	Text
workflow_start_time	Workflow Start Time	Text
exit_code	Exit Code	Text
duration	Duration	Text
duration_in_seconds	Duration In Seconds	Integer
attempt	Attempt	Integer
maximum_retries	Maximum Retries	Integer
retry_indefinitely	Retry Indefinitely	Boolean
current_retry_count	Current Retry Count	Integer
next_retry_time	Next Retry Time	Text
early_finished	Early Finished	Boolean
late_finished	Late Finished	Boolean
late_started	Late Started	Boolean
simulate	Simulate	Boolean
custom_field_1	Custom Field 1	Text
custom_field_2	Custom Field 2	Text
halt	Halt	Boolean
critical	Critical	Boolean

22 Users and Groups

- [Overview](#)
- [Default Users and Groups](#)
- [Adding a User](#)
 - [User Details](#)
 - [User Details Field Descriptions](#)
- [Adding a Group](#)
 - [Group Details](#)
 - [Group Details Field Descriptions](#)
- [Additional Details](#)
- [Assigning Users to Groups](#)
- [Navigation Visibility for Users and Groups](#)
- [Deleting a User](#)
- [Impersonating a User](#)

22.1 Overview

You can create any number of users and user groups for Universal Controller, and you can assign any user to any user group.

The [roles and permissions](#) that you assign each user and group determines the level of access to Universal Controller functions.

You can assign any role and permission to any user or any user group. If you assign a user to a group, the user inherits all roles and permissions assigned to that group.

See [LDAP Settings](#) for information on how to set up Universal Controller to use LDAP authentication for:

- [Credentials for running tasks](#)
- [User logins](#)

22.2 Default Users and Groups

22.2.1 Default User

The default Universal Controller user is **ops.admin**. It is assigned to one of the default Universal Controller groups, Administrator Group.

22.2.2 Default Groups

There are two default groups:

- **Administrator Group** has access to all Controller functions; by default, it is assigned the [ops.admin](#) role, which has permissions on all Controller functions.

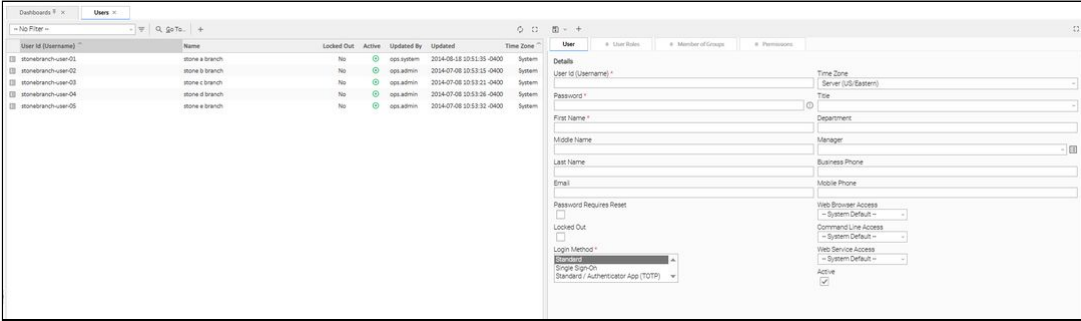
- **Everything Group** has access to all functions that do not require the [ops.admin](#) role.

22.3 Adding a User

Note

You must have administrative permissions to add users.

By default, a new user has no permissions. Until permissions are granted, a user can log into the Universal Controller user interface and view options in the [Services](#), but cannot perform any tasks.

<p>Step 1</p>	<p>From the Administration navigation pane, select Security > Users. The Users list displays a list of all currently defined users.</p> <p>To the right of the list, User Details for a new user displays.</p> 
<p>Step 2</p>	<p>Enter/select Details for a new user, using the field descriptions below as a guide.</p> <ul style="list-style-type: none"> • Required fields display an asterisk (*) after the field name. • Default values for fields, if available, display automatically. <p>To display more of the Details fields on the screen, you can either:</p> <ul style="list-style-type: none"> • Use the scroll bar. • Temporarily hide the list above the Details. • Click the New button above the list to display a pop-up version of the Details.
<p>Step 3</p>	<p>Optionally, assign one or more roles to the user, assign the user to a group, or assign permissions to this user.</p>
<p>Step 4</p>	<p>Click a Save button. The user is added to the database, and all buttons and tabs in the User Details are enabled.</p>

Note

To [open](#) an existing record on the list, either:

- Click a record in the list to display its record Details below the list. (To clear record Details below the list, click the **New** button that displays above and below the Details.)
- Clicking the [Details icon](#) next to a record name in the list, or right-click a record in the list and then click **Open** in the [Action menu](#) that displays, to display a pop-up version of the record Details.

- Right-click a record in the a list, or open a record and right-click in the record Details, and then click **Open In Tab** in the [Action menu](#) that displays, to display the record Details under a new tab on the record list page (see [Record Details as Tabs](#)).

22.3.1 User Details

The following details identifies the roles and permissions required to read and update user details.

Roles	Permissions	Fields
<ul style="list-style-type: none"> • ops_admin • ops_user_admin 	<ul style="list-style-type: none"> • Read any user. • Edit any user. 	<ul style="list-style-type: none"> • All
<ul style="list-style-type: none"> • ops_service 	<ul style="list-style-type: none"> • Read any user. 	
<ul style="list-style-type: none"> • none 	<ul style="list-style-type: none"> • Read its own user record (details). • Read its own Role, Permissions, and Member of Groups (group membership), but cannot read any Group record. • Update specific fields in its own details (see Fields). 	<ul style="list-style-type: none"> • First Name • Middle Name • Last Name • Email • Time Zone • Title • Department • Business Phone • Mobile Phone

The following User Details is for an existing user. See the [field descriptions](#), below, for a description of all fields that display in the User Details.

The screenshot shows the 'User Details' page for a user named 'stone a branch'. The page is divided into several sections:

- Details:** Contains fields for User Id (Username) (stonebranch-user-01), Password (masked), First Name (stone a), Middle Name, Last Name (branch), Email, Time Zone (System), Title (IT Technician), Department, Manager, Business Phone, Mobile Phone, Password Requires Reset, Locked Out, Login Method (Standard), Web Browser Access, Command Line Access, Web Service Access, and Active (checked).
- Personal Access Tokens:** Includes a field for 'Enter new application/token name', an 'Expiration' field (YYYY-MM-DD), and a 'Generate' button. Below is a table with columns: Name, Expiration, Last Used, and Created.
- User Impersonation:** Includes a field for 'Allowed Impersonation Users' with a dropdown menu.

22.3.2 User Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in the User Details.

Field Name	Description
Details	This section contains detailed information about the user.
User ID	Log in ID for this user.
Password	Password of this user.
	<div style="border: 1px solid orange; padding: 10px;"> <p>Note</p> <p>The hint for this field, as well as the information icon, will display any current characteristics and restrictions for Passwords as defined in Password Settings.</p> </div>

First Name	First name of this user.
Middle Name	Middle name of this user.
Last Name	Last name of this user.
Name	Automatically generated from the First Name and Last Name of this user.
Email	Email address of this user.
Password Requires Reset	If enabled, the user will be prompted to reset the password at next login.
Locked Out	If enabled, locks out the user. This field is enabled automatically if the maximum number of successive failed login attempts has been reached by the user.
Login Method	<p>Login method(s) that the user can authenticate with. You can use the Ctrl key to select multiple methods. Only one of Standard or Standard / Authenticator App (TOTP) can be selected, not both.</p> <p>Options:</p> <ul style="list-style-type: none"> • Standard • Single Sign-On • Standard / Authenticator App (TOTP)
Time Zone	Time zone of this user. When this user logs in, all scheduling times will be shown in the user's time zone, unless the trigger specifies a different time zone.
Title	Business title of this user.
Department	Business department of this user.
Manager	Business manager of this user.
Business Phone	Business phone number of this user.
Mobile Phone	Mobile phone number of this user.
Web Browser Access	<p>Specifies whether or not the user can log in to the user interface.</p> <p>Options:</p> <ul style="list-style-type: none"> • System Default - User restriction for logging in to the user interface is based on the current system default value of the System Default Web Browser Access Universal Controller system property. • Yes - User is not restricted from logging in to the user interface. • No - User is restricted from logging in to the user interface.
Command Line Access	<p>Specifies whether or not the user can log in to the Universal Controller Command Line Interface (CLI).</p> <p>Options:</p> <ul style="list-style-type: none"> • System Default - User restriction for logging in to the CLI is based on the current system default value of the System Default Command Line Access Universal Controller system property. • Yes - User is not restricted from logging in to the CLI. • No - User is restricted from logging in to the CLI.

Web Service Access	<p>Specifies whether or not the user can log in to the Universal Controller RESTful Web Services API.</p> <p>Options:</p> <ul style="list-style-type: none"> • System Default - User restriction for logging in to the Universal Controller Web Services is based on the current system default value of the System Default Web Service Access Universal Controller system property. • Yes - User is not restricted from logging in to the Universal Controller Web Services. • No - User is restricted from logging in to the Universal Controller Web Services.
Active	If enabled, the user ID is active and the user can log in. If disabled, the user is deactivated; the user will not appear in user lists and cannot be used for access to the Controller.
Personal Access Tokens	This section contains assorted detailed information about the applications that will access the Universal Controller Web Service APIs using the personal access token.
Expiration	Specifies when the personal access token expires. If left unspecified, the token never expires.
User Impersonation	This section specifies the users that can be impersonated by this user on Universal Controller Web Service requests.
Allowed Impersonation Users	<p>Specifies the users that can be impersonated by this user using the X-Impersonate-User HTTP header on Web Service requests.</p> <p>User impersonation requires the ops_user_impersonate role.</p> <p>Users with the ops_admin role can impersonate any user and do not need to specify Allowed Impersonation Users.</p>
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Buttons	This section identifies the buttons displayed above and below the User Details that let you perform various actions.
Save	Saves a new user record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplay empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
New	Displays empty (except for default values) Details for creating a new record.
Update	Saves updates to the record.
Delete	Deletes the current record.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	For pop-up view only; closes the pop-up view of this user.
Tabs	This section identifies the tabs across the top of the User Details that provide access to additional information about the user.

User Roles	Allows you to assign roles to this user.
Member of Groups	Allows you to assign this user to one or more groups . <div style="border: 1px solid orange; padding: 5px;"> <p>Note Universal Controller only supports a user being a member of 1,000 groups or less.</p> </div>
Permissions	Allows you to assign permissions to this user.

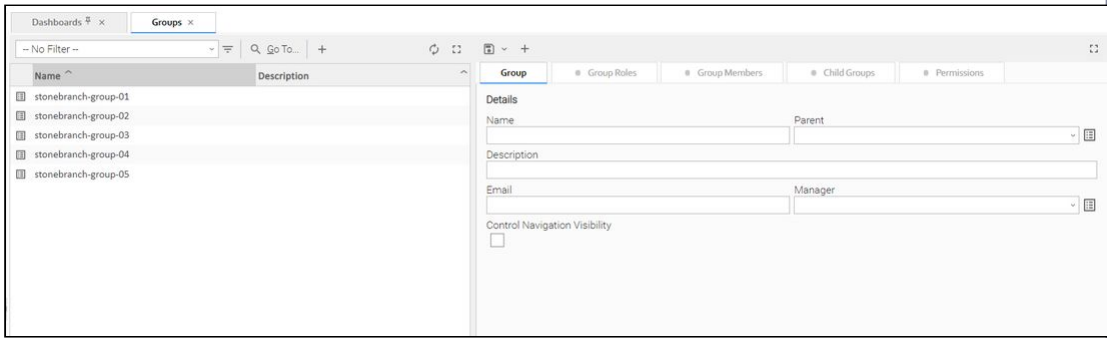
22.4 Adding a Group

Note

You must have administrative privileges to add groups.

A group is a collection of users. You can assign privileges and roles to groups or users. You can also assign groups to other groups.

Any user assigned to a group inherits all roles and permissions assigned to that group.

Step 1	<p>From the Administration navigation pane, select Security > Groups. The Groups list displays a list of all currently defined groups.</p> <p>To the right of the list, Group Details for a new group displays.</p> 
Step 2	<p>Enter/select Details for a new group, using the field descriptions below as a guide.</p> <ul style="list-style-type: none"> • Required fields display an asterisk (*) after the field name. • Default values for fields, if available, display automatically. <p>To display more of the Details fields on the screen, you can either:</p> <ul style="list-style-type: none"> • Use the scroll bar. • Temporarily hide the list above the Details. • Click the New button above the list to display a pop-up version of the Details.
Step 3	<p>Optionally, assign one or more roles to the group, assign members (users) to the group, assign other groups to this group, or assign permissions to this group.</p>

Step 4	Click a Save button. The group is added to the database, and all buttons and tabs in the Group Details are enabled.
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Note

To [open](#) an existing record on the list, either:

- Click a record in the list to display its record Details below the list. (To clear record Details below the list, click the **New** button that displays above and below the Details.)
- Clicking the [Details icon](#) next to a record name in the list, or right-click a record in the list and then click **Open** in the [Action menu](#) that displays, to display a pop-up version of the record Details.
- Right-click a record in the a list, or open a record and right-click in the record Details, and then click **Open In Tab** in the [Action menu](#) that displays, to display the record Details under a new tab on the record list page (see [Record Details as Tabs](#)).

22.4.1 Group Details

The following Group Details is for an existing group. See the [field descriptions](#), below, for a description of all fields that display in the Group Details.

The screenshot shows a web application window titled "Group Details: stonebranch-group-01". It features a tabbed interface with five tabs: "Group" (selected), "Group Roles", "Group Members", "Child Groups", and "Permissions". Under the "Group" tab, there is a "Details" section with the following fields:

- Name:** A text input field containing "stonebranch-group-01".
- Parent:** A dropdown menu.
- Description:** A large text area.
- Email:** A text input field.
- Manager:** A dropdown menu.
- Control Navigation Visibility:** A checkbox that is currently unchecked.

22.4.2 Group Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in the Group Details.

Field Name	Description
Details	This section contains detailed information about the group.
Name	Name of this group.
Parent	Name of this group's parent group, if any.

Description	Description of this record. Maximum length is 255 characters.
Email	Email address for this group.
Manager	Universal Controller user that is the manager of this group.
Control Navigation Visibility	Indication of whether or not to control the visibility of navigation pane entries in the Controller Services , via the Navigation Visibility field, for members of this Group. If Control Navigation Visibility is not checked (the default selection), all entries are visible.
Navigation Visibility	<p>If Control Navigation Visibility is enabled; Drop-down list of all Navigator entries.</p> <p>You can manually select and deselect any entry on the list. You also can click Check All above the list to make all Navigator entries visible to users in this Group, or click Uncheck All above the list to hide all Navigator entries from users in this Group.</p> <div style="border: 1px solid yellow; padding: 10px; margin-top: 10px;"> <p>Note</p> <p>If a new Navigation Visibility entry becomes available (for example, when a new Universal Task type has been created) <i>after</i> an administrator has configured the Navigation Visibility feature for a Group, you must explicitly add that new entry to the configuration.</p> <p>If a newly created Universal Task type does not appear as an entry in the Navigation Visibility drop-down list, confirm that the Universal Template has at least one field defined, perform the Refresh Navigation Tree operation, and refresh the Group Details (or refresh the Groups list).</p> <p>When a Universal Template is deleted, any Navigation Visibility configuration with a reference to its corresponding Universal Task type entry will automatically have that entry removed.</p> </div>
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Buttons	This section identifies the buttons displayed above and below the Group Details that let you perform various actions.
Save	Saves a new group record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplay empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
New	Displays empty (except for default values) Details for creating a new record.
Update	Saves updates to the record.
Copy	Creates a copy of this Group, which you are prompted to rename.

Delete	Deletes the current record.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	For pop-up view only; closes the pop-up view of this group.
Tabs	This section identifies the tabs across the top of the Group Details that provide access to additional information about the user.
Group Roles	Allows you to assign roles to this group.
Group Members	Allows you to assign users to this group. <div style="border: 1px solid orange; padding: 5px; margin: 5px 0;"> <p>Note Universal Controller only supports a user being a member of 1,000 groups or less.</p> </div>
Child Groups	Allows you to assign other groups to this group.
Permissions	Allows you to assign permissions to this group.

22.5 Additional Details

For information on how to access additional details - such as [Metadata](#) and complete [database Details](#) - for Users and Groups (or any type of record), see [Records](#).

22.6 Assigning Users to Groups

You can assign users to groups from a User record and from a Group record.

Step 1	Open the User or Group record.
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Step 2

Click the **Group Members** tab.

For a User, a list of all groups to which the user is assigned displays:

The screenshot shows the 'User Details' page for 'stone a branch'. The 'Member of Groups' tab is selected, displaying a table with 2 Group Members. The table has columns for Group, Updated By, and Updated.

Group	Updated By	Updated
stonebranch-group-01	ops.admin	2014-07-08 10:43:39 -0400
stonebranch-group-02	ops.admin	2014-07-08 10:43:39 -0400

For a Group, a list of all users assigned to the group displays.

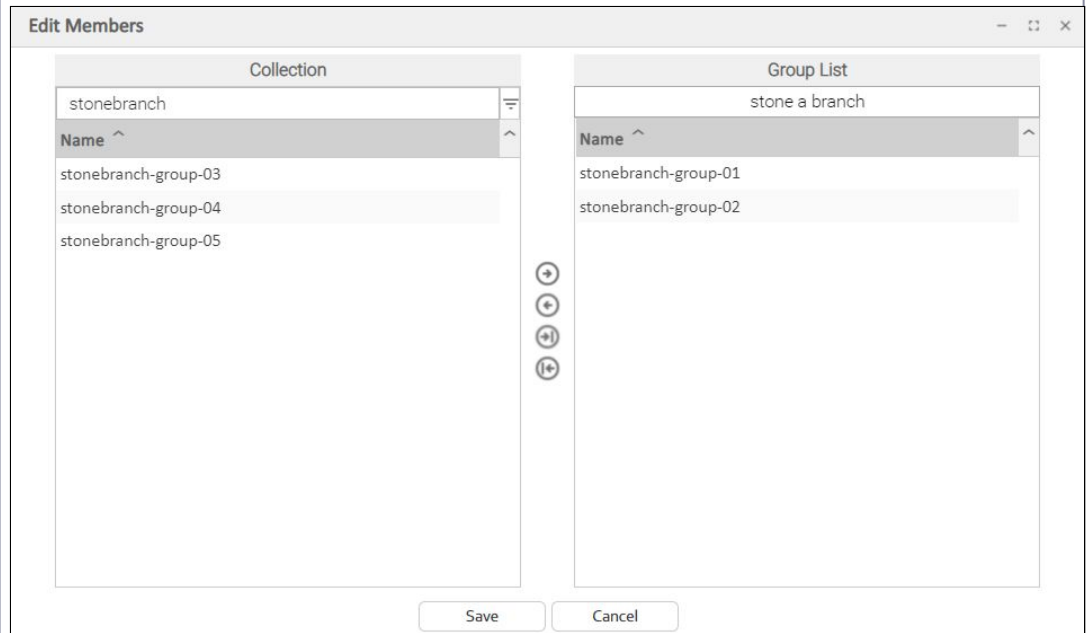
The screenshot shows the 'Group Details' page for 'stonebranch-group-01'. The 'Group Members' tab is selected, displaying a table with 3 Group Members. The table has columns for User, User Id (Username), Updated By, and Updated.

User	User Id (Username)	Updated By	Updated
stone b branch	stonebranch-user-02	Admin	2022-11-02 19:22:18 -0400
stone c branch	stonebranch-user-03	Admin	2022-11-02 19:22:18 -0400
stone a branch	stonebranch-user-01	ops.admin	2014-07-08 10:43:39 -0400

Step 3

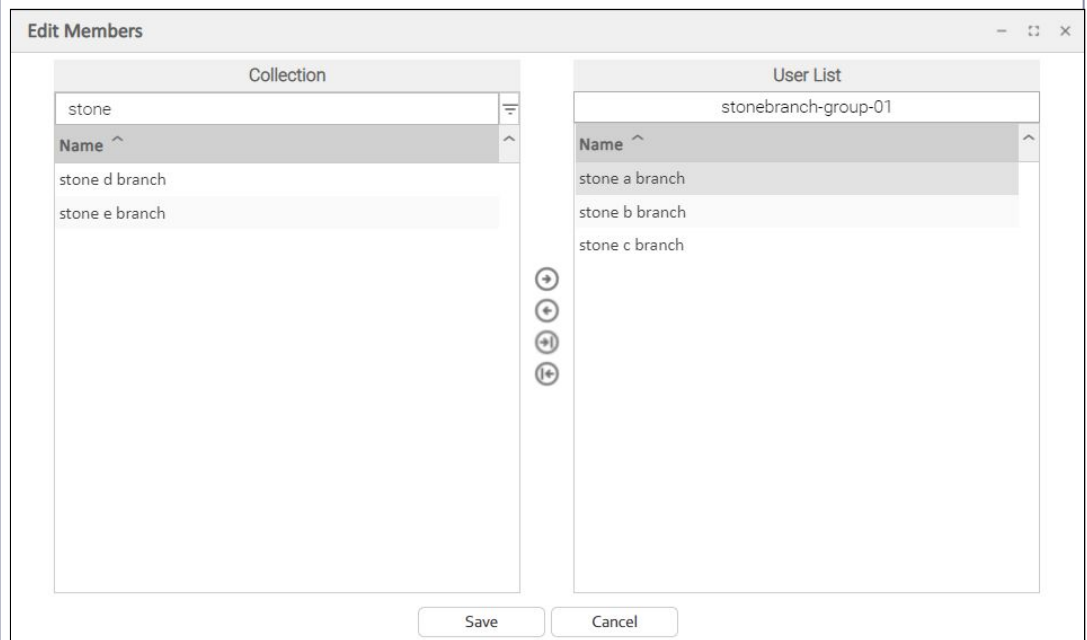
For a User, either:

- Click **New** to [create a Group](#) and automatically assign the User to it.
- Click **Edit** to display an **Edit Members** pop-up that allows you to assign the User to existing Groups.



For a Group, either:

- Click **New** to [create a User](#) and automatically assign it to the Group.
- Click **Edit** to display an **Edit Members** pop-up that allows you to assign existing Users to the Group.



Step 4

To filter the Users/Groups listed in the Collection window, enter characters in the text field above the **Name** column. Only Users/Groups containing that sequence of characters will display in the list.

Step 5	To assign a User to a Group, move the User/Group from the Collection window to the List window: <ol style="list-style-type: none"> 1. To move a single entry, double-click it or click it once and then click the > arrow. 2. To move multiple entries, Ctrl-click them and then click the > arrow. 3. To move all entries, click the >> arrow. To unassign the User to a Group, move the User/Group from the List window to the Collection window: <ol style="list-style-type: none"> 1. To move a single entry, double-click it or click it once and then click the < arrow. 2. To move multiple entries, Ctrl-click them and then click the < arrow. 3. To move all entries, click the << arrow.
Step 6	Click Save .

22.7 Navigation Visibility for Users and Groups

Users with the [ops.admin](#) role or the [ops_user_admin](#) role can control, via the [Control Navigation Visibility](#) and [Navigation Visibility](#) fields in the [Group Details](#) for a Group, which entries in the Controller [Services](#) are visible to users in that Group.

The following conditions apply to navigation visibility

User in Multiple Groups	If a user belongs to multiple Groups, and for any of those Groups the Control Navigation Visibility is not enabled, Navigator visibility for that user is not controlled.
User in Multiple Groups	If a user belongs to multiple Groups, and for all of those Groups navigation visibility has been deselected for one or more entries, the visible entries from all Groups will be merged. That is, if an entry is not visible to users in Group A, but the entry is visible to users in Group B, the entry will be visible to any user belonging to both Groups.
Navigation Pane	If all entries in a folder of a navigation pane (for example, the Tasks folder in the Automation Center navigation pane) are not visible to a Group, that folder does not display for any user in that Group.
Navigation Pane	If all entries in a navigation pane are not visible to a Group, that navigation pane does not display for any user in that Group.
Automation Center Navigation Pane	If a Group does not have visibility to one or more entries in the configurable Automation Center navigation pane, those entries are not available for configuration for any user in that Group.
Trigger Types / Task Types	If a Group does not have visibility to a specific Trigger type or Task type, that Trigger type or Task type does not display in the New drop-down menu on the All Triggers list or the All Tasks list for any user in that Group.
Universal Task Types	Dynamically created Universal Task type entries are available for selection / deselection in the Navigation Visibility field.
User Roles	The role selections for any user override any navigation visibility selections for any Group in which that user is a member.
User Roles	Navigation visibility selections for a Group do not apply to any users in the Group with the ops_admin role.

22.8 Deleting a User

Attempts to delete a user will be prohibited under the following circumstances:

- User is currently assigned as the manager for user(s).
- User is currently assigned as the manager for group(s).
- User currently associated with enabled trigger(s).
- User currently assigned as the execution user for trigger(s).
- User currently assigned as the execution user for active task instance(s).
- User currently assigned as the visible to for bundle(s).

If deletion of a user is allowed, the following information associated with the user record also will be deleted:

- User roles.
- User permissions.
- Group memberships.
- User's filters.
- User's pinned filter preferences.
- User's layout preferences.
- User's navigation preferences.
- User's reports (reports made visible only to that user).
- User's user preferences.
- User's dashboards.

22.9 Impersonating a User

Users with the [ops_admin](#) role, the [ops_user_admin](#) role, or the [ops_user_impersonate](#) role are able to specify an **X-Impersonate-User** HTTP header, in addition to their authentication header/parameter, when invoking Universal Controller [Web Service APIs](#).

The **X-Impersonate-User** HTTP header is specified as the [User Id](#) of the user to be impersonated.

Users with the [ops_admin](#) role can impersonate any user.

Users with only the [ops_user_admin](#) role or the [ops_user_impersonate](#) role must explicitly declare which users can be impersonated in the [Allowed Impersonation Users](#) field.

22.10 Copying Groups

- [Overview](#)
- [Copying One or More Groups from a Groups List](#)
- [Copying a Group from the Group Details](#)
- [Copy Permissions](#)

22.10.1 Overview

You can make copies of all Universal Controller records, including Groups, using the standard method for [Copying a Record](#): selecting **Insert** on the [Action menu](#).

However, this method does not make copies of any records that are associated with the copied record. For Groups, **Insert** does not make copies of any Group Roles, Group Members, and Permissions that are associated with the Group.

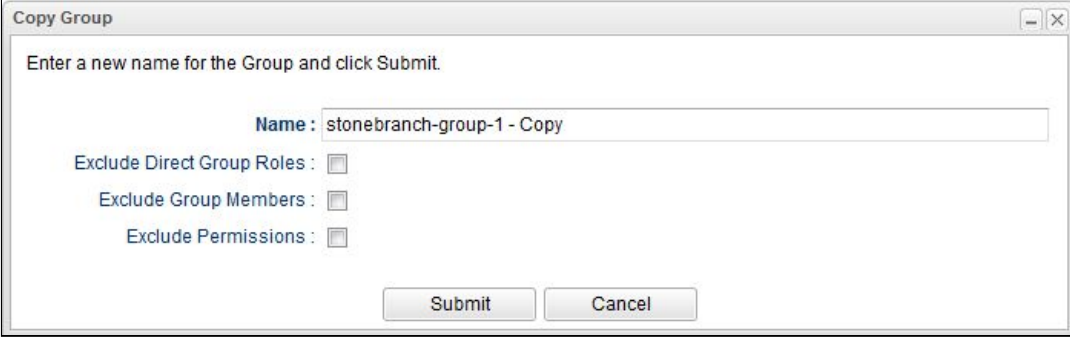
The Copy option allows you to make a complete copy of a Group, including all records associated with the Group.

22.10.2 Copying One or More Groups from a Groups List

<p>Step 1</p>	<p>From the Administration navigation pane, select Security > Groups to display the Groups list.</p>
<p>Step 2</p>	<p>Locate the Group(s) you want to copy (see Filtering).</p>
<p>Step 3</p>	<p>Copy the Group(s):</p> <p>Copy One Group</p> <ol style="list-style-type: none"> Right-click the Group Name. On the Action menu, select Copy. A Copy Group pop-up dialog displays. <div data-bbox="523 680 1544 999" style="border: 1px solid #ccc; padding: 5px; margin: 10px 0;"> <p>Copy Group</p> <p>Enter a new name for the Group and click Submit.</p> <p>Name: <input type="text" value="stonebranch-group-1 - Copy"/></p> <p>Exclude Direct Group Roles: <input type="checkbox"/></p> <p>Exclude Group Members: <input type="checkbox"/></p> <p>Exclude Permissions: <input type="checkbox"/></p> <p style="text-align: right;"> <input type="button" value="Submit"/> <input type="button" value="Cancel"/> </p> </div> <ol style="list-style-type: none"> Enter a new name for the Group and, optionally, exclude any of the following records from the copy: <ul style="list-style-type: none"> Group Roles Group Members Permissions Click Submit to create a copy of the Group. <p>Copy Multiple Groups</p> <ul style="list-style-type: none"> Ctrl-Click the Groups that you want to copy. Right-click any of the selected Groups. On the Action menu, select Copy. On the Confirmation pop-up that displays, click OK. The copied Groups are added to the list, with - Copy added as a suffix to the Group Name for each Group. If a Group with that - Copy name already exists, another copy is not created. <div data-bbox="466 1447 1544 1603" style="border: 2px solid orange; padding: 10px; margin-top: 10px;"> <p>Note</p> <p>When copying multiple Groups; Group Roles, Group Members, and Permissions will not be excluded.</p> </div>

22.10.3 Copying a Group from the Group Details

<p>Step 1</p>	<p>Select a Group from the Groups list. The Group Details for that Group displays.</p>
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<p>Step 2</p>	<p>Either:</p> <ul style="list-style-type: none"> • Click the Copy button. • Right-click the Details to display the Action menu, and then click Copy. <p>A Copy Group pop-up dialog displays.</p> 
<p>Step 3</p>	<p>Enter a new name for the Group and, optionally, exclude any of the following records from the copy:</p> <ul style="list-style-type: none"> • Group Roles • Group Members • Permissions
<p>Step 4</p>	<p>Click Submit to create a copy of the Group.</p>

22.10.4 Copy Permissions

To copy a Group, you must have either the [ops_admin](#) or [ops_user_admin](#) role.

23 Roles and Permissions

- [Overview](#)
- [Assigning Roles to Users or Groups](#)
 - [Description of Roles](#)
- [Assigning Permissions to Users or Groups](#)
 - [General Permissions Field Descriptions](#)
- [Types of Permissions](#)
 - [Agent Permissions](#)
 - [Agent Cluster Permissions](#)
 - [Application Permissions](#)
 - [Bundle Permissions](#)
 - [Calendar Permissions](#)
 - [Credential Permissions](#)
 - [Database Connection Permissions](#)
 - [Email Connection Permissions](#)
 - [Email Template Permissions](#)
 - [OAuth Client Permissions](#)
 - [OMS Server Permissions](#)
 - [PeopleSoft Connection Permissions](#)
 - [Promotion Target Permissions](#)
 - [SAP Connection Permissions](#)
 - [Script Permissions](#)
 - [SNMP Manager Permissions](#)
 - [Task Permissions](#)
 - [Task Instance Permissions](#)
 - [Trigger Permissions](#)
 - [Universal Event Permissions](#)
 - [Variable Permissions](#)
 - [Virtual Resource Permissions](#)
 - [Webhook Permissions](#)
- [Exporting Permissions for a Group](#)

23.1 Overview

Roles control user and group access to administrative functions within Universal Controller. A user or group that has been assigned a role has permission to perform any function defined for that role.

Permissions control user and group access to specific functions for specific types of Controller records.

Some roles have permissions for specific functions that can be assigned individually. For example, a user that has been assigned the [ops_agent_cluster_admin](#) role has permission to perform all functions associated with Agent Clusters. A user that has not been assigned the [ops_agent_cluster_admin](#) role still can be given permission to perform individual functions associated with Agent Clusters via the [Agent Cluster Permissions](#).

Conversely, since there is no role associated with Agents, permissions for a user to perform functions associated with Agents must be assigned specific [Agent Permissions](#).

Note

The [ops_admin](#) role assigns a user permission to perform all functions.

23.2 Assigning Roles to Users or Groups

Roles control user access to functions that include:

- Setting up security.
- Creating reports, filters, and gauges.
- Creating Agent Clusters, SNMP Managers.
- Creating Email Connections, Database Connections, PeopleSoft Connections, and SAP Connections.
- Creating and promoting bundles of records.

Each role is a predefined collection of administrative functions (see [Description of Roles](#), below). By assigning a role to a user or group, you automatically give that user or group all functions associated with that role.

Note

You cannot add new roles to the Controller; you must assign administrative functions to groups or users using the predefined roles.

To assign roles to a user or group:

Step 1

Open a [User](#) or [Group](#) record.

Step 2

For a User, click the **User Roles** tab. A list of Roles assigned to the User displays.

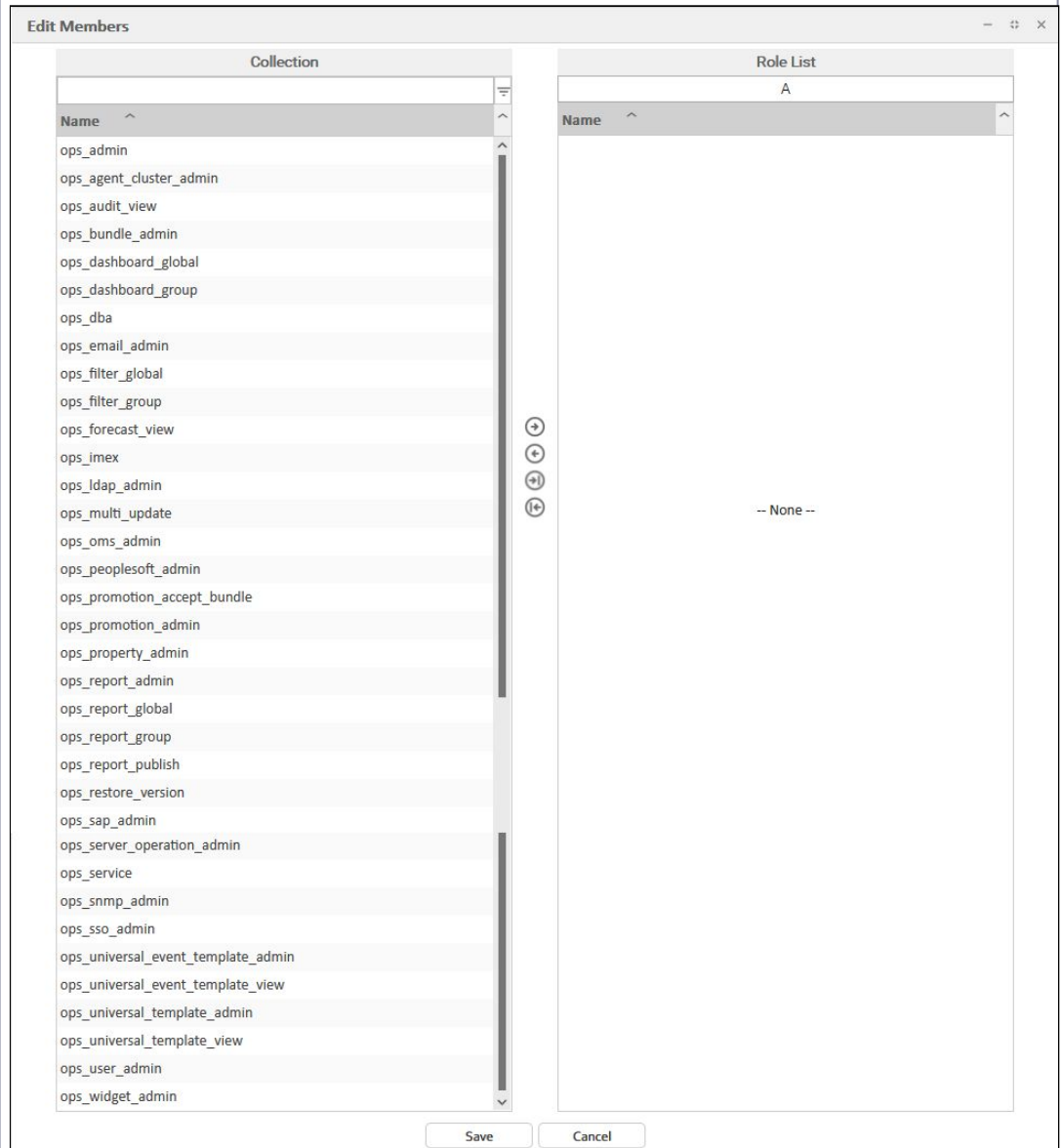
Role	Granted By	Inherited	Updated By	Updated
ops_report_global		No	ops.admin	2019-03-11 14:09:54 -0400
ops_report_group		No	ops.admin	2019-03-11 14:09:54 -0400

For a Group, click the **Group Roles** tab. A list of Roles assigned to the Group displays.

Role	Granted By	Inherits	Updated By	Updated
ops_admin		Yes	ops.admin	2014-07-08 11:27:25

Step 3

Click **Edit**. An **Edit Members** pop-up displays that allows you to assign Roles to the User / Group. For example:



- The Collection window displays all Roles that have not been assigned to this User / Group.
- The Roles List window displays all Roles that have been assigned to this User / Group.

Step 4

To filter the Users/Groups listed in the Collection window, enter characters in the text field above the **Name** column. Only Users/Groups containing that sequence of characters will display in the list.

Step 5

To assign a Role to the User / Group, move the Role from the **Collection** window to the **Roles** window:

- To move a single Role, double-click it or click it once and then click the > arrow.
- To move multiple Roles, Ctrl-click them and then click the > arrow.
- To move all Roles, click the >> arrow.

To unassign a Role to the User / Group, move the Role from the **Roles** window to the **Collection** window:

- To move a single Role, double-click it or click it once and then click the < arrow.
- To move multiple Roles, Ctrl-click them and then click the < arrow.
- To move all Roles, click the << arrow.

Step 6

Click **Save**.

23.2.1 Description of Roles

The following table summarizes the roles available in the Controller.

Role Name	Available Functions	Contains Roles
ops_admin	<p>All functions; this is the Universal Controller administrator role. The easiest way to assign full permissions to a user is to add the user to the Administrator Group, which by default is assigned the ops_admin role.</p> <div style="border: 1px solid orange; padding: 10px; margin-top: 10px;"> <p>Note</p> <p>The ops_admin role contains all other roles. If a user is assigned the ops_admin role, no other roles need to be assigned to that user, and unassigning any other role from the user will not revoke that role.</p> </div>	The ops_admin role contains all other roles.
ops_agent_cluster_admin	<p>Create, read, update, and delete agent clusters.</p> <p>(Also see Agent Cluster Permissions, below.)</p>	
ops_audit_view	<p>Read all Audits.</p> <div style="border: 1px solid orange; padding: 10px; margin-top: 10px;"> <p>If Audit Owner Read Permitted system property = true, users can view their own audits without having either the ops_admin role or the ops_audit_view role.</p> </div>	
ops_bundle_admin	<ul style="list-style-type: none"> • Create, read, update, and delete Bundles. • View Promotion Targets, including agent mappings. • View Promotion History. • View a record's list of bundles. • View Promotion Schedules. • Add a record to a bundle. • Create bundles by date. • Generate a Bundle Report. <p>(Also see Bundle Permissions and Promotion Target Permissions, below.)</p>	
ops_dashboard_global	<p>Create, update, and delete Dashboard Details with Everyone visibility; updating includes updating Dashboard visibility.</p>	
ops_dashboard_group	<p>Create, update, and delete Dashboard Details that are visible to any of the groups in which the user is a member of; updating includes updating Dashboard visibility.</p>	
ops_dba	<p>Create, update, delete Database Connections.</p> <p>(Also see Database Connection Permissions, below.)</p>	
ops_email_admin	<p>Create, read, update, delete Email Connections.</p> <p>(Also see Email Connection Permissions, below.)</p>	
ops_filter_global	<p>Create Filters with Everyone visibility.</p>	
ops_filter_group	<p>Create Filters that belong to a group of which this user is a member.</p>	

Role Name	Available Functions	Contains Roles
ops_forecast_view	Read Forecast Calendar , Forecasts List , and Forecast Details .	
	<div style="border: 1px solid orange; padding: 5px;"> <p>Note</p> <p>Users also can read forecast information, without being assigned this role, if they have Read permission for the Task specified in the Forecast Details.</p> </div>	
ops_imex	List Import/Export XML .	
ops_jcl_edit	Modify the JCL contents and update it.	• ops_jcl_view
ops_jcl_view	Submit the JCL view request to the agent and view the contents of it.	
ops_ldap_admin	Read and update LDAP Settings .	
ops_multi_update	Update multiple records .	
ops_oauth_admin	Create, read, update, and delete OAuth Clients .	
ops_oms_admin	Create, update, and delete OMS Servers .	
ops_peoplesoft_admin	Create, read, update, and delete PeopleSoft Connections . (Also see PeopleSoft Connection Permissions , below.)	
ops_promotion_accept_bundle	Accept bundles being promoted to a target server. (The Accept Bundle command is executed on the target server automatically as part of the Promote and Promote Bundle commands and does not involve user interaction.)	
ops_promotion_admin	<ul style="list-style-type: none"> • Create, read, update, and delete Promotion Targets, including agent mappings. • View Bundles. • Refresh Target Agents. • Promote records. • Promote or schedule the promotion of a bundle. • Reschedule, cancel, and delete Promotion Schedules. • Generate a Bundle report. • Accept bundles being promoted to a target server. (The Accept Bundle command is executed on the target server automatically as part of the Promote and Promote Bundle commands and does not involve user interaction.) 	• ops_promotion_accept_bundle
	<div style="border: 1px solid orange; padding: 5px;"> <p>Note</p> <p>By default, the ops_promotion_admin role also grants Read permission for any type of definition that can be added to a Bundle, given the expectation that a promotion administrator would review the content of a Bundle before promoting it. To change this default behaviour, see the Promotion Read Permission Required Universal Controller property.</p> </div>	
	(Also see Bundle Permissions and Promotion Target Permissions , below.)	
ops_property_admin	Read, update, and delete Universal Controller system properties and Password Settings .	

Role Name	Available Functions	Contains Roles
ops_report_admin	<ul style="list-style-type: none"> Create, read, update, and delete any report, regardless of visibility, in addition to the roles granted by the ops_widget_admin role. Create, update, and delete Dashboard Details with Everyone visibility and Dashboard Details that are visible for a group in which this user is a member; updating includes updating Dashboard visibility. <p>The Strict Report Create Constraints Universal Controller system property specifies whether or not to restrict report creation only to users with the ops_admin, ops_report_admin, ops_report_group, or ops_report_global role.</p> <p>The Strict Dashboard Create Constraints Universal Controller system property specifies whether or not to restrict Dashboard creation only to users with the ops_admin, ops_report_admin, ops_dashboard_group, or ops_dashboard_global role.</p>	<ul style="list-style-type: none"> ops_dashboard_global ops_dashboard_group ops_report_global ops_report_group ops_report_publish ops_widget_admin
ops_report_global	Create global reports .	
ops_report_group	Create reports that belong to a group to which this user is a member.	
ops_report_publish	Publish reports . (This role was applicable only to the Controller 5.x release.)	
ops_restore_version	Restore old versions of records.	
ops_sap_admin	Create, read, update, and delete SAP Connections . (Also see SAP Connection Permissions , below.)	
ops_server_operation_admin	Run Server Operations .	
ops_service	<ul style="list-style-type: none"> Log in and view Home Dashboard. The Active Task Instances By Status widget will remain blank unless the user is assigned the Task Instance Read permission, as the ops_service role does not include access to such data. Read Agents. Read Universal Controller system properties. Read Password Settings. Read LDAP Settings (and run the Test Connection command). Read Single Sign-On Settings. Read Universal Event Templates and related data (Fields and Field Choices). Read Universal Templates and related data (Fields and Field Choices). Read Data Backup/Purge. Unless the user also is assigned the ops_audit_view role, the Audit tab on the Data Backup/Purge Details, which allows for conveniently viewing related Audit records, will not be available. Read Users and related data (Roles, Group Membership, and Permissions). Read Groups and related data (Roles, Group Membership, Child Groups, and Permissions). Read Universal Controller Metrics (Monitoring Web Services). 	
ops_simulation_view	Read Simulation records.	
ops_snmp_admin	Create, read, update, and delete SNMP Managers , to which the Controller sends SNMP notifications . (Also see SNMP Manager Permissions , below.)	
ops_sso_admin	Read and update SAML Single Sign-On and OAuth Single Sign-On .	
ops_universal_event_template_admin	Create, read, update, and delete Universal Event Templates .	<ul style="list-style-type: none"> ops_universal_event_template_view
ops_universal_event_template_view	Read Universal Event Templates .	
ops_universal_template_admin	Create, read, update, and delete Universal Templates (including Universal Template Event Templates).	<ul style="list-style-type: none"> ops_universal_template_view

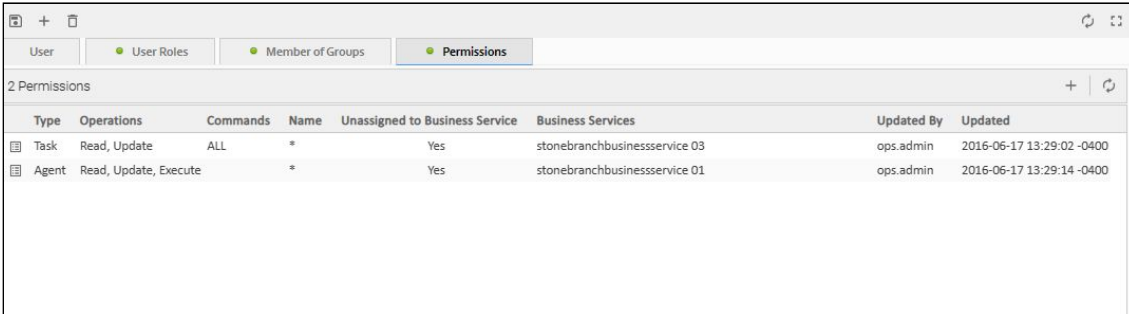
Role Name	Available Functions	Contains Roles
ops_universal_template_view	Read Universal Templates (including Universal Template Event Templates).	
ops_user_admin	Create, read, update, and delete users and groups .	<ul style="list-style-type: none"> ops_user_impersonate
ops_user_impersonate	Allows an authenticated user to impersonate another user by using the X-Impersonate-User HTTP header on a Web Service request.	
ops_webhook_admin	<ul style="list-style-type: none"> Create, read, update, and delete Webhooks. Enable, Disable, and Assign Execution User for Webhooks. 	<ul style="list-style-type: none"> ops_webhook_view
ops_webhook_view	Read Webhooks .	
ops_widget_admin	Create, update, and delete Widgets .	

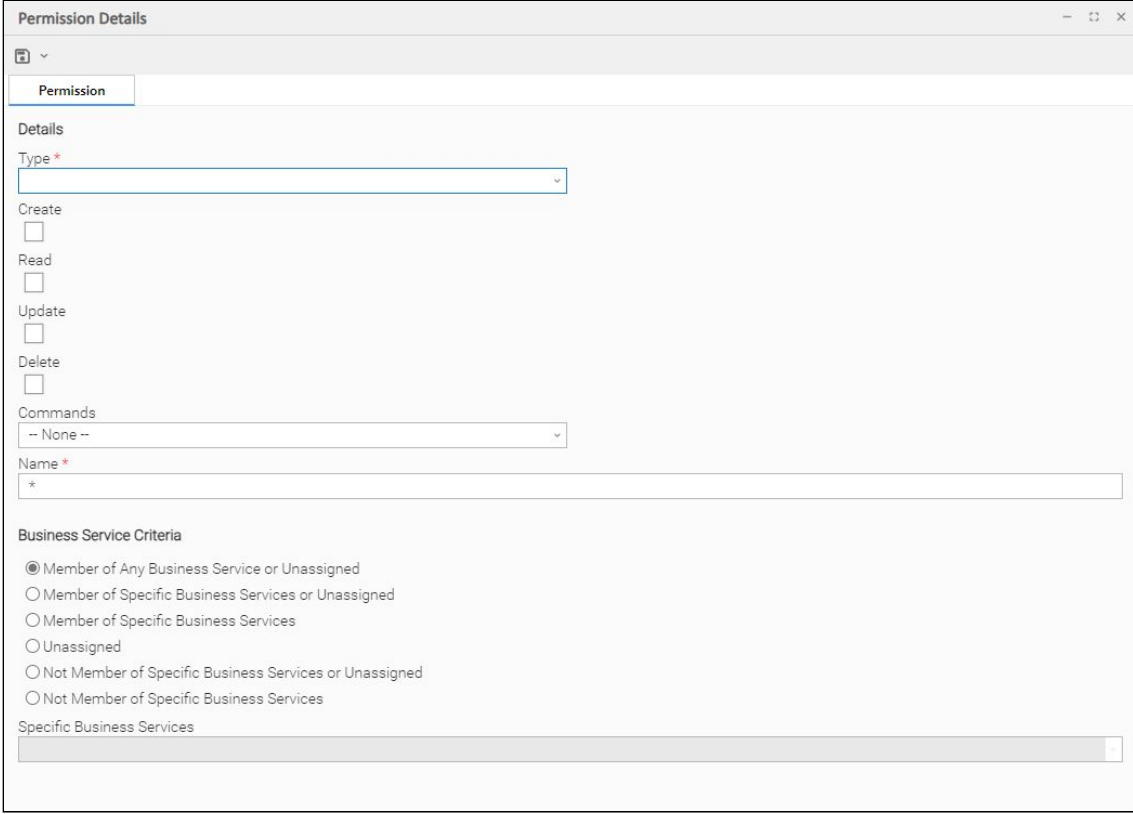
23.3 Assigning Permissions to Users or Groups

Permissions control user access to specific types of Controller records, such as task or trigger, and the types of functions that can be performed for those record types, such as create or delete.

You can further narrow down which records each permission applies to by specifying either name parameters or Business Services. For example, a given permission might apply only to tasks whose name begins with "SF," or a permission might apply only to tasks that have been assigned to a specific [Business Service](#) or to tasks that do not belong to any Business Services. See [General Permissions Field Descriptions](#), below, for more details.

To add permissions to a user or group:

Step 1	Open a User or Group record.
Step 2	<p>Click the Permissions tab. A list of permissions assigned to the User / Group displays.</p> <p>For Example:</p>  <div style="border: 2px solid orange; padding: 10px; margin-top: 10px;"> <p>Note</p> <p>The Business Services column represents a virtual field whose value is determined by data from both the Member of Business Services field and the Member of Any Business Service or Unassigned field. If you want to apply a sort relating to the data in Business Services, you have to add either or both Member of Business Services and Member of Any Business Service or Unassigned fields as columns and apply the desired sort on either or both of them.</p> </div>

<p>Step 3</p>	<p>Click New. The Permissions Details pop-up displays.</p> 
<p>Step 4</p>	<p>Select permissions for the selected user or group.</p> <p>The permissions available differ depending on the Type of permission that you select. Available permissions are Create, Read, Update, Delete, and Execute. For some record types, additional Commands are available. If the permission does not apply to the record type in the Type drop-down, the permission does not appear in the display.</p> <p>These permissions automatically include other permissions:</p> <ul style="list-style-type: none"> • Create permission includes Read and Update permissions. • Update permission includes Read permission. • Delete permission includes Read permission.

23.3.1 General Permissions Field Descriptions

The following fields of information and buttons display in the Permissions Details for all [Permission types](#):

Field Name	Description
Details	This section contains detailed information about the permission.
Name	Applies this permission to records whose name matches the string specified here. Wildcards are supported.
Business Service Criteria	This section contains criteria for selecting records to apply permissions by their business service membership.

<ul style="list-style-type: none"> • Member of Any Business Service or Unassigned • Member of Specific Business Services or Unassigned • Member of Specific Business Services • Unassigned • Not Member of Specific Business Services or Unassigned • Not Member of Specific Business Services 	<p>Criteria for matching records by their business service membership.</p> <ul style="list-style-type: none"> • Member of Any Business Service or Unassigned • Member of Specific Business Services or Unassigned You must specify one or more business services from the Specific Business Services drop-down. • Member of Specific Business Services You must specify one or more business services from the Specific Business Services drop-down. • Unassigned • Not Member of Specific Business Services or Unassigned You must specify one or more business services from the Specific Business Services drop-down. • Not Member of Specific Business Services You must specify one or more business services from the Specific Business Services drop-down.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Buttons	This section identifies the buttons displayed above and below the Permissions Details that let you perform various actions.
Save	Saves a new record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplay empty Details so that you can create another new record.
Update	Saves updates to the record.
Delete	Deletes the current record.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	For pop-up view only; closes the pop-up view of this record.

23.4 Types of Permissions

This section identifies the different types of permissions that you can add to a user or group.

23.4.1 Agent Permissions

Permission Details
- □ ×

Permission

Details

Type *

Read

Update

Delete

Execute

Commands

- ALL
- Resume Agent
- Suspend Agent

Member of Any Business Service or Unassigned
 Member of Specific Business Services or Unassigned
 Member of Specific Business Services
 Unassigned
 Not Member of Specific Business Services or Unassigned
 Not Member of Specific Business Services

Specific Business Services

Options	Description
Read	Grants permission to read an Agent definition. <div style="border: 2px solid orange; padding: 10px; margin: 10px 0;"> The Read check box will be checked automatically if the Business Service Visibility Restricted Universal Controller system property is false. </div>
Update	Grants permission to update an Agent definition. (Only certain fields can be updated.)
Delete	Grants permission to delete an Agent.
Execute	Grants permission to execute a task on an Agent.

Options	Description
Commands	<ul style="list-style-type: none"> • ALL: Grants permission to suspend and resume Agents. • Resume Agent: Grants permission to resume the ability of a suspended Agent to run tasks. • Suspend Agent: Grants permission to suspend the ability of an Agent to run tasks.

23.4.2 Agent Cluster Permissions

(You also can assign Agent Cluster Permissions to a user by assigning the [ops_agent_cluster_admin](#) role to the user.)

Permission Details - □ ×

Permission

Details

Type *

Create

Read

Update

Delete

Commands

- ALL
- Resume Agent Cluster
- Suspend Agent Cluster
- Resume Agent Cluster Membership
- Suspend Agent Cluster Membership
- Resolve Agent Cluster

Unassigned

Not Member of Specific Business Services or Unassigned

Not Member of Specific Business Services

Specific Business Services

Options	Description
Create	Grants permission to create a new Agent Cluster.

Options	Description
Read	<p>Grants permission to read an Agent Cluster definition.</p> <div style="border: 1px solid orange; padding: 10px; margin-top: 10px;"> <p>The Read check box will be checked automatically if the Business Service Visibility Restricted Universal Controller system property is false.</p> </div>
Update	Grants permission to update an Agent Cluster definition. (Only certain fields can be updated.)
Delete	Grants permission to delete an Agent Cluster.
Commands	<ul style="list-style-type: none"> • ALL: Grants permission to issue any command. • Resume Agent Cluster: Grants permission to resume the ability of a suspended Agent Cluster to run tasks. • Suspend Agent Cluster: Grants permission to suspend the ability of an Agent Cluster to run tasks. • Resume Agent Cluster Membership: Grants permission to resume the membership of an Agent in an Agent Cluster. • Suspend Agent Cluster Membership: Grants permission to suspend the membership of an Agent from an Agent Cluster. • Resolve Agent Cluster: Grants permission to resolve the Network Alias of an Agent Cluster with a Distribution type of Network Alias.

23.4.3 Application Permissions

Options	Description
Create	Grants permission to create a new Application.
Read	Grants permission to read an Application.
Update	Grants permission to update an Application.
Delete	Grants permission to delete an Application.
Commands	See Application Control Tasks for details. Options: <ul style="list-style-type: none"> • ALL: Grants permission to execute a Start, Stop, and Query from the Application resource screen. • Start: Grants permission to execute a Start from the Application resource screen. • Stop: Grants permission to execute a Stop from the Application resource screen. • Query: Grants permission to execute a Query from the Application resource screen.

23.4.4 Bundle Permissions

(You also can assign Bundle Permissions to a user by assigning the [ops_bundle_admin](#) role to the user.)

Permission Details
- □ ×

Permission

Details

Type *
Bundle

Create

Read

Update

Delete

Commands
-- None --

ALL
 Promote Bundle

Business Service Criteria

Member of Any Business Service or Unassigned

Member of Specific Business Services or Unassigned

Member of Specific Business Services

Unassigned

Not Member of Specific Business Services or Unassigned

Not Member of Specific Business Services

Specific Business Services

Options	Description
Create	Grants permission to create a Bundle matching both the specified name wildcard and business service membership, including the use of the Create Bundle By Date and Create Bundle By Business Service commands.
Read	Grants permission to read a Bundle matching both the specified name wildcard and business service membership. <ul style="list-style-type: none"> User can run a Bundle Report for a Bundle matching both the specified name wildcard and business service membership. User can Read a Promotion Schedule associated with a Bundle matching both the specified name wildcard and business service membership.
Update	Grants permission to update a Bundle matching both the specified name wildcard and business service membership, including the use of the Add To Bundle command.
Delete	Grants permission to delete a Bundle matching both the specified name wildcard and business service membership.

Options	Description
Commands	<ul style="list-style-type: none"> • ALL: Grants permission to issue any command. • Promote Bundle: Grants permission to promote a Bundle. <p>For the ALL or Promote Bundle command:</p> <ul style="list-style-type: none"> • User can promote a Bundle matching both the specified name wildcard and business service membership, assuming the user has Read permission for the Bundle. • User can Cancel, Reschedule, or Delete a Promotion Schedule associated with a Bundle matching both the specified name wildcard and business service membership, assuming the user has Read permission for the Bundle.

23.4.5 Calendar Permissions

Permission Details - □ ×

Permission

Details

Type *

Create

Read

Update

Delete

Commands

ALL

Copy Calendar

Business Service Criteria

Member of Any Business Service or Unassigned

Member of Specific Business Services or Unassigned

Member of Specific Business Services

Unassigned

Not Member of Specific Business Services or Unassigned

Not Member of Specific Business Services

Specific Business Services

Options	Description
Create	Grants permission to create a new Calendar.

Options	Description
Read	Grants permission to read a Calendar. The Read check box will be checked automatically if the Business Service Visibility Restricted Universal Controller system property is false.
Update	Grants permission to update a Calendar.
Delete	Grants permission to delete a Calendar.
Commands	<ul style="list-style-type: none"> • ALL: Grants permission to issue any command. • Copy Calendar: Grants permission to copy a Calendar.

23.4.6 Credential Permissions

Permission Details
- □ ×

Permission

Details

Type *

Create

Read

Update

Delete

Execute

Commands

ALL
 Test Provider

Business Service Criteria

Member of Any Business Service or Unassigned
 Member of Specific Business Services or Unassigned
 Member of Specific Business Services
 Unassigned
 Not Member of Specific Business Services or Unassigned
 Not Member of Specific Business Services

Specific Business Services

Options	Description
Create	Grants permission to create a new Credential.
Read	Grants permission to read a Credential. The Read check box will be checked automatically if the Business Service Visibility Restricted Universal Controller system property is false.
Update	Grants permission to update a Credential.
Delete	Grants permission to delete a Credential.
Execute	Grants permission to execute a task that requires a Credential.
Commands	<ul style="list-style-type: none"> • ALL: Grants permission to issue any command. • Test Provider: Grants permission to Test Provider.

23.4.7 Database Connection Permissions

(You also can assign Database Connection Permissions to a user by assigning the [ops_dba](#) role to the user.)

Permission Details - □ ×

Permission

Details

Type *

Create

Read

Update

Delete

Execute

Commands

- ALL
- Copy Database Connection
- Test Connection

Member of Any Business Service or Unassigned
 Member of Specific Business Services or Unassigned
 Member of Specific Business Services
 Unassigned
 Not Member of Specific Business Services or Unassigned
 Not Member of Specific Business Services

Specific Business Services

Options	Description
Create	Grants permission to create a new Database Connection.
Read	Grants permission to read a Database Connection. The Read check box will be checked automatically if the Business Service Visibility Restricted Universal Controller system property is false.
Update	Grants permission to update a Database Connection.
Delete	Grants permission to delete a Database Connection.
Execute	Grants permission to execute a task that requires a Database Connection. (Displays only if the Strict Connection Execute Constraints Universal Controller system property is true.)
Commands	<ul style="list-style-type: none"> • ALL: Grants permission to issue any command. • Copy Database Connection: Grants permissions to copy a Database Connection. • Test Connection: Grants permission to test a Database Connection.

23.4.8 Email Connection Permissions

(You also can assign Email Connection Permissions to a user by assigning the [ops_email_admin](#) role to the user.)

Permission Details
- □ ×

Permission

Details

Type *
Email Connection

Create

Read

Update

Delete

Execute

Commands
-- None --

ALL
 Copy Email Connection
 Authorize
 Test Connection

Member of Any Business Service or Unassigned
 Member of Specific Business Services or Unassigned
 Member of Specific Business Services
 Unassigned
 Not Member of Specific Business Services or Unassigned
 Not Member of Specific Business Services

Specific Business Services

Options	Description
Create	Grants permission to create a new Email Connection.
Read	Grants permission to read an Email Connection. The Read check box will be checked automatically if the Business Service Visibility Restricted Universal Controller system property is false.
Update	Grants permission to update an Email Connection.
Delete	Grants permission to delete an Email Connection.
Execute	Grants permission to execute a task that requires an Email Connection. (Displays only if the Strict Connection Execute Constraints Universal Controller system property is true.)
Commands	<ul style="list-style-type: none"> • ALL: Grants permission to issue any command. • Copy Email Connection: Grants permissions to copy an Email Connection. • Test Connection: Grants permission to test an Email Connection.

23.4.9 Email Template Permissions

Permission Details
- □ ×

Permission

Details

Type *
Email Template

Create

Read

Update

Delete

Commands
-- None --

ALL
 Copy Email Template

Business Service Criteria

Member of Any Business Service or Unassigned

Member of Specific Business Services or Unassigned

Member of Specific Business Services

Unassigned

Not Member of Specific Business Services or Unassigned

Not Member of Specific Business Services

Specific Business Services

Options	Description
Create	Grants permission to create a new Email Template.
Read	Grants permission to read an Email Template. The Read check box will be checked automatically if the Business Service Visibility Restricted Universal Controller system property is false.
Update	Grants permission to update an Email Template.
Delete	Grants permission to delete an Email Template.
Commands	<ul style="list-style-type: none"> ALL: Grants permission to issue any command. Copy Email Template: Grants permission to copy an Email Template.

23.4.10 OAuth Client Permissions

(You also can assign OAuth Client Permissions to a user by assigning the [ops_oauth_admin](#) role to the user.)

Permission Details
- □ ×

Permission

Details

Type *

Create

Read

Update

Delete

Commands

Business Service Criteria

Member of Any Business Service or Unassigned
 Member of Specific Business Services or Unassigned
 Member of Specific Business Services
 Unassigned
 Not Member of Specific Business Services or Unassigned
 Not Member of Specific Business Services

Specific Business Services

Options	Description
Create	Grants permission to create a new OAuth Client.
Read	Grants permission to read an OAuth Client.
Update	Grants permission to update an OAuth Client.
Delete	Grants permission to delete an OAuth Client.
Commands	-- None --

23.4.11 OMS Server Permissions

(You also can assign OMS Server Permissions to a user by assigning the [ops_oms_admin](#) role to the user.)

Permission Details

Permission

Details

Type *

Create

Read

Update

Delete

Commands

ALL
 Resume
 Suspend

Member of Any Business Service or Unassigned
 Member of Specific Business Services or Unassigned
 Member of Specific Business Services
 Unassigned
 Not Member of Specific Business Services or Unassigned
 Not Member of Specific Business Services

Specific Business Services

Options	Description
Create	Grants permission to create a new OMS Server.
Read	Grants permission to read an OMS Server. The Read check box will be checked automatically if the Business Service Visibility Restricted Universal Controller system property is false.
Update	Grants permission to update an OMS Server.
Delete	Grants permission to delete an OMS Server.
Commands	<ul style="list-style-type: none"> • ALL: Grants permission to suspend and resume OMS Servers. • Resume: Grants permission to resume the connection of a suspended OMS Server. • Suspend: Grants permission to suspend the connection of an OMS Server.

23.4.12 PeopleSoft Connection Permissions

(You also can assign PeopleSoft Connection Permissions to a user by assigning the [ops_peoplesoft_admin](#) role to the user.)

Permission Details
- □ ×

Permission

Details

Type *
PeopleSoft Connection

Create

Read

Update

Delete

Execute

Commands
-- None --

ALL
 Copy PeopleSoft Connection

Business Service Criteria

Member of Any Business Service or Unassigned
 Member of Specific Business Services or Unassigned
 Member of Specific Business Services
 Unassigned
 Not Member of Specific Business Services or Unassigned
 Not Member of Specific Business Services

Specific Business Services

Options	Description
Create	Grants permission to create a new PeopleSoft Connection.
Read	Grants permission to read a PeopleSoft Connection. The Read check box will be checked automatically if the Business Service Visibility Restricted Universal Controller system property is false.
Update	Grants permission to update a PeopleSoft Connection.
Delete	Grants permission to delete a PeopleSoft Connection.
Execute	Grants permission to execute a task that requires a PeopleSoft Connection. (Displays only if the Strict Connection Execute Constraints Universal Controller system property is true.)

Options	Description
Commands	<ul style="list-style-type: none"> • ALL: Grants permission to issue any command. • Copy PeopleSoft Connection: Grants permission to copy a PeopleSoft Connection.

23.4.13 Promotion Target Permissions

(You also can assign Promotion Target Permissions to a user by assigning the [ops_promotion_admin](#) role to the user.)

Permission Details
- □ ×

Permission

Details

Type *

Create

Read

Update

Delete

Execute

Commands

ALL

Refresh Target Agents

Business Service Criteria

Member of Any Business Service or Unassigned

Member of Specific Business Services or Unassigned

Member of Specific Business Services

Unassigned

Not Member of Specific Business Services or Unassigned

Not Member of Specific Business Services

Specific Business Services

Options	Description
Create	Grants permission to create a Promotion Target matching both the specified name wildcard and business service membership.

Options	Description
Read	<p>Grants permission to read a Promotion Target matching both the specified name wildcard and business service membership.</p> <p>User can View Target Server Info for Promotion Target matching both the specified name wildcard and business service membership.</p>
Update	Grants permission to update a Promotion Target matching both the specified name wildcard and business service membership.
Delete	Grants permission to delete a Promotion Target matching both the specified name wildcard and business service membership
Execute	Grants permission to promote a Bundle using a Promotion Target matching both the specified name wildcard and business service membership, assuming the user has both Read permission and Promote Bundle command permission for the Bundle.
Commands	<ul style="list-style-type: none"> • ALL: Grants permission to issue any command. • Refresh Target Agents: Grants permission to refresh Target Agents.

23.4.14 SAP Connection Permissions

(You also can assign SAP Connection Permissions to a user by assigning the [ops_sap_admin](#) role to the user.)

Permission Details - □ ×

▼

Permission

Details

Type * ▼
SAP Connection

Create

Read

Update

Delete

Execute

Commands ▼
-- None --

ALL
 Copy SAP Connection

Business Service Criteria

Member of Any Business Service or Unassigned

Member of Specific Business Services or Unassigned

Member of Specific Business Services

Unassigned

Not Member of Specific Business Services or Unassigned

Not Member of Specific Business Services

Specific Business Services ▼

Options	Description
Create	Grants permission to create a new SAP Connection.
Read	Grants permission to read an SAP Connection. The Read check box will be checked automatically if the Business Service Visibility Restricted Universal Controller system property is false.
Update	Grants permission to update an SAP Connection.
Delete	Grants permission to delete an SAP Connection.
Execute	Grants permission to execute a task that requires an SAP Connection. (Displays only if the Strict Connection Execute Constraints Universal Controller system property is true.)
Commands	<ul style="list-style-type: none"> • ALL: Grants permission to issue any command. • Copy SAP Connection: Grants permissions to copy an SAP Connection.

23.4.15 Script Permissions

Permission Details

Permission

Details

Type *

Create

Read

Update

Delete

Execute

Commands

ALL
 Copy Script

Business Service Criteria

Member of Any Business Service or Unassigned
 Member of Specific Business Services or Unassigned
 Member of Specific Business Services
 Unassigned
 Not Member of Specific Business Services or Unassigned
 Not Member of Specific Business Services

Specific Business Services

Options	Description
Create	Grants permission to create a new Script.
Read	Grants permission to read a Script.
Update	Grants permission to update a Script.
Delete	Grants permission to delete a Script.
Execute	Grants permission to execute a Script contained by a task.
Commands	<ul style="list-style-type: none"> • ALL: Grants permission to issue any command. • Copy Script: Grants permission to copy a Script.

23.4.16 SNMP Manager Permissions

(You also can assign SNMP Manager Permissions to a user by assigning the [ops_snmp_admin](#) role to the user.)

Permission Details
- ☐ ×

Permission

Details

Type *
SNMP Manager

Create

Read

Update

Delete

Execute

Commands
-- None --

ALL
 Copy SNMP Manager

Business Service Criteria

Member of Any Business Service or Unassigned
 Member of Specific Business Services or Unassigned
 Member of Specific Business Services
 Unassigned
 Not Member of Specific Business Services or Unassigned
 Not Member of Specific Business Services

Specific Business Services

Options	Description
Create	Grants permission to create a new SNMP Manager.
Read	Grants permission to read an SNMP Manager. The Read check box will be checked automatically if the Business Service Visibility Restricted Universal Controller system property is false.
Update	Grants permission to update an SNMP Manager.
Delete	Grants permission to delete an SNMP Manager.
Execute	Grants permission to execute a task that requires an SNMP Manager. (Displays only if the Strict Connection Execute Constraints Universal Controller system property is true.)

Options	Description
Commands	<ul style="list-style-type: none"> • ALL: Grants permission to issue any command. • Copy SNMP Manager: Grants permissions to copy an SNMP Manager.

23.4.17 Task Permissions

Permission Details
- □ ×

Permission

Details

Type *

Create

Read

Update

Delete

Commands

- ALL
- Copy Task
- Launch
- Recalculate Forecast
- Reset Statistics
- Reset z/OS Override Statistics
- Set Execution Restriction

Not Member of Specific Business Services or Unassigned

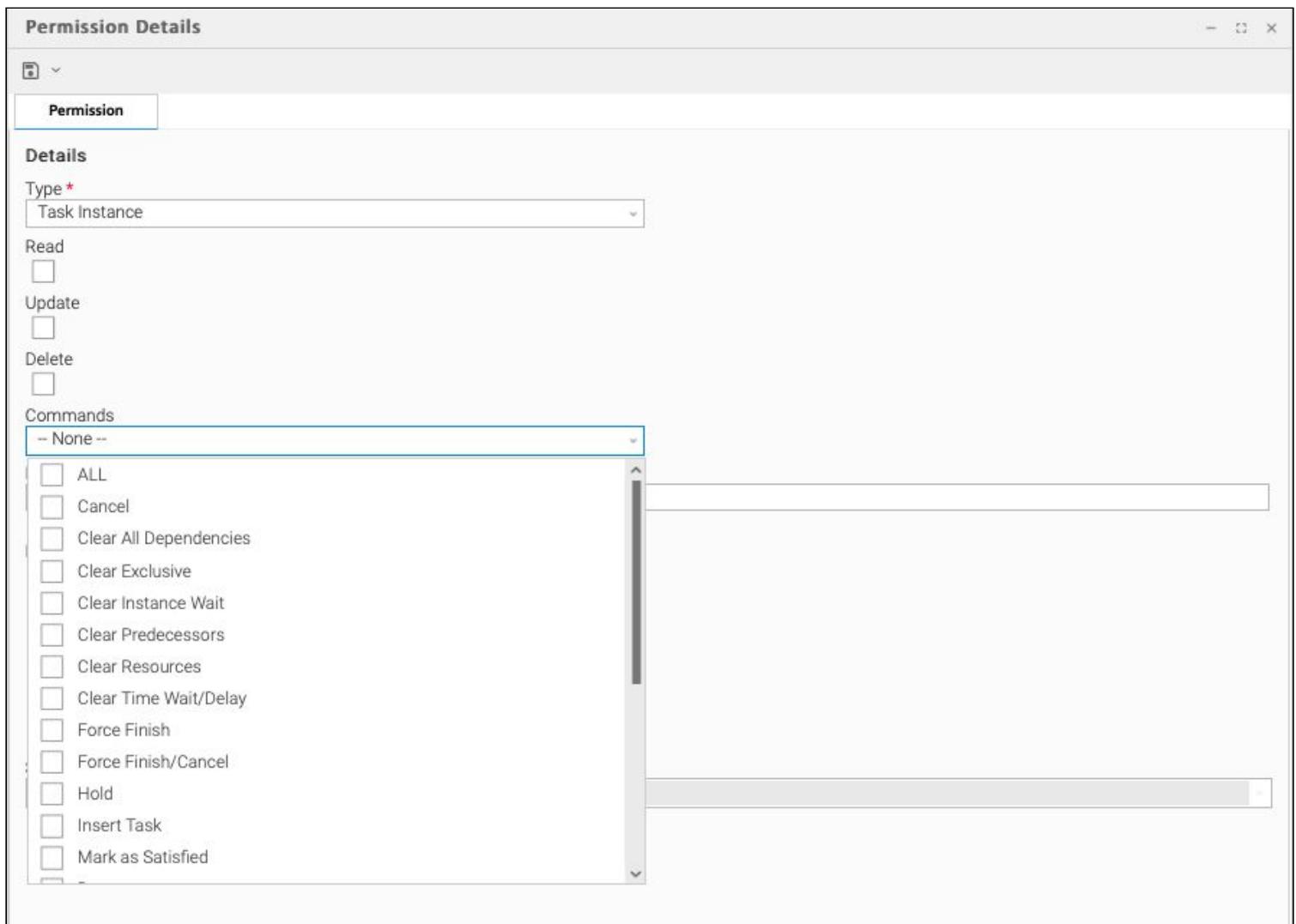
Not Member of Specific Business Services

Specific Business Services

Options	Description
Create	Grants permission to create a new Task.
Read	Grants permission to read a Task.
Update	Grants permission to update a Task.
Delete	Grants permission to delete a Task.

Options	Description
Commands	<ul style="list-style-type: none"> • ALL: Grants permission to issue any command. • Copy Task: Grants permission to copy a Task. • Launch: Grants permission to launch a Task. • Recalculate Forecast: Grants permission to recalculate a forecast. • Reset Statistics: Grants permission to reset statistics, including statistics being tracked by each parent Workflow of a Task. • Reset z/OS Override Statistics: Grants permission to reset z/OS override statistics. • Set Execution Restriction: Grants permission to set an execution restriction for a task in a workflow.

23.4.18 Task Instance Permissions



Options	Description
Create	Task instances are created automatically when the task launches, so the Create permission does not appear.
Read	Grants permission to read a Task Instance
Update	Grants permission to update certain fields on a Task Instance.

Options	Description
Delete	Grants permission to delete a Task Instance.
Commands	<p data-bbox="451 349 1150 383">For command descriptions, see Manually Running and Controlling Tasks.</p> <ul data-bbox="475 394 1517 1010" style="list-style-type: none"> • ALL: Grants permission to issue any command. • Cancel: Grants permission to cancel a Task Instance. • Clear All Dependencies: Grants permission to clear all dependencies on a Task Instance. • Clear Predecessors: Grants permission to clear all predecessors on a Task Instance. • Clear Exclusive: Grants permission to clear all mutual exclusive dependencies from a Task Instance. • Clear Resources: Grants permission to clear all resource dependencies of a Task Instance. • Clear Time Wait/Delay: Grants permission to clear all Wait To Start and Delay On Start specifications for a Task Instance. • Force Finish: Grants permission to force finish a Task Instance. • Force Finish/Cancel: Grants permission to force finish/cancel a Task Instance. • Hold: Grants permission to put a Task Instance on hold. • Insert Task: Grants permission to insert a task on the workflow monitor of a workflow Task Instance. • Mark as Satisfied: Can mark a dependency as satisfied. • Re-run: Grants permission to re-run a Task Instance. • Release: Grants permission to release a Task Instance from hold. • Release Recursive: Grants permission to release a workflow and all its tasks from hold. • Retrieve Output: Grants permission to execute the Retrieve Output button. • Set Priority Low: Grants permission to change the priority of a task to Low. • Set Priority Medium: Grants permission to change the priority of a task to Medium. • Set Priority High: Grants permission to change the priority of a task to High. • Set Completed: Grants permission to set a Manual Task Instance status to completed. • Set Started: Grants permission to set a Manual Task Instance status to a new started time. • Skip: Grants permission to skip a Task Instance. • Unskip: Grants permission to unskip a Task Instance selected to be skipped. <div data-bbox="459 1037 1541 1279" style="border: 1px solid orange; padding: 10px; margin-top: 10px;"> <p data-bbox="491 1084 544 1111">Note</p> <p data-bbox="491 1122 1417 1149">Universal Controller will initially check for command permission specifically for the task instance.</p> <p data-bbox="491 1160 1469 1238">If no command permission is granted for the task instance, Universal Controller will check if command permission is granted for the parent workflow task instance, and then continue to check for command permission up the workflow task instance hierarchy.</p> </div>

23.4.19 Trigger Permissions

Permission Details
- □ ×

Permission

Details

Type *

Create

Read

Update

Delete

Commands

- ALL
- Assign Execution User
- Copy Trigger
- Disable Trigger
- Enable Trigger
- Recalculate Forecast
- Set Skip Count
- Trigger Now

Not Member of Specific Business Services

Specific Business Services

Options	Description
Create	Grants permission to create a Trigger.
Read	Grants permission to read a Trigger.
Update	Grants permission to update a Trigger.
Delete	Grants permission to delete a Trigger.
Commands	<ul style="list-style-type: none"> • ALL: Grants permission to issue any command. • Assign Execution User: Grants permission to override the execution user of task instances launched by a Trigger. • Copy Trigger: Grants permission to copy a Trigger. • Disable Trigger: Grants permission to disable a Trigger. • Enable Trigger: Grants permission to enable a Trigger. • Recalculate Forecast: Grants permission to recalculate a forecast. • Set Skip Count: Grants permission to perform a Set Skip Count action with/without Update permission. • Trigger Now: Grants permission to Trigger (launch) a task.

23.4.20 Universal Event Permissions

The authorization for publishing and monitoring Universal Events is separate from the Universal Event Template administration and requires the Universal Event permission.

The permission Name wildcard applies to the published Universal Event Name.

The Name of a published global Universal Event is derived from the Universal Event Template Name.

The Name of a published local Universal Event is derived from the Universal Template Name and the Universal Template Event Template Name.

<template-name>.<event-template-name>

The permission Member of Any Business Service or Unassigned, Unassigned to Business Service, and Member of Business Services applies to the published Universal Event Member of Business Services.

For a global Universal Event published through the Web Service API, the publisher optionally specifies the Member of Business Services.

For a local Universal Event published by a Universal Task Instance Extension, the Universal Event inherits the Universal Task Instance Member of Business Services.

Permission Details
- □ ×

▼

Permission

Details

Type *
Universal Event ▼

Create

Read

Commands
-- None -- ▼
-- None --

Business Service Criteria

Member of Any Business Service or Unassigned
 Member of Specific Business Services or Unassigned
 Member of Specific Business Services
 Unassigned
 Not Member of Specific Business Services or Unassigned
 Not Member of Specific Business Services

Specific Business Services

Options	Description
Create	Grants permission to publish or push Universal Events.
Read	<p data-bbox="488 349 935 383">Grants permission to monitor Universal Events.</p> <div data-bbox="488 416 1541 730" style="border: 2px solid orange; padding: 10px;"> <p data-bbox="520 461 568 483">Note</p> <p data-bbox="520 499 1501 577">For Pre-Defined Global Universal Events, Webhook and/or Universal Monitor execution users must have "read" permission for the underlying record associated with the Universal Event in addition to "read" permission for the Universal Event itself.</p> <p data-bbox="520 589 1477 678">For example, the execution user for a Universal Monitor that monitors the UAC - Agent Changed Universal Event for the Universal Agent <code>AGNT0001</code> must have "read" permission for the UAC - Agent Changed Universal Event and "read" permission for the Agent <code>AGNT0001</code>.</p> </div>
Commands	-- None --

23.4.21 Variable Permissions

Permission Details
- ☐ ×

Permission

Details

Type *

Create

Read

Update

Delete

Commands

Business Service Criteria

Member of Any Business Service or Unassigned
 Member of Specific Business Services or Unassigned
 Member of Specific Business Services
 Unassigned
 Not Member of Specific Business Services or Unassigned
 Not Member of Specific Business Services

Specific Business Services

Options	Description
Create	Grants permission to create a Variable.
Read	Grants permission to read a Variable.
Update	Grants permission to update a Variable.
Delete	Grants permission to delete a Variable.
Commands	-- None --

23.4.21.1 Enabling / Disabling Enhanced Variable Security

Important

If you have upgraded from a Controller release that did not previously support the Variable permission type, it is important that you review and assign global variable permissions to all appropriate users/groups to avoid impacting existing workload that requires the use of global variables to execute.

By default, enhanced global variable security is enabled; the [Variable Security Enabled](#) Universal Controller system property is set to true.

This controls global variable access the following ways:

- Users with the [ops_admin](#) role have full access to all global variables.
- Users with the [ops_promotion_admin](#) role have **Read** access to all global variables.
- **Create, Read, Update, and Delete** permissions must be assigned to users explicitly if those permissions are not granted through the [ops_admin](#) or [ops_promotion_admin](#) role.
- Only those global variables for which a user has **Read** permission will be visible from the [Variables list](#).
- Only those global variables for which the **Execution User** of a task instance has **Read** permission will be available within the variable scope of a task instance.
- A [Set Variable action](#) for a global variable will require appropriate global variable **Create** or **Update** permission.
- CLI and Web Services APIs will require appropriate global variable permissions depending on whether the command will **Read, Create, or Update** a global variable.
- [Create Bundle By Date](#) command will only add a global variable to the bundle if the:
 - Global variable qualifies for the specified date.
 - User invoking the command has **Read** permission for that global variable.

All defined Variable permissions will be enforced unless enhanced global variable security has been disabled by setting [Variable Security Enabled](#) to false. This allows all global variables to be managed and used by any valid Universal Controller user.

23.4.22 Virtual Resource Permissions

Permission Details
- □ ×

Permission

Details

Type *
Virtual Resource

Create

Read

Update

Delete

Execute

Commands
-- None --

ALL
 Copy Virtual Resource

Business Service Criteria

Member of Any Business Service or Unassigned
 Member of Specific Business Services or Unassigned
 Member of Specific Business Services
 Unassigned
 Not Member of Specific Business Services or Unassigned
 Not Member of Specific Business Services

Specific Business Services

Options	Description
Create	Grants permission to create a virtual resource.
Read	Grants permission to read a virtual resource. The Read check box will be checked automatically if the Business Service Visibility Restricted Universal Controller system property is false.
Update	Grants permission to update a virtual resource.
Delete	Grants permission to delete a virtual resource.
Execute	Grants permission to execute a virtual resource.
Commands	<ul style="list-style-type: none"> • ALL: Grants permission to issue any command. • Copy Virtual Resource: Grants permission to copy a Virtual Resource.

23.4.22.1 Enabling Enhanced Virtual Resource Security

Important

If you have upgraded from a Controller release that did not previously support the Virtual Resource permission type, it is important that you review and assign virtual resource permissions to all appropriate users/groups to avoid impacting existing workload that requires the use of virtual resources to execute.

By default, enhanced virtual resource security is enabled; the [Virtual Resource Security Enabled](#) Universal Controller system property is set to true.

This controls virtual resource access the following ways:

- All users will have **Read** access to virtual resources.
- Users with the [ops_admin](#) role will have full access to all virtual resources.
- **Create, Update, Delete**, and **Execution** permissions must be explicitly assigned to users if those permissions are not granted through the [ops_promotion_admin](#) role.
- Only those virtual resources for which the **Execution User** of the task instance has **Execute** permission can be requested by the task instance. Any virtual resource requested by task instances with an **Execution User** that does not have **Execute** permission for that virtual resource will result in the task instance going into [Start Failure](#) status, with status description **Execution for virtual resource "resource-name" prohibited due to security constraints**.
- Set Virtual Resource Limit [System Operation action](#) will require appropriate virtual resource **Update** permission.
- CLI and Web Services APIs will require appropriate virtual resource permissions: Updating a virtual resource limit through the CLI and Web Services APIs will require virtual resource **Update** permission.

All defined Virtual Resource permissions will be enforced unless enhanced virtual resource security has been disabled by setting [Virtual Resource Security Enabled](#) to false. This allows all virtual resources to be managed and used by any valid Universal Controller user.

23.4.23 Webhook Permissions

Permission Details

Permission

Details

Type *

Create

Read

Update

Delete

Commands

- ALL
- Enable
- Disable
- Assign Execution User

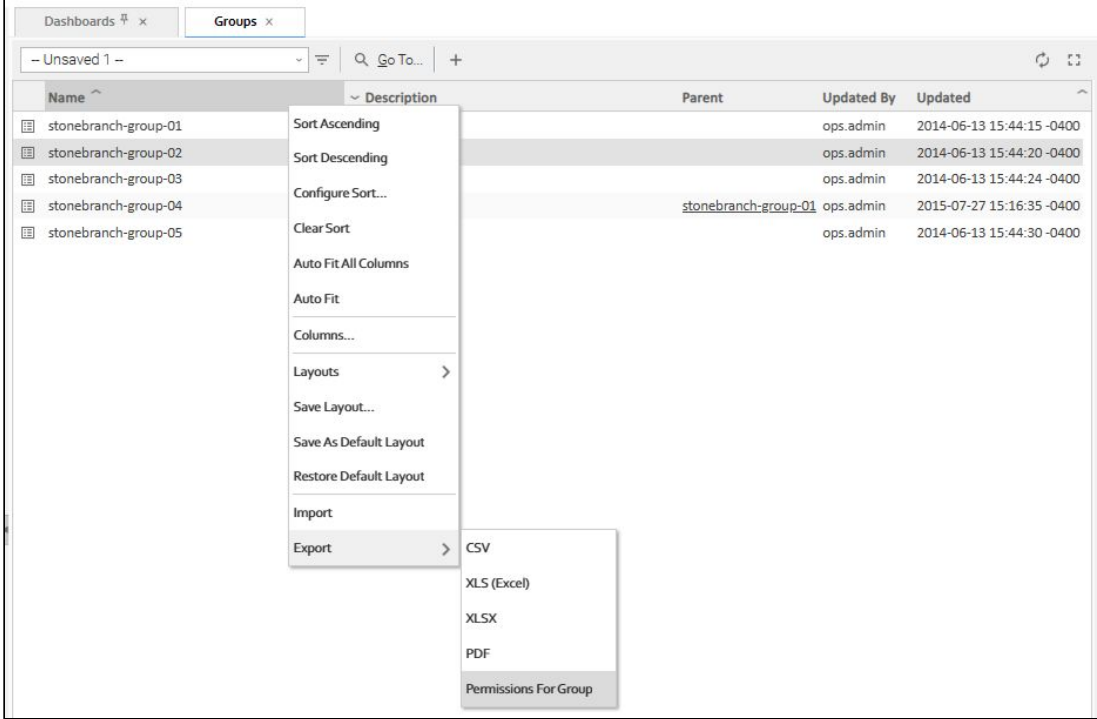
Member of Any Business Service or Unassigned
 Member of Specific Business Services or Unassigned
 Member of Specific Business Services
 Unassigned
 Not Member of Specific Business Services or Unassigned
 Not Member of Specific Business Services

Specific Business Services

Options	Description
Create	Grants permission to create a Webhook.
Read	Grants permission to read a Webhook.
Update	Grants permission to update a Webhook.
Delete	Grants permission to delete a Webhook.
Commands	<ul style="list-style-type: none"> • ALL: Grants permission to issue any command. • Enable: Grants permission to enable Webhook. • Disable: Grants permission to disable Webhook. • Assign Execution User: Grants permission to assign execution user to Webhook.

23.5 Exporting Permissions for a Group

The Controller lets you export user groups and their permissions, which then can be imported into another Controller system. Only the permissions listed under the Permissions tab for each group will be exported.

<p>Step 1</p>	<p>From the Administration navigation pane, select Security > Groups. The Groups list displays.</p>																														
<p>Step 2</p>	<p>As desired, filter the list to select the group(s) whose permissions you want to export. When you perform the export, all groups matching the filter will be exported.</p>																														
<p>Step 3</p>	<p>Access the Action menu and select Export > Permissions For Group.</p>  <p>The screenshot shows a table with the following data:</p> <table border="1"> <thead> <tr> <th>Name</th> <th>Description</th> <th>Parent</th> <th>Updated By</th> <th>Updated</th> </tr> </thead> <tbody> <tr> <td>stonebranch-group-01</td> <td></td> <td></td> <td>ops.admin</td> <td>2014-06-13 15:44:15 -0400</td> </tr> <tr> <td>stonebranch-group-02</td> <td></td> <td></td> <td>ops.admin</td> <td>2014-06-13 15:44:20 -0400</td> </tr> <tr> <td>stonebranch-group-03</td> <td></td> <td></td> <td>ops.admin</td> <td>2014-06-13 15:44:24 -0400</td> </tr> <tr> <td>stonebranch-group-04</td> <td></td> <td>stonebranch-group-01</td> <td>ops.admin</td> <td>2015-07-27 15:16:35 -0400</td> </tr> <tr> <td>stonebranch-group-05</td> <td></td> <td></td> <td>ops.admin</td> <td>2014-06-13 15:44:30 -0400</td> </tr> </tbody> </table>	Name	Description	Parent	Updated By	Updated	stonebranch-group-01			ops.admin	2014-06-13 15:44:15 -0400	stonebranch-group-02			ops.admin	2014-06-13 15:44:20 -0400	stonebranch-group-03			ops.admin	2014-06-13 15:44:24 -0400	stonebranch-group-04		stonebranch-group-01	ops.admin	2015-07-27 15:16:35 -0400	stonebranch-group-05			ops.admin	2014-06-13 15:44:30 -0400
Name	Description	Parent	Updated By	Updated																											
stonebranch-group-01			ops.admin	2014-06-13 15:44:15 -0400																											
stonebranch-group-02			ops.admin	2014-06-13 15:44:20 -0400																											
stonebranch-group-03			ops.admin	2014-06-13 15:44:24 -0400																											
stonebranch-group-04		stonebranch-group-01	ops.admin	2015-07-27 15:16:35 -0400																											
stonebranch-group-05			ops.admin	2014-06-13 15:44:30 -0400																											

To export or import the **Permissions For Group XML**, you must have the [ops_admin](#) role or the [ops_imex](#) and [ops_user_admin](#) roles.

If the groups do not exist on the import system, they (and their Permissions) will be created there.

If the groups do exist on the import system, only the description of the groups and the permissions under their **Permissions** tab will be replaced with those from the imported XML.

24 Webhooks

- [Overview](#)
- [Creating a Webhook](#)
 - [Webhook Details](#)
 - [Webhook Details Field Descriptions](#)
- [URL Action](#)
 - [URL Action JSON Properties](#)
 - [URL Action JSON Examples](#)

24.1 Overview

You can register a third party webhook URL (or Task) to trigger when a specific built-in [Universal Event](#) is published.

If you have a custom integration, you can register your webhook to launch an appropriately configured [Universal Task](#).

To allow for the enforcement of read permission for Universal Events, the registration needs to have a security context.

If no Execution User is explicitly assigned, the registration will run under the security context of the user who enabled the registration.

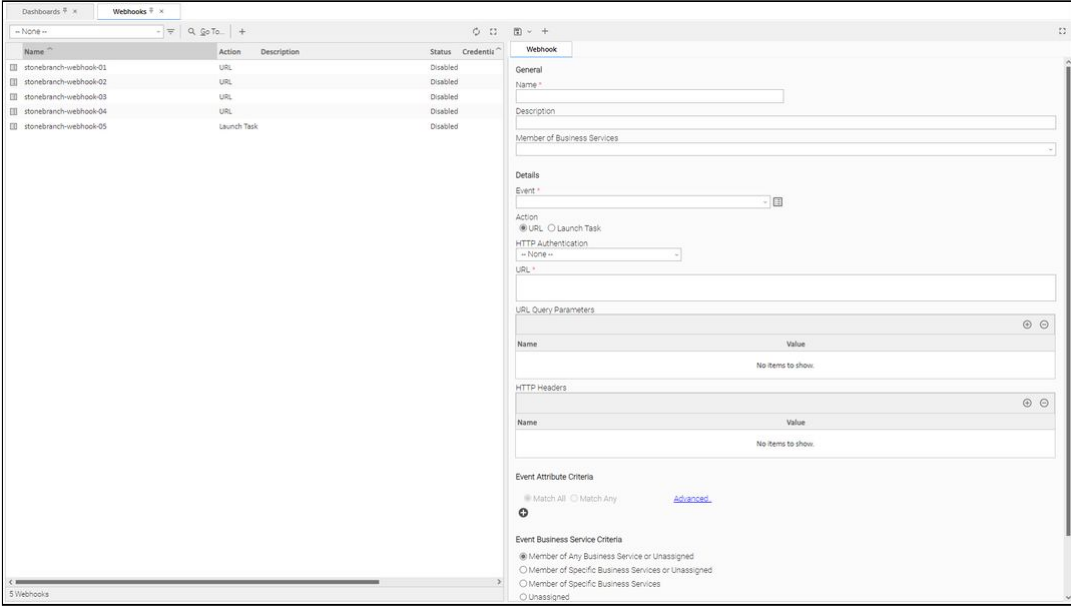


In order for a registration to trigger, the Execution User must have the following authorization.

- Read permission for the published Universal Event and read permission for the underlying record the Universal Event is associated with.
- If a Task is specified instead of a URL, Launch permission for the Task.
- If a Task is specified instead of a URL, any permissions required by the Task Instance, such as Execute permission for Credentials.

If a Task is specified, the built-in variables outlined below can be used to pass data where appropriate:


- [Task and Task Instance Variables](#)
- [Universal Event Variables](#)
- [Webhook Variables](#)

24.2 Creating a Webhook

<p>Step 1</p>	<p>From the Services navigation pane, select Administration > Webhooks. The Webhooks list displays:</p> 
<p>Step 2</p>	<p>Enter / select Details for a new Webhook, using the field descriptions below as a guide.</p> <ul style="list-style-type: none"> • Required fields display an asterisk (*) after the field name. • Default values for fields, if available, display automatically. <p>To display more of the Details fields on the screen, you can either:</p> <ul style="list-style-type: none"> • Use the scroll bar. • Temporarily hide the list above the Details. • Click the  button above the list to display a pop-up version of the Details.
<p>Step 3</p>	<p>Click a  button. The Webhook record is added to the database, and all buttons in the Webhook Details are enabled.</p>

Note

To [open](#) an existing record on the list, either:

- Click a record in the list to display its record Details below the list. (To clear record Details below the list, click the  button that displays above and below the Details.)
- Clicking the Details icon next to a record name in the list, or right-click a record in the list and then click **Open** in the [Action menu](#) that displays, to display a pop-up version of the record Details.
- Right-click a record in the a list, or open a record and right-click in the record Details, and then click **Open In Tab** in the [Action menu](#) that displays, to display the record Details under a new tab on the record list page (see [Record Details as Tabs](#)).

24.2.1 Webhook Details

The following Webhook Details is for a new Webhook. See the field descriptions, below, for a description of all fields that display in the Webhook Details.

Webhook Details
- □ ×

Webhook

General

Name *

Description

Member of Business Services

Details

Event *

Action
 URL Launch Task

HTTP Authentication

URL *

URL Query Parameters ⊕ ⊖

Name	Value
No items to show.	

HTTP Headers ⊕ ⊖

Name	Value
No items to show.	

Event Attribute Criteria

Match All Match Any [Advanced...](#)

+

Event Business Service Criteria

Member of Any Business Service or Unassigned

Member of Specific Business Services or Unassigned

Member of Specific Business Services

Unassigned

Not Member of Specific Business Services or Unassigned

Not Member of Specific Business Services

Specific Business Services

24.2.2 Webhook Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in the Webhook Details.

Field Name	Description
General	This section contains general information about the Webhook.
Name	User-defined name of this webhook.
Description	Description of this record. (Maximum = 255 characters.)
Member of Business Services	User-defined; Allows you to select one or more Business Services that this record belongs to. (You also can Check All or Uncheck All Business Services for this record.) You can select up to 62 Business Services for any record type, and enter a maximum of 2048 characters for each Business Service. If the Business Service Visibility Restricted Universal Controller system property is set to true, depending on your assigned (or inherited) Permissions or Roles , Business Services available for selection may be restricted.
Details	This section contains detailed information about the Webhook.
Event	Specifies the Universal Event Template to be monitored. Only System Templates are allowed.
Action	Type of Action (URL or Launch Task) to be taken when the event changes are published.
HTTP Authentication	If Action is URL; Specifies the HTTP authentication scheme to use.
Credentials	If HTTP Authentication is Basic; Credentials for the URL. Click the details icon to create a new credentials record or view a selected credential's definition.
URL	If Action is URL; Specifies the URL.
URL Query Parameters	If Action is URL; Specifies any query parameters to be encoded as a query string and appended to the URL.
HTTP Headers	If Action is URL; Specifies the HTTP headers.
Task	If Action is Launch Task; Select the task to execute. Click the details icon to view the task definition.
Event Attribute Criteria	This section contains criteria for selecting Universal Events to monitor.
<ul style="list-style-type: none"> • Match All • Match Any 	Specification of a filter for the specific type of Universal Event. <ul style="list-style-type: none"> • Match All • Match Any
Event Business Service Criteria	This section contains criteria for selecting Universal Events to monitor by their business service membership.

Field Name	Description
<ul style="list-style-type: none"> Member of Any Business Service or Unassigned Member of Specific Business Services or Unassigned Member of Specific Business Services Unassigned Not Member of Specific Business Services or Unassigned Not Member of Specific Business Services 	Criteria for matching on Universal Events by their business service membership. <ul style="list-style-type: none"> Member of Any Business Service or Unassigned Member of Specific Business Services or Unassigned You must specify one or more business services from the Specific Business Services drop-down. Member of Specific Business Services You must specify one or more business services from the Specific Business Services drop-down. Unassigned Not Member of Specific Business Services or Unassigned You must specify one or more business services from the Specific Business Services drop-down. Not Member of Specific Business Services You must specify one or more business services from the Specific Business Services drop-down.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Buttons	This section identifies the buttons displayed above and below the Webhook Details that let you perform various actions.
Save	Saves a new Webhook record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplay empty Details so that you can create another new record.
New	Displays empty (except for default values) Details for creating a new record.
Update	Saves updates to the record.
Delete	Deletes the current record.
Enable	Enables the current Webhook.
Disable	Disables the current Webhook.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	For pop-up view only; closes the pop-up view of this task.

24.3 URL Action

The URL action facilitates the passing of matched Universal Event details as JSON in the body of the POST request.

24.3.1 URL Action JSON Properties

Property	Description	Data Type
attributes	Attributes of the Universal Event. The attributes object contains name/value pairs for each Attribute of the Universal Event.	object The Attribute value will be mapped to a data type using the Attribute type. <ul style="list-style-type: none"> Text → string Integer → number Boolean → boolean
businessServices	Business Services of the Universal Event. If the Universal Event is published from a universal task instance (via the Universal Extension API), the Universal Event inherits the business services from the task instance. If the Universal Event is a system-published event, it inherits the business services of the object the event is being published for. If the Universal Event is published via our publish web service API, the business services are specified as part of the request body. If the Universal Event is published via our push web service API, the business services are specified as part of the request query parameters.	JSON array literal with string array values
name	Name of the Universal Event.	string
templateId	UUID of the Universal Event Template for the Universal Event.	string
webhookName	Name of the Webhook that handled the matched Universal Event.	string

24.3.2 URL Action JSON Examples

Event: UAC - Property Changed

```
{
  "attributes" : {
    "after_value_boolean" : true,
    "name" : "Custom Day Local Indicator Enabled",
    "updated_by" : "ops.admin",
    "before_value_boolean" : false,
    "after_value" : "true",
    "updated" : "2023-04-03 13:03:13 -0400",
    "before_value" : "false",
    "property_name" : "uc.custom_day.local_indicator.enabled"
  },
  "businessServices" : [],
  "name" : "uac_property_changed",
  "templateId" : "4dde3b099053409e81fcae415cb91c02",
  "webhookName" : "stonebranch-webhook-01"
```

```
}

```

Event: UAC - Agent Changed

```
{
  "attributes" : {
    "hb_grace_period" : 60,
    "agent_id" : "AGNT0001",
    "log_level" : "Info",
    "ip_address" : "127.0.1.1",
    "version" : "7.4.0.0",
    "suspended" : false,
    "agent_type" : "Linux/Unix",
    "decommissioned" : false,
    "event_type" : "Updated",
    "hb_intvl" : 120,
    "build" : "51",
    "transient" : false,
    "name" : "stonebranch-agent-01 - AGNT0001",
    "updated_by" : "ops.admin",
    "updated" : "2023-04-03 13:32:57 -0400",
    "host_name" : "stonebranch-agent-01",
    "status" : "Active",
    "agent_type_value" : 2
  },
  "businessServices" : [],
  "name" : "uac_agent_changed",
  "templateId" : "850d38176e944ca3ae49a3cb52f98cdb",
  "webhookName" : "stonebranch-webhook-05"
}
```

Event: UAC - Task Status Changed

```
{
  "attributes" : {
    "attempt" : 1,
    "calendar_id" : "77171434c0a801c9016d5b2b5d17ddee",
    "created" : "2023-09-27 11:45:32 -0400",
    "current_retry_count" : 0,
    "early_finished" : false,
    "end_time" : "2023-09-27 11:45:39 -0400",
    "execution_user" : "Admin",
    "exit_code" : "0",
    "halt" : false,
    "instance_id" : "1695826587880446240E92L94VWVWP1NY",
    "instance_name" : "stonebranch-linuxunixtask-01",
    "instance_number" : 1,
    "invoked_by" : "Manually Launched",
    "late_finished" : false,
    "late_started" : false,
    "launch_source" : "Launch Task / User Interface",
    "launch_time" : "2023-09-27 11:45:32 -0400",
    "maximum_retries" : 0,
    "retry_indefinitely" : true,
  }
}
```

```

    "security_name" : "stonebranch-linuxunixtask-01",
    "simulate" : false,
    "source_version" : 32,
    "state_changed_time" : "2023-09-27 11:45:39 -0400",
    "status" : "Finished",
    "status_description" : "Agent is not Active -> State was forced from UNDELIVERABLE to
FINISHED",
    "status_value" : 190,
    "task_id" : "6a8cfdcc05ad49d1b2e9153e831a3334",
    "type" : "Linux/Unix",
    "type_value" : 4,
    "updated" : "2023-09-27 11:45:33 -0400"
  },
  "businessServices" : [
    "stonebranchbusinessservice 01",
    "stonebranchbusinessservice 02"
  ],
  "name" : "uac_task_status_changed",
  "templateId" : "7fda9c3f452e4fe78a4f9dc3afad8353",
  "webhookName" : "stonebranch-webhook-05"
}

```

Event: UAC - Task SLA

```

{
  "attributes" : {
    "attempt" : 1,
    "calendar_id" : "77171434c0a801c9016d5b2b5d17ddee",
    "created" : "2024-03-11 15:01:39 -0400",
    "current_retry_count" : 0,
    "early_finished" : false,
    "execution_user" : "Admin",
    "exit_code" : "0",
    "instance_id" : "1710013567491690711LXITAWF41VSXZ",
    "instance_name" : "stonebranch-timertask-01",
    "instance_number" : 2,
    "invoked_by" : "Manually Launched",
    "late_finished" : true,
    "late_started" : true,
    "launch_source" : "Launch Task / User Interface",
    "launch_time" : "2024-03-11 15:01:39 -0400",
    "maximum_retries" : 0,
    "retry_indefinitely" : false,
    "security_name" : "stonebranch-timertask-01",
    "simulate" : false,
    "sla_type" : "Finished Late",
    "source_version" : 17,
    "start_time" : "2024-03-11 15:01:39 -0400",
    "state_changed_time" : "2024-03-11 15:01:39 -0400",
    "status" : "Running",
    "status_value" : 80,
    "task_id" : "f0f47f5fdc264c3f8d78e76e794863ca",
    "type" : "Timer",
    "type_value" : 2,
    "updated" : "2024-03-11 15:01:39 -0400"
  },
}

```

```
"businessServices" : [ ],  
"name" : "uac_task_sla",  
"templateId" : "69372756e6ec401d8162621f61c611eb",  
"webhookName" : "stonebranch-webhook-05"  
}
```