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## **Opswise Controller 6.1.x**

### **Administration**

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# Administration



Overview



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Ports Configuration

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*Ports Configuration*



The information on these pages also is located in the [Opswise Controller 6.1.x Administration.pdf](#).

# Administration Overview

## Opwise Controller Administration

Administration of Opwise Controller includes:

|   |  |
|---|--|
| <b>High Availability</b>                              | Configuration of Opwise Automation Center system as a redundant (multiple Opwise Controller <a href="#">cluster node</a> ) system.   |
| <b>Ports Configuration</b>                            | Configuration of ports for Opwise Controller components and prerequisites.   |
| <b>Opwise Controller Start-Up Properties</b>          | <p>These properties are required for Controller start-up, initialization, and operation.</p> <p>They are contained in the <code>opwise.properties</code> file and have their values set during installation. To reset the values, you must stop the Controller, edit <code>opwise.properties</code>, and restart the Controller.</p> |
| <b>Opwise Controller System Properties</b>            | <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>  |
| <b>LDAP Settings</b>                                  | <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>   |
| <b>Opwise Command Line Interface (CLI) Properties</b> | 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 Opwise Universal Agent if Opwise Command Line Interface has been selected to be installed.   |
| <b>Data Backup/Purge</b>                              | Configuration of automatic backups and/or purges of some or all of the Controller activity data.   |
| <b>Server Operations</b>                              | Opwise 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.  |
| <b>Filters</b>  | Creation and application of filters to record lists throughout the Opwise Controller user interface.   |
| <b>Security</b>                                       | Creation of Opwise Controller <a href="#">users</a> and <a href="#">user groups</a> and the <a href="#">roles and permissions</a> that can be assigned to them; <a href="#">Business Services</a> that group Controller records into logical groups; and <a href="#">audits</a> of all user interaction with the Controller.         |

## High Availability

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### Introduction

High Availability (HA) of Opwise Automation Center means that it has been set up to be a redundant system; in addition to the components that are processing work, there are back-up components available to continue processing through hardware or software failure.

This page describes a High Availability environment, how High Availability components recover in the event of such a failure, and what [actions](#), if any, the user must take.

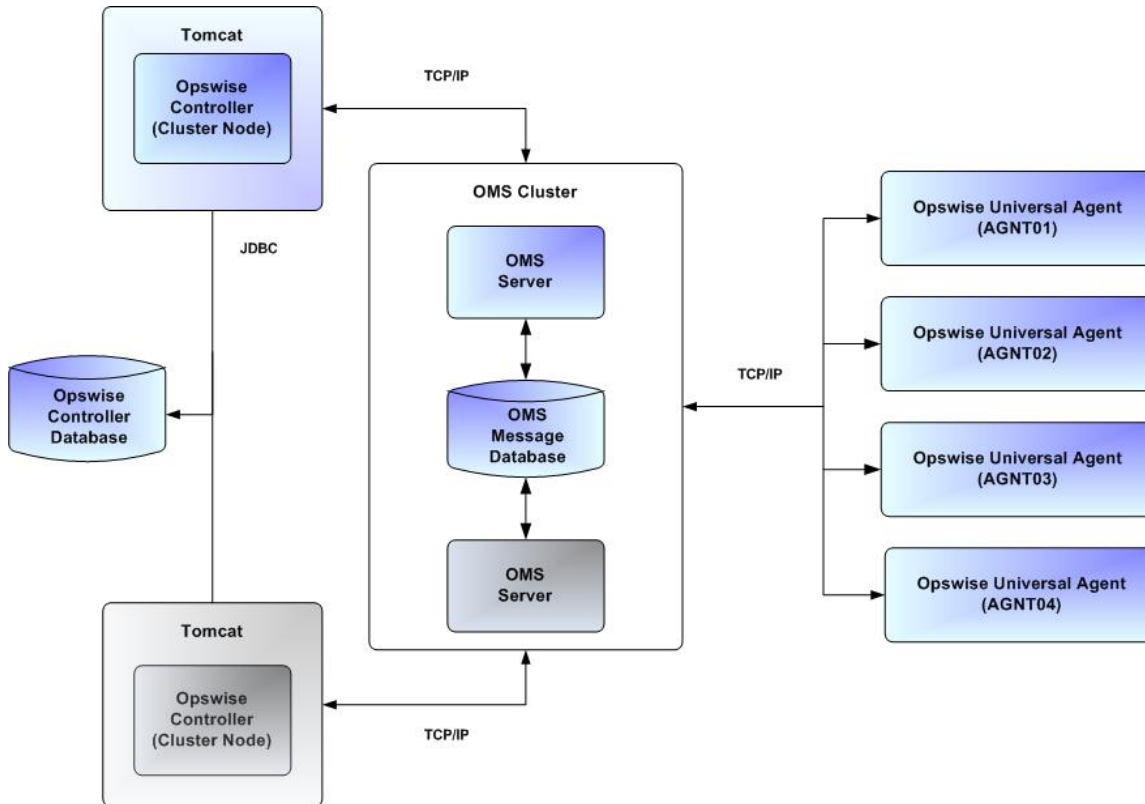
### High Availability System

The following illustration is a typical, although simplified, Opwise Automation Center system in a High Availability environment.

In this environment, there are:

- Two Opwise Controller instances ([cluster nodes](#))
- Two [Opwise Message Service \(OMS\)](#) network communications providers in an OMS cluster
- Four [Opwise Universal Agent \(Agent\)](#) machines

The components in blue are active and operating. The components in gray are available for operations but currently are inactive (passive).



See [High Availability Components](#) for a detailed description of how each component type functions in a High Availability environment.

## High Availability Components

This section provides detailed information on the cluster nodes and Agents in a High Availability environment.

### Cluster Nodes

Each Opwise Automation Center installation consists of one or more instances of Opwise Controller; each instance is a cluster node. Only one node is required in an Opwise Automation Center system; however, in order to run a High Availability configuration, you must run at least two nodes.

At any given time under High Availability, one node operates in Active mode and the remaining nodes operate in Passive mode (see [Determining Mode of a Cluster Node at Start-up](#)).

An Active node performs all system processing functions; Passive nodes can perform limited processing functions.

### Passive Cluster Node Restrictions

Passive cluster nodes cannot execute any automated or scheduled work.

Also, from a Passive node you cannot:

- Perform a workflow instance insert task operation.
- Update a task instance.
- Update an enabled trigger.
- Update an enabled data backup/purge.

However, Passive nodes do let you perform a limited number of processing functions, such as:

- Launch tasks.
- Monitor and display data.
- Access the database.
- Generate reports.

## Agent

The Agent runs as a Windows service or Linux/Unix daemon. A cluster node sends a request to the Agent to perform a function. The Agent processes the request, gathers data about the operation of the client machine, and sends status and results back to the node. It performs these functions by exchanging messages with the node.

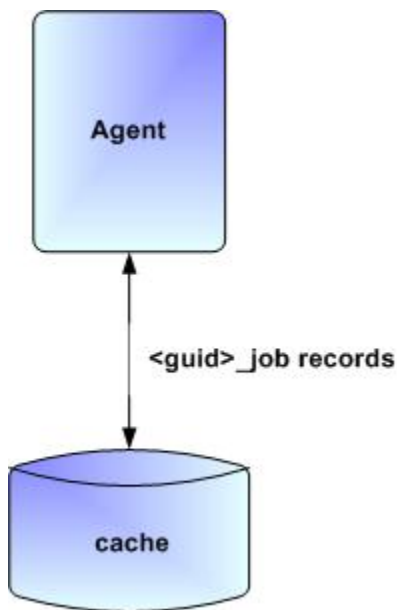
Once an Agent has registered with a node, you can view it by selecting that Agent type from the [Agents & Connections](#) navigation pane of the user interface. A list displays showing all the registered Agents of that type. See [Agents](#) for more information.

If an Agent fails, Universal Broker restarts it. The Agent then attempts to determine what tasks or functions were in process at the time of failure.

In order to support such a determination, Agent task processing includes the following steps:

|               |   |
|---------------|---|
| <b>Step 1</b> | Each time the Agent receives a task, it writes to cache a record called <code>[guid]_job</code> , where <code>[guid]</code> is a unique tracking number assigned to the task instance.  |
| <b>Step 2</b> | As the task runs, the Agent updates the <code>[guid]_job</code> record with status information.   |
| <b>Step 3</b> | When the task run completes, the Agent deletes the <code>[guid]_job</code> record.  |
| <b>Step 4</b> | If an Agent is restarted, it looks in the cache for <code>[guid]_job</code> records. If any are found, the Agent looks at the status. If the record indicates that the job is supposed to be running, the Agent searches the system to locate it. If the Agent is able to locate the task and resume tracking, it continues and marks the task resumed. If the Agent is not able to resume tracking a task, it returns a message to the cluster node, setting the status of the task instance to <b>IN-DOUBT</b> . This then requires manual follow-up to determine the state of the process. |

As illustrated below, the Agent reads/writes a record to its agent/cache directory for each task instance that it manages.



## Opwise Message Service (OMS)

Opwise Message Service (OMS) sends and receives messages between the cluster nodes and Agents.

OMS consists of an [OMS Server](#) and an [OMS Administration Utility](#). The OMS clients - cluster nodes and Agents - establish persistent TCP/IP socket connections with the OMS Server.

OMS provides for reliable message communication by persisting all OMS queued messages to persistent storage. The OMS Server maintains OMS queues in an OMS message database that resides on persistent storage.

See [Opwise Message Service \(OMS\)](#) for detailed information on OMS.

## How High Availability Works

In a High Availability environment, passive cluster nodes play the role of standby servers to the active (primary) cluster nodes server. All running cluster nodes issue heartbeats and check the mode (status) of other running cluster nodes, both when they [start up](#) and continuously [during operations](#). If a cluster node that currently is processing work can no longer do so, one of the other cluster nodes will take over and continue

processing.

Each cluster node connects to the Opswise Controller database and to an OMS HA cluster, and each Agent connects to the same OMS HA cluster. An Opswise Controller HA configuration can use a single OMS server, that is not an HA cluster, with the understanding that a single OMS server would introduce a single point of failure. Using an OMS HA cluster is recommended.

See [High Availability Configuration](#) for information on how these connections are made.

## Cluster Node Mode

The mode (status) of a cluster node indicates whether or not it is the cluster node that currently is processing work:

|                |  |
|----------------|--|
| <b>Active</b>  | Cluster node currently is performing all system processing functions.  |
| <b>Passive</b> | Cluster Node is not connected to OMS but is available to perform all system processing functions, except that it would not be able to exchange data with an Agent. |
| <b>Offline</b> | Cluster node is not running or is inoperable and needs to be restarted.  |



### Note

Cluster nodes in Passive mode can perform **limited** system processing functions.

## High Availability Start-Up

The following steps describe how a High Availability environment starts up:

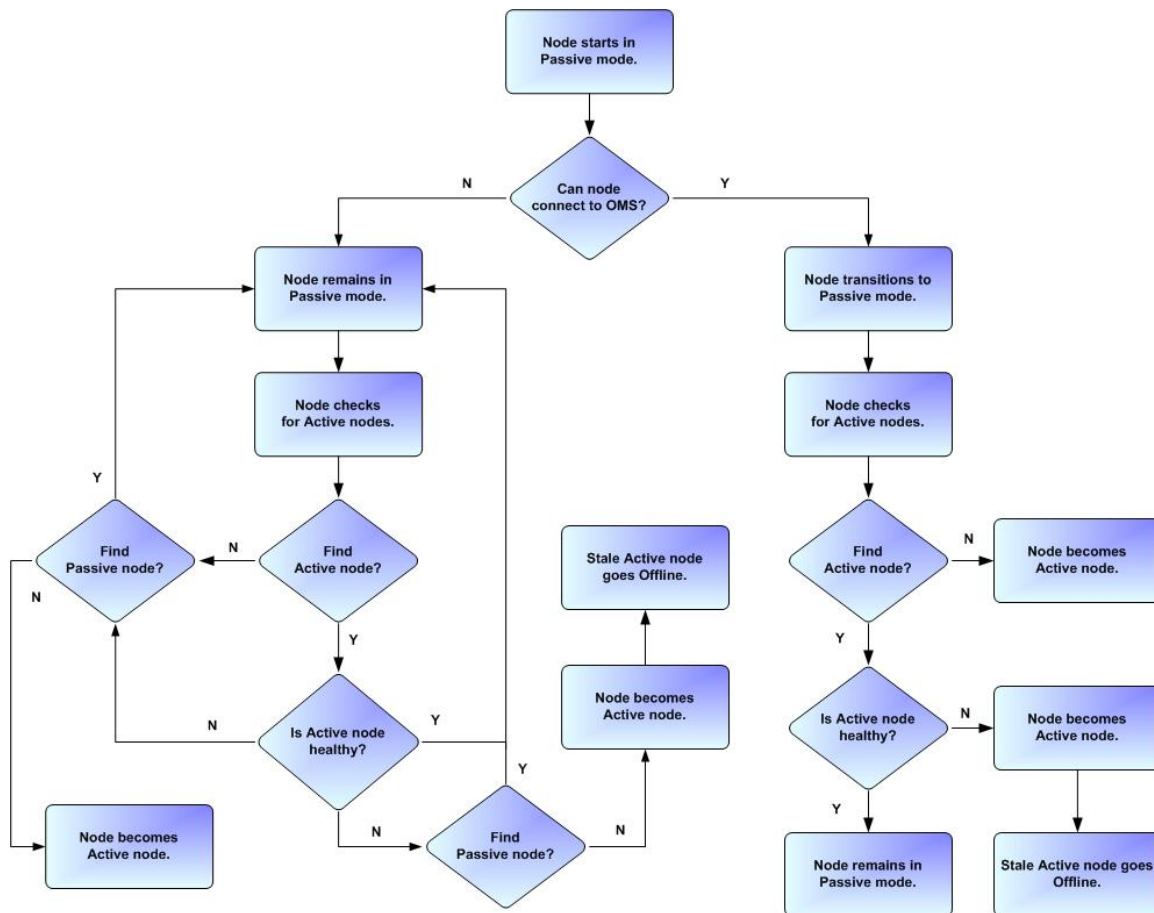
|               |   |
|---------------|---|
| <b>Step 1</b> | User starts the Cluster Nodes.  |
| <b>Step 2</b> | Each cluster node reads its <code>opswise.properties</code> file.   |
| <b>Step 3</b> | Each cluster node locates and connects to the database and retrieves information about the Opswise Automation Center environment. |
| <b>Step 4</b> | Each cluster node connects to an OMS server.  |
| <b>Step 5</b> | Each Agent connects to an OMS server.   |

## Determining Mode of a Cluster Node at Start-up

A cluster node starts in **Passive** mode. It then determines if it should remain in Passive mode or switch to **Active** mode.

The following flow chart describes how a cluster node determines its mode at start-up:



**Note**

A cluster node is considered "healthy" or "stale" based on its heartbeat timestamp.

## Checking the Active Cluster Node During Operations

When all cluster nodes have started, each one continuously monitors the heartbeats of the other running cluster nodes.

If a **Passive** cluster node determines that the **Active** cluster node is no longer running, the Passive cluster node automatically takes over as the Active cluster node based upon the same criteria described [above](#).

This determination is made as follows:

|               |  |
|---------------|--|
| <b>Step 1</b> | The Active cluster node sends a heartbeat by updating a timestamp in the database. The heartbeat interval is 10 (seconds).   |
| <b>Step 2</b> | All Passive cluster nodes check the Active cluster node's timestamp to determine if it is current. (This check runs every 60 seconds.)   |
| <b>Step 3</b> | If a Passive cluster node determines that the Active cluster node's timestamp is stale, <b>failover</b> occurs: the Passive cluster node changes the mode of the Active cluster node to <b>Offline</b> and takes over as the Active cluster node. If more than one cluster node is operating in Passive mode, the first cluster node eligible to become Active that determines that the Active cluster node is not running becomes the Active cluster node. A stale cluster node is one whose timestamp is older than 5 minutes. |

## Active Cluster Node without an OMS Connection

An Active cluster node that loses the connection to OMS checks regularly to see if there is a Passive cluster node eligible to become Active; that is, it has a connected OMS. If it finds an eligible cluster node, the Active cluster node without a connected OMS automatically will stop and restart. This allows the Passive cluster node to take over as the Active cluster node.

This stop and restart is done within the Tomcat process; that is, the Tomcat process remains running while the cluster node just shuts down its internal processes (threads) and then starts them back up. Tomcat itself is not stopped and started.

## What To Do If a Failover Occurs

A Passive cluster node taking over as an Active cluster node is referred to as failover. If failover occurs, the event is invisible unless you are using the Active cluster node in a browser.

If you are using the Active cluster node in a browser and the cluster node fails, you will receive a browser error. In this case, take the following steps to continue working:

|               |  |
|---------------|--|
| <b>Step 1</b> | Access the new Active cluster node in your browser. To determine which cluster node is now Active, check the <b>Mode</b> column on the Cluster Nodes list in the user interface (see <a href="#">Viewing Cluster Node Status</a> , below). |
| <b>Step 2</b> | If you were adding, deleting, or updating records at the time of the failure, check the record you were working on. Any data you had not yet saved will be lost.   |



### Note

Running the [Pause Cluster Node Server Operation](#) does not induce a failover event. You cannot pause an Active cluster node to create a failover to a Passive cluster node.

## Viewing Cluster Node Status

To view a list of all cluster nodes, from the [Agents & Connections](#) navigation pane select **System > Cluster Nodes**. The Cluster Nodes list identifies all registered cluster nodes. The **Mode** column on the list identifies the current mode (status) of all cluster nodes.

| Node Id          | Mode   | Start Time                | Timestamp                 | Uptime                               | Host Name | IP Address    | Release | Build Id  | Build Date      |
|------------------|--------|---------------------------|---------------------------|--------------------------------------|-----------|---------------|---------|-----------|-----------------|
| opwise:88-opwise | Active | 2014-06-19 10:47:19 -0400 | 2014-07-02 11:11:32 -0400 | 13 Days 0 Hour 24 Minutes 12 Seconds | opwise6   | 168.174.31.74 | 6.1.0.0 | build.200 | 06-18-2014_0800 |



### Note

A cluster node becomes registered the first time it starts. From then on, it always appears in the Cluster Nodes list, regardless of its current mode.

Click any cluster node on the list to display Details for that cluster node below the list. (See [Cluster Nodes](#) for a description of the fields in the Details.)

## High Availability Configuration

To achieve High Availability for your Opwise Automation Center system, you must configure the cluster nodes, OMS, and Agents.

### Configuring Cluster Nodes

All cluster nodes in a High Availability environment must point to the same database by making sure the following entries in their `opwise.properties` files are the same.

For example:

```
opwise.db.name=opwise
opwise.db.rdbms=mysql
opwise.db.url=jdbc:mysql://10.10.1.1/
```

## Configuring OMS

OMS HA cluster configuration is described in the [OMS Reference Guide](#).

The Opwise Controller OMS Server definitions specify an OMS HA cluster as an ordered, comma-separated list of OMS Server addresses, one for each member of the OMS HA cluster.



### OMS configuration

Do not define multiple OMS Server records for individual OMS HA cluster members. An OMS HA cluster must be defined as a single OMS Server record with an OMS address list containing each OMS HA cluster member.

As an example, if an OMS HA cluster contains three OMS Servers, `oms1.acme.com`, `oms2.acme.com`, and `oms3.acme.com`, the Opwise Controller OMS Server definition would be defined with an OMS Server address value of `oms1.acme.com,oms2.acme.com,oms3.acme.com`.

## Configuring Agents

If you want to configure an Agent to be able to access an OMS HA cluster, you must configure the Universal Automation Center Agent (UAG) [OMS\\_SERVERS](#) configuration option.

## Configuring Notifications Based on Component Status

You can configure the Controller to generate Email Notifications or SNMP Notifications based on the mode of your [cluster nodes](#), [OMS Servers](#), and [Agents](#).

## Load Balancer

If you are using a load balancer in your High Availability environment, it can utilize the following HTTP requests:

|  |   |
|--|---|
| <p><code>http(s)://serverhost:[Port]/opwise/is_active_node.do</code></p> | <p>If a cluster node is active, this URL returns the status <b>200</b> (OK) and a simple one word content of <b>ACTIVE</b>.</p> <p>If a cluster node is not active, this URL returns the status <b>403</b> (cluster node is not active) and lists the actual mode of the cluster node: <b>PASSIVE</b> or <b>OFFLINE</b>.</p>  |
| <p><code>http(s)://serverhost:[Port]/opwise/ops_node_info.do</code></p>  | <p>This URL returns information about a cluster node:</p> <ul style="list-style-type: none"> <li>• Node: serverhost.com:8080-opwise</li> <li>• Release: 6.1.1.0*</li> <li>• Build Id: 10-10-2014_1129</li> <li>• Mode: Active</li> <li>• Host Name: serverhost.com</li> <li>• Host IP: 192.168.50.50</li> <li>• Uptime: 7 Days 3 Hours 22 Minutes 37 Seconds</li> </ul> |

# Ports Configuration

## Ports Configuration

Ports configured for Opwise Controller 6.1.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         |
| Opwise Controller (Tomcat)   | 8080         |
| Opwise Message Service (OMS) | 7878         |

## Opwise Controller Properties

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- Opwise Controller Start-up Properties (opwise.properties)
  - Sample opwise.properties File
- Opwise Controller System Properties
  - Overriding Opwise Controller System Properties
- Command Line Interface (CLI) Properties

### Overview

Opwise Controller contains three types of configurable properties:

|  |  |
|--|--|
| <b>Opwise Controller Start-up Properties (opwise.properties)</b> | <p>Opwise Controller start-up properties are the default properties contained in the <code>opwise.properties</code> 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>opwise.properties</code>, and restarting the Controller. The changes will take effect after the restart (see <a href="#">Starting and Stopping Opwise Controller</a>).</p> |
| <b>Opwise Controller System Properties</b>                       | <p>Opwise 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>   |
| <b>Opwise Command Line Interface (CLI) Properties</b>            | <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 Opwise Message Service (OMS) are installed as [configuration file options](#) when OMS is installed as a component of Opwise Universal Agent. The values for these options are set during the installation. There are several [configuration methods](#) available for changing these values.



### Opwise Controller Start-up Properties (opwise.properties)


The `opwise.properties` file is read by the Controller, which is started by Tomcat.

The `opwise.properties` file resides here:

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

| Property Name                    | Description   | Default |
|----------------------------------|---|---------|
| <b>For MySQL:</b>                |   |         |
| <pre>opwise.db.rdbms=mysql</pre> | Database type. Specify this property if you are using a MySQL database. |         |

|  |   |       |
|--|---|-------|
| <pre>opswise.db.url=jdbc:mysql://localhost/</pre>  | <p>JDBC connect URL. Specify this property if you are using a MySQL database.</p>   |       |
| <b>For SQLServer</b>   |   |       |
| <pre>opswise.db.rdbms=sqlserver</pre>  | <p>Database type. Specify this property if you are using a SQLServer database.</p>  |       |
| <pre>opswise.db.url=jdbc:sqlserver: //localhost:1433;DatabaseName=opswise</pre>  | <p>JDBC connect URL. Specify this property if you are using a SQLServer database.</p>   |       |
| <b>For Oracle</b>  |   |       |
| <pre>opswise.db.rdbms=oracle</pre>   | <p>Database type. Specify this property if you are using an Oracle database.</p>  |       |
| <pre>opswise.db.url=jdbc:oracle:thin:@ //localhost:1521/@oracle.db.name@</pre>   | <p>JDBC connect URL. Specify this property if you are using an Oracle database.</p>   |       |
| <b>For LDAP:</b>   |   |       |
| <pre>opswise.ldap.groups.filter_indirect=</pre>  | <p>When this property is set to true, any Groups synchronized indirectly (that is, through a User's <b>memberOf</b> attribute) will honor the Group search filter and Group OU filters under the LDAP Advanced Settings section.</p>  | true  |
| <div style="background-color: #ffffcc; padding: 5px;"> <p> <b>Note</b><br/>The code default for this property, which is used if this property is not set, is false.</p> </div>  |   |       |
| <pre>opswise.ldap.groups.single_parent_per_child=</pre>  | <div style="background-color: #ffe6e6; padding: 5px;"> <p> <b>IMPORTANT</b><br/>This property should only be set to true if your Groups being synchronized from AD have at most one parent Group.</p> </div> | false |
| <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> |   |       |
| <b>(For all databases)</b>   |   |       |
| <pre>opswise.db.user=</pre>  | <p>Login ID that the Controller will use to log in to your database.</p>  | root  |

|   |   |               |
|---|---|---------------|
| <code>opwise.db.password.encrypted=</code>            | Encrypted version of <code>opwise.db.password</code> that will replace <code>opwise.db.password</code> in the <code>opwise.properties</code> file upon start-up.  | (none)        |
| <code>opwise.db.name=</code>                          | Name for the Controller database.<br><br> <b>IMPORTANT</b><br>If you specify a database name in this property and in <code>opwise.db.url=</code> , the names must be the same.   | opwise        |
| <code>opwise.date.formats</code>                      | Accepted input date formats for <a href="#">Date Functions</a> and <a href="#">Stored Procedure parameters</a> . For example:<br><code>opwise.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. |               |
| <code>opwise.db.pooler.connections=</code>            | Minimum number of connections that can remain idle in the pool without extra connections being created, or zero to create none.   | 25            |
| <code>opwise.db.pooler.connections.max=</code>        | Maximum number of active connections that can be allocated from this pool at the same time, or negative for no limit.   | 100           |
| <code>opwise.servlet.port=</code>                     | Port number used by Tomcat.   | 8080          |
| <code>opwise.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>opwise.trustmanager.algorithm=</code>           | Java trust manager algorithm. For IBM AIX, value must be <code>IbmX509</code> . The default works for all other platforms.  | SunX509       |
| <code>opwise.trustmanager.provider=</code>            | Java trust manager provider. For IBM AIX, value must be <code>IBMJSSE2</code> . The default works for all other platforms.  | SunJSSE       |
| <code>opwise.trustmanager.truststore=</code>          | Location of the keystore which holds certificates and keys.   | properties/ca |
| <code>opwise.trustmanager.truststore.password=</code> | Password (if required) for the keystore.  | changeit      |

## Sample opwise.properties File

```
# DB
opwise.db.rdbms=mysql
opwise.db.url=jdbc:mysql://localhost/
# MYSQL
# opwise.db.rdbms=mysql
# opwise.db.url=jdbc:mysql://localhost/
# MS SQLSERVER
# opwise.db.rdbms=sqlserver
# opwise.db.url=jdbc:sqlserver://localhost:1433;DatabaseName=opwise
# ORACLE
# opwise.db.rdbms=oracle
# opwise.db.url=jdbc:oracle:thin:@//localhost:1521/@oracle.db.name@
#
# COMMON
#
# trust manager algorithm & provider
#opwise.trustmanager.algorithm=SunX509
#opwise.trustmanager.provider=SunJSSE
#
opwise.db.user=root
opwise.db.password=pswd
opwise.db.name=opwise
opwise.db.pooler.connections=2
opwise.db.pooler.connections.max=40
opwise.servlet.port=8080
opwise.ui.session_timeout=30
```

## Opwise Controller System Properties

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

Opwise Controller system properties do not reside in a properties file; they are available only via the user interface. You can reset these properties any time after the Controller is in operation without having to stop and restart the Controller.



### Note

You must be assigned the `ops_admin` role in order to reset these properties.



**Step 1** From the Administration navigation pane, select **Configuration > Properties**. The Properties list displays.

| 51 Properties   |  | Updated By | Updated                   |
|---|--|------------|---------------------------|
| Name ^  | Value  |            |                           |
| Administrator Email Address                                 |  | ops.system | 2015-03-10 17:58:08 -0400 |
| Agent Cache Retention Period In Days                        | 7  | ops.system | 2014-04-25 11:20:28 -0400 |
| Agent Heartbeat Interval In Seconds                         | 120  | ops.system | 2014-04-25 11:20:28 -0400 |
| Agent Prefix  | AGNT   | ops.system | 2014-04-25 11:20:28 -0400 |
| Automatically Create Versions                               | true   | ops.system | 2014-06-13 15:52:25 -0400 |
| Automatically Skip Conflicting Multi-Origin Paths           | false  | ops.system | 2015-03-20 17:57:00 -0400 |
| Broadcast On Hold If Cluster Suspended                      | true   | ops.system | 2014-04-25 11:20:28 -0400 |
| Calendar Preview Period In Years                            | 2  | ops.system | 2015-01-09 17:41:16 -0500 |
| Client Export Fetch Limit                                   | 1000   | ops.system | 2014-08-15 17:48:01 -0400 |
| Compress Bundle Promotion Payload                           | false  | ops.system | 2014-04-25 11:20:28 -0400 |
| Confirm Exit  | true   | ops.system | 2015-01-07 17:02:33 -0500 |
| Confirm Update For Tasks In Workflows                       | false  | ops.system | 2015-02-19 09:45:31 -0500 |
| Continue Monitoring Completed Workflows In Workflow Monitor | false  | ops.system | 2014-04-25 11:20:28 -0400 |
| Copy Notes To Task Instances For Reporting                  | false  | ops.system | 2014-04-25 11:20:28 -0400 |
| Create Version On Related List Change                       | true   | ops.system | 2014-04-25 11:20:28 -0400 |
| Enable Trigger Simulation                                   | false  | ops.system | 2014-04-25 11:20:28 -0400 |
| Exclude Holidays For Business Days                          | false  | ops.system | 2014-04-25 11:20:28 -0400 |
| Export Agent References                                     | false  | ops.system | 2014-04-25 11:20:28 -0400 |
| Export Path   |  | ops.system | 2014-12-02 11:28:39 -0500 |
| Expose Infran Script  | false  | ops.system | 2014-05-15 15:20:30 -0400 |
| Expose Resolved Script                                      | false  | ops.system | 2014-04-25 11:20:28 -0400 |
| Forecast Period In Days                                     | 31   | ops.system | 2014-11-19 11:01:11 -0500 |
| LDAP Synchronization Enabled                                | false  | ops.system | 2014-08-21 21:03:16 -0400 |
| License Key   |  | ops.system | 2014-06-06 13:07:19 -0400 |
| List Qualifying Times Format                                | EEEE, MMMMMM dd, yyyy HH:mm:ss z   | ops.system | 2014-04-25 11:20:28 -0400 |
| Lock Account After Maximum Login Attempts                   | false  | ops.system | 2014-05-22 16:36:06 -0400 |
| Log File Retention Period In Days                           | 5  | ops.system | 2014-10-15 11:02:35 -0400 |
| Log Level   | INFO   | ops.system | 2014-04-25 11:20:28 -0400 |
| Maximum Login Attempts                                      | 5  | ops.system | 2014-04-25 11:20:28 -0400 |
| Maximum Nested Variable Depth                               | 25   | ops.system | 2014-04-25 11:20:28 -0400 |
| Maximum Processing Threads                                  | 1000   | ops.system | 2014-04-25 11:20:28 -0400 |
| Maximum Timer Threads                                       | 300  | ops.system | 2014-04-25 11:20:28 -0400 |
| Password Expiration Enabled                                 | true   | ops.system | 2015-03-12 15:55:47 -0400 |
| Password Expiration In Days                                 | 30   | ops.system | 2015-03-12 15:55:44 -0400 |
| Platform Log Level  | WARN   | ops.system | 2014-08-26 09:14:08 -0400 |
| Retrieve Output Default Maximum Lines                       | 100  | ops.system | 2014-06-01 17:35:03 -0400 |
| SMTP Debug  | false  | ops.system | 2015-03-26 13:51:45 -0400 |
| Start Server Paused   | false  | ops.system | 2014-04-25 11:20:28 -0400 |
| Stop Unknown Application Monitors                           | false  | ops.system | 2014-04-25 11:20:28 -0400 |
| System Default Activity Quick Filters                       | Active=180,190,200;Blocked=10,20,23,30,33,60;Completed=180,190,200;Problem=35,81,... | ops.system | 2014-10-15 13:04:16 -0400 |
| System Default CLI Bulk Import Path                         | /opt/tomcat/opswise_import   | ops.system | 2014-04-25 11:20:28 -0400 |
| System Default Command Line Access                          | Yes  | ops.system | 2014-04-25 11:20:28 -0400 |
| System Default Confirm Launch Command                       | Yes  | ops.system | 2014-06-01 17:34:34 -0400 |
| System Default Maximum Versions                             | 100  | ops.system | 2014-04-25 11:20:28 -0400 |
| System Default Report Group Threshold                       | 10   | ops.system | 2014-08-15 17:48:01 -0400 |
| System Default Update Virtual Resource Limit On Promotion   | Yes  | ops.system | 2015-03-09 18:18:41 -0400 |
| System Default Web Browser Access                           | Yes  | ops.system | 2014-04-25 11:20:28 -0400 |
| System Default Web Service Access                           | Yes  | ops.system | 2014-04-25 11:20:28 -0400 |
| Variable Security Enabled                                   | true   | ops.system | 2014-05-30 13:06:44 -0400 |
| Virtual Resource Security Enabled                           | true   | ops.system | 2014-05-30 13:06:49 -0400 |
| Workflow Search Result Limit                                | 200  | ops.system | 2014-04-25 11:20:28 -0400 |


**Step 2** Double-click a property **Value** to change that value.


The following table describes the Opwise Controller system properties:

| Name<br>(Property Name)                                   | Description   | Default |
|---|---|---------|
| Administrator Email Address<br>(opswise.admin.email_addr) | System administrator email address(es) specified as the recipient(s) for <b>System Notifications</b> . Addresses for multiple administrators should be specified in a comma-separated list. | (none)  |

|  |   |       |
|--|---|-------|
| Agent Cache Retention Period in Days<br>(opwise.agent.cache.retention)                                     | Number of days that cache files (stdout, stderr) are retained by the system.  | 7     |
| Agent Heartbeat Interval in Seconds<br>(opwise.agent.heartbeat.interval.in.seconds)                        | Number of seconds between each heartbeat message sent by the agent to the Controller.   | 120   |
| Agent Prefix<br>(opwise.agent.prefix)  | Prefix appended to the Queue name for newly registered agents. A 4-digit number is appended to this prefix.   | AGNT  |
| Automatically Create Versions<br>(opwise.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<br>(opwise.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 upstream tasks, where one or more of the upstream tasks would cause the task to be run and one or more would cause the task to be skipped.   | false |
| Broadcast On Hold If Cluster Suspended<br>(opwise.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 <a href="#">suspended</a> .   | true  |
| Calendar Preview Period In Years<br>(opwise.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 <a href="#">Calendar Preview</a> .  | 2     |
| Client Export Fetch Limit<br>(opwise.export.client.fetch_limit)  | Number of records to pre-fetch before performing an <a href="#">export to CSV</a> , <a href="#">PDF</a> , <a href="#">XLS (Excel)</a> , or <a href="#">XLSX</a> . 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<br>(opwise.bundle.payload_compression)                                   | Specification (true or false) for whether or not the Controller will compress record bundles during a promotion.  | false |
| Confirm Exit<br>(opwise.browser.confirm_exit)  | Specification (true or false) for whether or not a <a href="#">confirmation pop-up</a> displays if a user navigates away from the Opwise Controller 6.1.x user interface (or closes the browser without logging out).   | true  |
| Confirm Update For Tasks In Workflows<br>(opwise.task.confirm_workflow_update)                             | Specification (true or false) for whether or not a user, when <a href="#">updating a task</a> , 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<br>(opwise.workflow_monitor.monitor_completed) | Specification (true or false) for whether or not the Controller will continue monitoring completed Workflows in the Workflow Monitor.   | false |

|  |   |       |
|--|---|-------|
| Copy Notes to Task Instances for Reporting<br>(opwise.notes.copy_to_execs)       | Specification (true or false) for whether or not the Controller will copy task notes to task instances so that task notes can be included in activity reports or gauges. For example, if true is specified, you can create a gauge that lists task notes for failed task instances. This property should be enabled only as needed.   | false |
| Create Version On Related List Change<br>(opwise.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 system will create a version of the task when the user changes a task variable.  | true  |
| Enable Trigger Simulation<br>(opwise.trigger.simulation)                         | <p>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> <p>You can still force a trigger by using the Trigger Now command or launch a task by using the Launch command.</p>   | false |
| Exclude Holidays for Business Days<br>(opwise.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"> <li>• If true, holidays that fall on Business Days are considered non-Business Days.</li> <li>• If false (the default), holidays that fall on Business Days are considered Business Days.</li> </ul> <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 |
| Export Agent References<br>(opwise.export.agent_references)                      | Specification (true or false) for whether or not the Controller will export referenced Agents when exporting definition XMLs with the <a href="#">Export References</a> feature.  | false |

|  |   |        |
|--|---|--------|
| <p>Export Path<br/>(opwise.export.path)</p>                                      | <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="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b><br/>Any <a href="#">bulk import</a> or <a href="#">list import</a> 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 <a href="#">bulk export</a> and <a href="#">list export</a> 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 &lt;tomcat&gt;/opwise_export.</p> </div> | (none) |
| <p>Expose Infitran Script<br/>(opwise.infitran.expose_script)</p>                | <p><b>For debugging use only.</b> Specification (true or false) for whether or not the Controller prepares a <a href="#">script</a> when it launches a file transfer on an Infitran installation. If troubleshooting is necessary, enabling this property allows you to view the script in the Output tab on the task instance.</p>   | false  |
| <p>Expose Resolved Script<br/>(opwise.script_library.expose_resolved_script)</p> | <p>Specification (true or false) for whether or not to generate a SCRIPT output type capturing the resolved contents of the <a href="#">Scripts</a> script for each task instance run attempt that utilizes a script from the <a href="#">Scripts</a>. This property only applies to <a href="#">Scripts</a> defined with the <b>Resolve Opwise Variables</b> 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 <a href="#">Scripts</a>.</p>   | false  |
| <p>Forecast Period in Days<br/>(opwise.forecast.days)</p>                        | <p>Number of days to be included in a trigger forecast. See <a href="#">Displaying Trigger Forecast Information</a>.</p>  | 31     |
| <p>LDAP Synchronization Enabled<br/>(opwise.security.ldap.enabled)</p>           | <p>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.</p>   | false  |
| <p>License Key<br/>(opwise.license)</p>  | <p>License key for your installation; provided to you by your Opwise Controller representative.</p>   | (none) |

|  |   |                                       |
|--|---|---------------------------------------|
| List Qualifying Times Format<br>(opwise.trigger.date.format.display)                 | Format that you want the Controller to use when listing qualifying times for Time and Cron Triggers. See <a href="#">List Qualifying Times</a> .  | EEEE, MMMMMM dd, yyyy<br>HH:mm:ss z Z |
| Lock Account After Maximum Login Attempts<br>(opwise.login.maximum_attempts.enabled) | Specification (true or false) for whether or not to lock a user account if the user has reached the maximum number of successive login attempts that is allowed, as specified by the <a href="#">Maximum Login Attempts</a> property.<br><br>Whenever this property is enabled (value is changed from <b>false</b> to <b>true</b> ), the current number of failed login attempts for all users is reset to 0.   | false                                 |
| Log File Retention Period in Days<br>(opwise.log.retention)                          | Number of days that the Controller retains its log files.   | 5                                     |
| Log Level<br>(opwise.log.level)  | Level of logging for the Controller: <ul style="list-style-type: none"> <li>• ALL</li> <li>• TRACE</li> <li>• DEBUG</li> <li>• INFO</li> <li>• WARN</li> <li>• ERROR</li> <li>• SEVERE</li> <li>• OFF</li> </ul>  | INFO                                  |
| Maximum Login Attempts<br>(opwise.login.maximum_attempts)                            | Maximum number of successive login attempts that a user can make before the user's account is locked if the <a href="#">Lock Account After Maximum Login Attempts</a> property is set to <b>true</b> .  | 5                                     |
| Maximum Nested Variable Depth<br>(opwise.variable.maximum_depth)                     | Maximum number of nested variables allowed.   | 25                                    |
| Maximum Processing Threads<br>(opwise.threads.max)                                   | Maximum number of processing threads used.  | 1000                                  |
| Maximum Timer Threads<br>(opwise.timer.threads.max)                                  | Maximum number of timer threads used.   | 300                                   |
| Password Expiration Enabled<br>(opwise.login.password_expiration.enabled)            | Specification (true or false) for whether or not user passwords will expire after the maximum number of days that a user password can remain unchanged before expiring, as specified by the <a href="#">Password Expiration in Days</a> property.<br><br><div style="background-color: #ffffcc; padding: 5px; border: 1px solid #ccc;">  <b>Note</b><br/>Password expiration is not applicable to LDAP authenticated users. </div> | false                                 |
| Password Expiration in Days<br>(opwise.login.password_expiration)                    | Maximum number of days that a user password can remain unchanged before expiring, if the <a href="#">Password Expiration Enabled</a> property value is <b>true</b> .  | 30                                    |

|   |  |   |
|---|--|---|
| Platform Log Level<br>(log.level.platform)  | Level of logging for the platform where the Controller operates: <ul style="list-style-type: none"> <li>• ALL</li> <li>• TRACE</li> <li>• DEBUG</li> <li>• INFO</li> <li>• WARN</li> <li>• ERROR</li> <li>• OFF</li> </ul>   | WARN  |
| Retrieve Output Default Maximum Lines<br>(opwise.retrieve_output.maximum_lines)                                       | Limit for the number of lines retrieved when Automatic Output Retrieval is enabled on a task.  | 100   |
| SMTP Debug<br>(opwise.smtp.debug)   | Specification (true or false) for whether or not additional debug information about any <a href="#">Email Connection</a> issues (for example, Email Connection Test fails or errors while sending emails) will be included in the log.   | false   |
| Start Server Paused<br>(opwise.startup.paused)  | Specification (true or false) for whether or not the start server process brings up the server in paused mode.   | false   |
| Stop Unknown Application Monitors<br>(opwise.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   |
| System Default Activity Quick Filters<br>(opwise.activity.quick_filters.default)                                      | <a href="#">Task instance status types</a> to include in the Active, Blocked, Completed, and Problem <a href="#">Quick Filters</a> . 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 you own Quick Filters. | Active=1180,1190,1200;<br>Blocked=10,20,23,30,33,60;<br>Completed=180,190,200;<br>Problem=35,81,99,110,120,125,               |
| System Default CLI Bulk Import Path<br>(opwise.bulk_import.path.default)  | Pathname from where imported XML files are written.  | <tomcat-home>/opwise_im<br><b>or</b><br><tomcat-home>\opwise_im<br><br>(<tomcat-home> is the base to installation directory.) |
| System Default Command Line Access<br>(opwise.user.command_line.default)  | Specification (Yes or No) for all users whose <b>Command Line access</b> field in their <a href="#">User Details</a> is set to <b>-- System Default --</b> , 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<br>(opwise.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.  | Yes   |
| System Default Maximum Versions<br>(opwise.version.maximum.default)   | Maximum number of version records (1 to 255) to maintain per definition.   | 100   |
| System Default Report Group Threshold<br>(opwise.version.maximum.default)   | Maximum number of groups to display on a <a href="#">Chart report</a> . All groups above the threshold will be displayed in one group named Other.   | 10  |
| System Default Update Virtual Resource Limit On Promotion<br>(opwise.promotion.virtual_resource.update_limit.default) | Specification (Yes or No) for whether or not virtual resource limits are updated as part of a <a href="#">promotion</a> .  | Yes   |
| System Default Web Browser Access<br>(opwise.user.browser.default)  | Specification (Yes or No), for all users whose <b>Web Browser access</b> field in their <a href="#">User Details</a> is set to <b>-- System Default --</b> , for whether or not to control a user's ability to access the Controller through the user interface.                                 | Yes   |

|   |  |      |
|---|--|------|
| System Default Web Service Access<br>(opwise.user.web_service.default)          | Specification (Yes or No), for all users whose <b>Web Service access</b> field in their <a href="#">User Details</a> is set to <b>-- System Default --</b> , for whether or not to control a user's ability to access the Controller through the RESTful Web Services API. | Yes  |
| Variable Security Enabled<br>(opwise.security.variable.enabled)                 | Specification (true or false) for enabling enhanced Global Variable security.  | true |
| Virtual Resource Security Enabled<br>(opwise.security.virtual_resource.enabled) | Specification (true or false) for enabling enhanced Virtual Resource security.   | true |
| Workflow Search Result Limit<br>(opwise.workflow.search_result_limit)           | Results limit when querying for task records from the <a href="#">Task Find</a> or <a href="#">Open Workflow</a> pop-up.   | 200  |

## Overriding Opwise Controller System Properties

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

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

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

## 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 command.

However, you can create a configuration file with any name; it must exist in the directory from where you are issuing the commands (see [Command Line Interface \(CLI\)](#)). The file is created during installation of Opwise Universal Agent if Opwise Command Line Interface has been selected to be installed.

## LDAP Settings

- Overview
- Credentials for Running Tasks Authentication
- User Login Authentication
- LDAP Settings Field Descriptions
- Mappings Tab
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  - 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

## Overview



### Note

The information provided on this page assume 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 Opwise Automation Center to use LDAP authentication for:

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

## Credentials for Running Tasks Authentication

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

|                |   |
|----------------|---|
| <b>UNIX</b>    | <p>If you want the credentials for Opwise 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 <a href="#">Security of Opwise Universal Agent Components</a> 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> |
| <b>Windows</b> | <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>  |



### Note

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

## User Login Authentication



**Step 1** From the Administration navigation pane, select **Configuration > LDAP Settings**. The LDAP Settings page displays.

**Step 2** Enter / select your LDAP Settings, using the field descriptions below as a guide.

- Required fields display in **boldface**.
- Default values for fields, if available, display automatically.

**Step 3** Click the **Update** button.

## LDAP Settings Field Descriptions

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

| Field Name        | Description   |
|-------------------|---|
| <b>Connection</b> | This section contains information on the LDAP connection.   |
| URL               | <p>URL of the LDAP connection. For example:</p> <ul style="list-style-type: none"> <li>• <b>ldap://ldap.stonebranch.com:389/</b></li> <li>• <b>ldaps://192.202.185.90:636/</b></li> </ul> <p>To use SSL encryption (<b>ldaps://</b>), you will have to configure Opwise Automation Center with an X.509 CA certificate in either of these formats:</p> <ul style="list-style-type: none"> <li>• DER-encoded binary</li> <li>• Base64-encoded</li> </ul> |
| 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.  |
| <b>Search</b>                | 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            | LDAP attribute for the specified <a href="#">User ID</a> .<br><br>Options: <ul style="list-style-type: none"> <li>• sAMAccountName</li> <li>• cn</li> <li>• uid</li> <li>• Other...</li> </ul>   |
| User Filter                  | Search filter for users.<br><br>If you do not specify a User Filter, the server uses <code>(&amp;(objectClass=user) (objectCategory=person))</code> .  |
| User Target OU List          | Single- or multi-level target OU's (Organizational Units) within the <a href="#">Base DN</a> directory to filter for user records.<br><br>For example, <code>OU=Employees</code> or <code>OU=Employees,OU=Users</code> .<br><br>If you do not specify one or more OU's, the entire sub-tree from the <a href="#">Base DN</a> will be searched. |
| Group Filter                 | Search filter for groups.<br><br>If you do not specify a Group Filter, the server uses <code>(&amp;(objectClass=group) (objectCategory=group))</code> .  |
| Group Target OU List         | Single- or multi-level target OU's within the <a href="#">Base DN</a> directory to filter for group records.<br><br>For example, <code>OU=Opwise Groups</code> or <code>OU=Opwise Groups,OU=Groups</code> .<br><br>If you do not specify one or more OU's, the entire sub-tree from the <a href="#">Base DN</a> will be searched.              |
| <b>Advanced</b>              | 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 Member Attribute        | LDAP attribute for the groups in which a user is a member. If you do not specify a User Member Attribute, the LDAP server uses <b>memberOf</b> .   |
| Group Member Attribute       | LDAP attribute for the members of a group. If you do not specify a Group Member Attribute, the LDAP server uses <b>member</b> .  |
| <b>Buttons</b>               | This section identifies the buttons displayed above and below the LDAP Settings that let you perform various actions.  |
| <b>Update</b>                | Saves updates to the record.   |
| <b>Test Connection</b>       | After saving the LDAP Settings to the database, click <b>Test Connection</b> to run a connection test.   |
| <b>Refresh</b>               | Refreshes any dynamic data displayed in the LDAP Settings.   |
| <b>Tabs</b>                  | This section identifies the tabs across the top of the LDAP Settings page that provide access to additional information about the LDAP Settings.   |
| <b>Mappings</b>              | List of Opwise columns mapped to LDAP attributes that enables you to customize how the User/Group records get populated from LDAP.   |

## Mappings Tab

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

| 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 | Description    | description     | ops.system | 2014-09-25 20:00:00 -0400 |

## Mappings Tab Column Descriptions

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

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

## Mapping Details

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

For example:

Mapping Details

Update Refresh Close

Mapping

Details

Type: User

Column: Manager

Attribute: manager

Update Refresh Close

## Best Practices

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

### 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, <b>OU=Corporate,DC=stonebranch,DC=com</b> |
|--|

|  |
|--|
| OU=Students, <b>OU=Corporate,DC=stonebranch,DC=com</b> |
|--|

### Groups

|   |
|---|
| OU=AtlantaGroup,OU=CorporateGroups, <b>OU=Corporate,DC=stonebranch,DC=com</b> |
|---|

|   |
|---|
| OU=OntarioGroup,OU=CorporateGroups, <b>OU=Corporate,DC=stonebranch,DC=com</b> |
|---|

|   |
|---|
| OU=OtherGroups, <b>OU=Corporate,DC=stonebranch,DC=com</b> |
|---|

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 |
|----------------|

## 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 Opwise 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:

|                                  |  |
|----------------------------------|--|
| <b>Source Column for a User</b>  | ldap:CN=Neil Peart,OU=TestUsers,DC=qad,DC=stone,DC=branch    |
| <b>Source Column for a Group</b> | ldap:CN=OpwiseParent,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](#).

## LDAP Server Operations

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

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

- **LDAP Refresh**  
This server operation performs an LDAP refresh in the background and sends entries to the Opwise Controller log.
- **LDAP Refresh Debug**

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 server operation.

## LDAP Settings Fields

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

### 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.

### 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:   | <b>OU=CorporateUsers,OU=Corporate,DC=stonebranch,DC=com</b>  |
| And your Groups are in: | <b>OU=CorporateGroups,OU=Corporate,DC=stonebranch,DC=com</b> |
| Your Base DN can be:    | <b>OU=Corporate,DC=stonebranch,DC=com</b>                    |

### User Filter

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

By default, the query will match any object (**objectClass=\***). However, this is very unlikely to be the desired configuration.

|                                  |  |
|----------------------------------|--|
| <b>For Active Directory (AD)</b> | <p>At a minimum, specify the following:</p> <div style="border: 1px solid #ccc; padding: 10px; margin: 10px 0;"> <pre>(&amp;(objectClass=user)(objectCategory=person))</pre> </div> <p>This filter would match both user and <b>inetOrgPerson objectClasses</b>. <b>objectCategory=person</b> is added for two reasons:</p> <ul style="list-style-type: none"> <li>• It is an indexed attribute, so the query performance is optimized.</li> <li>• Without it, Computer objects could be synchronized.</li> </ul> <p>For example, in AD, a computer <b>objectClass</b> extends from a user <b>objectClass</b>, but a computer's <b>objectCategory=computer</b>, not <b>person</b>.</p> |
| <b>For Non-Active Directory</b>  | <p>Consider using, as a minimum, ....&lt;&gt;.</p>   |



#### Note

Once an object (User or Group) is synchronized into Opswise, 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, an Opswise 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 Opswise.

For example:

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

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

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

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

For example:

- **OpwiseGroupA** is a member of **OpwiseGroup**.
- **OpwiseGroupB** is a member of **OpwiseGroupA**.
- **OpwiseGroupC** is a member of **OpwiseGroupB**.

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=OpwiseGroup,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)).

## Group Filter

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

By default, the query will match any object (**objectClass=group**).

|   |  |
|---|--|
| <p><b>For Active Directory (AD)</b></p> | <p>It is recommended that you optimize the query performance by incorporating the indexed <b>objectCategory</b> attribute:</p> <pre>*(&amp;(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=OpwiseGroup,OU=CorporateGroups,OU=Corporate,DC=stonebranch,DC=com**, modify the recommended minimum group search filter:

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

To synchronize only **OpwiseGroupA**, **OpwiseGroupB**, and **OpwiseGroupC**, use the following filter:

```
(&(objectClass=group)(objectCategory=group)(|(cn=OpwiseGroupA)(cn=OpwiseGroupB)(cn=OpwiseGroupC)))
```

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

```
(&(objectClass=group)(objectCategory=group)(|(cn=OpwiseGroup)(memberOf=CN=OpwiseGroup,OU=CorporateGroup
```

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

```
(&(objectClass=group)(objectCategory=group)(|(cn=OpwiseGroup)(memberOf:1.2.840.113556.1.4.1941:=CN=Opwi
```

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 <a href="#">Opwise Controller Start-up Properties</a> file ( <code>opwise.properties</code> ) contains the following property configuration:<br><b>opwise.ldap.groups.filter_indirect=true</b><br><br>(If <b>opwise.ldap.groups.filter_indirect=true</b> , any Groups synchronized indirectly - that is, through a User's <b>memberOf</b> attribute - will honor the Group Filter and Group Target OU List.) |



#### Note

The `opwise.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.

## Data Backup - Purge

- [Overview](#)
- [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 Opswise Controller](#)
- [Returning Virtual Resources for Purged Task Instances in Failure Status](#)

### Overview

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

- [Audit records](#)
- [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](#).

### Creating a Data Backup / Purge Record



**Step 1** From the **Administration** navigation pane, select **Configuration > Data Backup / Purge**. The Data Backup / Purge list displays.

Below the list, Details for a new Data Backup / Purge record displays.

The screenshot shows the 'Data Backup / Purge' interface. At the top, there is a list of 5 records. Below the list, the 'Data Backup / Purge Details' form is displayed, showing fields for Name, Table, Days Older Than, Backup, Purge, and Schedule.

| Name                      | Table | Days Older Than | Purge | Backup | Schedule | Next Scheduled Time       | Enabled | Updated By          | Updated                   |
|---------------------------|-------|-----------------|-------|--------|----------|---------------------------|---------|---------------------|---------------------------|
| stonebranch-databackup-01 | Audit | 30              | No    | Yes    | Yes      | 2014-07-14 01:15:00 -0400 | ✔       | stonebranch-user-01 | 2014-07-08 16:39:54 -0400 |
| stonebranch-databackup-02 | Audit | 30              | No    | Yes    | No       |                           | ✘       | stonebranch-user-02 | 2014-06-13 16:24:43 -0400 |
| stonebranch-databackup-03 | Audit | 30              | No    | Yes    | No       |                           | ✘       | stonebranch-user-03 | 2014-06-13 16:24:47 -0400 |
| stonebranch-databackup-04 | Audit | 30              | No    | Yes    | No       |                           | ✘       | stonebranch-user-04 | 2014-06-13 16:24:50 -0400 |
| stonebranch-databackup-05 | Audit | 30              | No    | Yes    | No       |                           | ✘       | stonebranch-user-05 | 2014-06-13 16:24:54 -0400 |

The details form below the list includes the following fields:

- Name**: [Text input field]
- Table**: [Dropdown menu]
- Days Older Than**: [Text input field with value 1]
- Backup**:
- Purge**:
- Schedule**:

Buttons for 'Save' and 'New' are located at the bottom of the details form.

**Step 2** Enter / select Details for a new Data Backup / Purge record, using the [field descriptions](#) below as a guide.

- Required fields display in **boldface**.
- Default values for fields, if available, display automatically.

To display more of the Details fields on the screen, you can temporarily [hide the list](#).



**Note**

If you view [Data Backup / Purge Details](#) for an existing Data Backup / Purge record by clicking a record in the list, and then want to create a new Data Backup / Purge record, you must click the **New** button that displays above and below the Details.

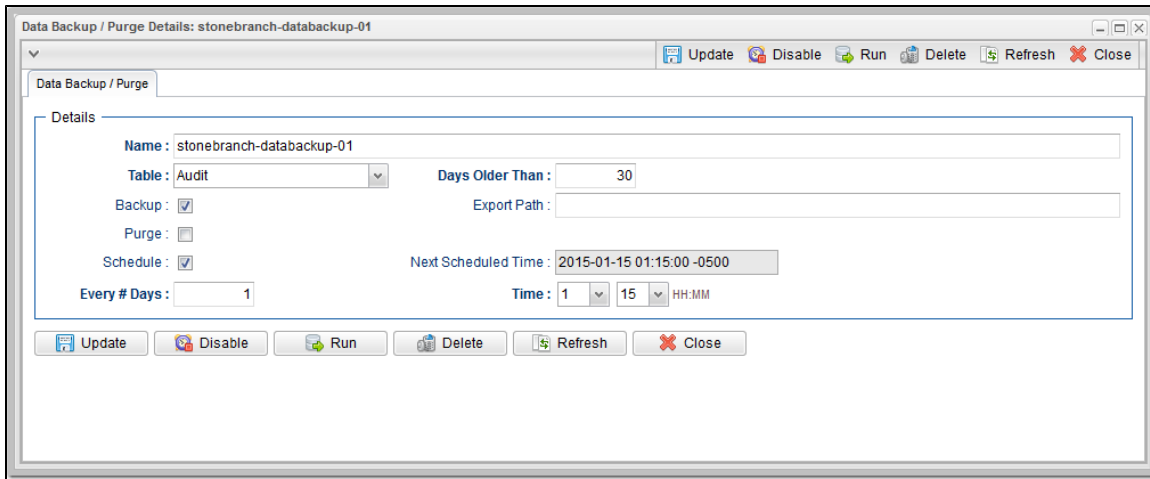
**Step 3** If you want the backup / purge to run automatically, enable the **Schedule** field and specify how often and what time it should run. Otherwise, you can run it manually.

**Step 4** Click the **Save** button. The record is added to the database, and all buttons and tabs in the Data Backup / Purge Details are enabled.

## 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.



## 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   |
|-----------------|---|
| <b>Details</b>  | This section contains detailed information about the record.  |
| Name            | Name of this backup specification.  |
| Table           | Specifies which records you want to back up and/or purge: <ul style="list-style-type: none"> <li>• Audit</li> <li>• Activity</li> <li>• History</li> </ul>  |
| Purge           | If enabled, the process will purge the selected data from your Opswise Controller database.   |
| Backup          | If enabled, the process will write all the selected data to XML files.  |
| 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. |

|                                   |  |
|-----------------------------------|--|
| <p><b>Export Path</b></p>         | <p>If <b>Backup</b> 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 style="border: 1px solid #ccc; padding: 10px; margin: 10px 0;"> <pre>Audit: ops_audit_Sat_Apr_30_08_30_00_PDT_2011.xml  Activity: ops_exec_sleep_Sat_Apr_30_08_30_00_PDT_2011.xml ops_exec_unix_Sat_Apr_30_08_30_00_PDT_2011.xml ops_exec_workflow_Sat_Apr_30_08_30_00_PDT_2011.xml  History: ops_history_Sat_Apr_30_08_30_00_PDT_2011.xml</pre> </div> <div style="background-color: #ffffcc; padding: 10px; margin: 10px 0;"> <p> <b>Note</b><br/>If no path is specified, the default path specified by the Opswise Controller system property <b>Export Path</b> will be used. 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><b>Schedule</b></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><b>Every # Days</b></p>        | <p>If <b>Schedule</b> is enabled, specifies the frequency (in number of days) of the backup / purge process. Default is 1.</p>   |
| <p><b>Time</b></p>                | <p>If <b>Schedule</b> is enabled, specifies the time of the backup / purge. Use 24:00 hour time.</p>   |
| <p><b>Next Scheduled Time</b></p> | <p>Displays the next scheduled time the backup / purge process will run, based on the specifications in your schedule.</p>   |
| <p><b>Buttons</b></p>             | <p>This section identifies the buttons displayed above and below the Data Backup / Purge Details that let you perform various actions.</p>   |
| <p><b>Save</b></p>                | <p>Saves a new record in the Controller database.</p>  |
| <p><b>Update</b></p>              | <p>Saves updates to the record.</p>  |
| <p><b>New</b></p>                 | <p>Displays empty (except for default values) Details for creating a new record.</p>   |
| <p><b>Enable</b></p>              | <p>Enables these Backup / Purge instructions so that they will be processed by the Controller.</p>   |
| <p><b>Disable</b></p>             | <p>Disables these backup / purge instructions so they will not be processed by the Controller.</p>   |
| <p><b>Run</b></p>                 | <p>Manually runs the backup / purge instructions.</p>  |
| <p><b>Delete</b></p>              | <p>Deletes the current record.</p>   |
| <p><b>Refresh</b></p>             | <p>Refreshes any dynamic data displayed in the Details.</p>  |
| <p><b>Close</b></p>               | <p>For pop-up view only; closes the pop-up view of this record.</p>  |

## 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.

## Importing Backed Up / Purged Data into Opswise 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](#).

## 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.

## Server Operations

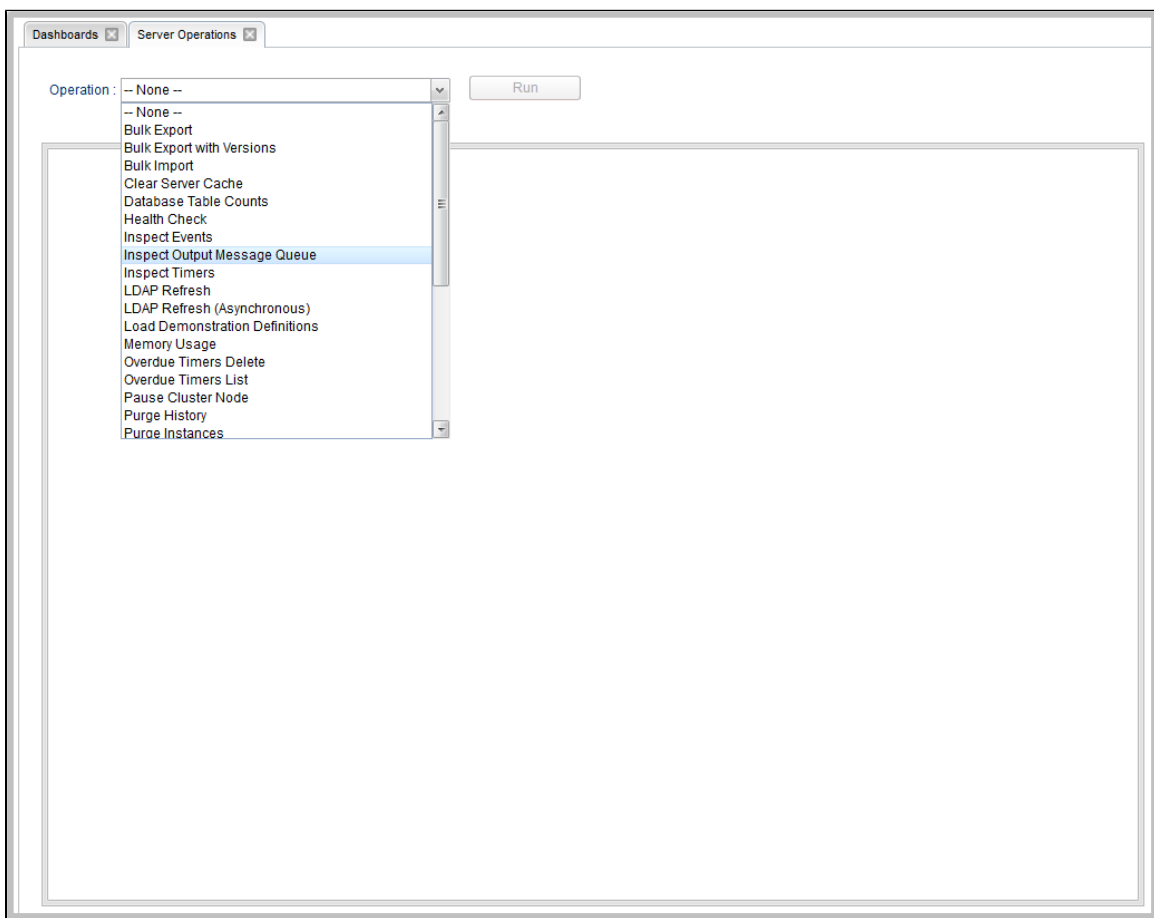
- Overview
- Running a Server Operation
- Server Operation Completion
- Server Operation Timeout
- Server Operations Descriptions
- Opwise Controller Database Tables

### Overview

Opwise 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.

### Running a Server Operation

**Step 1** From the Administration navigation pane, select **Configuration > Server Operations**. The Server Operations list displays.



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

### Server Operation Completion

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

For example:

```
2015-03-31-09:24:58:957 -0400 INFO [http-8080-exec-4] Running Server Operation: Bulk Export
```

```
2015-03-31-09:25:12:357 -0400 INFO [http-8080-exec-4] Server Operation completed: Bulk Export in 1
Minute 37 Seconds
```

## 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 [Universal Automation Center 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, **opswise.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.

```
2015-03-31-09:24:58:957 -0400 INFO [http-bio-8080-exec-4] Running Server Operation: Bulk Import
...
2015-03-31-09:25:12:357 -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 provide the most detailed information.

## 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 updated software (see <a href="#">Upgrading Opswise Controller</a> ).  |
| Bulk Export with Versions | Exports all current records along with older (non-current) versions of record definitions when migrating data to updated software (see <a href="#">Upgrading Opswise Controller</a> ).  |
| Bulk Import               | Imports all data from an exported file when migrating data to updated software (see <a href="#">Upgrading Opswise Controller</a> ).   |
| Clear Server Cache        | Clears the internal server cache. You can use this operation if you are experiencing unexpected behavior in the Opswise 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 Table Counts     | Displays the following information for Opswise Controller database tables: <ul style="list-style-type: none"> <li>• Largest table</li> <li>• Number of tables</li> <li>• Number of rows</li> <li>• Number of rows in each table</li> </ul> See <a href="#">Opswise Controller Database Tables</a> , below, for a description of all tables. |

|                                |  |
|--------------------------------|--|
| Health Check                   | <p>Displays information about the current instance of the Controller.</p> <pre> <b>Nodes:</b>    <u>Connected Node: opwise</u>     Mode: Active     Uptime: 1 Day 1 Hour 13 Minutes 37 Seconds     hostname: opwise     ip: 192.168.00.00     started: 2014-04-22 12:28:25 -0400     hb: 2014-04-23 17:41:58     release: 1     build: build.159     build date: 04-22-2014_1014  Using 3.38% of memory. In Use: 66.84 MB Allocated: 989.94 MB. Free: 1912.91 MB. Max Heap:  jdbc:mysql://qa-dfdb2.stone branch/:root:: In Use: 0, Total: 2  Event Processors:    HeartBeat - Queue Size: 0  <b>Guid Lock Information: NO GUID LOCKS.</b>  <b>Database Connection Pool: Active: 0 Idle: 2</b> </pre> |
| Inspect Events                 | For use only by Technical Support personnel or when you are requested to run it by Technical Support.  |
| Inspect Output Message Queue   | 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 system operation forces a refresh writes all log entries to the user interface as well as to the log, and prevents all other user activity while the running. If you estimate the refresh could take a considerable amount of time, we recommend you use <a href="#">LD (Asynchronous)</a> .  |
| LDAP Refresh (Asynchronous)    | If LDAP is configured for this installation, it refreshes every 24 hours. This system operation forces a refresh is performed in the background and sends log entries to the Controller log.   |
| 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 <a href="#">Overdue Timers List</a> 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 this operation, the event or task will complete. The Controller remains in a paused state until you run the <a href="#">Cluster Node</a> operation.  |

|                                     |  |
|-------------------------------------|--|
| Purge History                       | <p>Purges all records from the <a href="#">History table</a> (ops_history).</p> <p>Any time a task instance goes into an end status (Cancelled, Failed, Skipped, Finished, Success), a copy of the record is added to the History table. You can view your History table by selecting <b>Automation Center &gt; Task Instances &gt; History</b> in the navigation pane.</p> <div style="background-color: #ffffcc; padding: 10px; border: 1px solid #ccc;"> <p> <b>Note</b><br/>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 <a href="#">Data Backup/Purge</a> for this purpose by selecting <b>Administration &gt; Data Backup/Purge</b> 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 <a href="#">All Task Instances table</a> (ops_exec), which contains all system activity, including any status (including end statuses). Records in the <a href="#">All Task Instances table</a> (ops_exec) remain there until they are manually purged.</p> <div style="background-color: #ffe6e6; padding: 10px; border: 1px solid #ccc;"> <p> <b>Warning</b><br/>Running this operation will purge any live data; that is, task instances that have not completed.</p> </div>   |
| Purge Versions                      | Sends a request to all active Agents to purge their logs and cache.  |
| Purge Logs and Cache                | Purges versions of records in excess of the maximum specified by the <a href="#">System Default Maximum Versions</a> 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 <a href="#">Resetting the Current Task Counts</a> ).  |
| Reset All Agent Task Counts         | Resets the current number of tasks currently being run by all Agents to 0 (see <a href="#">Resetting the Current Task Counts</a> ).  |
| Restart Cluster Node                | Stops and restarts the Controller within the running Tomcat server. The Controller is effectively shut down without stopping and starting Tomcat.  |
| Restore System Default List Layouts | Restores all lists to their default layouts.   |
| Resume Cluster Node                 | Resumes the Controller after it has been paused using the <a href="#">Pause Cluster Node</a> operation.  |
| 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 unused objects in order to make the memory they currently occupy available for quick re-use. When controlling the method call, the Java Virtual Machine has made a best effort to reclaim space from all discarded objects.  |
| Server Information                  | <p>Displays the following categories of information about the Opwise Controller server:</p> <ul style="list-style-type: none"> <li>• Node</li> <li>• License</li> <li>• Server Deployment</li> <li>• Database Information</li> <li>• Memory Information</li> </ul>   |
| System Properties                   | <p>Displays all properties of the operating system on which the Controller is running.</p> <p>You may be asked to run this server operation by Technical Support.</p>  |
| Thread List                         | <p>Captures information about internal Controller system processes.</p> <p>You may be asked to run this server operation by Technical Support.</p>   |
| Thread List by CPU                  | <p>Captures information about internal Controller system processes.</p> <p>You may be asked to run this server operation by Technical Support.</p>   |



|                    |   |
|--------------------|---|
| Thread Stack Trace | Captures information about internal Controller system processes.<br>You may be asked to run this server operation by Technical Support. |
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## Opwise Controller Database Tables

The following table identifies and describes all Opwise 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 [Reports](#).

| Table                            | Table Name                    | Description   |
|----------------------------------|-------------------------------|---|
| Abort Actions                    | ops_abort_action              | Contains details about <a href="#">Abort actions</a> .  |
| Abort Actions Versions           | ops_abort_action_v            | Contains details about <a href="#">previous versions</a> of <a href="#">Abort actions</a> . New versions of Abort Action records are created when a task record is updated.   |
| All Agents                       | ops_agent                     | Displays a list of <a href="#">Agents</a> .   |
| All Agent Clusters               | ops_agent_cluster             | Contains details about <a href="#">Agent Clusters</a> .   |
| All Agent Clusters Versions      | ops_agent_cluster_v           | Contains details about <a href="#">previous versions</a> of <a href="#">Agent Clusters</a> .  |
| All Agents Mapping               | ops_agent_mapping             | Shows all the agents connected to one or more <a href="#">Promotion Targets</a> (as retrieved using the <a href="#">Refresh Target Agents</a> button).  |
| Linux/Unix Agents Mapping        | ops_agent_mapping_unix        | Shows the mapping specifications between local <a href="#">Linux/Unix agents</a> and <a href="#">Linux/Unix agents</a> on a <a href="#">Promotion Target</a> (as retrieved using the <a href="#">Refresh Target Agents</a> button). |
| Windows Agents Mapping           | ops_agent_mapping_windows     | Shows the mapping specifications between local <a href="#">Windows agents</a> and <a href="#">Windows agents</a> on a <a href="#">Promotion Target</a> (as retrieved using the <a href="#">Refresh Target Agents</a> button).       |
| z/OS Agents Mapping              | ops_agent_mapping_zos         | Shows the mapping specifications between local <a href="#">z/OS agents</a> and <a href="#">z/OS agents</a> on a <a href="#">Promotion Target</a> (as retrieved using the <a href="#">Refresh Target Agents</a> button).             |
| Applications                     | ops_application               | Shows a list of <a href="#">Application Resources</a> .   |
| Applications Versions            | ops_application_v             | Contains details about <a href="#">previous versions</a> of <a href="#">Application resources</a> .   |
| Audits                           | ops_audit                     | Contains details of events being written to the <a href="#">Audit history</a> .   |
| Backups                          | ops_backup                    | Contains <a href="#">Backup</a> and <a href="#">Purge</a> records.  |
| Bundles                          | ops_bundle                    | Contains all <a href="#">Bundles</a> records.   |
| Bundles and Agent Clusters       | ops_bundle_agent_cluster_join | Shows relationship information between <a href="#">Bundles</a> and <a href="#">Agent Clusters</a> ; that is, which agent clusters belong to which bundles.  |
| Bundles and Applications         | ops_bundle_application_join   | Shows relationship information between <a href="#">Bundles</a> and <a href="#">Application resources</a> ; that is, which Application resources belong to which bundles.  |
| Bundles and Calendars            | ops_bundle_calendar_join      | Contains relationship information between <a href="#">Bundles</a> and <a href="#">Calendars</a> ; that is, which Calendars belong to which Bundles.   |
| Bundles and Credentials          | ops_bundle_credentials_join   | Contains relationship information between <a href="#">Bundles</a> and <a href="#">Credentials</a> ; that is, which Credential records belong to which bundles.  |
| Bundles and Custom Days          | ops_bundle_custom_day_join    | Contains relationship information between <a href="#">Custom Days</a> and <a href="#">Bundles</a> ; that is, which Custom Days belong to which Bundles.   |
| Bundles and Database Connections | ops_bundle_db_cntn_join       | Contains information about the relationship between <a href="#">Bundles</a> and <a href="#">Database Connections</a> ; that is, which Database Connections belong to which Bundles.   |
| Bundles and Email Connections    | ops_bundle_email_cntn_join    | Contains information about the relationship between <a href="#">Bundles</a> and <a href="#">Email Connections</a> ; that is, which Email Connections belong to which Bundles.   |

|                               |                               |   |
|-------------------------------|-------------------------------|---|
| Bundles and Email Templates   | ops_bundle_email_tmplt_join   | Contains relationship information between <a href="#">Bundles</a> and <a href="#">Email templates</a> ; that is, which Email Templates belong to which Bundles.     |
| Bundles and Business Services | ops_bundle_generic_group_join | Contains relationship information between <a href="#">Bundles</a> and <a href="#">Business Services</a> ; that is, which Business Services belong to which Bundles. |
| Bundles and Virtual Resources | ops_bundle_resource_join      | Contains relationship information between <a href="#">Bundles</a> and <a href="#">Virtual Resources</a> ; that is, which Virtual Resources belong to which Bundles. |
| Bundles and SAP Connections   | ops_bundle_sap_cntrn_join     | Contains relationship information between <a href="#">Bundles</a> and <a href="#">SAP Connection</a> ; that is, which SAP Connection records are in which Bundles.  |
| Bundles and Scripts           | ops_bundle_script_join        | Contains relationship information between <a href="#">Bundles</a> and <a href="#">Script</a> ; that is, which Scripts belong to which Bundles.                      |
| Bundles and SNMP Managers     | ops_bundle_snmp_cntrn_join    | Contains relationship information between <a href="#">Bundles</a> and <a href="#">SNMP Manager</a> ; that is, which SNMP Managers belong to which Bundles.          |
| Promotion Targets             | ops_bundle_target             | Contains details about <a href="#">Promotion Target</a> records.  |
| Bundles and Tasks             | ops_bundle_task_join          | Contains relationship information between <a href="#">Bundles</a> and <a href="#">Tasks</a> ; that is, which Tasks are in which Bundles.                            |
| Bundles and Triggers          | ops_bundle_trigger_join       | Contains relationship information between <a href="#">Bundles</a> and <a href="#">Triggers</a> ; that is, which Triggers are in which Bundles.                      |
| Bundles and Variables         | ops_bundle_variable_join      | Contains relationship information between <a href="#">Bundles</a> and <a href="#">Global variables</a> ; that is, which Global variables belong to which Bundles.   |
| Calendar Custom Days          | ops_cal_cust_join             | Contains details about which <a href="#">Custom Days</a> are associated with which <a href="#">Calendar records</a> .   |
| Calendar Custom Days Versions | ops_cal_cust_join_v           | Contains <a href="#">previous versions</a> of the association between <a href="#">Custom Days</a> and <a href="#">Calendar records</a> .                            |
| Calendars                     | ops_calendar                  | Contains details about <a href="#">Calendar records</a> .   |
| Calendars Versions            | ops_calendar_v                | Contains <a href="#">previous versions</a> of <a href="#">Calendar records</a> .  |
| Chart Colors                  | ops_chart_color               | Contains details about colors used in <a href="#">Chart reports</a> .   |
| Cluster Lock                  | ops_cluster_lock              | (For internal use only.)  |
| Cluster Nodes                 | ops_cluster_node              | Provides details about <a href="#">cluster nodes</a> .  |
| Cluster Nodes Notifications   | ops_cluster_notification      | Contains <a href="#">Email and SNMP notification</a> records associated with the <a href="#">cluster node</a> .   |
| Command                       | ops_command                   | (For internal use only.)  |
| Command Response              | ops_command_response          | (For internal use only.)  |
| Properties                    | ops_config                    | Contains <a href="#">Opwise Controller System Properties</a> .  |
| Connector Notifications       | ops_connector_notification    | Contains Email Notification and SNMP Notification data associated with <a href="#">Agents</a> and <a href="#">OMS Servers</a> .                                     |
| Counter                       | ops_count                     | (For internal use only.)  |
| Credentials                   | ops_credentials               | <a href="#">Login credentials</a> used by the Controller to access remote machines.   |
| Credentials Versions          | ops_credentials_v             | Contains <a href="#">previous versions</a> of <a href="#">Credentials</a> records.  |
| Custom Days                   | ops_custom_day                | Contains details about defined <a href="#">Custom Days</a> .  |
| Custom Days Versions          | ops_custom_day_v              | Contains <a href="#">previous versions</a> of <a href="#">Custom Days</a> records.  |
| Dashboards                    | ops_dashboard                 | Contains details about <a href="#">Dashboards</a> .   |

|                                    |                                |  |
|------------------------------------|--------------------------------|--|
| Dashboards Portlets                | ops_dashboard_portlet          | Contains details about the content (Widgets) on the Dashboards.  |
| 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 Resources                    | ops_event_resource             | Contains information about Virtual Resource-related event processing   |
| Exclusive Requests                 | ops_exclusive_order            | Contains any outstanding requests to run exclusively by a task instance.   |
| 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.   |
| File Monitor Instances             | ops_exec_file_monitor          | Contains details about File Monitor task instances.  |
| File Transfer Task Instances       | ops_exec_ftp                   | Contains details about File Transfer task instances.   |
| FTP File Monitor Instances         | ops_exec_ftp_file_monitor      | Contains details about FTP File Monitor task instances.  |
| Indesca Task Instances             | ops_exec_indesca               | Contains details about Indesca task instances.   |
| 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.  |
| Output                             | ops_exec_output                | Contains any output (such as STDOUT) attached to 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 <a href="#">Timer task instances</a> .   |
| SQL Task Instances                  | ops_exec_sql                | Contains details about <a href="#">SQL task instances</a> .   |
| Stored Procedure Task Instances     | ops_exec_stored_proc        | Contains details about <a href="#">Stored Procedure task instances</a> .  |
| Stored Procedure Task Parameters    | ops_exec_stored_proc_param  | Contains <a href="#">Parameter</a> records associated with <a href="#">Stored Procedure task instances</a> .  |
| System Monitor Task Instances       | ops_exec_system_monitor     | Contains <a href="#">System Monitor task</a> task instance records.   |
| Task Instance Virtual Resources     | ops_exec_to_resource        | Contains relationship information between <a href="#">Virtual Resources</a> and task instances; that is, which task instances are assigned to which Virtual Resources.    |
| Linux/Unix Task Instances           | ops_exec_unix               | Contains details about <a href="#">Linux/Unix task instances</a> .  |
| Windows Task Instances              | ops_exec_windows            | Contains details about <a href="#">Windows task instances</a> .   |
| Workflow Task Instances             | ops_exec_workflow           | Contains details about <a href="#">Workflow task instances</a> .  |
| Workflow Task Instance Dependencies | ops_exec_workflow_edge      | Contains information about the <a href="#">conditions</a> specified between task instances within <a href="#">workflows</a> .   |
| 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 <a href="#">workflows</a> .                    |
| z/OS Task Instances                 | ops_exec_zos                | Contains details about <a href="#">z/OS task instances</a> .  |
| Restart Confirmations               | ops_exec_zos_confirm        | Contains details about any <a href="#">restart confirmations</a> performed on <a href="#">z/OS tasks</a> .  |
| Job Step Files Data                 | ops_exec_zos_files          | Contains details about <a href="#">jobsteps</a> in a <a href="#">z/OS task</a> .  |
| Restartable Job Steps               | ops_exec_zos_jobsteps       | Contains historical details about <a href="#">restartable job steps</a> in a <a href="#">z/OS task</a> .  |
| Restartable Job Steps               | ops_exec_zos_jobstepsui     | Contains details about <a href="#">restartable job steps</a> in a <a href="#">z/OS task</a> .   |
| Restart Criteria                    | ops_exec_zos_rstrt_criteria | Contain information about <a href="#">z/OS task restart criteria</a> .  |
| Step Conditions                     | ops_exec_zos_stepcond       | Contains details about <a href="#">z/OS task instance step conditions</a> .   |
| Externalizable                      | ops_externalizable          | Contains an internal table for events.  |
| Business Services                   | ops_generic_group           | Contains details about <a href="#">Business Services</a> .  |
| Business Services Versions          | ops_generic_group_v         | Contains <a href="#">previous versions</a> of <a href="#">Business Service</a> records.   |
| Group Roles                         | ops_group_has_role          | Contains relationship information between Opwise Controller User <a href="#">Groups</a> and <a href="#">Roles</a> ; that is, which Groups have been assigned which Roles. |
| History                             | ops_history                 | Contains a <a href="#">history of task activity</a> .   |
| LDAP                                | ops_ldap                    | Identifies where <a href="#">LDAP Settings</a> are stored.  |
| Licenses                            | ops_license                 | Contains information about the Controller <a href="#">license</a> .   |
| 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 <a href="#">list</a> layouts.   |
| Local Variables             | ops_local_variable            | Contains details about <a href="#">task and trigger variables</a> (also called local variables), entered into the Variables tab on a task or trigger record.   |
| Local Variables Versions    | ops_local_variable_v          | Contains <a href="#">previous versions</a> 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.)   |
| Notes                       | ops_note                      | Contains details about <a href="#">Notes</a> attached to Controller records.   |
| Notes Versions              | ops_note_v                    | Contains <a href="#">previous versions</a> of Notes records.   |
| All Actions                 | ops_notification              | Contains details about all task actions: <a href="#">Abort Action</a> , <a href="#">Email Notifications</a> , <a href="#">Set Variable</a> , <a href="#">SNMP Notification</a> , and <a href="#">System Operation</a> .  |
| All Actions Versions        | ops_notification_v            | Contains details about <a href="#">previous versions</a> of all task actions: <a href="#">Abort Action</a> , <a href="#">Email Notifications</a> , <a href="#">Set Variable</a> , <a href="#">SNMP Notification</a> , and <a href="#">System Operation</a> . New versions of Action records are created when a task record is updated. |
| OMS Servers                 | ops_oms_server                | Provides details about <a href="#">OMS Servers</a> .   |
| Output Messages             | ops_output_msg                | (For internal use only.)   |
| Permissions                 | ops_permission                | Contains details about <a href="#">Opwise Controller Permissions</a> assigned to <a href="#">Opwise Controller Users</a> and <a href="#">Opwise Controller User Groups</a> .   |
| Promotion History           | ops_promotion_history         | Contains a list of <a href="#">Bundles</a> 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.   |
| Reports                     | ops_report                    | Contains information about Controller <a href="#">Reports</a> .  |
| Outstanding Requests        | ops_resource_order            | Contains any outstanding requests for a <a href="#">Virtual Resource</a> by a task instance.   |
| Currently In Use By         | ops_resource_usage            | Contains details about <a href="#">Virtual resource</a> usage, as displayed in the <a href="#">Currently In Use By</a> tab.  |
| SAP Connections             | ops_sap_connection            | Contains <a href="#">SAP Connection</a> records.   |
| SAP Connections Versions    | ops_sap_connection_v          | Contains <a href="#">previous versions</a> of <a href="#">SAP Connection</a> records.  |
| Schemas                     | ops_schema                    | Contains version information about database schemas.   |
| Scripts                     | ops_script                    | Contains <a href="#">Script</a> records.   |
| Scripts Versions            | ops_script_v                  | Contains <a href="#">previous versions</a> of <a href="#">Script</a> records.  |
| SNMP Notifications          | ops_snmp_cluster_notification | Contains <a href="#">SNMP notifications</a> defined for <a href="#">Cluster Nodes</a> .  |
| SNMP Notifications          | ops_snmp_conn_notification    | Contains SNMP Notification-specific data associated with <a href="#">Agents</a> and <a href="#">OMS Servers</a> .  |
| SNMP Managers               | ops_snmp_connection           | Contains <a href="#">SNMP Manager</a> records.   |
| SNMP Managers Versions      | ops_snmp_connection_v         | Contains <a href="#">previous versions</a> of <a href="#">SNMP Manager</a> records.  |
| SNMP Notifications          | ops_snmp_notification         | Contains <a href="#">SNMP notifications</a> defined for <a href="#">Tasks</a> .  |
| SNMP Notifications Versions | ops_snmp_notification_v       | Contains <a href="#">previous versions</a> of <a href="#">SNMP notifications</a> defined for <a href="#">Tasks</a> . (Versions are created only when a task is updated.)   |
| SQL Results Set             | ops_sql_results               | Contains output from <a href="#">SQL tasks</a> .   |
| SQL Warnings Set            | ops_sql_warnings              | Contains <a href="#">warnings</a> returned by executed SQL statements.   |

|                                      |                                |   |
|--------------------------------------|--------------------------------|---|
| Stored Procedure Parameters          | ops_stored_proc_param          | Contains <a href="#">Parameter</a> records associated with <a href="#">Stored Procedure</a> tasks.  |
| Stored Procedure Parameters Versions | ops_stored_proc_param_v        | Contains <a href="#">previous versions</a> of <a href="#">Parameter</a> records associated with <a href="#">Stored Procedure</a> 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 <a href="#">System Operation</a> actions.  |
| System Operations Versions           | ops_system_operation_v         | Contains details about <a href="#">previous versions</a> of <a href="#">System Operation</a> actions. (Versions of records are created only when a record is updated.)                            |
| All Tasks                            | ops_task                       | Contains details about <a href="#">tasks</a> of every type, along with associated Task Instance information.  |
| Application Control Tasks            | ops_task_application_control   | Contains details about <a href="#">Application Control</a> tasks.   |
| Application Control Task Versions    | ops_task_application_control_v | Shows <a href="#">previous versions</a> of <a href="#">Application Control</a> tasks.   |
| Email Tasks                          | ops_task_email                 | Contains details about <a href="#">Email</a> tasks.   |
| Email Task Versions                  | ops_task_email_v               | Contains <a href="#">previous versions</a> of <a href="#">Email</a> task records.   |
| File Monitors                        | ops_task_file_monitor          | Contains details about <a href="#">File Monitor</a> tasks.  |
| File Monitor Versions                | ops_task_file_monitor_v        | Contains <a href="#">previous versions</a> of <a href="#">File Monitor</a> task records.  |
| File Transfer Tasks                  | ops_task_ftp                   | Contains details about <a href="#">File Transfer</a> tasks.   |
| File Transfer Tasks Versions         | ops_task_ftp_v                 | Contains <a href="#">previous versions</a> of <a href="#">File transfer</a> task records.   |
| FTP File Monitors                    | ops_task_ftp_file_monitor      | Contains details about <a href="#">FTP File Monitor</a> tasks.  |
| FTP File Monitors Versions           | ops_task_ftp_file_monitor_v    | Contains <a href="#">previous versions</a> of <a href="#">FTP File Monitor</a> task records.  |
| Indesca Tasks                        | ops_task_indesca               | Contains details about <a href="#">Indesca</a> tasks.   |
| Indesca Task Versions                | ops_task_indesca_v             | Contains <a href="#">previous versions</a> of <a href="#">Indesca</a> task records.   |
| Manual Tasks                         | ops_task_manual                | Contains details about <a href="#">Manual</a> tasks.  |
| Manual Task Versions                 | ops_task_manual_v              | Contains <a href="#">previous versions</a> of <a href="#">Manual</a> task records.  |
| Task Monitors                        | ops_task_monitor               | Contains details about <a href="#">Task Monitor</a> tasks.  |
| Task Monitors Versions               | ops_task_monitor_v             | Contains <a href="#">previous versions</a> of <a href="#">Task Monitor</a> task records.  |
| Task Run Criteria                    | ops_task_run_criteria          | Contains <a href="#">run criteria</a> information for tasks within <a href="#">Workflows</a> .  |
| Task Run Criteria Versions           | ops_task_run_criteria_v        | Contains <a href="#">previous versions</a> of <a href="#">run criteria</a> information for tasks within <a href="#">Workflow</a> . (Versions are created only when the Workflow task is updated.) |
| SAP Tasks                            | ops_task_sap                   | Contains <a href="#">SAP</a> task records.  |
| SAP Tasks Versions                   | ops_task_sap_v                 | Contains <a href="#">previous versions</a> of <a href="#">SAP</a> task records.   |
| Timer Tasks                          | ops_task_sleep                 | Contains details about <a href="#">Timer</a> tasks.   |

|                                  |                               |   |
|----------------------------------|-------------------------------|---|
| Timer Tasks Versions             | ops_task_sleep_v              | Contains <a href="#">previous versions</a> of Timer tasks records.  |
| SQL Tasks                        | ops_task_sql                  | Contains details about <a href="#">SQL tasks</a> .  |
| SQL Tasks Versions               | ops_task_sql_v                | Contains <a href="#">previous versions</a> of SQL tasks records.  |
| Mutually Exclusive               | ops_tasks_to_exclusive        | Contains relationship information between tasks and <a href="#">mutually exclusive tasks</a> ; that is, which tasks are mutually exclusive with each other.   |
| Mutually Exclusive Versions      | ops_tasks_to_exclusive_v      | Contains <a href="#">previous versions</a> of relationship information between tasks and <a href="#">mutually exclusive tasks</a> .   |
| Stored Procedure Tasks           | ops_task_stored_proc          | Contains details about <a href="#">Stored Procedure tasks</a> .   |
| Stored Procedure Tasks Versions  | ops_task_stored_proc_v        | Contains <a href="#">previous versions</a> of Stored Procedure tasks records.   |
| System Monitors                  | ops_task_system_monitor       | Contains <a href="#">System Monitor task records</a> .  |
| System Monitors Versions         | ops_task_system_monitor_v     | Contains <a href="#">previous versions</a> of System Monitor task records.  |
| Task Virtual Resources           | ops_task_to_resource          | Contains relationship information between <a href="#">Virtual resources</a> and tasks; that is, which tasks are assigned to which Virtual Resources.  |
| Task Virtual Resources Versions  | ops_task_to_resource_v        | Contains <a href="#">previous versions</a> of relationship information between <a href="#">Virtual resources</a> and tasks.   |
| Linux/Unix Tasks                 | ops_task_unix                 | Contains details about <a href="#">Linux/Unix tasks</a> .   |
| Linux/Unix Tasks Versions        | ops_task_unix_v               | Contains <a href="#">previous versions</a> of Linux/Unix task records.  |
| All Tasks Versions               | ops_task_v                    | Contains <a href="#">previous versions</a> of all task records.   |
| Windows Tasks                    | ops_task_windows              | Contains details about <a href="#">Windows tasks</a> .  |
| Windows Tasks Versions           | ops_task_windows_v            | Contains <a href="#">previous versions</a> of Windows task records.   |
| Workflow Tasks                   | ops_task_workflow             | Contains details about <a href="#">Workflow tasks</a> .   |
| Task Workflow Dependencies       | ops_task_workflow_edge        | Contains information about the <a href="#">conditions</a> specified between tasks in <a href="#">workflows</a> .  |
| Workflow Task Edges              | ops_task_workflow_edge_v      | Contains <a href="#">previous versions</a> of information about the <a href="#">conditions</a> specified among tasks in <a href="#">workflows</a> . (New versions of records are created only when the Workflow task is updated.) |
| Workflow Tasks Versions          | ops_task_workflow_v           | Contains <a href="#">previous versions</a> of <a href="#">workflow task records</a> .   |
| Workflow Tasks Vertices          | ops_task_workflow_vertex      | Contains relationship information between tasks and workflows; that is, which tasks are in which <a href="#">workflows</a> .  |
| Workflow Tasks Vertices Versions | ops_task_workflow_vertex_v    | Contains <a href="#">previous versions</a> of the relationship between tasks and workflows. (Versions are created only when the <a href="#">workflow task</a> is updated.)  |
| z/OS Tasks                       | ops_task_zos                  | Contains details about <a href="#">z/OS tasks</a> .   |
| Restart Criteria                 | ops_task_zos_rstrt_criteria   | Contain information about z/OS task <a href="#">restart criteria</a> .  |
| Restart Criteria                 | ops_task_zos_rstrt_criteria_v | Contains <a href="#">previous versions</a> of z/OS task <a href="#">restart criteria</a> .  |
| Step Conditions                  | ops_task_zos_stepcond         | Contains details about z/OS task <a href="#">step conditions</a>  |
| Step Conditions                  | ops_task_zos_stepcond_v       | Contains <a href="#">previous versions</a> of z/OS task <a href="#">step conditions</a>   |
| z/OS Tasks Versions              | ops_task_zos_v                | Contains <a href="#">previous versions</a> 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 <a href="#">triggers</a> of every type.   |
| Application Monitor Triggers          | ops_trigger_appl_monitor      | Contains details about <a href="#">Application Monitor triggers</a> .  |
| Application Monitor Triggers Versions | ops_trigger_appl_monitor_v    | Contains details about <a href="#">previous versions</a> of <a href="#">Application Monitor triggers</a> .   |
| Cron Triggers                         | ops_trigger_cron              | Contains details about <a href="#">Cron trigger</a> records.   |
| Cron Trigger Versions                 | ops_trigger_cron_v            | Contains <a href="#">previous versions</a> of <a href="#">Cron trigger</a> records.  |
| File Monitor Triggers                 | ops_trigger_fm                | Contains details about <a href="#">File Monitor triggers</a> .   |
| File Monitor Triggers Versions        | ops_trigger_fm_v              | Contains <a href="#">previous versions</a> of <a href="#">File Monitor trigger</a> records.  |
| Forecasts                             | ops_trigger_forecast          | Contains details about <a href="#">trigger forecasts</a> .   |
| Manual Triggers                       | ops_trigger_manual            | Contains <a href="#">Manual trigger</a> records.   |
| Manual Trigger Versions               | ops_trigger_manual_v          | Contains <a href="#">previous versions</a> of <a href="#">Manual trigger</a> records.  |
| Temporary Triggers                    | ops_trigger_temp              | Contains details about <a href="#">Temporary triggers</a> .  |
| Temporary Triggers Versions           | ops_trigger_temp_v            | Contains <a href="#">previous versions</a> of <a href="#">Temporary trigger</a> records.   |
| Time Triggers                         | ops_trigger_time              | Contains details about <a href="#">Time triggers</a> .   |
| Time Triggers Versions                | ops_trigger_time_v            | Contains <a href="#">previous versions</a> of <a href="#">Time trigger</a> records.  |
| Task Monitor Triggers                 | ops_trigger_tm                | Contains details about <a href="#">Task Monitor triggers</a> .   |
| Task Monitor Triggers Versions        | ops_trigger_tm_v              | Contains <a href="#">previous versions</a> of <a href="#">Task Monitor trigger</a> records.  |
| All Triggers Versions                 | ops_trigger_v                 | Contains <a href="#">previous versions</a> of <a href="#">Trigger</a> records.   |
| Linux/Unix Agents                     | ops_unix_agent                | Contains details about <a href="#">Linux/Unix agent resources</a> .  |
| Linux/Unix Agent Clusters             | ops_unix_agent_cluster        | Contains details about <a href="#">Linux/Unix agent clusters</a> .   |
| Linux/Unix Agents In Cluster          | ops_unix_agent_cluster_join   | Shows relationship information between <a href="#">Unix agents</a> and <a href="#">Unix agent clusters</a> , that is, which agents belong to which clusters.                         |
| Linux/Unix Agents In Cluster Versions | ops_unix_agent_cluster_join_v | Shows <a href="#">previous versions</a> of relationship information between <a href="#">Unix agents</a> and <a href="#">Unix agent clusters</a> .                                    |
| Linux/Unix Agent Clusters Versions    | ops_unix_agent_cluster_v      | Contains <a href="#">previous versions</a> of <a href="#">Linux/Unix cluster</a> records.  |
| Users                                 | ops_user                      | Contains details about <a href="#">User records</a> .  |
| Group Members                         | ops_user_grmember             | Contains relationship information between Opswise Controller <a href="#">User Groups</a> and Opswise Controller <a href="#">Users</a> ; that is, which Users belong to which Groups. |
| Groups                                | ops_user_group                | Contains details about Opswise Controller <a href="#">User Groups</a> .  |
| User Roles                            | ops_user_has_role             | Contains details about Users and <a href="#">Roles</a> , including which Users have which Roles.   |
| User Preferences                      | ops_user_preference           | Contains information about Opswise Controller <a href="#">User Preferences</a> .   |



|                                    |                              |  |
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| User Roles                         | ops_user_role                | Contains information about available <a href="#">user roles</a> .  |
| User Roles Contains                | ops_user_role_contains       | Contains information about roles that comprise parent roles <a href="#">user roles</a> .   |
| User Tokens                        | ops_user_token               | Contains information about <a href="#">user sessions</a> .   |
| Variables                          | ops_variable                 | Contains details about <a href="#">Global variables</a> , entered by selecting Variables from the Navigation pane.   |
| Set Variables                      | ops_variable_action          | Contains details about <a href="#">Set Variable actions</a> .  |
| Set Variables                      | ops_variable_action_v        | Contains <a href="#">previous versions</a> of <a href="#">Set Variable actions</a> .   |
| Variables Versions                 | ops_variable_v               | Contains <a href="#">previous versions</a> of <a href="#">Global variables</a> .   |
| Virtual Resources                  | ops_virtual_resource         | Contains details about <a href="#">Virtual resource records</a> .  |
| Virtual Resources Versions         | ops_virtual_resource_v       | Contains <a href="#">previous versions</a> of <a href="#">Virtual resources</a> .  |
| Widgets                            | ops_widget                   | Contains details about all <a href="#">Widgets</a> .   |
| Widgets Activity                   | ops_widget_activity          | Contains details about <a href="#">Activity Widgets</a> .  |
| Widgets Report                     | ops_widget_report            | Contains details about <a href="#">Report Widgets</a> .  |
| Widgets System                     | ops_widget_system            | Contains details about <a href="#">System Widgets</a> .  |
| Windows Agents In Cluster          | ops_win_agent_cluster_join   | Shows relationship information between <a href="#">Windows agents</a> and <a href="#">Windows agent clusters</a> , that is, which agents belong to which clusters.     |
| Windows Agents In Cluster Versions | ops_win_agent_cluster_join_v | Shows <a href="#">previous versions</a> of relationship information between <a href="#">Windows agents</a> and <a href="#">Windows agent clusters</a> .                |
| Windows Agents                     | ops_windows_agent            | Contains details about <a href="#">Windows agents</a> .  |
| Windows Agent Clusters             | ops_windows_agent_cluster    | Contains details about <a href="#">Windows agent clusters</a> .  |
| Windows Agent Clusters Versions    | ops_windows_agent_cluster_v  | Contains <a href="#">previous versions</a> of <a href="#">Windows Agent Cluster records</a> .  |
| z/OS Agents                        | ops_zos_agent                | Contains details about <a href="#">z/OS agents</a> .   |
| All Step Actions                   | ops_zos_step_action          | Contains details about <a href="#">z/OS step actions</a> .   |
| System Operations                  | ops_zos_step_action_sysop    | Contains details about <a href="#">z/OS System Operation step actions</a> .  |
| System Operations Versions         | ops_zos_step_action_sysop_v  | Contains details about <a href="#">previous versions</a> of <a href="#">z/OS System Operation step actions</a> . (Versions are created only when a record is updated.) |
| Step Actions                       | ops_zos_step_action_v        | Contains <a href="#">previous versions</a> of <a href="#">z/OS step actions</a> . (Versions are created only when a record is updated.)                                |