Microsoft System Center Opalis Integration Pack for Dell Advanced Infrastructure Manager Version 1.0

User's Guide

About Notes

NOTE: A NOTE indicates important information that helps you make better use of your computer.

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Overview

The Integration Pack for Dell Advanced Infrastructure Manager (AIM) is an add-on for Microsoft System Center Opalis that enables you to automate procedures and processes in the Dell AIM environment.

With this integration pack, you can create workflows that interact with and transfer information to other System Center products such as Operations Manager.

System Requirements

Before implementing the Integration Pack for Dell AIM, install and configure the following software. For more information about installing and configuring Opalis and Dell AIM, refer to the respective product documentation.

- Dell Advanced Infrastructure Manager Version 3.4.1
- Microsoft System Center Opalis Version 6.3

Registering and Deploying the Integration Pack

After you download the integration pack file, register it with the Opalis management server and then deploy it to action servers and workflow authoring console. For more information about how to install integration packs, see the **Deploying Integration Packs** section of the Microsoft System Center Opalis Guide at **go.microsoft.com/fwlink/?LinkId=205302**.

To register and deploy the integration pack:

1. Copy the *IP_Opalis_Dell_AIM_1.0.oip* integration pack file to a location of your choice on the management server on which Opalis is running.
2. Confirm that the file is not set to **Read Only** as this can prevent unregistering the integration pack at a later date.
3. Start the Deployment Manager as an administrator. From the **Start** menu, right-click **Deployment Manager**, and then click **Run as Administrator**.

4 In the left pane of the Deployment Manager, expand **Management Server**, right-click **Integration Packs**, and then click **Register IP with the Management Server**. The Integration Pack Registration Wizard is displayed. Click **Next**.

5 In the **Integration Pack or Hotfix Selection** dialog box, click **Add**. Locate and select the *IP_Opalis_Dell_AIM_1.0.oip* file that you copied in step 1. Click **Open**.

6 Click **Finish**. The **End User Agreement** dialog box is displayed. Click **Accept**.

The **Log Entries** pane will display a confirmation message when the integration pack is successfully registered.

7 In the left pane, right-click **Integration Packs**, and then click **Deploy IP to Action Server or Workflow Authoring Console**. Select *Integration Pack for Dell AIM*, and then click **Next**.

8 Enter the name of the computer with the action server or workflow authoring console to which you want to deploy the integration pack or click the ellipsis button (…) to browse for computers, click **Add**, and then click **Next**.

9 Select the **Installation Configuration** options that apply to this deployment, and then click **Next**.

10 Click **Finish**. The **Log Entries** pane will display a confirmation message when the integration pack is successfully deployed.

Configuring the Integration Pack for Dell AIM Configurations

A configuration establishes a reusable link between Opalis and a Dell AIM server. Create as many configurations as you require to specify links to multiple servers running Dell AIM. You can also create multiple connections to the same server to allow for differences in security permissions for different user accounts and to manage working with different types of Dell AIM objects.

To set up a Dell AIM configuration:

1. In the Opalis Client, click the **Options** menu, and select *Dell Advanced Infrastructure Manager*.

   The Dell AIM Prerequisite Configuration dialog box is displayed.

2. On the **Configurations** tab, click **Add** to begin the configuration setup. The **Add Configuration** dialog box is displayed.
3. In the **Name** box, enter a name for the connection. For example, the name of the Dell AIM server or a descriptive name to distinguish the type of connection.
4. Click the **ellipsis** button next to the **Type** box and select **Dell AIM**.
5. In the **AIM Server Location** box, type the name or IP Address of the Dell AIM computer.
6. In the **AIM Server Port** box, type the port used to access the Dell AIM Web Service.
7. In the **Use SSL** box, select *True* if Opalis should use SSL to connect to the Dell AIM server; otherwise select False.
8. In the **AIM Username** and **AIM Password** boxes, type the credentials that Opalis will use to connect to the Dell AIM server.
9. Click **OK** to close the configuration dialog box, and then click **Finish**.

NOTE: The **Dell AIM** configuration type is used by activities, such as **Add Persona** and **Get Persona**, where object type is implicit, and by activities, such as **Remove Object**, where inputs properties, filters and returned data are not dependent on object type selection.

To set up a Dell AIM Object Type configuration:

1. In the Opalis Client, click the **Options** menu, and select *Dell Advanced Infrastructure Manager*.

   The Dell AIM Prerequisite Configuration dialog box is displayed.

2. On the **Configurations** tab, click **Add** to begin the configuration setup.

   The **Add Configuration** dialog box is displayed.

3. In the **Name** box, enter a name for the connection. That is, the name of the Dell AIM Controller or a descriptive name to distinguish the type of connection.

4 Click the **ellipsis** button next to the **Type** box and select **Dell AIM Object Type**.

5 In the **AIM Object Type** box, select the type of Dell AIM object that you want to configure.

6 In the **AIM Server Location** box, type the name or IP Address of the Dell AIM computer.

7 In the **AIM Server Port** box, type the port used to access the Dell AIM Web Service.

8 In the **Use SSL** box, select *True* if Opalis should use SSL to connect to the Dell AIM server; or else select False.

9 In the **AIM Username and AIM Password** boxes, type the credentials that Opalis will use to connect to the Dell AIM server.

10 Click **OK** to close the configuration dialog box, and then click **Finish**.

NOTE: The **Dell AIM Object Type** configuration type is used by activities, such as **Add Object** and **Get Object**, where object type selection is required to dynamically configure the input properties, filters and returned data used by the activity.

Common Configuration Instructions for All Activities

The following configuration instructions apply to all activities in this integration pack. Links to this section are included in the configuration instructions for each activity.

Activity Properties

Each activity has a set of required or optional properties that define the configuration of that activity. This includes how it connects to other activities or how the activity performs its actions. You can view or modify activity properties in the workflow authoring console.

To configure the properties for an activity:

1 Double-click the activity. Alternatively, right-click the activity, and then click **Properties**.

2 To save the configuration entries, click **Finish**.

In the activity properties dialog box, several tabs along the left side provide access to general and specific settings for the activity. Although the number of available tabs for activity properties differs from activity to activity, all activities have a **General** tab, a **Properties** tab and/or **Filters** tab, and a **Run Behavior** tab.

General Tab

This tab contains the **Name** and **Description** properties for the activity. By default, the **Name** of the activity is the same as its activity type, and the **Description** is blank. You can modify these properties to create more descriptive names or provide detailed descriptions of the actions of the activity.

Properties Tab

This tab contains properties that are specific to the activity.

All activities in this integration pack have the **Configuration Name** property at the top of the **Properties** or **Filters** tab. This property is used to specify the Dell AIM or Dell AIM Object Type configuration, depending on the activity that is being defined.

To configure the Configuration Name property:

- Click the ellipsis (…) button next to the **Name** field, and then select the applicable configuration name. Configurations displayed in the list have been previously defined as described in Configuring the Integration Pack for Dell AIM Configurations

Filters Tab

The Get activities use filters to control which Dell AIM objects are returned. Property values of potential candidates are compared to the values of the filters to determine if they meet the criteria. When matching against values, you select one of the available relations.

Equals: the property of the object exactly matches the text or number specified in the filter.

Does not equal: the property of the object does not exactly match the text or number specified in the filter.

Is less than or equal to: the property of the object is less than or equal to the number specified in the filter.

Is greater than or equal to: the property of the object is greater than or equal to the number specified in the filter.

Contains: the property of the object contains the exact text specified in the filter. Unlike the Equals behavior, with Contains, other text can surround the matching text.

Does not contain: the property of the object does not contain the exact text specified in the filter. Unlike the Equals behavior, there are other text surrounding the matching text.

Matches pattern: uses regular expressions to specify a pattern that the text must match.

Does not match pattern: use regular expressions to specify a pattern that the text must not match.

NOTE: You can use the Filter properties for a particular Field and Relation only once in an activity. For example, if the filter criteria for a persona include a filter for **OS Architecture** equals **x86_32** then you cannot add another filter for **OS Architecture** equals **x86_64**.

Run Behavior Tab

This tab contains the properties that determine how the activity handles multi-value returned data and what notifications are sent if the activity fails or runs for an excessive period of time.

Multi-Value Returned Data Behavior

The Get activities retrieve information from another activity or outside source, and can return one or more values in the returned data. For example, when you use the Get Relationship activity, the data output may the set of *Network Connections* used by a *Persona*. By default, the data from the Get activity are passed on as multiple individual outputs. This invokes the next activity as many times as there are items in the output. Alternatively, you can provide a single output for the activity by enabling the **Flatten** option. When you enable this option, you also choose a formatting option:

- **Separate with line breaks**: Each item is on a new line. This format is useful for creating human-readable text files for the output.

- **Separate with _**: Each item is separated by one or more characters.
- **Use CSV format**: All items are in CSV (comma-separated value) format. This format is useful for importing data into spreadsheets or other applications.

The activity will produce a new set of data every time it runs. The Flatten feature does not flatten data across multiple instances of the same activity.

Returned Data

Returned data is the foundation of a working runbook. It is the data produced as a result of the actions of an activity. This data is published to an internal data bus that is unique for each runbook. Subsequent activities in the runbook can subscribe to this data and use it in their configuration. Link conditions also use this information to add decision-making capabilities to runbooks.

An activity can only subscribe to data from the activities that are linked before it in the runbook. You can use returned data to automatically populate the property values needed by activities.

To use returned data:

1. Right-click the property value box, click **Subscribe,** and then click **Returned Data**.
2. Click the **Object** drop-down box and select the activity from which you want to obtain the data.

   To view additional data elements common to all policies, select **Show Common Returned Data**.
3. Click the returned data element, and then click **OK**.

For a list of the data elements returned by each activity, see the **Returned Data tables** in the activity topic.

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Dell Integration Pack Activities

This integration pack adds the Dell AIM category to the **Activity** pane in the workflow authoring console. This category contains the following activities:

- Add Object
- Add Persona
- Add Relationship
- Get Object
- Get Persona
- Update Persona
- Remove Persona
- Get Relationship
- Maintenance Mode
- Remove Object
- Remove Persona
- Run Operation
- Start
- Stop
- Update Object
- Update Persona

Add Object Activity

The **Add Object** activity is used in a policy to add new objects to the Dell AIM environment, such as adding a *Network*, *Server Pool*, or *VMRack*.

For the procedure to configure this activity, see, Configuring the Add Object Activity.

Required and optional properties are generated based on the AIM Object Type that is associated with the Dell AIM Object Type configuration that you select when you define the activity.

The activity publishes all the data from the required and optional properties into returned data. Additional return data is generated based on the AIM **Object Type** that is associated with the Dell AIM Object Type configuration that you select when you define the activity.

Table 2-1. Add Object Returned Data

Name	Description	Value Type
AIM Object Type	The type of Dell AIM object that you can add	String
AIM Server Location	The location of the Dell AIM server	String
AIM Server Port	The port used to connect to the Dell AIM server	Integer
AIM Username	The username used to connect to the Dell AIM server	String
Use SSL	Specifies whether or not the SSL protocol was used to connect to the Dell AIM server	True or False

Get Object Activity

The **Get Object** activity is used in a policy to retrieve objects of a specified type from the Dell AIM environment, such as retrieving all of the *Networks*, *Hosts* or *VMRacks*.

For the procedure to configure this activity, see: Configuring the Get Object Activity.

The **Get Object** activity uses filters to determine which Dell AIM objects is returned. Filters are generated based on the AIM Object Type that is associated with the Dell AIM Object Type configuration that you select when you define the activity.

Returned data is generated based on the AIM Object Type that is specified in the Dell AIM Object Type Configuration that you select when you define the activity.

The following tables list the returned data this is commonly returned for this activity.

Table 2-2. Common Get Object Returned Data

Name	Description	Value Type
AIM Object Type	The type of Dell AIM object you can add	String
AIM Server Location	The location of the Dell AIM server	String
AIM Server Port	The port used to connect to the Dell AIM server	Integer
AIM Username	The username used to connect to the Dell AIM server.	String
Use SSL	Specifies whether or not the SSL protocol was used to connect to the Dell AIM server	True or False

Remove Object Activity

The **Remove Object** activity is used in a runbook to remove an object from the Dell AIM environment, such as removing a *Network*, *Switch*, or *VMRack*.

For the procedure to configure this activity, see: Configuring the Remove Object Activity.

The activity publishes all of the data from the required properties into returned data.

The following tables list the required properties and returned data for this activity.

Table 2-3. Remove Object Required Properties

Element	Description	Valid Values	Look up
AIM Object Type	The type of object whose maintenance mode you want to remove	**Chassis** **External Network** **Network** **Persona** **Server Pool** **Switch** **Tag** **VMRack** **VRack**	Yes
ID	The ID of the object you want to remove	**String**	No

Table 2-4. Remove Object Returned Data

Name	Description	Value Type
AIM Object Type	The type of object whose maintenance mode you want to remove	String
AIM Server Location	The location of the Dell AIM server	String
AIM Server Port	The port used to connect to the Dell AIM server	Integer
AIM Username	The username used to connect to the Dell AIM server.	String
ID	The ID of the object you want to remove	String
Use SSL	Specifies whether or not the SSL protocol was used to connect to the Dell AIM server	True or False

Update Object Activity

The **Update Object** activity is used in a policy to update existing objects in the Dell AIM environment, such as changing the *Name* of a *Server Pool*.

For the procedure to configure this activity, see: Configuring the Update Object Activity.

Optional properties are generated based on the AIM Object Type that is associated with the Dell AIM Object Type configuration that you select when you define the activity.

The activity publishes all of the data from the required and optional properties into returned data. Additional return data is generated based on the AIM Object Type that is associated with the Dell AIM Object Type configuration that you select when you define the activity.

The following tables list the required and optional properties and returned data for this activity.

Table 2-5. Update Object Required Properties

Element	Description	Valid Values	Look up
ID	The ID of the object that you want to update	String	No

Table 2-6. Update Object Returned Data

Name	Description	Value Type
AIM Object Type	The type of Dell AIM object that you can update	String
AIM Server Location	The location of the Dell AIM server	String
AIM Server Port	The port used to connect to the Dell AIM server	Integer
AIM Username	The username used to connect to the Dell AIM server.	String
ID	The ID of the object that you want to update	

Table 2-6. Update Object Returned Data

Name	Description	Value Type
Use SSL	Specifies whether or not the SSL protocol was used to connect to the Dell AIM server	True or False

Add Persona Activity

The **Add Persona** activity is used in a policy to add a new persona to the Dell AIM environment.

For the procedure to configure this activity, see, Configuring the Add Persona Activity.

The activity publishes all of the data from the required and optional properties into returned data. Additional returned data is generated based on the properties of the persona.

The following tables list the required and optional properties and returned data for this activity.

Table 2-7. Add Persona Required Properties

Element	Description	Valid Values	Look up
ID	The ID of the persona	String	No
Name	The name of the persona	String	No

Table 2-8. Add Persona Optional Properties

Element	Description	Valid Values	Look up
Agent Exists	If true, then an agent is installed in the persona. If false, the persona is agentless	True or False	Yes

Table 2-8. Add Persona Optional Properties

Element	Description	Valid Values	Look up
Confirmations Enabled	True if the persona will pause when starting or stopping, waiting for a confirmation to continue; otherwise false	True or False	Yes
Consecutive Failures	The number of times this persona has failed to boot on any host	Integer	No
Default Gateway	The persona's default gateway	String	No
Description	The persona's description	String	No
DNS Search Domain	DNS search domain for the persona	String	No
Extensions Enabled	Specifies whether or not persona extensions are executed for this persona	True or False	Yes
Health Monitor Enabled	Specifies whether or not the persona is monitored by the Controller	True or False	Yes
Health Monitor Hostname	The specified host (hostname or IP address) that is checked to determine whether or not the persona is running	String	No
Net Boot	Specifies whether or not the persona is network booted	True or False	Yes
Networking Enabled	Specifies whether or not the persona's networking configuration is modifiable via the installed agent	True or False	Yes
Network Mode	Specifies the network mode of the persona	trunk access auto	Yes

Table 2-8. Add Persona Optional Properties

Element	Description	Valid Values	Look up
OS Architecture	The persona's operating system architecture	x86_32 x86_64 unknown	Yes
OS Family	The persona's operating system family	linux windows	Yes
OS Sub Type	Specific type of the persona's operating system	String	No
OS Version	Specific version of the persona's operating system	String	No
Primary SCN Address	The persona's primary SCN address	String	No
Routing and DNS	Specifies the persona's routing and DNS mode	managed manual dhcp	Yes
SCN Assignment Type	Specifies how the SCN IP addresses are assigned	pool static	Yes
Secondary SCN Address	The persona's secondary SCN address	String	No
Template	Specifies whether the persona is a template	True or False	Yes

NOTE: For more information on Add Persona Optional Properties refer Advanced Infrastructure Manager Developer's Guide

Table 2-9. Add Persona Returned Data

Name	Description	Value Type
Agent Exists	If true, then an agent is installed in the persona; otherwise false	True or False
AIM Object Type	The type of Dell AIM object that you can update	String

Table 2-9. Add Persona Returned Data

Name	Description	Value Type
AIM Server Location	The location of the Dell AIM server	String
AIM Server Port	The port used to connect to the Dell AIM server	Integer
AIM Username	The username used to connect to the Dell AIM server	String
AIM Object Type	The type of Dell AIM object that you can add	String
App State	The persona's current state	create cloneDest cloneSrc dormant runnable retargetting goingDormat failed quarantined
Assigned Server Pools	The list of server pools this persona is assigned to	String (CSV)
Confirmations Enabled	True if the persona will pause when starting or stopping, waiting for confirmations to continue; false otherwise	True or False
Consecutive Failures	The number of consecutive times this persona has failed to boot on any host	Integer
Default Gateway	The persona's default gateway	String
Description	The persona's description	String
DNS Addresses	IP addresses of the persona's DNC servers	String (CSV)

Table 2-9. Add Persona Returned Data

Name	Description	Value Type
Extensions	List of persona extensions assigned to the persona	String (CSV)
Extensions Enabled	True if persona extensions is executed for this persona; otherwise false	True or False
FC San Connections	The list of Fibre-Channel SAN connections assigned to this persona	String (CSV)
Health Monitor Enabled	True if the health of the persona is monitored by the controller; otherwise false	True or False
Health Monitor Hostname	The specified host (hostname or IP address) that is checked to determine whether or not the persona is running	String
ID	The ID of the persona	String
Name	The name of the persona	String
Net Boot	True if the persona is network booted; otherwise false	True or False
Network Connections	List of network connections assigned to the persona	String (CSV)
Networking Enabled	True if the persona's networking configuration is modifiable via the installed agent; otherwise false	True or False
Network Mode	The network mode of the persona	trunk access auto
OS Architecture	The persona's operating system architecture	x86_32 x86_64
OS Family	The persona's operating system family	linux windows

Table 2-9. Add Persona Returned Data

Name	Description	Value Type
OS Sub Type	Specific type of the persona's operating system	String
OS Version	Specified version of the persona's operating system	String
Primary SCN Address	The persona's primary SCN address	String
Routes	List of routes for the persona	String (CSV)
Routing and DNS	The persona's routing and DNS mode	managed manual dhcp
SCN Assignment Type	The persona's SCN assignment type	pool static
Secondary SCN Address	The persona's secondary SCN address	String
Template	True if the persona is a template; otherwise false	True or False
Use SSL	True if the activity uses the SSL protocol to connect to the Dell AIM server; otherwise false	True or False

Get Persona Activity

The **Get Persona** activity is used in a policy to retrieve information about the personas in the Dell AIM environment.

For the procedure to configure this activity, see: Configuring the Get Persona Activity.

The **Get Persona** activity uses filters to determine which of the persona retrieved from the Dell AIM environment is returned.

The following tables list the filters and returned data for this activity.

Table 2-10. Get Persona Filters

Element	Description	Filters	Valid Values
Agent Exists	If true, then an agent is installed in the persona. If false, the persona is agentless	Equals Does not equal	True or False
Build Number	Build version of the persona's agent	Equals Does not equal Is Less than Is less than or equal to Is Greater than Is greater than or equal to	Integer
Confirmations Enabled	True if the persona will pause when starting or stopping, waiting for a confirmation to continue; otherwise false	Equals Does not equal	True or False
Consecutive Failures	The number of times this persona has failed to boot on any host	Equals Does not equal Is Less than Is less than or equal to Is Greater than Is greater than or equal to	Integer
Copy Enabled	Specifies whether or not you can close this persona	Equals Does not equal	True or False

Table 2-10. Get Persona Filters

Element	Description	Filters	Valid Values
Default Gateway	The persona's default gateway	Equals Does not equal Contains Does not contain Matches pattern Does not match pattern	String
Description	The persona's description	Equals Does not equal Contains Does not contain Matches pattern Does not match pattern	String
DNS Search Domain	DNS search domain for the persona	Equals Does not equal Contains Does not contain Matches pattern Does not match pattern	String
Extensions Enabled	Specifies whether or not persona extensions are executed for this persona	Equals Does not equal	True or False
Health Monitor Enabled	Specifies whether or not the persona is monitored by the Controller	Equals Does not equal	True or False

Table 2-10. Get Persona Filters

Element	Description	Filters	Valid Values
Health Monitor Hostname	The specified host (hostname or IP address) that is checked to determine whether or not the persona is running	Equals Does not equal Contains Does not contain Matches pattern Does not match pattern	String
ID	The ID of the persona	Equals Does not equal Contains Does not contain Matches pattern Does not match pattern	String
Name	The name of the persona	Equals Does not equal Contains Does not contain Matches pattern Does not match pattern	String
Net Boot	Specifies whether or not the persona is network booted	Equals Does not equal	True or False
Networking Enabled	Specifies whether nor not the persona's networking configuration is modifiable via the installed agent	Equals Does not equal	True or False

Table 2-10. Get Persona Filters

Element	Description	Filters	Valid Values
Network Mode	Specifies the network mode of the persona	Equals Does not equal	trunk access auto
OS Architecture	The persona's operating system architecture	Equals Does not equal	x86_32 x86_64 unknown
OS Family	The persona's operating system family	Equals Does not equal	linux windows
OS Sub Type	Specific type of the persona's operating system	Equals Does not equal Contains Does not contain Matches pattern Does not match pattern	String
OS Version	Specific version of the persona's operating system	Equals Does not equal Contains Does not contain Matches pattern Does not match pattern	String
Primary SCN Address	The persona's primary SCN address	Equals Does not equal Contains Does not contain Matches pattern Does not match pattern	String

Table 2-10. Get Persona Filters

Element	Description	Filters	Valid Values
Release Name	The release name of the persona's agent	Equals	String
		Does not equal	
		Contains	
		Does not contain	
		Matches pattern	
		Does not match pattern	
Routing and DNS	Specifies the persona's routing and DNS mode	Equals	managed
		Does not equal	manual
			dhcp
SCN Assignment Type	Specifies how the SCN IP addresses are assigned	Equals	pool
		Does not equal	static
Secondary SCN Address	The persona's secondary SCN address	Equals	String
		Does not equal	
		Contains	
		Does not contain	
		Matches pattern	
		Does not match pattern	
Template	Specifies whether the persona is a template	Equals	True or False
		Does not equal	
Version	Specifies the version of the agent installed on the persona	Equals	String
		Does not equal	
		Contains	
		Does not contain	
		Matches pattern	
		Does not match pattern	

Table 2-11. Get Persona Returned Data

Name	Description	Value Type
Agent Exists	If true, then an agent is installed in the persona; otherwise false	True or False
AIM Object Type	The type of Dell AIM object that you can add	String
AIM Server Location	The location of the Dell AIM server	String
AIM Server Port	The port used to connect to the Dell AIM server	Integer
AIM Username	The username used to connect to the Dell AIM server.	String
AIM Object Type	The type of Dell AIM object you can add	String
App State	The persona's current state	create cloneDest cloneSrc dormant runnable retargetting goingDormat failed quarantined
Assigned Server Pools	The list of server pools this persona is assigned to	String (CSV)
Build Number	Build version of the persona's agent	Integer

Table 2-11. Get Persona Returned Data

Name	Description	Value Type
Confirmations Enabled	True if the persona will pause when starting or stopping, waiting for confirmations to continue; false otherwise	True or False
Consecutive Failures	The number of consecutive times this persona has failed to boot on any host	Integer
Copy Enabled	True if the persona is cloneable; otherwise false	True or False
Default Gateway	The persona's default gateway	String
Description	The persona's description	String
DNS Addresses	IP addresses of the persona's DNC servers	String (CSV)
Extensions	List of persona extensions assigned to the persona	String (CSV)
Extensions Enabled	True if persona extensions is executed for this persona; otherwise false	True or False
FC Scan Connections	the list of Fibre-Channel SAN connections assigned to this persona	String (CSV)
Health Monitor Enabled	True if the health of the persona is monitored by the controller; otherwise false	True or False
Health Monitor Hostname	The specified host (hostname or IP address) that is checked to determine whether or not the persona is running	String
ID	The ID of the persona	String
Images	List of images assigned to the persona	String (CSV)

Table 2-11. Get Persona Returned Data

Name	Description	Value Type
Maintenance Description	The reason the persona was placed in maintenance mod	String
Maintenance Mode	True if the persona is in maintenance mode; otherwise false	True or False
Name	The name of the persona	String
Net Boot	True if the persona is network booted; otherwise false	True or False
Network Connections	List of network connections assigned to the persona	String (CSV)
Networking Enabled	True if the persona's networking configuration is modifiable via the installed agent; otherwise false	True or False
Network Mode	The network mode of the persona	trunk access auto
OS Architecture	The persona's operating system architecture	x86_32 x86_64
OS Family	The persona's operating system family	linux windows
OS Sub Type	Specific type of the persona's operating system	String
OS Version	Specified version of the persona's operating system	String
Primary SCN Address	The persona's primary SCN address	String
Release Name	The release name of the persona agent	String

Table 2-11. Get Persona Returned Data

Name	Description	Value Type
Routes	List of routes for the persona	String (CSV)
Routing and DNS	The persona's routing and DNS mode	managed manual dhcp
SCN Assignment Type	The persona's SCN assignment type	pool static
Secondary SCN Address	The persona's secondary SCN address	String
State	The persona's current state	stopped running booting awaitingConfirmation shuttingDown
Template	True if the persona is a template; otherwise false	True or False
Use SSL	True if the activity uses the SSL protocol to connect to the Dell AIM server; otherwise false	True of False
Version	The version of the agent installed on the persona	String

Remove Persona Activity

The Remove Persona activity is used in a runbook to remove a persona from the Dell AIM environment.

For the procedure to configure this activity, see: Configuring the Remove Persona Activity.

The activity publishes all of the data from the required properties into returned data.

The following tables list the required properties and returned data for this activity.

Table 2-12. Remove Persona Required Properties

Element	Description	Valid Values	Look up
ID	The ID of the persona you want to remove	String	No

Table 2-13. Remove Persona Returned Data

Name	Description	Value Type
AIM Server Location	The location of the Dell AIM server	String
AIM Server Port	The port used to connect to the Dell AIM server	Integer
AIM Username	The username used to connect to the Dell AIM server.	String
ID	The ID of the persona you want to remove	String
Use SSL	Specifies whether or not the SSL protocol was used to connect to the Dell AIM server.	True or False

Update Persona Activity

The Update Persona activity is used in a policy to update an existing persona, such enabling a health monitor and setting a health monitor hostname.

For the procedure to configure this activity, see: Configuring the Update Persona Activity.

The activity publishes all of the data from the required and optional properties into returned data. Additional returned data is generated based on the properties of the persona.

The following tables list the required and optional properties and returned data for this activity.

Table 2-14. Update Persona Required Properties

Element	Description	Valid Values	Look up
ID	The ID of the persona that is updated	String	No

Table 2-15. Update Persona Optional Properties

Element	Description	Valid Values	Look up
Agent Exists	If true, then an agent is installed in the persona. If false, the persona is agentless	True or False	Yes
Confirmations Enabled	True if the persona will pause when starting or stopping, waiting for a confirmation to continue; otherwise false	True or False	Yes
Consecutive Failures	The number of times this persona has failed to boot on any host	Integer	No
Default Gateway	The persona's default gateway	String	No
Description	The persona's description	String	No
DNS Search Domain	DNS search domain for the persona	String	No
Extensions Enabled	Specifies whether or not persona extensions are executed for this persona	True for False	Yes
Health Monitor Enabled	Specifies whether or not the persona is monitored by the Controller	True or False	Yes

Table 2-15. Update Persona Optional Properties

Element	Description	Valid Values	Look up
Health Monitor Hostname	The specified host (hostname or IP address) is checked to determine whether or not the persona is running	String	No
Name	The name of the persona	String	No
Net Boot	Specifies whether or not the persona is network booted	True or False	Yes
Networking Enabled	Specifies whether nor not the persona's networking configuration is modifiable via the installed agent	True or False	Yes
Network Mode	Specifies the network mode of the persona	trunk access auto	Yes
OS Architecture	The persona's operating system architecture	x86_32 x86_64 unknown	Yes
OS Family	The persona's operating system family	linux windows	Yes
OS Sub Type	Specific type of the persona's operating system.	String	No
OS Version	Specific version of the persona's operating system.	String	No
Primary SCN Address	The persona's primary SCN address	String	No
Routing and DNS	Specifies the persona's routing and DNS mode	managed manual dhcp	Yes

Table 2-15. Update Persona Optional Properties

Element	Description	Valid Values	Look up
SCN Assignment Type	Specifies how the SCN IP addresses are assigned	pool static	Yes
Secondary SCN Address	The persona's secondary SCN address	String	No
Template	Specifies whether the persona is a template	True or False	Yes

Table 2-16. Update Persona Returned Data

Name	Description	Value Type
Agent Exists	If true, then an agent is installed in the persona; otherwise false	True or False
AIM Object Type	The type of Dell AIM object that you can add.	String
AIM Server Location	The location of the Dell AIM server	String
AIM Server Port	The port used to connect to the Dell AIM server	Integer
AIM Username	The username used to connect to the Dell AIM server.	String
App State	The persona's current state	create cloneDest cloneSrc dormant runnable retargetting goingDormat failed quarantined
Assigned Server Pools	The list of server pools this persona is assigned to	String (CSV)

Table 2-16. Update Persona Returned Data

Name	Description	Value Type
Confirmations Enabled	True if the persona will pause when starting or stopping, waiting for confirmations to continue; false otherwise	True for False
Consecutive Failures	The number of consecutive times this persona has failed to boot on any host	Integer
Default Gateway	The persona's default gateway	String
Description	The persona's description	String
DNS Addresses	IP addresses of the persona's DNC servers	String (CSV)
Extensions	List of persona extensions assigned to the persona	String (CSV)
Extensions Enabled	True if persona extensions is executed for this persona; otherwise false	True or False
FC San Connections	The list of Fibre-Channel SAN connections assigned to this persona	String (CSV)
Health Monitor Enabled	True if the health of the persona is monitored by the controller; otherwise false	True or False
Health Monitor Hostname	The specified host (hostname or IP address) that is checked to determine whether or not the persona is running	String
ID	The ID of the persona	String
Name	The name of the persona	String
Net Boot	True if the persona is network booted; otherwise false	True or False
Network Connections	List of network connections assigned to the persona	String (CSV)

Table 2-16. Update Persona Returned Data

Name	Description	Value Type
Networking Enabled	True if the persona's networking configuration is modifiable via the installed agent; otherwise false	True or False
Network Mode	The network mode of the persona	trunk access auto
OS Architecture	The persona's operating system architecture	x86_32 x86_64
OS Family	The persona's operating system family	linux windows
OS Sub Type	Specific type of the persona's operating system	String
OS Version	Specified version of the persona's operating system	String
Primary SCN Address	The persona's primary SCN address	String
Routes	List of routes for the persona	String (CSV)
Routing and DNS	The persona's routing and DNS mode	managed manual dhcp
SCN Assignment Type	The persona's SCN assignment type	pool static
Secondary SCN Address	The persona's secondary SCN address	String
Template	True if the persona is a template; otherwise false	True or False
Use SSL	True if the activity uses the SSL protocol to connect to the Dell AIM server; otherwise false	True of False

Table 2-16. Update Persona Returned Data

Name	Description	Value Type
Version	The version of the agent installed on the persona	String

Add Relationship Activity

The **Add Relationship** activity is used in a policy to add a new child object to an existing Dell AIM object, such as adding a *Network Connection* or *Image to a Persona*.

For the procedure to configure this activity, see Configuring the Add Relationship Activity.

Optional properties are generated based on the AIM Object Type that is specified in the Dell AIM Object Type configuration that you select when you define the activity.

The activity publishes all of the data from the required and optional properties into returned data. Additional returned data is generated based on the AIM Object Type that is specified in the Dell AIM Object Type configuration that you select when you define the activity.

The following tables list the required properties and returned data for this activity.

Table 2-17. Add Relationship Required Properties

Element	Description	Valid Values	Look up
Parent Object Type	The type of Dell AIM object that the child object is being added to	String	Yes
Parent Object ID	The ID of the object that the child object is being added to	String	No

Table 2-18. Add Relationship Returned Data

Name	Description	Value Type
AIM Object Type	The type of Dell AIM object you can add.	
AIM Server Location	The location of the Dell AIM server	String
AIM Server Port	The port used to connect to the Dell AIM server	String
AIM Username	The username used to connect to the Dell AIM server	Integer
ID	The ID of the child object that was created	String
Parent Object Type	The type of Dell AIM object that the child object is being added to	String
Parent Object ID	The ID of the object that the child object is being added to	String
Use SSL	Specifies whether or not the SSL protocol was used to connect to the Dell AIM server.	True or False

Get Relationship Activity

The **Get Relationship** activity is used in a policy to retrieve child objects of a certain type from a specified parent, such as the getting the *Images* assigned to a *Persona* or the *Switches* assigned to a *Rack*.

For the procedure to configure this activity, see, Configuring the Get Relationship Activity.

The **Get Relationship** activity uses filters to determine which objects retrieved from Dell AIM are published. Filters are generated based on the AIM Object Type that is associated with the Dell AIM Object Type configuration that you select when you define the activity.

Returned data is generated based on the AIM Object Type that is specified in the Dell AIM Object Type Configuration that you select when you define the activity.

The following tables list the required and optional properties and returned data for this activity.

Table 2-19. Get Relationship Required Properties

Element	Description	Valid Values	Look up
Parent Object Type	The type of Dell AIM object that the children are being retrieved from	String	Yes
Parent Object ID	The ID of the parent object that the children are being retrieved from	String	No

Table 2-20. Get Relationship Returned Data

Name	Description	Value Type
AIM Object Type	The type of Dell AIM object you can add	String
AIM Server Location	The location of the Dell AIM server	String
AIM Server Port	The port used to connect to the Dell AIM server	Integer
AIM Username	The username used to connect to the Dell AIM server.	String

Table 2-20. Get Relationship Returned Data

Name	Description	Value Type
Parent Object Type	The type of Dell AIM object that the children are being retrieved from	String
Parent Object ID	The ID of the parent object that the children are being retrieved from	String
Use SSL	Specifies whether or not the SSL protocol was used to connect to the Dell AIM server	True or False

Maintenance Mode Activity

The **Maintenance Mode** activity is used in a runbook to set the maintenance mode of a host, persona or VMRack.

For the procedure to configure this activity, see: Configuring the Maintenance Mode Activity

The activity publishes all of the data from the required and optional properties into returned data.

The following tables list the required and optional properties and returned data for this activity.

Table 2-21. Maintenance Mode Required Properties

Element	Description	Valid Values	Look up
AIM Object Type	The type of object whose maintenance mode you want to change	Host Persona VMRack	Yes
ID	The ID of the object whose maintenance mode you want to change	String	No

Table 2-21. Maintenance Mode Required Properties

Element	Description	Valid Values	Look up
Maintenance Mode	Specifies whether you are enabling or disabling maintenance mode	True or False	Yes

Table 2-22. Maintenance Mode Optional Properties

Element	Description	Valid Values	Look up
Maintenance Description	The reason for enabling maintenance mode	String	No

Table 2-23. Maintenance Mode Returned Data

Name	Description	Value Type
AIM Object Type	The type of object whose maintenance mode you want to change	String
AIM Server Location	The location of the Dell AIM server	String
AIM Server Port	The port used to connect to the Dell AIM server	Integer
AIM Username	The username used to connect to the Dell AIM server.	String
ID	The ID of the object whose maintenance mode you want to change	Host Persona VMRack
Maintenance Mode	Specifies whether you are enabling or disabling maintenance mode	True or False
Maintenance Description	The reason for enabling maintenance mode	String
Use SSL	Specifies whether or not the SSL protocol was used to connect to the Dell AIM server	True or False

Run Operation Activity

The **Run Operation** activity is used in a runbook to invoke an AimWS method, such as locking a persona to the server it has been assigned to or disabling a network connection.

For the procedure to configure this activity, see, Configuring the Run Operation Activity.

The activity publishes all of the data from the required and optional properties into returned data.

The following tables list the required and optional properties and returned data for this activity.

Table 2-24. Run Operation Required Properties

Element	Description	Valid Values	Look up
Method Name	The name of the invoked AimWS method	String	Yes

Table 2-25. Run Operation Optional Properties

Element	Description	Valid Values	Look up
Parameter 1	The first parameter to pass to the method.	String	No
Parameter 2	The second parameter to pass to the method	String	No
Parameter 3	The third parameter to pass to the method	String	No
Parameter 4	The fourth parameter to pass to the method	String	No
Parameter 5	The fifth parameter to pass to the method	String	No
Parameter 6	The sixth parameter to pass to the method	String	No
Parameter 7	The seventh parameter to pass to the method	String	No
Parameter 8	The eighth parameter to pass to the method	String	No

Table 2-25. Run Operation Optional Properties

Element	Description	Valid Values	Look up
Parameter 9	The ninth parameter to pass to the method	String	No

Table 2-26. Run Operation Returned Data

Name	Description	Value Type
AIM Server Location	The location of the Dell AIM server	String
AIM Server Port	The port used to connect to the Dell AIM server	Integer
AIM Username	The username used to connect to the Dell AIM server.	String
Method Name	The name of the invoked AimWS method	String
Parameter 1	The first parameter passed to the method.	String
Parameter 2	The second parameter passed to the method	String
Parameter 3	The third parameter passed to the method	String
Parameter 4	The fourth parameter passed to the method	String
Parameter 5	The fifth parameter passed to the method	String
Parameter 6	The sixth parameter passed to the method	String
Parameter 7	The seventh parameter passed to the method	String
Parameter 8	The eighth parameter passed to the method	String
Parameter 9	The ninth parameter passed to the method	String

Table 2-26. Run Operation Returned Data

Name	Description	Value Type
Use SSL	Specifies whether or not the SSL protocol was used to connect to the Dell AIM server.	True or False

Start Activity

The **Start activity** is used in a runbook to start a persona or VMRack that is currently stopped.

For the procedure to configure this activity, see: Configuring the Start Activity

The activity publishes all of the data from the required and optional properties into returned data.

The following tables list the required and optional properties and returned data for this activity

Table 2-27. Start Required Properties

Element	Description	Valid Values	Look up
AIM Object Type	The type of object that you want to start.	Persona VMRack	Yes
ID	The ID of the object that you want to start	String	No

Table 2-28. Start Optional Properties

Element	Description	Valid Values	Look up
Host	The ID of the Host that you want to start the persona or VMRack on	String	No
Timeout	The number of seconds to wait for the persona or VMRack to start. If not specified, the activity does not wait	Integer	No

Table 2-29. Start Returned Data

Name	Description	Value Type
AIM Object Type	The type of object that you want to start	String
AIM Server Location	The location of the Dell AIM server	String
AIM Server Port	The port used to connect to the Dell AIM server	Integer
AIM Username	The username used to connect to the Dell AIM server.	String
Host	The ID of the Host that you want to start the persona or VMRack on.	Persona VMRack
ID	The ID of the persona or VMRack that you want to start	True or False
State	The state of the persona or VMRack activity when the activity finishes	stopped running booting awaitingConfirmation shuttin down
Timeout	The number of seconds to wait for the persona or VMRack to start. If not specified, the activity does not wait.	Integer
Use SSL	Specifies whether or not the SSL protocol was used to connect to the Dell AIM server	True or False

Stop Activity

The **Stop activity** is used in a runbook to stop persona or VMRack that is currently running.

For the procedure to configure this activity, see, Configuring the Stop Activity.

The activity publishes all of the data from the required and optional properties into returned data.

The following tables list the required and optional properties and returned data for this activity.

Table 2-30. Stop Required Properties

Element	Description	Valid Values	Look up
AIM Object Type	The type of object that you want to stop	Persona VMRack	Yes
ID	The ID of the object that you want to stop	String	No

Table 2-31. Stop Optional Properties

Element	Description	Valid Values	Look up
Timeout	The number of seconds to wait for the persona or VMRack to stop. If not specified, the activity does not wait	Integer	No

Table 2-32. Stop Returned Data

Name	Description	Value Type
AIM Object Type	The type of object that you want to stop	String
AIM Server Location	The location of the Dell AIM server	String
AIM Server Port	The port used to connect to the Dell AIM server	Integer
AIM Username	The username used to connect to the Dell AIM server	String

Table 2-32. Stop Returned Data

Name	Description	Value Type
ID	The ID of the persona or VMRack that you want to stop	True or False
State	The state of the persona or VMRack activity when the activity finishes	stopped running booting awaitingConfirmation shuttingDown
Timeout	The number of seconds to wait for the persona or VMRack to stop. If not specified, the activity does not wait.	Integer
Use SSL	Specifies whether or not the SSL protocol was used to connect to the Dell AIM server	True or False

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Configuring Dell Integration Pack Activities

Configuring the Add Object Activity

To configure the Add Object activity:

1. From the **Activities** pane, drag an **Add Object** activity to the active policy.
2. Double-click the **Add Object** activity.

   The **Properties** dialog box is displayed.
3. Configure the **Properties** tab.
   a. In the **Configuration** section, click the ellipsis button (...), and then select the Dell AIM Object Type configuration that you want to use for this activity. Click **OK.**
   b. In the **Properties** section, enter a value for each of the required properties and the applicable optional properties. If the property is Lookup-enabled, you can click the ellipsis (…) button next to the text box to browse for a value.

   You can also use returned data to automatically populate the value of the property from the data output by a previous activity in the workflow.

   To use returned data:

   a. Right-click the property value box, click **Subscribe**, and then click **Returned Data**.
   b. Click the **Activity** drop-down box and select the activity from which you want to obtain the data.
   c. To view additional data elements common across the runbook, select **Show Common Returned Data**.
   d. Click the returned data element you want to use, and then click **OK**.

   For a list of the data elements returned by each activity, see the Returned Data tables in the activity topic.

4 For information about the settings on the **General** and **Run Behavior** tabs, see Common Configuration Instructions for All Activities.

5 Click **Finish**.

Configuring the Get Object Activity

To configure the Get Object activity:

1 From the **Activities** pane, drag a **Get Object** activity to the active policy.

2 Double-click the **Get Object** activity icon.

The **Properties** dialog is displayed.

3 Configure the settings in the **Filters** tab:

In the **Configuration** section, click the ellipsis button (...), and select the Dell AIM Object Type configuration that you want to use for this activity. Click **OK**.

a In the **Filters** section click **Add**. In the **Name** box, click the down arrow and select a property from the list.

b In the **Relation** box, click the down arrow and select a filter type.

c In the **Value** box, enter the value you want to use. For more information about using filters see Filter Behavior.

You can also use returned data to automatically populate the value of the property from the data output by a previous activity in the workflow.

To use returned data:

a Right-click the property value box, click **Subscribe**, and then click **Returned Data**.

b Click the **Activity** drop-down box and select the activity from which you want to obtain the data.

c To view additional data elements common across the runbook, select **Show Common Returned Data**.

d Click the returned data element you want to use, and then click **OK**.

For a list of the data elements published by each activity, see the Returned Data tables in the activity topic.

e Click OK to save the filter settings.

f Add additional filters as needed, and then click Finish.

4 To make changes to a filter, click the filter and then click **Edit**. Make the changes, and then click **OK**.

To remove a filter, click the filter and then click **Remove**.

5 For information about the settings on the **General** and **Run Behavior** tabs, see Common Configuration Instructions for All Activities.

6 Click **Finish**.

Configuring the Remove Object Activity

To configure the Remove Object activity:

1 From the **Activities** pane, drag a **Remove Object** activity to the active runbook.

2 Double-click the **Remove Object** activity.

The **Properties** dialog box is displayed.

3 Configure the **Properties** tab:

a In the **Configuration** section, click the ellipsis button (...), and then select the Dell AIM configuration that you want to use for this activity. Click **OK**.

b In the **Properties** section, enter a value for each of the required properties and the applicable optional properties. If the property is Lookup-enabled, you can click the ellipsis (…) button next to the text box to browse for a value.

You can also use returned data to automatically populate the value of the property from the data output by a previous activity in the workflow.

To use returned data:

a Right-click the property value box, click **Subscribe**, and then click **Returned Data**.

b Click the **Activity** drop-down box and select the activity from which you want to obtain the data.

c To view additional data elements common across the runbook, select **Show Common Returned Data**.

d Click the returned data element you want to use, and then click **OK**.

For a list of the data elements returned by each activity, see the Returned Data tables in the activity topic.

4 For information about the settings on the **General** and **Run Behavior** tabs, see Common Configuration Instructions for All Activities.

5 Click **Finish**.

Configuring the Update Object Activity

To configure the Update Object activity:

1 From the **Activities** pane, drag an **Update Object** activity to the active policy.

2 Double-click the **Update Object** activity.

The **Properties** dialog box is displayed.

3 Configure the **Properties** tab.

a In the **Configuration** section, click the ellipsis button (...), and then select the Dell AIM Object Type configuration that you want to use for this activity. Click **OK**.

b In the **Properties** section, enter a value for each of the required properties and the applicable optional properties. If the property is Lookup-enabled, you can click the ellipsis (…) button next to the text box to browse for a value.

You can also use returned data to automatically populate the value of the property from the data output by a previous activity in the workflow.

To use returned data:

a Right-click the property value box, click **Subscribe**, and then click **Returned Data**.

b Click the **Activity** drop-down box and select the activity from which you want to obtain the data.

c To view additional data elements common across the runbook, select **Show Common Returned Data**.

d Click the returned data element you want to use, and then click **OK**.

For a list of the data elements returned by each activity, see the Returned Data tables in the activity topic.

4 For information about the settings on the **General** and **Run Behavior** tabs, see Common Configuration Instructions for All Activities.

5 Click **Finish**.

Configuring the Add Persona Activity

To configure the Add Persona activity:

1 From the **Activities** pane, drag an **Add Persona** activity to the active policy.

2 Double-click the **Add Persona** activity.

The **Properties** dialog box is displayed.

3 Configure the **Properties** tab:

a In the **Configuration** section, click the ellipsis button (...), and then select the Dell AIM configuration that you want to use for this activity. Click **OK**.

b In the **Properties** section, enter a value for each of the required properties and the applicable optional properties. If the property is Lookup-enabled, you can click the ellipsis (…) button next to the text box to browse for a value.

You can also use returned data to automatically populate the value of the property from the data output by a previous activity in the workflow.

To use returned data:

a Right-click the property value box, click **Subscribe**, and then click **Returned Data**.

b Click the **Activity** drop-down box and select the activity from which you want to obtain the data.

c To view additional data elements common across the policy, select **Show Common Returned Data**.

d Click the returned data element you want to use, and then click **OK**.

For a list of the data elements returned by each object, see the Returned Data tables in the activity topic.

4 For information about the settings on the **General** and **Run Behavior** tabs, see Common Configuration Instructions for All Activities.

5 Click **Finish**.

Configuring the Get Persona Activity

To configure the Add Persona activity:

1. From the **Activities** pane, drag a **Get Persona** activity to the active policy.
2. Double-click the **Get Persona** activity icon. The **Properties** dialog is displayed.
3. Configure the settings in the **Filters** tab:
   a. In the **Configuration** section, click the ellipsis button (...), and select the Dell AIM Object configuration that you want to use for this activity. Click **OK**.
   b. In the **Filters** section click **Add**. In the **Name** box, click the down arrow and select a property from the list.
   c. In the **Relation** box, click the down arrow and select a filter type.
   d. In the **Value** box, enter the value you want to use. For more information about using filters see Filters Tab

   You can also use returned data to automatically populate the value of the property from the data output by a previous activity in the workflow.

   To use returned data:

   a. Right-click the property value box, click **Subscribe**, and then click **Returned Data**.
   b. Click the **Activity** drop-down box and select the activity from which you want to obtain the data.
   c. To view additional data elements common across the runbook, select **Show Common Returned Data**.
   d. Click the returned data element you want to use, and then click **OK**.

   For a list of the data elements published by each activity, see the Returned Data tables in the activity topic.

   e. Click **OK** to save the filter settings.
   f. Add additional filters as needed, and then click **Finish**.
4. To make changes to a filter, click the filter and then click **Edit**. Make the changes, and then click **OK**.

   To remove a filter, click the filter and then click **Remove**.

5 For information about the settings on the **General** and **Run Behavior** tabs, see Common Configuration Instructions for All Activities.

6 Click **Finish**.

Configuring the Remove Persona Activity

To configure the Remove Persona activity:

1 From the **Activities** pane, drag a **Remove Persona** activity to the active runbook.

2 Double-click the **Remove Persona** activity.

The **Properties** dialog box is displayed.

3 Configure the **Properties** tab:

a In the **Configuration** section, click the ellipsis button (...), and then select the Dell AIM configuration that you want to use for this activity. Click **OK**.

b In the **Properties** section, enter the ID of the persona that you want to remove.

You can also use returned data to automatically populate the value of the property from the data output by a previous activity in the workflow.

To use returned data:

a Right-click the property value box, click **Subscribe**, and then click **Returned Data**.

b Click the **Activity** drop-down box and select the activity from which you want to obtain the data.

c To view additional data elements common across the runbook, select **Show Common Returned Data**.

d Click the returned data element you want to use, and then click **OK.**

For a list of the data elements returned by each activity, see the Returned Data tables in the activity topic.

4 For information about the settings on the General and Run Behavior tabs, see Common Configuration Instructions for All Activities.

5 Click **Finish**.

Configuring the Update Persona Activity

To configure the Update Persona activity:

1. From the **Activities** pane, drag an **Update Persona** activity to the active policy.
2. Double-click the **Update Persona** activity.

   The **Properties** dialog box is displayed.
3. Configure the **Properties** tab:
   a. In the **Configuration** section, click the ellipsis button (...), and then select the Dell AIM configuration that you want to use for this activity. Click **OK**.
   b. In the **Properties** section, enter the ID of the persona that you want to remove.

   You can also use returned data to automatically populate the value of the property from the data output by a previous activity in the workflow.

   To use returned data:

   a. Right-click the property value box, click **Subscribe**, and then click **Returned Data**.
   b. Click the **Activity** drop-down box and select the activity from which you want to obtain the data.
   c. To view additional data elements common across the runbook, select **Show Common Returned Data**.
   d. Click the returned data element you want to use, and then click **OK**.

   For a list of the data elements returned by each activity, see the Returned Data tables in the activity topic.
4. For information about the settings on the General and Run Behavior tabs, see Common Configuration Instructions for All Activities.
5. Click **Finish**.

Configuring the Add Relationship Activity

To configure the Add Relationship activity:

1. From the **Activities** pane, drag an **Add Relationship** activity to the active policy.
2. Double-click the **Add Object** activity.

   The **Properties** dialog box is displayed.
3. Configure the **Properties** tab:
   a. In the **Configuration** section, click the ellipsis button (...), and then select the Dell AIM Object Type configuration that you want to use for this activity. Click **OK**.

   NOTE: The **AIM Object Type** specified in the Dell AIM Object Type configuration you select when you define the activity represents the type of Dell AIM object that you are adding to the parent object. For example, if you want to add an image to a persona then you will require a configuration with the AIM Object Type set to *Image*.

   b. In the **Properties** section, enter a value for each of the required properties and the applicable optional properties. If the property is Lookup-enabled, you can click the ellipsis (…) button next to the text box to browse for a value.

   You can also use returned data to automatically populate the value of the property from the data output by a previous activity in the workflow.

   To use returned data:

   a. Right-click the property value box, click **Subscribe**, and then click **Returned Data**.
   b. Click the **Activity** drop-down box and select the activity from which you want to obtain the data.
   c. To view additional data elements common across the runbook, select **Show Common Returned Data**.
   d. Click the returned data element you want to use, and then click **OK.**

   For a list of the data elements returned by each activity, see the Returned Data tables in the activity topic.

4 For information about the settings on the General and Run Behavior tabs, see Common Configuration Instructions for All Activities.

5 Click **Finish**.

Configuring the Get Relationship Activity

To configure the Get Relationship activity:

1 From the **Activities** pane, drag a **Get Relationship** activity to the active policy.

2 Double-click the **Get Relationship** activity icon.

The **Properties** dialog is displayed.

3 Configure the **Properties** tab:

a In the **Configuration** section, click the ellipsis button (...), and then select the Dell AIM Object Type configuration that you want to use for this activity. Click OK.

NOTE: The **AIM Object Type** specified in the Dell AIM Object Type configuration you select when you define the activity represents the type of Dell AIM object that you are retrieving from the parent object. For example, to retrieve the images associated with a persona, you require a configuration with the AIM Object Type set to *Image*.

b In the **Properties** section, enter a value for each of the required properties and the applicable optional properties. If the property is Lookup-enabled, you can click the ellipsis (…) button next to the text box to browse for a value.

You can also use returned data to automatically populate the value of the property from the data output by a previous activity in the workflow.

To use returned data:

a Right-click the property value box, click **Subscribe**, and then click **Returned Data**.

b Click the **Activity** drop-down box and select the activity from which you want to obtain the data.

c To view additional data elements common across the runbook, select **Show Common Returned Data**.

d Click the returned data element you want to use, and then click **OK**.

For a list of the data elements returned by each activity, see the Returned Data tables in the activity topic.

4 Configure the settings in the **Filters** tab:

   a In the **Filters** section click **Add**. In the **Name** box, click the down arrow and select a property from the list.

   b In the **Relation** box, click the down arrow and select a filter type.

   c In the **Value** box, enter the value you want to use. For more information about using filters see Filters Tab.

   You can also use returned data to automatically populate the value of the property from the data output by a previous activity in the workflow.

   To use returned data:

   a Right-click the property value box, click **Subscribe**, and then click **Returned Data**.

   b Click the **Activity** drop-down box and select the activity from which you want to obtain the data.

   c To view additional data elements common across the runbook, select **Show Common Returned Data**.

   d Click the returned data element you want to use, and then click **OK**.

   For a list of the data elements published by each activity, see the Returned Data tables in the activity topic.

   e Click **OK** to save the filter settings.

   f Add additional filters as needed, and then click **Finish**.

5 To make changes to a filter, click the filter and then click **Edit**. Make the changes, and then click **OK**.

6 To remove a filter, click the filter and then click **Remove**.

   For information about the settings on the **General** and **Run Behavior** tabs, see Common Configuration Instructions for All Activities.

7 Click **Finish**.

Configuring the Maintenance Mode Activity

To configure the Maintenance Mode activity:

1. From the **Activities** pane, drag a **Maintenance Mode** activity to the active runbook.
2. Double-click the **Maintenance Mode** activity.

   The **Properties** dialog box is displayed.
3. Configure the **Properties** tab:
   a. In the **Configuration** section, click the ellipsis button (...), and then select the Dell AIM configuration that you want to use for this activity. Click **OK**.
   b. In the **Properties** section, enter a value for each of the required properties and the applicable optional properties. If the property is Lookup-enabled, you can click the ellipsis (…) button next to the text box to browse for a value.

   You can also use returned data to automatically populate the value of the property from the data output by a previous activity in the workflow.

   To use returned data

   a. Right-click the property value box, click **Subscribe**, and then click **Returned Data**.
   b. Click the **Activity** drop-down box and select the activity from which you want to obtain the data.
   c. To view additional data elements common across the runbook, select **Show Common Returned Data**.
   d. Click the returned data element you want to use, and then click **OK**.

   For a list of the data elements returned by each activity, see the Returned Data tables in the activity topic.
4. For information about the settings on the **General** and **Run Behavior** tabs, see Common Configuration Instructions for All Activities.
5. Click **Finish**.

Configuring the Run Operation Activity

To configure the Run Operation activity:

1. From the **Activities** pane, drag a **Run Operation** activity to the active runbook.
2. Double-click the **Run Operation** activity.

   The **Properties** dialog box is displayed.
3. Configure the **Properties** tab:
   a. In the **Configuration** section, click the ellipsis button (...), and then select the Dell AIM configuration that you want to use for this activity. Click **OK**.
   b. In the **Properties** section, enter a value for each of the required properties and the applicable optional properties. If the property is Lookup-enabled, you can click the ellipsis (…) button next to the text box to browse for a value.

   You can also use returned data to automatically populate the value of the property from the data output by a previous activity in the workflow.

   To use returned data

   a. Right-click the property value box, click **Subscribe**, and then click **Returned Data**.
   b. Click the **Activity** drop-down box and select the activity from which you want to obtain the data.
   c. To view additional data elements common across the runbook, select **Show Common Returned Data**.
   d. Click the returned data element you want to use, and then click **OK**.

   For a list of the data elements returned by each activity, see the Returned Data tables in the activity topic.
4. For information about the settings on the **General** and **Run Behavior** tabs, see Common Configuration Instructions for All Activities.
5. Click **Finish**.

NOTE: Excluding the initial **Auth** parameter, which is handled by the **Run Operation** activity, you must match the AimWS parameters exactly. For example, when invoking the LockPersona method you must include optional

property **Parameter 1** and enter the ID of the persona that you want to lock. For more information on the parameters required for each AimWS method refer to the Dell Advanced Infrastructure Manager Developer's Guide.

Configuring the Start Activity

To configure the Start activity:

1. From the **Activities** pane, drag a **Start** activity to the active runbook.
2. Double-click the **Start** activity.

   The **Properties** dialog box is displayed.
3. Configure the **Properties** tab:
   a. In the **Configuration** section, click the ellipsis button (...), and then select the Dell AIM configuration that you want to use for this activity. Click **OK**.
   b. In the **Properties** section, enter a value for each of the required properties and the applicable optional properties. If the property is Lookup-enabled, you can click the ellipsis (…) button next to the text box to browse for a value.

   You can also use returned data to automatically populate the value of the property from the data output by a previous activity in the workflow.

   To use returned data

   a. Right-click the property value box, click **Subscribe**, and then click **Returned Data**.
   b. Click the **Activity** drop-down box and select the activity from which you want to obtain the data.
   c. To view additional data elements common across the runbook, select **Show Common Returned Data**.
   d. Click the returned data element you want to use, and then click **OK**.

   For a list of the data elements returned by each activity, see the Returned Data tables in the activity topic.

4 For information about the settings on the **General** and **Run Behavior** tabs, see Common Configuration Instructions for All Activities.

5 Click **Finish**.

NOTE: If you do not include the optional **Timeout** property the activity will not wait for the specified persona or VMRack to start. Since persona booting takes some time, you can choose to poll the state if you are not using the timeout property.

Configuring the Stop Activity

To configure the Stop activity:

1 From the **Activities** pane, drag a **Stop** activity to the active runbook.

2 Double-click the **Stop** activity.

The **Properties** dialog box is displayed.

3 Configure the **Properties** tab:

a In the **Configuration** section, click the ellipsis button (...), and then select the Dell AIM configuration that you want to use for this activity. Click **OK**.

b In the **Properties** section, enter a value for each of the required properties and the applicable optional properties. If the property is Lookup-enabled, you can click the ellipsis (…) button next to the text box to browse for a value.

You can also use returned data to automatically populate the value of the property from the data output by a previous activity in the workflow.

To use returned data

a Right-click the property value box, click **Subscribe**, and then click **Returned Data**.

b Click the **Activity** drop-down box and select the activity from which you want to obtain the data.

c To view additional data elements common across the runbook, select **Show Common Returned Data**.

d Click the returned data element you want to use, and then click **OK**.

For a list of the data elements returned by each activity, see the Returned Data tables in the activity topic.

4 For information about the settings on the **General** and **Run Behavior** tabs, see Common Configuration Instructions for All Activities.

5 Click **Finish**.

NOTE: If you do not include the optional **Timeout** property the activity will not wait for the specified persona or VMRack to stop. Since persona booting takes some time, you can choose to poll the state if you are not using the timeout property.

4

Workflow

The following sample workflows are part of the Dell Advanced Infrastructure Manager (AIM) Integration Pack for Dell to showcase some of the most common use cases of today's *Workload* management using Dell AIM.

Workflow Requirements

To import Workflows, Opalis version 6.3 with Dell AIM Integration pack for Opalis Version 1.0 installed and System Center Operations Manager (SCOM) integration pack version 5.6 installed.

Importing Workflows

Use standard workflow import procedure from Opalis. Note that these workflows have global configurations (Connections) for AIM and SCOM. Importing with Global Configurations will replace the existing connections details of AIM and SCOM. If you want to retain the existing AIM configurations you can ignore the Global Configurations option while importing and choose to import only the policies. Then, you can manually add AIM and SCOM connections (in the same name as specified in AIM Connection Details).

For more information see the Microsoft TechNet article on System Center Opalis at **technet.microsoft.com/en-us/library/hh237242.aspx**.

AIM Connection Details

The Workflow uses following connections with AIM:

NOTE: If the AIM connections were not imported along with the policy, then create the connections.

Connection Name	Connection Type	Details
AIM-Connection	Dell AIM	The common connection used by all objects which executes specific functions like **Start**, **Stop**, and **Get Personas**.
AIM-HostObject	Dell AIM Object Type	Uses the object type **Connection** and the object type is the **Host**. Use this connection for activities that which act on the AIM's **Host** object. Example, **Get Objects** (Host).
AIM-VMObject	Dell AIM Object Type	Uses the **Object Type** connection and the object type is the **VMRack**. Use this connection for activities that act on the AIM's **VMRack** object. Example, **Get Objects** (VMRack).
AIM-VMRackObject	Dell AIM Object Type	Uses the **Object Type** connection and the object type is the **Virtual Machine** (VM). Use this connection for activities that act on the AIM's VM Object. Example, **Get Objects** (VM).

For more information, see Dell Integration Pack Activities.

Proactive Failover

Dell Server Management pack for SCOM monitors heath of Dell server. It raises critical, warning, or both events in SCOM by interacting with Dell OpenManage. If a critical failure event like *OMSA Temperature sensor detected a failure value* occurs on a server, it triggers the **Proactive Failover** workflow. The Workflow retargets all the Workloads from the server which triggered the failure event. This is accomplished by combining the functionality of the SCOM and AIM. For more information, see Workflow – Proactive Failover.

Prerequisites

The pre-requisite for the Proactive Failover workflow are:

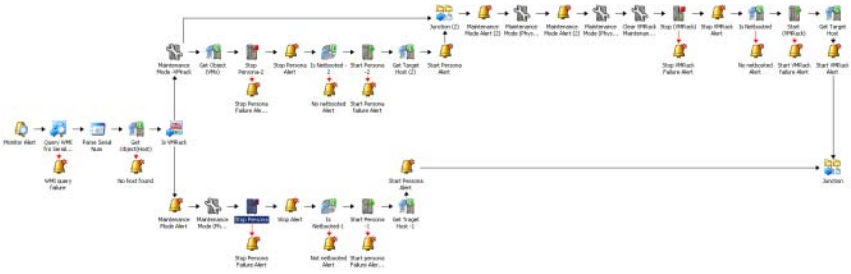
- OpenManage version 6.1 or later installed on all servers in the AIM environment
- AIM version 3.4.1 is installed and Opalis has established a connection with the AIM controller. For more information, see Configuring Dell Integration Pack Activities.
- SCOM 2007 R2 is installed and Opalis has established a connection with SCOM.
- The workload images are prepared to operate in AIM environment. For more information, see *Dell Advanced Infrastructure Manager User's Guide* on **support.dell.com\manuals**.
- The servers under the AIM environment are managed by SCOM and Dell Server Management packs are imported.
- Workloads, both Personas and VMRacks, are assigned to server pools and at least one server is available for re-targeting.
- The Proactive Failover Workflow uses the Windows Management Instrumentation (WMI) to query the Service Tag (on a Dell system) or Serial Number of the server, therefore the Server which generates the alert must have access to WMI for the Opalis User.

- Due to the **hostname** dependency the SCOM objects in the workflow may not work after importing. You may need to reselect the connection for all the SCOM Objects based on your configuration.
- Ensure that the Opalis server has a DNS server and hostname comes from the SCOM alerts are resolvable.

Workflow – Proactive Failover

When a critical failure occurs on a physical server, the Proactive Failover workflow retargets the server's workload.Proactive Failover Figure 4-1 depicts the proactive failover workflow.Proactive Failover

Figure 4-1. Proactive Failover



When the critical alert is received from the physical machine:

1. Using the WMI query, the service tag (if it is a Dell system) or serial number of the server is retrieved.

   NOTE: This serial number/service tag acts as the unique identifier to get the server details from Dell AIM controller.

2. The **IsVMRack** object determines if the physical server hosts **VMRack** or **Physical Persona**.

   NOTE: In AIM environment a server is hosting a physical persona or hosting a VMRack (example HyperV). This workflow takes different actions based on the image hosted on the physical server.

   The workflow takes different actions based on the **IsVMRack**'s outcome.

3. If **IsVMRack** object determines the physical server has a **Physical Persona:**

a The workflow will move the physical host server into maintenance mode.

NOTE: When the physical host server is moved to maintenance mode, AIM will not use the machine for any other Workload reallocation.

b After stopping the persona using the **Stop** activity.

NOTE: To check if the persona is **NetBooted** the **GetPersona** object is used.

c If this persona is a netbooted persona then the **Start** activity takes care of starting the persona.

d The Persona (work flow) will start in some other host based on the server pools it is assigned. AIM chooses the target host.

NOTE: Both **Stop** and **Start** activities are included with optional **Timeout** property which makes the activity blocking, that is, the activity will wait till the time set for the persona to change to the intended state runs out.

e The Workflow creates appropriate SCOM alerts during the failure and success events.

4 If **IsVMRack** determines the physical server has a **Host** hosting VMRACK:

a The workflow will put the **VMRack** in maintenance mode.

NOTE: When the **VMRack** server is moved to maintenance mode, this will stop AIM from assigning more personas to this VMRack.

b The **Get VMs** activity will get all the Virtual Machines running on that VMRack.

Since more than one persona are running on a **VMRack**, this object can return a *multi-instance* array. So following activities gets executed for each instance, that is for each persona running on that VMRack:

- Persona is **Stopped**.
- Persona is **Started** again if it is a NetBooted persona.

NOTE: To Check if the persona is **NetBooted** the **GetPersona** object is used.

Since the **VMRack** from which this persona is moved is in maintenance mode, AIM takes care of starting the persona in the next available host. Here it is assumed that the persona is assigned with server pools. Both **Stop** and **Start** use the timeout property to make it a blocking call. For more details refer Dell AIM integration pack user guide.

- SCOM alert is raised for each success and failure events.

c Once the above said sub-flow gets completed it merges with the main flow where the physical host is moved into maintenance mode.

d The **VMRack** is removed from maintenance mode and stopped as all the VMs are re-targeted to other servers.

e The **VMRack** is started if it is a netbootable **VMRack**.

NOTE: The Get Object (**VMRack**) is used to determine if the **VMRack** is netbooted or not.

The workflow assumes that **VMRack** is assigned with server pool and there is a server available for re-target. Both **Start** and **Stop** VMRack objects uses the timeout property to make it a blocking call, that is, the activity will wait till the time-out duration is completed for the persona, or till the VMrack's state changes to the corresponding state.

Workload Retarget

This sample workflow takes care of re-targeting Workload from one server to another server. The Workload movement is Physical to Virtual, Virtual to Virtual, Virtual to Physical, and Physical to Physical.

Workflow Prerequisites

The prerequisite for Workload Retarget workflow is:

- AIM version 3.4.1 is installed and Opalis has connection with AIM controller. For more information, see Configuring Dell Integration Pack Activities.

Workflow Inputs

The following inputs are required for the Workload Retarget workflow to complete successfully:

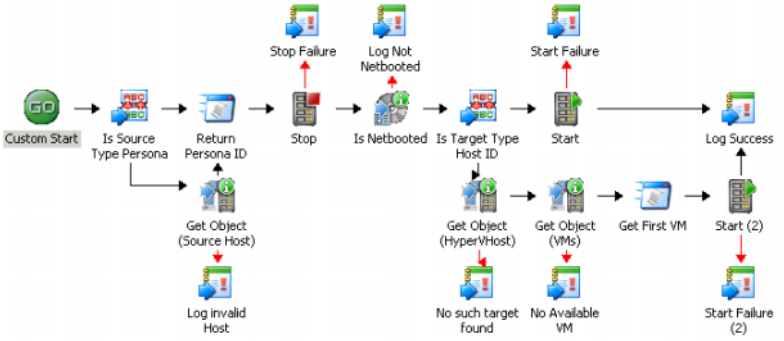
- **Log server IP** – The workflow will raise Windows Event logs for all the important actions. You have to specify the server on which the log is raised. You must have access to raise a Windows event on the target server.
- **Source ID** – Specifies the source persona which is retargeted. User can choose to give the actual **Persona ID** or the **Host ID** (physical/VM server) on which the persona is running.
- **Source Type** – Specify the type of source ID to input. Acceptable values are one or two.
  - If you have given the **Persona ID** as the **Source ID** then the **Source Type** is one.
  - If you have given the **Host ID** of the persona then the **Source Type** is two. If the **Host ID** is given as source then the workflow will automatically fetch the Persona running on that host.
- **Target ID** – Specify the target **Host**, that is, where the persona is retargeted. User can choose to give the actual **Host ID** (physical to virtual) or the physical Host ID of the VMRack (HyperV/ESX).

- **Target Type** – Specify the type of target:
  - If you specify an actual physical or virtual **Host ID** then the **Target Type** is two.
  - If you specify the **Hypervisor Host ID** (physical Host ID of the HyperV) as target then the **Target Type** is one. If the **Target Type** is one, then the workflow will automatically chose one of the available Virtual Machines (VMs) from the hypervisor as target and hosts the persona.

Workflow – Workload Retarget

The Workload Retarget workflow automatically retargets the Workload from one server to another server. Figure 4-2 depicts the workload retarget workflow.

Figure 4-2. Workload Retarget



When you want to retarget a server's Workload:

1. Launch the Opalis console by clicking **Start→ All Programs→ Opalis Software→ Opalis Integration Server→ Opalis Integration Server Client.**
2. Expand **Policies→ Sample Workflow**.
3. Click the **p2v workflow** tab.
4. Click **Test**.

   The **Policy Testing Console** is displayed.
5. Click **Run**.

The Retarget Workflow asks for details such as **Source ID**, **Target ID** and so on. For more information, see Workflow Inputs.

6 If the source type is **Host** then the workflow uses the **Get Object** (Source Host) to retrieve the persona running on the host otherwise the **Source Id** (entered by user) is used as the source persona ID.

NOTE: Irrespective of the **Persona ID** being discovered automatically by the Workflow or manually entered by the user, the **Return Persona ID** exposes only one **Persona ID** for the objects that are further executed in the workflow. The **Stop Persona** objects stops the persona and it waits for the **Stop** activity to complete.

7 Based on the **Target Type** specified the persona is started on the Target Host.

- If the **Target Type** is specified as **Hypervisor Host**(1) then the **GetObject** (HyperV Host) finds the hypervisor object which is running on that host. Then **GetObject** (VMs) retrieves all the available VMs from the hypervisor. Finally the **Start Persona** starts the persona on the first available VM.
- If the **Target Type** is specified as **Host ID**(2) then the persona is started on the host directly.

NOTE: In both the scenarios the **Persona** is retargeted only if it is **NetBootable**. **Window Event Logs** is raised for all the important events like success and failure of a persona and so on.

Workflow – Troubleshooting

One of the SCOM object returns failure

Make sure the connection with SCOM is fine by doing a test connection in SCOM connection dialog. Also make sure proper connection is selected on the individual object.

Query WMI object fails

Make sure the target system hostname is resolvable by DNS also make sure the opalis user has WMI access in the target server. If not then edit the object and enter proper credentials which has WMI access.

Persona starts successfully but the workflow after waiting for sometime raises notification saying Failure to start Persona

The Start objects has a timeout property which might have got expired before the persona actually started. Edit the object and increase the timeout which are in seconds.

Persona take longer time to stop but the workflow after waiting for sometime raises notification saying Failure to stop Persona

The Stop objects has a timeout property which might have got expired before the persona actually stopped. Edit the object and increase the timeout which are in seconds.

5

Related Reference

For more information about Dell AIM, see the related product brochure, whitepaper, and product demo available on the Dell Infrastructure Management website at **dell.com/dell-aim**. For more information on virtual integrated systems, see the Dell Virtual Integrated System website at **dell.com/vis**.

For more information on Microsoft System Center Opalis, its installation, or features and functionalities. See the Microsoft TechNet site at **technet.microsoft.com** and **opalis.codeplex.com** for details on Microsoft System Center Opalis.

Obtaining Technical Assistance

If at any time you do not understand a procedure in this guide, or if your product does not perform as expected, there are different types of help available. For more information, see *Getting Help* in your system's *Hardware Owner's Manual*.

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