

# Monitoring VMware Systems

VMware: vSphere Base Pack PowerPack version 302, revision 1

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# Chapter

# Introduction

#### Overview

This manual describes how to monitor VMware vCenter Servers in SL1 using the VMware: vSphere Base Pack PowerPack.

Use the following menu options to navigate the SL1 user interface:

- To view a pop-out list of menu options, click the menu icon (三).
- To view a page containing all the menu options, click the Advanced menu icon ( … ).

The following sections provide an overview of VMware and the VMware: vSphere Base Pack PowerPack:

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**NOTE:** ScienceLogic provides this documentation for the convenience of ScienceLogic customers. Some of the configuration information contained herein pertains to third-party vendor software that is subject to change without notice to ScienceLogic. ScienceLogic makes every attempt to maintain accurate technical information and cannot be held responsible for defects or changes in third-party vendor software. There is no written or implied guarantee that information contained herein will work for all third-party variants. See the End User License Agreement (EULA) for more information.

## What is VMware vSphere?

vSphere is VMware's cloud virtualization platform that enables users to deploy and manage VMware cloud-based resources using a suite of components, including the vCenter Server centralized management application and ESX/ESXi host servers.

**TIP**: To familiarize yourself with VMware terminology, see the VMware Master Glossary: <u>http://www.vmware.com/pdf/master\_glossary.pdf</u>.

#### What Does the VMware: vSphere Base Pack PowerPack Monitor?

To monitor VMware virtual infrastructure using SL1, you must install the VMware: vSphere Base Pack PowerPack. This PowerPack enables you to discover, model, and collect data about all aspects of VMware vSphere, including datacenters, clusters, virtual machines, and datastores.

The VMware: vSphere Base Pack PowerPack includes:

- One example credential you can use as templates to create SOAP/XML credentials to connect to the VMware devices you want to monitor.
- Dynamic Applications to discover, model, and monitor performance metrics and/or collect configuration data for VMware devices.
- Device Classes for each of the VMware devices SL1 monitors.
- A Device Template that enables you to easily align multiple Dynamic Applications to VMware devices.
- Event Policies and corresponding alerts that are triggered when VMware devices meet certain status criteria.
- Device dashboards for several of the discoverable VMware component devices.

**NOTE**: The VMware: vSphere Dashboards PowerPack contains additional dashboards that display data collected from VMware systems. To view these dashboards, you must install the VMware: vSphere Dashboards PowerPack on your SL1 System. (For more information, see the section on VMware Dashboards.)

#### Installing the VMware: vSphere Base Pack PowerPack

Before completing the steps in this manual, you must import and install the latest version of the VMware: vSphere Base Pack PowerPack.

**NOTE:** SL1 8.14.1 is active with VMware vSphere Base Pack v215 pre-installed.

TIP: By default, installing a new version of a PowerPack overwrites all content from a previous version of that PowerPack that has already been installed on the target system. You can use the *Enable Selective PowerPack Field Protection* setting in the **Behavior Settings** page (System > Settings > Behavior) to prevent new PowerPacks from overwriting local changes for some commonly customized fields. (For more information, see the *System Administration* manual.)

To download and install a PowerPack:

- 1. Download the PowerPack from the ScienceLogic Support Site.
- 2. Go to the **PowerPack Manager** page (System > Manage > PowerPacks).
- 3. In the **PowerPack Manager** page, click the **[Actions]** button, then select Import PowerPack.
- 4. The Import PowerPack dialog box appears:

Import P	owerPack™		×
Lic	Browse for file cense: Import	Browse	

- 5. Click the [Browse] button and navigate to the PowerPack file.
- 6. When the PowerPack Installer modal appears, click the [Install] button to install the PowerPack.

**NOTE:** If you exit the **PowerPack Installer** modal without installing the imported PowerPack, the imported PowerPack will not appear in the **PowerPack Manager** page. However, the imported PowerPack will appear in the **Imported PowerPacks** modal. This page appears when you click the **[Actions]** menu and select *Install PowerPack*.

## Version Requirements and Limitations

The following limitations and requirements apply to specific functionality in the VMware: vSphere Base Pack PowerPack:

- A new execution environment is available in this version of the PowerPack. However, the old environment will not be deleted. Therefore, users should remove the old executions environment after upgrading to VMware 302. To do this, go to System > Customize > ScienceLogic Libraries > Actions > Execution Environments and filter on 'VMware'. There will be two environments shown. Remove all ScienceLogic libraries from the Env GUID of "OB01D6E38C4EB3E11BA0EBC67B22A23E" and then delete the environment.
- To collect I/O and latency metrics for datastores, you must enable Storage I/O Control. For information about Storage I/O Control, see the VMware knowledge base.
- Datastore Storage Performance Statistics are available only from vCenter systems running vSphere API 4.1.2 or later. SL1 will not collect Datastore Storage Performance Statistics if the Dynamic Applications that use Dynamic Component Mapping are used to monitor ESX or ESX is servers directly.
- Datastore Performance Statistics are unavailable for NFS datastores.
- If VMware Tools is not installed on a guest VM, SL1 cannot collect all performance statistics for that guest VM.
- Because no truly unique identifier is provided by the VMware vSphere API, it is possible that duplicate component devices could be created in SL1 when a virtual machine vMotions between separately monitored ESX/ESXi servers. (This issue does not affect vMotion events that occur within the same component tree, such as between two ESX/ESXi servers that are monitored through the same vCenter server.) Therefore, ScienceLogic recommends monitoring VMware servers through vCenter. In addition to accommodating vMotion events, monitoring through vCenter prevents performance issues on ESX/ESXi servers caused by API use.
- If you want to delete and reinstall version 203 or higher of the VMware: vSphere Base Pack PowerPack, you should first delete any existing copies of the Device Template included in the PowerPack and then create new versions of them after reinstalling the PowerPack. Doing so ensures that any copies of the Device Template included in the PowerPack will work properly after reinstallation. You should then assign the new Device Template(s) to any existing Discovery Sessions that were linked to the previous versions of the template(s).

# Chapter

# 2

# **Configuration and Credentials**

#### Overview

The following sections describe how to configure VMware vCenter resources for monitoring by SL1 using the VMware: vSphere Base Pack PowerPack:

Prerequisites for Monitoring VMware vCenter Servers	
Creating a Read-Only User Account for Monitoring	
Configuring a SOAP/XML Credential	
Configuring a SOAP/XML Credential in the SL1 Classic User Interface	
Testing the VMware Credential	
Testing the VMware Credential in the SL1 Classic User Interface	
Configuring a VMware Device Template	
Use the following menu options to navigate the SL1 user interface:	

- To view a pop-out list of menu options, click the menu icon (=).
- To view a page containing all the menu options, click the Advanced menu icon ( … ).

# Prerequisites for Monitoring VMware vCenter Servers

Before performing the steps for configuring a vCenter server, you must:

- Have access to a VMware vCenter server that monitors your ESXi and ESX servers.
- Have access to the vCenter server using the vSphere web client.

If the Windows Server that hosts the vCenter server is SNMP-enabled, you must also configure your ESXi or ESX servers for communication using SNMP. To do so, you must:

 Configure SNMP community strings, traps, and polling on the ESXi or ESX server. Assign the server at least one SNMP community string. For more information, see VMware's documentation for <u>Configuring SNMP</u> for ESXi 6.5 or <u>Configuring SNMP for ESXi 6.7</u>.

### Creating a Read-Only User Account for Monitoring

Administrative users are the only default user type that have the level of access SL1 requires to collect data from the VMware vCenter web service. If you do not want to use the username and password of an administrative user in the SOAP/XML credential, you can set up a custom user role with the specific read-only access SL1 requires to the VMware vCenter web service.

To create a custom user role that grants the read-only access SL1 requires, perform the following steps:

- 1. Open your vCenter client at https://<vcenterservername>/ui
- 2. Select Menu > Administration from the drop-down.
- 3. In the menu at the left of the page, click Access Control > Roles. The **Roles** page appears:

vm vSphere Client	Menu 🗸	Q Search in all er	nvironments	C	?~
Administration - Access Control Roles	Roles				
Global Permissions	Roles provider	r:	rstlsvc6vsa	n01.eng.sciencelogic	.local ~
Licenses	+ 🗈 🧷 Administrator	×	1	DESCRIPTION Full access rights	USAGE
Client Plug-Ins vCenter Server Extens	Read-only No access				
<ul> <li>Deployment</li> <li>System Configuration</li> </ul>	Content library Datastore cons	administrator (sample) umer (sample)			
<ul> <li>Support</li> <li>Ubload File to Service</li> </ul>			16 items		

- 4. Click the plus sign (<sup>+</sup>) to add a new Role. The **New Role** page appears:
- 5. In the pane on the left, select **Storage views** and select the **View** checkbox. Click [Next].

Health update provider	All Storage views Privileges	All   Selected   Unselected
Host profile Network	Configure service	
Performance	View	
Permissions		
Profile-driven storage		
Resource		
Scheduled task		
Sessions		
Storage views		
Tasks		
Transfer service		
/Mware vCenter-Service		
/Mware vSphere Updat		

6. In the next screen, enter a name for the role in the **Role name** field. Optionally, you can enter a description in the **Description** field.

New Role	
Role name	ScienceLogic
Description	Monitoring role for ScienceLogic
	CANCEL BACK FINISH

7. Click the [Finish] button.

To assign the custom role to a user account, perform the following steps:

1. In the vCenter client, select your vCenter server containing the hosts and clusters you are monitoring and click the **[Permissions]** tab.

Summ	Moni	Config	Permissi	Datacen	Н	osts & Clu
+ /	×					
User/Grou	ıp ↓				Ŧ	Role

- 2. Click the plus sign (+) to add permissions.
- 3. Enter values in the following fields:
  - User. Select your domain and add the user in the field below.
  - Role. Select the role that you just created.
  - **Propagate to children**. Select this checkbox.

User	vsphere.local	~
	Q em7admin	
Role	ScienceLogic	~
	Propagate to children	
		CANCEL OK

4. Click the **[OK]** button.

# Configuring a SOAP/XML Credential

To use the Dynamic Applications in the VMware: vSphere Base Pack PowerPack, you must configure a SOAP/XML credential for the VMware web service.

NOTE: If you are using an SL1 system prior to version 11.1.0, the new user interface does not include the Duplicate option for sample credential(s). ScienceLogic recommends that you use the classic user interface and the Save As button to create new credentials from sample credentials. This will prevent you from overwriting the sample credential(s).

To define a credential:

- 1. Go to the **Credentials** page (Manage > Credentials).
- 2. Locate the "VMware Server Example" sample credential. Click its [Actions] icon (---) and select **Duplicate**. A copy of the credential, called VMware Server Example copy appears.
- 3. Click the [Actions] icon (---) for the VMware Server Example copy credential and select Edit. The Edit Credential page appears:

Name* VMware Server Example copy				Credentia	al Tester
All Organizations What	t organization manages this service?	v	Timeout (ms) 60000	Select Credential Test	
Content Encoding text/xml	Method ~ POST	HTTP Version ~ http/1.1	~	Select Collector	
URL https://%D/sdk/vimService				IP or Hostname to test "	Test Cree
HTTP Auth User N/A		HTTP Auth Password			lest Crec
Hostname/IP		Port (number optional) O			
User		Password			
Embedded Password [%P]					
Embed Value (%1) VMWARE_USERNAME		Embed Value [%2] USERPWD_IN_EMBEDDED_PASSWORD			
Embed Value [%3]		Embed Value [%4]			
HTTP Headers			Add Header		

- 4. Supply values in the following fields:
  - **Name**. Name of the credential. Can be any combination of alphanumeric characters, up to 64 characters.
  - All Organizations. Toggle on (blue) to align the credential to all organizations, or toggle off (gray) and then select one or more specific organizations from the What organization manages this service? drop-down field to align the credential with those specific organizations.

**NOTE**: To learn more about aligning credentials and organizations, see <u>Aligning Organizations With a</u> <u>Credential</u>.

- *Timeout (ms)*. Time, in milliseconds, after which SL1 will stop trying to communicate with the device from which you want to retrieve data.
- URL. In most cases, you can use the default setting.
- Embedded Password [%P]. Enter the password SL1 will use to connect to the VMware web service.
- **Embed Value [%1]**. Enter the username SL1 will use to connect to the VMware web service in the format <domain>/<username>. For example, silo\_domain\john\_user
- 4. Click [Save & Close].

**NOTE**: If you would like to test your credential using the Credential Tester panel, click **[Save & Test]**. For detailed instructions on using the Credential Tester, see the *Testing the VMware Credential* section.

#### Configuring a SOAP/XML Credential in the SL1 Classic User Interface

To modify either of the VMware credential templates in the SL1 classic user interface, perform the following steps:

- 1. Go to the Credential Management page (System > Manage > Credentials).
- 2. Click the wrench icon (*P*) for the "VMware Server Example" credential. The **Credential Editor** modal page appears:

Credential Editor [18] X					
Edit SOAP/XML Credential #18	New Reset				
Basic Settings       Profile Name       Content Encoding       Method       HTTP Version         VMware Server Example       [textlxml] <ul> <li>[POST]</li> <li>[HTTP/1.1]</li> <li>URL [https://Host:Port/Path   %D = Aligned Device Address   %N = Aligned Device Host Name ]</li> <li>[https://%D/sdk/vimService</li> <li>HTTP Auth User</li> <li>HTTP Auth Password</li> <li>Timeout (seconds)</li> <li>[N/A</li> </ul>	Soap Options           Embedded Password [%P]           Embed Value [%1]           Embed Value [%1]           Embed Value [%1]           Embed Value [%1]           Embed Value [%2]           VMWARE_USERNAME           USERPWD_IN_EMBEC           Embed Value [%3]           Embed Value [%4]				
Proxy Settings Hostname/IP Port User	HTTP Headers + Add a header				
CURL Options CAINFO CAPATH CLOSEPOLICY COOKIE COOKIELST COOKIELIST CRLF CUSTOMREQUEST DNSCACHETIMEOUT					
Save Save As					

- 3. Supply values in the following fields:
  - **Profile Name**. Enter a new name for the credential.
  - URL. In most cases, you can use the default setting.
  - **Embed Value [%1]**. Enter the username SL1 will use to connect to the VMware web service in the format <domain>/<username>. For example, silo\_domain\john\_user
  - Embedded Password [%P]. Enter the password SL1 will use to connect to the VMware web service.
- 4. Click the [Save As] button to save your changes as a new credential.

CAUTION: Do not click the [Save] button, as it will save over the example credential, which you may need for future use.

#### Testing the VMware Credential

SL1 includes a Credential Test for VMware. Credential Tests define a series of steps that SL1 can execute on demand to validate whether a credential works as expected. For more information about creating and managing credential tests, see the **Discovery and Credentials** manual.

The VMware Credential Test can be used to test a SOAP/XML credential for monitoring VMware using the Dynamic Applications in the VMware: vSphere Base Pack PowerPack. The VMware Credential Test performs the following steps:

- Test Reachability. Attempts to reach the vCenter server using ICMP.
- Attempt VMware Connection. Attempts to connect to the VMware service using the account specified in the credential.

To test the VMware using the Credential Tester panel:

- 1. Go to the **Credentials** page (Manage > Credentials).
- 2. Locate the VMware credential that you created, click the Actions button (--), and then select Test.
- 3. The **Credential Test Form** modal page appears. Fill out the following fields on this page:
  - Select Credential Test. Select the "VMware Credential Test".
  - Collector. Select the All-In-One Appliance or Data Collector that will run the test.
  - IP or Hostname to Test. Type the IP address of the vCenter server.
- 4. Click [Run Test] button to run the credential test. The Testing Credential window appears.

The **Testing Credential** window displays a log entry for each step in the credential test. The steps performed are different for each credential test. The log entry for each step includes the following information:

- **Step**. The name of the step.
- **Description**. A description of the action performed during the step.
- Log Message. The result of the step for this execution of the credential test.
- **Status**. Whether the result of this step indicates the credential and/or the network environment is configured correctly (Passed) or incorrectly (Failed).
- **Step Tip**. Mouse over the question mark icon (?) to display the tip text. The tip text recommends what to do to change the credential and/or the network environment if the step has a status of "Failed".

#### Testing the VMware Credential in the SL1 Classic User Interface

SL1 includes a Credential Test for VMware. Credential Tests define a series of steps that SL1 can execute on demand to validate whether a credential works as expected.

The VMware Credential Test can be used to test a SOAP/XML credential for monitoring VMware using the Dynamic Applications in the VMware: vSphere Base Pack PowerPack. The VMware Credential Test performs the following steps:

- Test Reachability. Attempts to reach the vCenter server using ICMP.
- Attempt VMware Connection. Attempts to connect to the VMware service using the account specified in the credential.

To test the VMware credential:

- 1. Go to the **Credential Test Management** page (System > Customize > Credential Tests).
- 2. Locate the VMware Credential Test and click its lightning bolt icon ( ). The Credential Tester modal page appears:

Credential Tester [	BETA] ×
Test Type	[ VMware Credential Test ]
Credential	VMware Server Example
Hostname/IP	
Collector	KNT-Patch2-CU1-65
	Run Test

- 3. Supply values in the following fields:
  - Test Type. This field is pre-populated with the credential test you selected.
  - **Credential**. Select the credential to test. This drop-down list includes only credentials that you have access to that can be tested using the selected credential test.
  - Hostname/IP. Type the IP address for the vCenter server.
  - Collector. Select the All-In-One Appliance or Data Collector that will run the test.

- 4. Click the **[Run Test]** button. The **Test Credential** window appears, displaying a log entry for each step in the credential test. The steps performed are different for each credential test. The log entry for each step includes the following information:
  - Step. The name of the step.
  - **Description**. A description of the action performed during the step.
  - Log Message. The result of the step for this credential test.
  - **Status**. Whether the result of this step indicates the credential or the network environment is configured correctly (Passed) or incorrectly (Failed).
  - Step Tip. Hover over the question mark icon (😳) with your mouse to display the tip text. The tip text recommends what to do to change the credential or the network environment if the step has a status of "Failed".

## Configuring a VMware Device Template

A *device template* allows you to save a device configuration and apply it to multiple devices. The VMware: vSphere Base Pack PowerPack includes the "VMware vSphere Template." If you configure and apply this device template when you discover your vCenter server, SL1 aligns the appropriate Dynamic Applications to the discovered vCenter server device.

To configure the VMware device template:

- 1. Go to the **Configuration Templates** page (Devices > Templates or Registry > Devices > Templates in the SL1 classic user interface).
- 2. Locate the "VMware vSphere Template" and click its wrench icon (<sup>2</sup>). The **Device Template Editor** page appears.
- 3. Click the [Dyn Apps] tab. The Editing Dynamic Application Subtemplates page appears.
- 4. Complete the following fields:

Templa	e Name VMware vSphere Template Exam	ole			
Config Interface	CV Policies Port Policies	Svc Policie	s Proc Policies	Dyn Apps	Logs
otemplate Selection	Template Application Behavior				
App: VMware: Inventory Cache			amic Application With		
App: VMware: ComponentCount C	All devices (align new applications and u	pdate collection sta	ites)		`
App: VMware: Events	Dynamic Application Settings				
App: VMware: Performance Cache App: VMware: RootFolder Datacer					
App: VMware: RootFolder Datacer	VMware: Inventory Cache	Dyn	amic Application		~
App: VMware: LicenseManager Rc	winivare. Inventory Cache				
Add New Dynamic App Sub-Template		dentiula		Poll Rate	
	VMware Server Example		~	Every 1 Minute	`
		Dynamic Applica	ation Presentation Object(s)		
	vSphere Update Version	Enabled V			
	Build	Enabled 🗸			
	Login Information				
	Login Time				
	Server API Version Server Type				
	Server Type Service Information				
	Username				
	vSphere Instance UUID	Enabled 🗸			
	Dynamic Application Thresholds				
	Raw Data Retention			5 days	

- Template Name. Type a new name for the device template.
- Credentials. Select the SOAP/XML credential that you created for VMware.
- 5. Click the next Dynamic Application listed in the **Subtemplate Selection** section on the left side of the page and then select the VMware SOAP/XML credential in the **Credentials** field.
- 6. Repeat step 5 until the you have selected the VMware SOAP/XML credential in the **Credentials** field for all of the Dynamic Applications listed in the **Subtemplate Selection** section.
- 7. Click [Save As].

**CAUTION:** Do not click the **[Save]** button, as it will save over the "VMware vSphere Template", which you may need for future use.

**NOTE:** The apps listed above must remain set. Changes to these may impact vCenter performance and are not guaranteed to work.

# Chapter



# Discovery

#### Overview

The following sections describe how to discover a vCenter server and component devices for monitoring by SL1 using the VMware: vSphere Base Pack PowerPack.

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Use the following menu options to navigate the SL1 user interface:

- To view a pop-out list of menu options, click the menu icon (三).
- To view a page containing all the menu options, click the Advanced menu icon ( … ).

## Discovering a vCenter Server

To create and run a discovery session that will discover a vCenter server, perform the following steps:

On the Devices page (I) or the Discovery Sessions page (Devices > Discovery Sessions), click the [Add Devices] button. The Select page appears:

Select the type of devices you want to monitor	
	General Information This workflow will allow you to discover and begin monitoring devices using or constraintial such as SNAPR Database, SOAPXML, Basic/Snipot, SSH/Key, or Powershell credentlate. Before you begin determine that you have these prerequisites in place: e. A constraint of the meed welve. If you meet the correct an Organization to the need educe, if you meet the organization of the need educe. If you meet the organization and the need protocol. For example, this means UDP 161 for SNMU and general ICMP traffic for Prug. If you don't how what Collector Group us can reach the target device using a valid network and general ICMP traffic for Prug. If you don't how what Collector Group us can reach the target device. You can test any credent we consult an SLI Architecture diagram or ask your SLI System Administrator. • A Credential for the device(s) being discovered. You can test any credent discovery failure. Go to System > Manage > Credentials to create a credent protocom the constration acuse for discovery failure. Go to System > Manage > Credentials to create a credent of the Select button below to continue the Discovery workflow.

- 2. Click the **[Unguided Network Discovery]** button. Additional information about the requirements for discovery appears in the **General Information** pane to the right.
- 3. Click [Select]. The Add Devices page appears:
- 4. Complete the following fields:
  - **Name**. Type a unique name for this discovery session. This name is displayed in the list of discovery sessions on the **[Discovery Sessions]** tab.
  - **Description**. Optional. Type a short description of the discovery session. You can use the text in this description to search for the discovery session on the **[Discovery Sessions]** tab.
  - Select the organization to add discovered devices to. Select the name of the organization to which you want to add the discovered devices.

5. Click [Next]. The Credentials page of the Add Devices wizard appears:

Cho	ose credentials that connect y	our devices	✓ Create New Test Credenti	lais
Q  Typ	be to search credentials		=	٥
•	NAME	ТҮРЕ	LASTEDIT	
	Azure Credential - Proxy	SOAP/XML	Tue Apr 23 2019 15:50:16 GMT+0000 (UTC)	1
	Azure Credential - SOAP/XML	SOAP/XML	Tue Apr 23 2019 15:50:16 GMT+0000 (UTC)	
	Cisco CE Series Configuration	SOAP/XML	Tue Apr 23 2019 15:50:29 GMT+0000 (UTC)	
	Cisco CE Series History	SOAP/XML	Tue Apr 23 2019 15:50:29 GMT+0000 (UTC)	
	Cisco CE Series Status	SOAP/XML	Tue Apr 23 2019 15:50:29 GMT+0000 (UTC)	
	Cisco CUCM Example	Basic/Snippet	Tue Apr 23 2019 15:49:26 GMT+0000 (UTC)	
	Cisco Meeting Server Example	Basic/Snippet	Tue Apr 23 2019 15:49:41 GMT+0000 (UTC)	
	Cisco SNMPv2 - Example	SNMP	Tue Apr 23 2019 15:50:10 GMT+0000 (UTC)	
	Cisco SNMPv3 - Example	SNMP	Tue Apr 23 2019 15:50:10 GMT+0000 (UTC)	
	Cisco VOS CUC Cluster Status	Basic/Snippet	Tue Apr 23 2019 15:49:07 GMT+0000 (UTC)	
	Cisco VOS IM&P Cluster Status	Basic/Snippet	Tue Apr 23 2019 15:49:07 GMT+0000 (UTC)	

6. On the **Credentials** page, locate and select the **SOAP/XML credential** you created. If the Windows server that hosts the vCenter server is SNMP-enabled, then additionally select an SNMP credential for the vCenter server.

**NOTE:** For integration between SL1 and ServiceNow, it is recommended that you discover your VMware environment using SNMP, so that the root device is classified as a vCenter device rather than as a Ping device. If you discover as non-SNMP, you will need to manually reclassify the root device as a vCenter device class.

7. Click [Next]. The Discovery Session Details page of the Add Devices wizard appears:

Step 1 Basic Information		Step 2 Credential Selection	3	Step 3 Discovery Session Details	×
	Ent	er basic discovery session details			
	List of IPs/Hostnames		File Upload		
	: 10.0.8.35				
	Which collector will discover these devices? CUG   em7aio17: 10.64.68.17		~	6	
	Run after save				
	Advanced Options $\checkmark$				
< Back				Save Ar	nd Run

- 8. Complete the following fields:
  - List of IPs/Hostnames. Type the IP address for the vCenter server.
  - Which collector will monitor these devices?. Select an existing collector to monitor the discovered devices. Required.
  - *Run after save*. Select this option to run this discovery session as soon as you click [Save and Close].

In the Advanced options section, click the down arrow icon ( $\sim$ ) to complete the following fields:

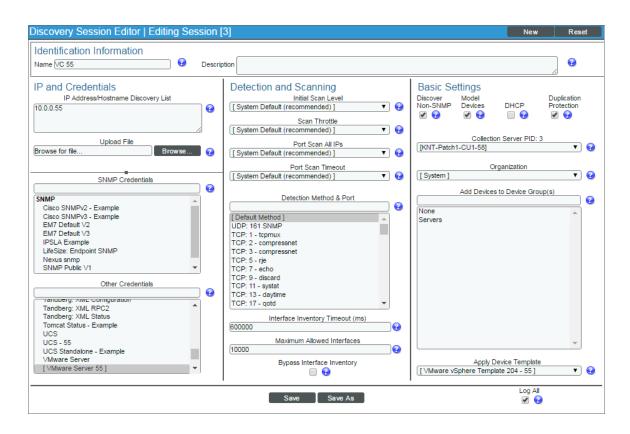
- **Discover Non-SNMP**. If the Windows server that hosts the vCenter server is not SNMP-enabled, then you must enable this setting.
- Apply Device Template. Select the device template that you created for VMware.
- 9. Click **[Save and Close]** to save the discovery session. The **Discovery Sessions** page (Devices > Discovery Sessions) displays the new discovery session.
- 10. If you selected the **Run after save** option on this page, the discovery session runs, and the **Discovery Logs** page displays any relevant log messages. If the discovery session locates and adds any devices, the **Discovery Logs** page includes a link to the **Device Investigator** page for the discovered device.

#### Discovering a vCenter Server in the SL1 Classic User Interface

To create and run a discovery session that will discover a vCenter server, perform the following steps:

1. Go to the **Discovery Control Panel** page (System > Manage > Classic Discovery).

2. Click the **[Create]** button to create a new discovery session. The **Discovery Session Editor** modal page appears:



- 3. Enter values in the following fields:
  - IP Address Discovery List. Type the IP address for the vCenter server.
  - SNMP Credentials. If the Windows server that hosts the vCenter server is SNMP-enabled, then select
    the SNMP credential for the vCenter server in this field. If you do not select an SNMP credential in this
    field, then you must select the Discover Non-SNMP checkbox.

**NOTE:** For integration between SL1 and ServiceNow, it is recommended that you discover your VMware environment using SNMP, so that the root device is classified as a vCenter device rather than as a Ping device. If you discover as non-SNMP, you will need to manually reclassify the root device as a vCenter device class.

- Other Credentials. Select the SOAP/XML credential that you created for VMware.
- Discover Non-SNMP. If the Windows server that hosts the vCenter server is not SNMP-enabled, then
  you must select this checkbox.
- Apply Device Template. Select the device template that you created for VMware.

- 4. Optionally, you can enter values in the other fields on this page. For more information about the other fields on this page, see the **Discovery & Credentials** manual.
- 5. Click the [Save] button and then close the Discovery Session Editor modal page.
- 6. The discovery session you created will appear at the top of the **Discovery Control Panel** page. Click its lightning-bolt icon (*F*) to run the discovery session.
- 7. The **Discovery Session** window appears. When the vCenter server is discovered, click its device icon (**W**) to view the **Device Properties** page for the vCenter server.

### Configuring the VMware Dynamic Applications

The following sections describe how to configure some of the Dynamic Applications in the VMware: vSphere Base PackPowerPack .

#### Configuring the "VMware: Events" Dynamic Application

The "VMware: Events" Dynamic Application is designed to collect events from VMware devices using the VMware API and insert those events into the device log of the aligned vCenter server.

For SL1 to insert VMware events into the device log, the Data Collector that monitors the vCenter server must be configured to process API events. For instructions on how to configure a Data Collector to process API events, see the **Global Settings** chapter in the **System Administration** manual.

You can specify which types of events the "VMware: Events" Dynamic Application collects by editing the event dictionary Python script located in the "VMware Event Collection" snippet of the "VMware: Events" Dynamic Application. This event dictionary includes a series of rows that look like this:

"ClusterStatusChangedEvent": {"count": 0, "countAll": 0, "collect": True}, Each row begins with an event type. This event type value must match the "eventTypeld" value the VMware API uses in its "EventFilterSpec" data object to indicate which events should be collected. For more information, see VMware's documentation on the "EventFilterSpec" data object.

To specify which events the "VMware: Events" Dynamic Application collects:

- 1. Go to the Dynamic Applications Manager page (System > Manage > Applications).
- 2. Click the wrench icon (*Properties Editor*) for the "VMware: Events" Dynamic Application. The **Dynamic Applications Properties Editor** page appears.
- 3. Click the [Snippets] tab. The Dynamic Applications Snippet Editor & Registry page appears.
- 4. Click the wrench icon (<sup>J</sup>) for the "VMware Event Collection" snippet.

5. Locate the section that looks like this:

```
event_dict = {
   "AlarmStatusChangedEvent": {"count": 0, "countAll": 0, "collect": True},
   "ClusterStatusChangedEvent": {"count": 0, "countAll": 0, "collect": True},
   "HostStatusChangedEvent": {"count": 0, "countAll": 0, "collect": True},
   "UserLoginSessionEvent": {"count": 0, "countAll": 0, "collect": True},
   "UserLogoutSessionEvent": {"count": 0, "countAll": 0, "collect": True},
   "VmEvent": {"count": 0, "countAll": 0, "collect": True},
   "VmMigratedEvent": {"count": 0, "countAll": 0, "collect": True},
   "other": {"count": 0, "countAll": 0, "collect": True},
}
```

- 6. Following the format shown above, add new rows for any additional event types you want to include in the event dictionary or delete the rows of any event types you want to remove from the event dictionary.
- 7. For each event type listed in the event dictionary:
  - If you want the Dynamic Application to collect that event type, change the "collect" value to "True". For example:

```
"AlarmStatusChangedEvent": {"count": 0, "countAll": 0, "collect": True},
If you do not want the Dynamic Application to collect that event type, change the "collect" value to "False". For example:
```

"UserLoginSessionEvent": {"count": 0, "countAll": 0, "collect": False},

• If you want the Dynamic Application to collect all event types, locate the "other" line and change the "collect" value to "True". For example:

```
"other": {"count": 0, "countAll": 0, "collect": True},
```

NOTE: Changing the "other" "collect" value to "True" overrides any event types with a "collect" value of "False". If you do not want to collect all event types, then you must either remove the "other" row or change its "collect" value to "False".

8. Click the **[Save]** button.

TIP: If you have edited the "VMware Event Collection" snippet and want to maintain your event\_dict settings the next time the PowerPack is upgraded, you must copy the event dictionary Python script, install the new version of the PowerPack, and then follow the steps in this section to paste the settings into the "VMware Event Collection" snippet in the upgraded version of the "VMware: Events" Dynamic Application.

# Configuring the Polling Frequency for VMware Performance Dynamic Applications

In the VMware: vSphere Base Pack PowerPack, some of the Dynamic Applications require that their **Poll** *Frequency* be set to a specific time to ensure the accuracy of the data they collect.

**CAUTION**: If there is a need to change the polling from the shipped values, vCenter performance is likely to be affected. Other configurations of the values are not recommended and/or guaranteed to work correctly.

To set the polling frequency:

- 1. Go to the **Dynamic Applications Manager** page (System > Manage > Applications).
- Search for the Dynamic Application whose polling frequency you want to update and click on its wrench icon (<sup>J</sup>).
- 3. In the **Dynamic Applications Properties Editor**, use the drop-down in the **Poll Frequency** field to select the polling frequency.

Close	<u>P</u> roperties	Collections	Presentation	s <u>S</u> nippets	Thresholds	<u>A</u> lerts	Subso	cribers
Dynamic Applicatio	ns [172]   Propert	ies Editor						Guide Reset
VMware: Virt	Application Nan ualMachine CPU F		Version [ [Version 2.0]	lumber	Abandon ( [After 4 Timed-Out Colle		• •	Disable Rollup of Data
[Bulk Snippe	Application Typ t Performance]	e • 🕢	Operation [Enabled] Collector	▼ 😧	Con	lext	0	Component Mapping
	Execution Environ /Mware: vSphere		[ Default ] Poll Free [Every 5 Minut		Null Row		0	
[ VMware: V	Device Dashboa irtual Machine ]	rd	Every 1 Minut Every 2 Minut Every 3 Minut [Every 5 Minut	es	Null Colun [ values ]		7 😧	Save As
Description This dynamic app	lication collects	performance data ass	Every 10 Minu Every 15 Minu Every 30 Minu Every 1 Hour Every 2 Hours Every 6 Hours Every 12 Hou Every 24 Hou	tes cs group for	the VirtualMachine pro	wider.		
Release Notes & Ch	ange Log							
🖹 - 🎽 B	IU <del>S</del>	A- TI- 6	• ¶ • ≫•		≡ ≡ ≡ -	% 🖬 🍠	>	
2. Added su Version 1.0: 1. This dyna	mic applicatio	host collections			he cpu group of per icess which stores r			
2. The follow		metrics are collecte LEVEL 2 and abov		ummation, cpu.usa	age.average, cpu.us	agemhz.avera	ige. NOTIC	E - vCenter must
Copyright (c)	2003-2016 Sci	enceLogic, Inc.						-

- 4. Set the polling frequencies for the following Dynamic Applications using the guidelines listed:
  - VMware: VirtualMachine CPU Performance. No more than 5 minutes.
  - VMware: VirtualMachine Datastore Performance. No more than 5 minutes.
  - VMware: VirtualMachine Disk Performance. No more than 5 minutes.
  - VMware: Inventory Cache. Exactly 1 minute.
  - VMware: Datastore Space Performance. No less than 15 minutes.

#### Using Collector Affinity with VMware Dynamic Applications

**Collector Affinity** specifies the Data Collectors that are allowed to run collection for Dynamic Applications aligned to component devices.

**NOTE:** The Collector Affinity feature is available only in SL1 versions 8.9.0 and greater, and applies only to distributed SL1 systems, not All-In-One Appliances.

CAUTION: If there is a need to change the Collector Affinity settings, performance is likely to be affected. Other configurations of the values are not recommended and/or guaranteed to work correctly.

By default, the Dynamic Applications in the VMware: vSphere Base Pack PowerPack are configured so that the Data Collector assigned to the root device will collect data for any Dynamic Applications in the PowerPack that are auto-aligned to component devices during discovery. This guarantees that data for all of the Dynamic Applications aligned to all of your VMware components will be collected by a single Data Collector.

When monitoring a VMware environment with a large number of component devices, however, running all of the Dynamic Applications on the root device's Data Collector could potentially overload the Data Collector, either because the Dynamic Applications take too long to complete or because they consume too much CPU or memory. When this occurs, some data might not be collected. This can lead to missed alerts and events, as well as gaps in graphs and reports.

To better support such large VMware environments, you can distribute the load of the VMware Bulk Performance Dynamic Applications across the Data Collectors in a collector group by changing the **Collector Affinity** setting for those Dynamic Applications to Assigned Collector. When the VMware Bulk Performance Dynamic Applications are configured this way, SL1 monitors the load on each Data Collector in the collector group and tries to evenly distribute the VMware Bulk Performance Dynamic Applications across the Data Collectors, thereby reducing total collection latency. It also has the benefit of distributing the PowerPack's CPU load and memory utilization.

**CAUTION**: The following VMware Bulk Performance Dynamic Applications are exceptions, and their **Collector Affinity** values must be changed to Root Device Collector:

- VMware: HostSystem Datastore Performance
- VMware: ResourcePool Performance
- VMware: VirtualMachine DataStore Performance

CAUTION: The Collector Affinity value should be changed to Assigned Collector only for VMware Bulk Performance Dynamic Applications (with the exception of the ones listed in the previous note). The VMware Configuration Dynamic Applications *must* run on the VMware root device's Data Collector. As such, their Collector Affinity values should remain set Root.

**NOTE**: The VMware: vSphere Base PackPowerPack automatically updates the **Collector Affinity** values to the correct settings.

**NOTE:** All Bulk Performance Dynamic Applications, except 'VMware: ResourcePool Performance', were updated in version 212 of the PowerPack to allow data to be cached on a local collector so virtual machines can be assigned to any collector.

For more information about configuring Collector Affinity settings for Dynamic Applications, see the "Collector Affinity" topic in the Dynamic Component Mapping chapter of the **Dynamic Application Development** manual.

#### Configuring the "VMware: Tag Configuration" Dynamic Application

By default the "VMware: Tag Configuration" Dynamic Application is disabled. Once enabled, you can use the data collected by this Dynamic Application to populate custom attributes for device groups. To do this, you need to define some of the fields as Custom Attributes.

To do this:

- 1. Go to the **Dynamic Applications Manager** page (System > Manage > Applications).
- 2. Find the "VMware: Tag Configuration" Dynamic Application and click its wrench icon (🥍).
- 3. Click the **[Collections]** tab. In the **Collection Objects** page, click the wrench icon (*P*) for the **Category** object.
- 4. In the Custom Attribute field, select Dynamic Name. Click the [Save] button.
- 5. Click the wrench icon for **Assigned Tag**. In the **Custom Attribute** field, select Dynamic Value, and then select Category in the second dropdown menu.
- 6. Click the **[Save]** button.

Close	Properties	<u>C</u> ollecti	ons <u>S</u>	Snippets	<u>T</u> hresholds	<u>A</u> lerts		Subscrib	ers				
Dynamic Applications	[204]   Collection Object	ts										Guide	Reset
Object Name	Category				)				Desc	ription			
Snippet Arguments	tag_category					The category o	f the (	collectio	n of t	ags.			
Class Type	[10 Config Character]			//									
String Type	· · · ·	~			,								
Custom Attribute	[Dynamic Name]	~											
Snippet	[ VMware Tag Configu	iration j		~	)								_/_
Group / Usage Type	[Group 1]	~	[Standard]	~	)				For	mula			
Asset / Form Link	[None]	~	[None]	~	)								
Inventory Link		~											
Change Alerting				~	ļ								
-		~										2	
Hide Object												63	
					Save Sa	ve As				Dis	able Ol	bject Maintenance	
Collection Object Re	egistry												
	Object Name			Clas		Snippet Arguments	Group	ID	Asset	Change	Align	Edit Date	
1. PAssigned Tag				Typ Config Charad		tag_name	1	o_1992	Link	Alerting Disabled	Left	2020-08-06 18:44:	50
2. Category				Config Chara		tag_category	1	o_1994		Disabled		2020-08-10 18:49	
<ol> <li>PDescription</li> </ol>				Config Charac		tag_description	1	o_1993		Disabled			
4. Alindex				Config Charac		tag_index	1	o_1991		Disabled		2020-08-06 18:44:	
5. 🥜 Tags				Label (Config	Group) 108			o_1995		Disabled	Len	2020-08-06 18:44:	50 UC
						(IS-)	ect Actio					~	Go
L						[Sel	COLACII	Vilj				•	L
opyright © 2003 - 2020	ScienceLogic, Inc. All r	ights reser	ved.										

For more information about Custom Attributes, see the **Device Management** manual.

### **Collecting Custom Performance Metrics**

#### vSphere Performance Collection

The VMware: vSphere Base Pack PowerPack enables you to collect custom performance metrics.

To add a new vSphere performance metric:

- In the Dynamic Applications Manager page (System > Manage > Applications), find the Bulk Snippet Performance Dynamic Application aligned to the particular device type of interest( i.e., Virtual Machine or Datastore). Click on the wrench icon (P) next to the Dynamic Application to open the Dynamic Applications Properties Editor page.
- 2. In the [Collections] tab, clone an existing collection object by selecting the wrench icon (
- 3. Add a new object name and metric label using the Snippet Arguments field.

The metric label format is: <metric\_group>.<metric\_name>.<rollupType>.

4. Click [Save As] to save the collection object as a new object without saving over the object that you cloned.

Details about the precise metric name, group, and rollup type can be found in <u>the vSphere documentation for</u> <u>PerformanceManager</u>. The vCenter managed object browser (MOB) at https://<vCenter IP>/mob/?moid=PerfMgr is an alternative source for counter labels if you know the counter ID. If it is decided that a new snippet must be added to the performance Dynamic Application, the following snippet code can be used as the basis for the new snippet:

```
from content import content_errors
from content import content_logger
from silo_vmware.VMwareBulkPerfMetrics import VMwareBulkPerfMetrics
CONTROL_PARAMS = {
    # 'maxThreads': 8, # maximum number of threads per execution
    # 'maxQueryMetrics': 64, # maximum number of metrics to include in QueryPerf,
    default is 64 or comes from API if set
    # 'intervalId': 300 # Default vCenter performance statistical interval
    with content_errors.ErrorManager(self):
    with content_logger.LogManager(self) as logger:
    app_name = "VMwareClusterComputeResourcePerformanceSnippet"
    inst = VMwareBulkPerfMetrics(self, app_name, snippet_id, devices, self.oids,
    entity_type='ComputeResource', ctrl_params=CONTROL_PARAMS)
    inst.process()
```

#### VSAN Performance Collection

The process for VSAN performance collection is similar to the process for vSphere performance collection, but the snippet argument uses a URL-style pattern to designate the metric to be collected. Refer to the <u>VSAN</u> <u>Management API documentation</u> for more information.

For example, for VSAN cluster front-end stats, the collection object snippet arguments use a pattern similar to this, where the entity type and metric can be exchanged with the new metric of interest:

```
vsan://vsan-performance-manager/VsanPerfQueryPerf?entityType=cluster-
domclient&entityUuid=*&metricLabel=congestion
```

Details on the precise parameters that can be provided to the query can be found in the <u>vSphere documentation</u> for VsanPerfQueryPerf.

If a new snippet is required, the following snippet code can be used as the basis for the new snippet:

```
from content import content_errors
from content import content_logger
from silo_vmware_vsan.vsan_perf_app_collector import VsanPerfAppCollector
TAG = "VsanStoragePerfStats"
with content_errors.ErrorManager(self):
    with content_logger.LogManager(self) as logger:
        vsan_app = VsanPerfAppCollector(self, TAG, snippet_id)
        vsan_app.get_collections()
        vsan_app.collect()
        vsan_app.store()
```

# Viewing Component Devices

When SL1 performs collection for the "VMware: RootFolder Datacenter Discovery" Dynamic Application, SL1 will create component devices for the components managed by the vCenter server and align other Dynamic Applications to those component devices. Some of the Dynamic Applications aligned to the component devices are also used to create additional component devices. All component devices appear on the **Devices** page.

**NOTE:** During initial discovery, SL1 requests information about 200 devices per poll period until all component devices are discovered. After initial discovery, SL1 requests only the changes from the previously collected topology. If you have a large VMware infrastructure, it can take several collection cycles after the initial collection of the "VMware: RootFolder Datacenter Discovery" Dynamic Application for all component devices to be discovered.

In addition to the **Devices** page, you can view the vCenter server and all associated component devices in the following places in the user interface:

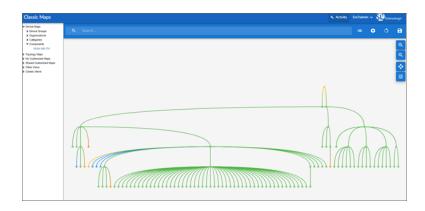
• The **Device Investigator** Map page (click **Map** in the **Device Investigator** page) displays a map of a particular device and all of the devices with which it has parent-child relationships. Double-clicking any of the listed devices reloads the page to make the selected device the primary device.

Devices											4 Activity	Em7admin 🗸	
10.64.140.	188										Report	Tools	Edit
Investigator	Settings	Interfaces	Configs	Events	Collections	Monitors	Thresholds	Processes	Software	Ports	Мар	Tickets	Q More 🗸
													٩
													٩
							unaux 1.ctr						*
							Hats						-
							ğ						
						1 m	Heat Server.						
					/	1	10.64. <b>548</b> .188						
						4	steen Nietz						
					dc3ehnstvsanesx02		VM Network						

The Device Components page (Devices > Device Components) displays a list of all root devices and
component devices discovered by SL1. The Device Components page displays all root devices and
component devices in an indented view, so you can easily view the hierarchy and relationships between
child devices, parent devices, and root devices. To view the component devices associated with a vCenter
server, find the vCenter server and click its plus icon (+).



The Component Map page (Classic Maps > Device Maps > Components) allows you to view devices by
root node and view the relationships between root nodes, parent components, and child components in a
map. This makes it easy to visualize and manage root nodes and their components. SL1 automatically
updates the Component Map as new component devices are discovered. The platform also updates each
map with the latest status and event information. To view the map for a vCenter server, go to the
Component Map page and select the map from the list in the left NavBar. To learn more about the
Component Map page, see the Maps manual.



## Relationships with Other Types of Component Devices

In addition to the parent/child relationships between component devices, the following relationships are automatically created by the Dynamic Applications in the VMware: vSphere Base Pack PowerPack:

• VMware Virtual Machines and VMware Datastores

- VMware Virtual Machines and VMware Networks
- VMware Virtual Machines and Cisco Cloud Center
- VMware Virtual Apps and VMware Networks
- VMware Hosts and VMware Datastores
- VMware Hosts and VMware Networks
- VMware Hosts and VMware Virtual Machines
- VMware Datastore Clusters and VMware Virtual Machines
- VMware Datastore Clusters and VMware Host Clusters
- VMware Datastore Clusters and VMware Hosts

SL1 can also automatically build relationships between VMware component devices and other associated devices. If you discover one or more of the following:

- A Dynatrace host using the Dynamic Applications in the Dynatrace PowerPack
- A Cisco UC VOS application using the Dynamic Applications in the Cisco: UC VOS PowerPack
- A Cisco CUCM cluster using the Dynamic Applications in the Cisco: CUCM PowerPack
- An EMC VNX device using the Dynamic Applications in the EMC: VNX PowerPack
- A NetApp device using the Dynamic Applications in the NetApp Base Pack PowerPack
- A UCS device using the Dynamic Applications in the Cisco: UCS PowerPack

SL1 automatically creates relationships between the following types of component devices, where appropriate:

- Dynatrace hosts and VMware Datastores
- Cisco UC VOS applications and VMware Datastores
- Cisco CUCM clusters and VMware Datastores
- EMC VNX LUNs and VMware Datastores
- NetApp LUNs and VMware Datastores
- VMware Hosts and UCS Service Profiles

## Determining Availability for Component Devices

The Dynamic Applications that discover the component devices managed by a vCenter server include collection objects that define the availability status of those component devices.

The hosts folder contains three parent device classes and one child device class for the virtual machines:

- Compute Clusters (Parent)
- Resource Pools (Parent)
- Hosts (Parent)
- Virtual Machines (Child)

Depending upon VMware vSphere configuration, different virtual machines could be associated to any or all of the three parent device types.

VMware vSphere includes three types of component devices that are considered unavailable if a vCenter server reports that the power state is off:

- Compute Resource
- Host Server (i.e., ESX and ESXi Servers)
- Virtual Machine

The following types of component devices are considered unavailable if a vCenter server loses its connection to an ESXi hypervisor host server:

- Host Server
- Virtual Machine

The following types of component devices are considered unavailable if a vCenter server does not include information about those components in the appropriate response:

- Distributed Virtual Switch
- Distributed Virtual Portgroup
- Folder
- Network
- Resource Pool

The following types of component devices are considered unavailable based on other conditions:

- **Datastore**. A datastore is considered unavailable if it is not accessible. A datastore is not accessible if no hosts have successfully mounted the datastore volume.
- **Cluster**. A cluster is considered unavailable if no hosts are associated with the cluster or all hosts associated with the cluster are powered off.

When a VMware device is shut down, an event is created to alert the user that the device is unavailable. If you turn off VMware devices intentionally, you can suppress these availability events.

To suppress these events:

- Create a device group that contains the VMware devices for which you want to suppress availability events.
- Suppress that device group in the relevant Event Policies.

To create the device group:

1. Go to the **Device Groups** page (Devices > Device Groups or Registry > Devices > Device Groups in the SL1 classic user interface).

2. Click the [Create] button. The Device Group Editor page appears:

Device Group Editor   Creating new group		Guide Reset
Device Group Name	Force Child Visibility?	Sharing Permissions
	[No]	[ Private (visible to you only) ]
lcon	Visibility	Permission Keys
	Maps/Views Confg Policies/Buk Edit Notification/Automation Discovery Device Schedules Event Suppression RSS Feeds	EM7 System Administration Grant All Tloket AtT Test IT Services Ib_TTSM mh-IT Services - View
Static Devices and Groups   Devices [0]   Groups [0]		Del Add
Device Name • Class   Sub-class	ID Organization Z Device Gro	oup Name • ID Devices Groups Rules 🗹
No devices in current device group		No sub-groups in current device group.
Dynamic Rules   Rules Found [0]		Del Add
Selector Type	Selector Targets	Matched Devs 🛛
	No dynamic rules in current device group.	
		Matched
	Save	

- 3. Enter values in the following fields:
  - Device Group Name. In this field you can enter a customized Device Group Name. For example, "Event Suppressed VMs".
  - Visibility. Select Event Suppression.

4. If you want to suppress one or a few individual devices, click the **[Add]** button under the **Static Devices and Groups** pane and select *Add Devices*. The **Device Alignment** modal page appears:

ice Alignment							Res	et
!	Device Name •	IP Address	Category	Class   Sub-class	D	Organization	Action	
. M.Xen			Servers	Xen Cluster I Xen Cluster	1924	Svstem		l
10-Forward	1	10.20.30.195	Servers	NET-SNMP   FreeBSD	115	System		
3. 10.0.0.3		10.0.0.3	Unknown	Cisco Systems   OEM	1944	System		
10.0.0.5		10.0.0.5	Unknown	Cisco Systems   OEM	1943	System		
5. 10.0.10.21			VMware	VMware   Host Server	1722	System		
6. 10.0.10.22			VMware	VMware   Host Server	1723	System		
. 10.0.10.23			VMware	VMware   Host Server	1721	System		
3. 10.0.10.24			VMware	VMware   Host Server	1716	System		
. 10.0.10.25			VMware	VMware   Host Server	1719	System		
. 10.0.10.26			VMware	VMware   Host Server	1709	System		
. 10.0.10.27			VMware	VMware   Host Server	1710	System		
2. 10.0.10.29			VMware	VMware   Host Server	1690	System		
8. 10.0.10.30			VMware	VMware   Host Server	1712	System		
4. 📶 10.0.10.31			VMware	VMware   Host Server	1714	System		
5. 10.0.10.32			VMware	VMware   Host Server	1927	System		
6. 10.0.10.33			VMware	VMware   Host Server	1912	System		
7. 📶 10.0.10.33			VMware	VMware   Host Server	1711	System		
8. 10.0.10.34			VMware	VMware   Host Server	1708	System		
9. 10.0.10.40			VMware	VMware   Host Server	1922	System		
0. 📶 10.0.9.180			VMware	VMware   Host Server	1657	System		
. 📶 10.0.9.180			VMware	VMware   Host Server	1408	System		
. 📶 10.0.9.181			VMware	VMware   Host Server	1411	System		
. 📶 10.0.9.181			VMware	VMware   Host Server	1656	System		
. 10.0.9.182			VMware	VMware   Host Server	1558	System		
. 10.0.9.182			VMware	VMware   Host Server	1409	System		
. 📶10.0.9.183			VMware	VMware   Host Server	1414	System		
. 10.0.9.183			VMware	VMware   Host Server	1646	System		
8. 10.0.9.184			VMware	VMware   Host Server	1645	System		
. 10.0.9.184			VMware	VMware   Host Server	1412	System		

- 5. In the **Device Alignment** modal page, perform a search in the **Class | Sub-class** column for "Virtual Machine" to bring up the available VMware devices.
- 6. Find the device(s) for which you want to suppress availability events and select their checkbox (
- 7. Click the [Add/Remove] button to add the device(s).

8. To add all VM devices to the device group, click the **[Add]** button in the **Dynamic Rules** pane of the **Device Group Editor** page. The **Device Group Rule Editor** page appears:

evice Group Rule Editor							Re	eset
Active Selectors	Selector Definition	ıs						
Organization								
Device Class								
Device Category								
Device Name								
Device IP								
Device State								
Collection State								
Open TCP Ports								
Running Process								
Windows Service								
Subscribed Product								
Active Event								
latched Devices [1120]							Collection	
Device N	lame •	Category Servers	Class   Sub-class	1924	Organiza	tion Active	State	
1		Servers	Xen Cluster   Xen Cluster NET-SNMP   FreeBSD	1924	System System	Active		
3. 10.0.0.3		Unknown	Cisco Systems   OEM	1944	System	Active		
4. 10.0.0.5		Unknown	Cisco Systems   OEM	1943	System	Active		
5. 10.0.10.21		VMware	VMware   Host Server	1722	System	Active		
6. 📶 10.0.10.22		VMware	VMware   Host Server	1723	System	Active		
7. 10.0.10.23		VMware	VMware   Host Server	1721	System	Active		
8. 10.0.10.24		VMware	VMware   Host Server	1716	System	Active		
9. 10.0.10.25		VMware	VMware   Host Server	1719	System	Active		
10. 10.0.10.26		VMware VMware	VMware   Host Server VMware   Host Server	1709 1710	System System	Active		
44 40.040.27		vwware	vinware   nost Server	1710	System	Active		
11. 10.0.10.27		VMware	VMware   Host Server	1690	System	Active		
11. 10.0.10.27 12. 10.0.10.29 [Viewing Page: 1]	•	VMware	VMware   Host Server	1690	System	Active	OF	

9. In the **Device Group Rule Editor** page, select the checkbox (1) for **Device Class** in the **Active Selectors** pane.

10. In the **Selector Definitions** pane, the **Device Class** field appears. Perform a search for "VMware" in the **Device Class** field, and select VMware | Virtual Machine. All virtual machines will appear in the **Matched Devices** pane:

vice Group Rule Editor							R	eset
ctive Selectors	Selector Definition	ons						
Organization		Device	Class	Invert 📃				
Device Class	VMware							
Device Category	Viiiware   Tolder VMware   Host S	enver						
Device Name	VMware   Netwo							
Device IP	VMware   Resou							
Device State	VMware   vCente			-				
Collection State	VMware   Virtual							
	VMware   Virtual	Machine						
Open TCP Ports								
Running Process								
Windows Service								
Subscribed Product								
Active Event								
Asset Make								
latched Devices [360]								
							Collection	
	Name •	Category	Class   Sub-class	ID		Organization	Collection State	
Device 1		Category VMware	Class   Sub-class VMware   Virtual Machine	<u>ID</u> 1587	System	Organization	Collection State Active	
<u>Device 1</u> 1. <u>100.10_IS_10.100.10</u>	00.17				System System	Organization	State	
<u>Device 1</u> 1. <u>100.10_IS_10.100.10</u>	00.17	VMware	VMware   Virtual Machine	1587	-	<u>Organization</u>	State Active	
Device 1 1100.10_IS_10.100.10 21100.8_IS_10.100.100 377.1.10_IS	)0.17 ).15	VMware VMware	VMware   Virtual Machine VMware   Virtual Machine	1587 1591	System	<u>Organization</u>	Active Active	
Device 1 1	0.17 0.15 al	VMware VMware VMware	VMware   Virtual Machine VMware   Virtual Machine VMware   Virtual Machine	1587 1591 1490	System System System	<u>Organization</u>	State Active Active Unavailable Unavailable Unavailable	
Device 1 1. m[100.10_IS_10.100.10 2. m[100.8_IS_10.100.100 3. m[7.1.10_IS 4. m[7.1.X-7.2.beta.internal	0.17 0.15 al	VMware VMware VMware VMware	VMware   Virtual Machine VMware   Virtual Machine VMware   Virtual Machine VMware   Virtual Machine	1587 1591 1490 1482	System System System System	<u>Organization</u>	State Active Active Unavailable Unavailable	
Device 1 1. m[100.10_IS_10.100.10 2. m[100.8_IS_10.100.10 3. m[7.1.10.15 4. m[7.1.X-7.2 beta.intern: 5. m[7.1.X-7.2 beta.intern: 6. m[7Safe Test System 7. m[7Safe Test System	0.17 0.15 al	VMware VMware VMware VMware VMware VMware VMware	VMware   Virtual Machine VMware   Virtual Machine VMware   Virtual Machine VMware   Virtual Machine VMware   Virtual Machine VMware   Virtual Machine	1587 1591 1490 1482 1672 1606 1500	System System System System	Organization	State Active Active Unavailable Unavailable Unavailable Unavailable	
Device 1           1.         m[100.10_IS_10.100.10]           2.         m[100.8_IS_10.100.10]           3.         m[7.1.X-7.2 beta.interm           5.         m[7.1.X-7.2 beta.interm           6.         m[7.1X-7.2 beta.interm           7.         m[7.54fe Test System           8.         m[8633_AIO	0.17 0.15 al	VMware VMware VMware VMware VMware VMware VMware	VMware   Virtual Machine VMware   Virtual Machine VMware   Virtual Machine VMware   Virtual Machine VMware   Virtual Machine VMware   Virtual Machine VMware   Virtual Machine	1587 1591 1490 1482 1672 1606 1500 1635	System System System System System System	Organization	State Active Unavailable Unavailable Unavailable Unavailable Active	
Device 1 Dev	0.17 0.15 al	VMware VMware VMware VMware VMware VMware VMware VMware VMware VMware	VMware   Virtual Machine VMware   Virtual Machine	1587 1591 1490 1482 1672 1606 1500 1635 1516	System System System System System System System	<u>Organization</u>	State Active Unavailable Unavailable Unavailable Unavailable Unavailable Active Active	
Device 1           1         m[100.10_[S_10.100.10]           2         m[101.01_S]           3         m[7.1.10_[S]           4         m[7.1.X-7.2.beta.intermin.5]           5         m[7.1.X-7.2.beta.intermin.6]           6         m[7.5afe Test System]           7         m[7.5afe Test System]           9         m[6633_Al0]           9         m[633_Al0]           0         m[Al0_snader]	0.17 0.15 al	VMware VMware VMware VMware VMware VMware VMware VMware VMware VMware	VMware   Virtual Machine VMware   Virtual Machine	1587 1591 1490 1482 1672 1606 1500 1635 1516 1681	System System System System System System System System	Organization	State Active Unavailable Unavailable Unavailable Unavailable Unavailable Active Active Active	
Device 1 Dev	00.17 ),15 al al	VMware VMware VMware VMware VMware VMware VMware VMware VMware VMware	VMware   Virtual Machine VMware   Virtual Machine	1587 1591 1490 1482 1672 1606 1500 1635 1516 1681 1753	System System System System System System System	Organization	State Active Unavailable Unavailable Unavailable Unavailable Unavailable Active Active	

11. Click the **[OK]** button. The Device Class will appear in the **Dynamic Rules** pane.

Next, you need to suppress two Event Policies for this Device Group.

- Suppressing the Event Policies in SL1
- Suppressing the Event Policies in the SL1 classic user interface

To suppress two Event Policies for this Device Group:

- 1. Go to the **Event Policies** page (Events > Event Policies).
- 2. Perform a search for "Availability".
- 3. Locate the **Poller: Availability Check Failed** policy, click the actions icon (---) and select **Edit**. The **Policy Description** page appears. Click the **[Suppression]** tab.

				▲ Activity Em7admin ~ SUSciencelogic
Poller: Availability Check Failed	Enable Event Policy			Cancel Save
Policy Description Match Logic	Event Message Suppression			
Devices		Select Devices	Device Groups	Select Device Groups
No Devices Selected			No Device Groups Selected	

- 4. In the **Device Groups** pane, click the **[Select Device Groups]** button.
- 5. In the **Available Device Groups** window, locate the device group you created and select its checkbox. Click the **[Select]** button. The selected device group now appears in the **Device Groups** pane.
- 6. Click the **[Save]** button.
- 7. Repeat these steps for the **Poller: Availability Healthy** event policy to suppress events that will occur when a VMware device is turned back on again.

To suppress the two Event Policies in the SL1 classic user interface:

- 1. Go to the **Event Policy Manager** page (Registry > Events > Event Manager).
- 2. Perform a search in the *Event Policy Name* column for "Availability".

3. Click the wrench icon (*P*) for the **Poller**: Availability Check Failed policy. The Event Policy Editor page appears:

Event Policy Editor   Editing Event Policy [927]	New Reset	Guide
Policy Advanced Suppressions		
Available Device Groups	Suppressed Device Groups	
mh-Test Group aws Data Centers mh Testgroup2	Event Suppressed VMs	*
Available Devices	s Suppressed Devices	Ŧ
Advanced Telecommunications Modules Ltd: OEM: Broadxent system	(No devices suppressed)	
Altiga Networks: OEM: Claco_10.20.30.134 Altiga Networks: OEM: CustB_VPN3000 Altiga Networks: OEM: CustB_VPN3000 Altiga Networks: OEM: CustB_VPN3000 APC: MasterSwitch PDU: Imrtreset1 APC: SmartUPS 2200: ups1.tvm az APC: UPS: power24 APC: Web/SNMP Management Card: power16 APC: Web/SNMP Management Card: + LA3-POWER101 Ascend Communications: Pipeline touter: ACCT-734664 ASKEY Computer Corp.: OEM: 10.20.30.52 Avaga: OEM: MCTS8720Act Avocent: DSR1021 03.30.00.77: DSR1021 06-E0-7D Avocent: OSR1021 03.30.00.77: DSR1021 06-E0-7D Avocent: OEM: CCT1650 05-57-7A Avocent: OEM: CPS-1610 90-8F-22 Avagent: OEM: DSR1022 02-10-63		Ŧ
	Save Save As	

- 4. Click the [Suppressions] tab in the Event Policy Editor page.
- 5. In the **Available Device Groups** field, select the device group you created. In this example, you would select *Event Suppressed VMs*.
- 6. Click the right arrow button, [>>], and the device group moves to the **Suppressed Device Groups** field.
- 7. Click the [Save] button.
- 8. Repeat these steps for the **Poller: Availability Healthy** event policy to suppress events that will occur when a VMware device is turned back on again.

# Limitations of Merged Devices

If you merge a VMware virtual machine component with a physical device, be aware of the following limitations:

- When you merge a VMware virtual machine with a physical device, such as a Window or Linux server, you should ensure that the virtual machine and the physical device are assigned to the same collector group.
- When a virtual machine is moved, dropped, or deleted, the corresponding physical device record is deleted via vanish/purge.

• The VMware: vSphere Base Pack PowerPack aligns Internal Collection Dynamic Applications when you merge a device. When you unmerge a device, you should manually unmerge the "VMware: VirtualMachine IC Uptime" Dynamic Application from the physical device.

# Chapter



# Dashboards

### Overview

Use the following menu options to navigate the SL1 user interface:

- To view a pop-out list of menu options, click the menu icon (三).
- To view a page containing all the menu options, click the Advanced menu icon ( … ).

SL1 includes the VMware: vSphere Dashboards PowerPack, which contains dashboards that display data collected from VMware systems.

In addition, the VMware: vSphere Base Pack PowerPack includes device dashboards that provide summary information for VMware component devices. Each of these device dashboards is aligned as the default device dashboard for its equivalent device class.

The following sections describe how to install the VMware: vSphere Dashboards PowerPack and a description of each dashboard that is included in the VMware: vSphere Dashboards and VMware: vSphere Base Pack PowerPacks:

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# Installing the VMware: vSphere Dashboards PowerPack

Before you can view the VMware Host Performance or VMware vCenter Overview dashboards in SL1, you must first install the VMware: vSphere Dashboards PowerPack. To do so:

- 1. Go to the **PowerPack Manager** page (System > Manage > PowerPacks).
- 2. Click the [Actions] button, then select Install PowerPack. The Imported PowerPacks modal page appears.
- Use the search filter in the *PowerPack Name* column heading to locate the PowerPack you want to install. To do so, enter text to match, including special characters, and the *Imported PowerPacks* modal page displays only PowerPacks that have a matching name.

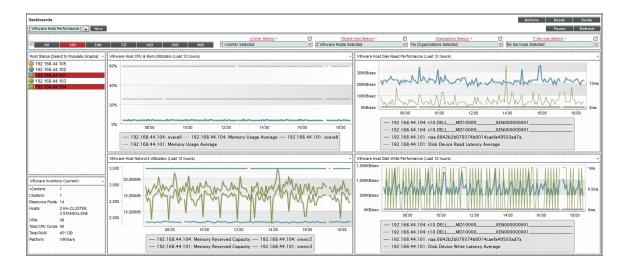
рc	orted PowerPacks™   PowerPack	Files I	Found	[298]							Res	set
	PowerPack Name	Version	Revisio n	GUID	L	ast Edi	ited	1	mporte	ed 🔺		2
					All		-	All		-		
1.	Event Association Test	1	1	DED1884762194566B70BCD4DF3A742	2015-	12-16	09:43:07	2015	-12-16	09:43:0	9	
2.	Event Suppression Test	1	1	EC64565DCA55E155135F91F81F44D8	2015-	12-09	07:44:17	2015	12-09	07:44:1	1	Ē
3.	SLPSD: Onboarding	0.20000	287	E121312B60972ED35BEDA19E88D195	2015-	11-12	12:14:05	2015	11-12	12:13:50	1	
4.	SL_PS Cisco 3rd Party Device Support	1.39999	151	8B78EDB3A373B2D187ECEAE2545744	2015-	11-05	12:17:39	2015	11-05	12:16:54	1	Ē
5.	NetApp Base Pack	7.7.0	6873	8014D5DAD2B8C9AC3E1DD84CC227E	2015-	10-21	13:31:47	2015	10-29	14:56:5	1	
6.	Cisco: Contact Center Enterprise *BETA*	0.5	1119	7CC6AD933EFB4FF5D840EFEA40F85C	2015-	12-14	13:50:50	2015	10-29	14:56:5	1	
7.	EM7 Standard Device Categories	7.7.0	255	7A7322AA30F189B42943C082EFD7121	2015-	06-02	18:30:56	2015	10-29	14:56:54	1	
8.	BL Test	1	2	74F7E816CF0FC9153700D2AF0982C2	2015-	10-29	10:56:11	2015	10-29	10:56:0	1	
9.	BL Test	1	1	74F7E816CF0FC9153700D2AF0982C2	2015-	10-29	10:56:11	2015	10-29	10:54:1	1	
10.	Microsoft: Office 365 *BETA*	0.5	138	8FA30F7D1FAC9162DD8C717D9EF778				2015	10-20	16:44:3	1	
11.	NetApp Base Pack	7.7.0	6838	8014D5DAD2B8C9AC3E1DD84CC227E	2015-	10-21	13:31:47	2015	10-20	16:44:3	1	
12.	Cisco: Contact Center Enterprise *BETA*	0.5	1109	7CC6AD933EFB4FF5D840EFEA40F85C	2015-	12-14	13:50:50	2015	10-20	16:44:3	1	
13.	EM7 Default Internal Events	7.7.0	316	BE1F363DB4BA9A10F5C6BC28931F0B	2015-	10-28	13:26:25	2015	10-20	16:44:3	1	
14.	F5 BIG-IP *BETA*	7.7.0	3242	BFA4E6B316FD2302D913EF38FE7FF82	2015-	10-28	13:26:27	2015	10-20	16:44:3	1	
15.	Microsoft: Office 365 *BETA*	0.5	136	8FA30F7D1FAC9162DD8C717D9EF778				2015	10-14	15:12:2	1	
16.	Cisco: Contact Center Enterprise *BETA*	0.5	1022	7CC6AD933EFB4FF5D840EFEA40F85C	2015-	12-14	13:50:50	2015	10-14	15:12:2	1	
17.	Microsoft Base Pack	7.7.0	868	97469E96E98B5DAB516F3CCC8747CE	2015-	10-28	13:26:26	2015	10-13	12:47:5	1	
18.	EM7 Default Internal Events	7.7.0	315	BE1F363DB4BA9A10F5C6BC28931F0B	2015-	10-28	13:26:25	2015	10-13	12:47:5	1	
19.	NetApp Base Pack	7.7.0	6792	8014D5DAD2B8C9AC3E1DD84CC227E	2015-	10-21	13:31:47	2015	10-13	12:47:5	1	Π.

- 4. Click the lightning-bolt icon ( $\checkmark$ ) for the PowerPack that you want to install.
- 5. The Install PowerPack modal page appears. To install the PowerPack, click [Install].
- 6. The PowerPack now appears in the **PowerPack Manager** page. The contents of the PowerPack are automatically installed in your SL1 System.

# VMware Host Performance Dashboard

The VMware Host Performance dashboard allows service providers to monitor VMware hosts and diagnose problems with those hosts. The dashboard can include data from up to four hosts in each graph. This allows users to find correlations between hosts in data drops or spikes, making it easier for users to identify and diagnose issues.

The dashboard displays the following widgets:



Context Quick Selector. This widget is located along the top of the dashboard and contains:

- *Time span presets*. Users select the time span over which they want to view data. Selections range from 6 hours to 90 days.
- vCenter Selector. If a user has multiple vCenters, this drop-down list allows the user to select one or several vCenters for which they want to view data.
- Organizations Selector. This drop-down list allows a user to select specific organizations for which they want to view data.
- IT Services Selector. If a user has an ITSM service (for example, for e-commerce), the IT Services Selector drop-down list allows them to select an IT service for which they want to view data.

*Host Status*. Displays the IP address of each VMware ESX/ESXi server and its status with a color-coded "traffic light" icon. When you select one or more VMware ESX/ESXi server, the four performance widgets are populated with data from that host server(s). The status of each host is indicated as follows:

- Critical. Host has a serious problem that requires immediate attention.
- Major. Host has a problem that requires immediate attention.
- Minor. Host has a less-serious problem.

- Notice. Host has an informational event associated with it.
- Healthy. Host is running with no problems.

**NOTE**: More than four hosts can be selected in the *Host Status* widget, but the dashboard will only display data from the first four that have been selected.

**VMware Inventory**. This widget displays information based on the user's credentials. The widget displays inventory information about the following:

- vCenters
- Clusters
- Resource Pools
- Hosts
- VMs
- Total CPU Cores
- Total RAM
- Platform

The following four widgets measure different aspects of VMware performance. Select one or more hosts in the *Host Status* widget to view data in these widgets:

- VMware Host CPU & Memory Utilization. Displays overall and average CPU and Memory Utilization in percent. Displays a line graph with a line each for CPU Utilization and Memory Utilitization over the time period selected in the Context Quick Selector by percent.
- VMware Host Disk Read Performance. Displays the Disk Read Performance of the selected host in a line graph.
- VMware Host Network Utilization. Displays the Network Utilization of the selected host in a line graph.
- VMware Host Disk Write Performance. Displays the Disk Write Performance of the selected host in a line graph.

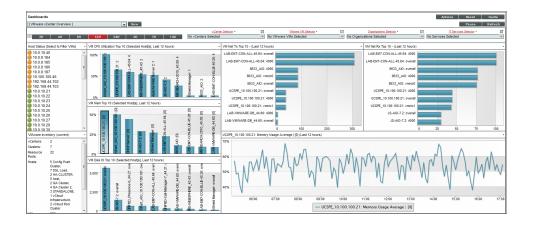
Each of the four performance widgets has the following features:

- The X-axis of each widget displays time selected in the Context Quick Selector by hours or days.
- For the selected VMware ESX/ESXi server, the Y-axis displays either performance or utilization by percentage or in a format that is auto-converted to the most consumable value based on the server.
- You can hide a data series by selecting the label in the legend that appears at the bottom of the widget. To show a hidden data series, select the label again.
- You can zoom in on a section of the graph by clicking, holding, and dragging your mouse across the section you want to view. If you are zoomed in on a section of the graph, you can revert to the original time span by selecting *Reset zoom* in the top-right corner of the graph.

• Hovering the cursor over a single line reveals details about specific data points. If you select a data point, the **Device Performance** page will open in a separate window with the graph for the selected metric displayed.

# VMware vCenter Overview Dashboard

The VMware vCenter Overview dashboard allows users to have visibility into their VMware environment. Users can view how their VMs and hosts are performing over a given period of time. The dashboard allows diagnostics with its overlay capability. By selecting up to four hosts, the usage average of those devices and hosts can reveal correlations in spikes or drops in data, allowing the user to quickly diagnose issues.



**Context Quick Selector**. This widget contains the time span presets buttons, vCenter Selector, VMware VM Selector, Organizations Selector, and IT Services Selector.

- *Time span presets*. Users select the time span over which they want to view data. Selections range from 6 hours to 90 days.
- vCenter Selector. If a user has multiple vCenters, this drop-down list allows the user to select one or several vCenters for which they want to view data
- VMware Host Selector. This drop-down list allows a user to select up to four VMware Hosts for which they want to view data.
- Organizations Selector. This drop-down list allows a user to select specific organizations for which they want to view data
- IT Services Selector. If a user has an ITSM service for e-commerce, for example, the IT Services Selector drop-down list allows them to select an IT service for which they want to view data.

*Host Status*. Displays the IP address of each VMware server and its status with a color-coded "traffic light" icon. When one or more are selected, the graphs will be populated with data from that host server(s). The status of each host is indicated as follows:

- Critical. Host has a serious problem that requires immediate attention.
- Major. Host has a problem that requires immediate attention.

- Minor. Host has a less-serious problem.
- Notice. Host has an informational event associated with it.
- Healthy. Host is running with no problems.

**NOTE**: More than four hosts can be selected in the *Host Status* widget, but the dashboard will only display data from the first four that have been selected. It is recommended that you select VMware devices from the *VMware VM Selector* drop-down list in the *Quick Context Selector* widget.

**VMware Inventory**. This widget displays information based on the user's credentials. The widget displays inventory information about the following:

- vCenters
- Clusters
- Resource Pools
- Hosts
- VMs
- Total CPU Cores
- Total RAM
- Platform

**VM CPU Utilization**. Displays the 10 guest VMs with the highest average CPU utilization over the selected time period. The widget displays a bar graph with percentage utilized as the Y-axis.

**VM Memory Top 10**. Displays the 10 guest VMs with the highest average memory utilization over the selected time period. The widget displays a bar graph with percentage utilized as the Y-axis.

VM Disk IO Top 10. Displays the 10 guest VMs with the highest average disk usage over the selected time period. The widget displays a bar graph with disk utilization as the Y-axis.

VM Network Transmit Top 10. Displays the 10 guest VMs with the highest average outbound network utilization over the selected time period. The widget displays a bar graph with outbound network utilization as the Y-axis.

VM Network Receive Top 10. Displays the 10 guest VMs with the highest average inbound network utilization over the selected time period. The widget displays a bar graph with inbound network utilization as the Y-axis.

**Detailed Performance Graph**. The widget in the bottom-right of the dashboard displays data when a bar on any of the other graphs in this dashboard is selected. When a bar is selected, it displays the selected metric over time. You can select up to eight metrics to display in this graph by holding down the **<Ctrl>** key when you select each bar.

# VMware Device Dashboards

The VMware: vSphere Base Pack PowerPack includes device dashboards that provide summary information for VMware component devices. Each of these device dashboards is aligned as the default device dashboard for its equivalent device class.

### VMware: Cluster

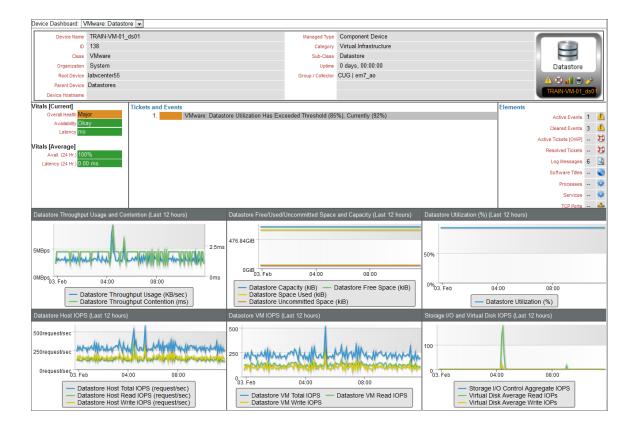
Device Dashboar	d: VMware: Cluster	-										
Device N	Name Cluster1				Managed Typ	Component [	Device			-		
	D 7292				Categor	Servers.VMv	/are					
c	Class VMware				Sub-Clas	Cluster					<u> </u>	
Organiza	ation System				Uptim	0 days, 00:0	0:00			C	luster Con Resource	npute
Root De	evice flexpod-vcenter				Group / Collecto	r CUG   AWSd	evAIO					
Parent De	evice Hosts										🛆 😫 📶 🗉	
Device Hostn	name										Cluster	
Vitals [Current]									I	Elements		
Overall Health											Active Events	💧
Availability											Cleared Events	27 🔺
Latency	y ms			There ar	e no events or tickets :	or this device					Tickets [OWP]	
Vitals [Average]											solved Tickets	
Avail. (24 Hr.												
Latency (24 Hr.	.) 0.00 ms										Log Messages	_
										:	Software Titles	-
											Processes	- 🕸
											Services	- 🕸
											TCP Ports	📣
Cluster Effective	e CPU Average (Mhz) (	Last 12 hours)			Root F	lesourcePool Cl	PU Usage Average	(Mhz) (Last 12 hou	rs)			
20000Mhz					5000M 2500M			mluh	.l.		hit	ml
0Mhz	03:00	06:00	09:00	1	0M	nz 02:00	04:00	06:00	08:00	10:00	12	200
					2.00	02.00	04.00					.00
	<u> </u>	Cluster Effective CPU A	Average (Mhz)				_	<ul> <li>CPU Usage Av</li> </ul>	erage (Mhz	)		
Cluster Effective	Memory Average and	Total (Last 12 hours)			Root F	ResourcePool M	emory Performance	e (Last 12 hours)				
100GB												
10000												
					10GB							
50GB						-m	m			m	m	h
							,					
					0GB	02:00	04:00	06:00	08:00	10:00	12	00
0GB 02:0	00 04:00	06:00	08:00 10	0:00 1	2:00							
_	Cluster Effective Me	emory Average (MB)	- Memory Total	Average (MB)		Me Me	mory Swapped Av mory Balloon Ave	rage (MB) – N	Memory Co Memory Acti	onsumed Averag ve Average (MB)	e (MB)	

The VMware: Cluster device dashboard displays the following information:

- The basic information about the cluster
- The current health, availability, and latency for the cluster
- A list of active events and open tickets associated with the cluster
- A count of, and links to, the elements associated with the cluster
- Four instances of the Multi-series Performance Widget that display the following metrics trended over the last 12 hours:
  - Cluster Effective CPU Average
  - CPU Usage Average

- ° Cluster Effective Memory Average
- Memory Total Average
- Memory Swapped Average
- ° Memory Consumed Average
- ° Memory Balloon Average
- Memory Active Average

#### VMware: Datastore



The VMware: Datastore device dashboard displays the following information:

- The basic information about the datastore
- The current health, availability, and latency for the datastore
- A list of active events and open tickets associated with the datastore
- A count of, and links to, the elements associated with the datastore
- Six instances of the Multi-series Performance Widget that display the following metrics trended over the last 12 hours:
  - Datastore Throughput Usage
  - ° Datastore Throughput Contention

- Datastore Capacity
- Datastore Free Space
- Datastore Space Used
- Datastore Uncommitted Space
- Datastore Utilization
- ° Datastore Host Total IOPS
- ° Datastore Host Read IOPS
- ° Datastore Host Write IOPS
- Datastore VM Total IOPS
- ° Datastore VM Read IOPS
- Datastore VM Write IOPS
- Storage I/O Control Aggregate IOPS
- Virtual Disk Average Read IOPS
- Virtual Disk Average Write IOPS

### VMware: Datastore Cluster

Device Das	shboard: VMware: Datastor	e Cluster 💌										
D	Device Name DS Cluster				Managed Type	Component Device						
	D 7306				Category	Virtual.Infrastructur	re				4.4	R II
	Class VMware				Sub-Class	Datastore Cluster						8
C	Organization System				Uptime	0 days, 00:00:00					Datastore C	luster
1	Root Device flexpod-vcenter				Group / Collector	CUG   AWSdevAlO					A 🛛 🖬	5.0
Pa	arent Device Datastores										DS Clu	
Devic	e Hostname										US CIU	ster
Detectoro	Cluster Capacity (Last 12 h	euro)								Elements		
Datastore	Cluster Capacity (Last 12 h	ours)								Lionona	Active Events	🔥
476.84GiB											Cleared Events	20 📥
					There are	e no events or tickets for	this device				Active Tickets [OWP]	-
238.42GiB	1										Resolved Tickets	
											Log Messages	-
0GiB	04:00	08:00	12:00	-							Software Titles	-
			12.00								Processes	-
	<ul> <li>Datastore Cluster</li> <li>Datastore Cluster</li> </ul>	Capacity (kiB) Space Used (kiB)									Services	-
		Space Allocated (kiB)									TCP Ports	
Datastore	Cluster IOPS (Last 12 hour	5)		Datastore Cluster S	Space (Last 12 hours)			Datastore	e Cluster Latency (L	ast 12 hou		
0.07IOPs			_								,	
								20ms -		-		
0.06IOPs -				476.84GiB								
								17.5ms				
0.05IOPs				381.47GiB				15ms				
0.04IOPs -				286.1GiB				12.5ms				
				200.166				10ms		_		
0.03IOPs -												
				190.73GiB				7.5ms				
0.02IOPs -								Emo				
0.02IOPs -				95.367GiB				5ms -				
				95.367GiB				5ms				
0.02IOPs -								2.5ms -				
				95.367GiB	04:00	08:00	12:00		04:00		08:00	12:00
0.01IOPs -	04:00	08:00	12:00	0GIB	Datastore Cluster Spa	ace Allocated (kiB)	12:00	2.5ms -	- Virtual Disk	Average R	lead Latency (ms)	12:00
0.01IOPs -		08 <sup>1</sup> 00 Aggregate IOPs (IOPs)	12:00	OGIB	04:00 Datastore Cluster Spr Datastore Cluster Caj Datastore Cluster Caj	ace Allocated (kiB) pacity (kiB)	12:00	2.5ms -	- Virtual Disk	Average V		12:00

The VMware: Datastore Cluster device dashboard displays the following information:

- The basic information about the datastore cluster
- A list of active events and open tickets associated with the datastore cluster
- A count of, and links to, the elements associated with the datastore cluster
- Four instances of the Multi-series Performance Widget that display the following metrics trended over the last 12 hours:
  - Datastore Cluster Capacity
  - ° Datastore Cluster Space Used
  - ° Datastore Cluster Space Allocated
  - ° Storage I/O Control Aggregate IOPS
  - Virtual Disk Average Read Latency
  - Virtual Disk Average Write Latency
  - Virtual Machine Observed Latency

#### VMware: Host

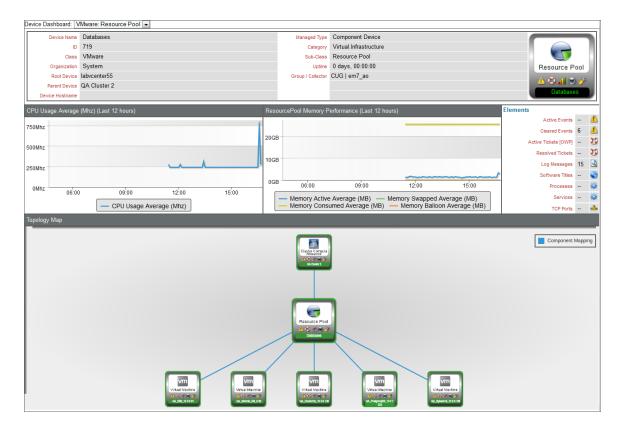


The VMware: Host device dashboard displays the following information:

- The basic information about the host
- A list of active events and open tickets associated with the host
- A count of, and links to, the elements associated with the host

- Seven instances of the Multi-series Performance Widget that display the following metrics trended over the last 12 hours:
  - Availability
  - CPU (%)
  - Memory (%)
  - CPU Usage Average
  - Memory Swap Used Average
  - Memory Consumed Average
  - Memory Balloon Average
  - Memory Active Average
  - Network Transmitted Average
  - Network Received Average
  - Disk Total Write Latency Average
  - ° Disk Total Read Latency Average
  - ° Disk Commands Aborted Summation
  - Datastore Average Read Commands
  - ° Datastore Average Write Commands
  - Datastore Write Latency
  - Datastore Read Latency

### VMware: Resource Pool



The VMware: Resource Pool device dashboard displays the following information:

- The basic information about the resource pool
- A count of, and links to, the elements associated with the resource pool
- Two instances of the Multi-series Performance Widget that display the following metrics trended over the last 12 hours:
  - CPU Usage Average
  - Memory Active Average
  - ° Memory Swap Used Average
  - ° Memory Consumed Average
  - Memory Balloon Average

### VMware: Virtual App

	/Mware: Virtual App 📃 💌								
Device Name	Test vApp			Managed Type	Component Device				
D	7341			Category	Virtual.Infrastructure			Conton of the second se	}
Class				Sub-Class	Virtual App			and a s	- 11
Organization					0 days, 00:00:00			Virtual Ap	р
11	flexpod-vcenter			Group / Collector	CUG   AWSdevAIO			🔺 🗢 🖬 🖶	1.0
Parent Device	Cluster1							Test vAp	
Device Hostname									
CPU Usage Average	(Mhz) (Last 12 hours)		Re	esourcePool Memory P	erformance (Last 12 ho	urs)		Elements	
			20	мв				Active Events	- 💧
			30	лив				Cleared Events	
0.05Mhz			20	мв				Active Tickets [OWP]	
			20	,				Resolved Tickets	- 8
0.025Mhz			10	MB				Log Messages	24 🖪
0.0250012								Software Titles	🕥
			0		03:00	06:00	09:00	Processes	- 🏘
0Mhz 03. Feb	03:00	06:00	09:00	03. Feb				Services	- 8 -
	0011112222	() () ()		- Memory Act	ive Average (MB)-	Memory Swapped	Average (MB)	TCP Ports	
	- CPU Usage Av	verage (Mnz)		- Memory Co	nsumed Average (MB	- Memory Balloc	n Average (MB)		_
Topology Map									
								Component Mapping	
								Component Mapping	Relation
	_			CL FIT COUP. Its					
								VMware: VApp/Network	
								VMware: VApp/Network	
								VMware: VApp/Network	
								VMware: VApp/Network	
				Vicual App				VMware: VApp/Network	
								VMware: VApp/Network	
				Vicual App				VMware: VApp/Network	
				Vicual App				VMware: VApp/Network	
								VMware: VApp/Network	
								VMware: VApp/Network	
								VMware: VApp/Network	

The VMware: Virtual App device dashboard displays the following information:

- The basic information about the virtual app
- A count of, and links to, the elements associated with the virtual app
- Two instances of the Multi-series Performance Widget that display the following metrics trended over the last 12 hours:
  - CPU Usage Average
  - Memory Active Average
  - Memory Swap Used Average
  - Memory Consumed Average
  - Memory Balloon Average

### VMware: Virtual Machine

Device time       75.40,0,10.00,100.8       Memory Performance (Last 12 hours)       Memory Reformance (Last 12 hours)       Memory Reformance (Last 12 hours)         Visial grant       States Processor       Statesor       States Processor       States	Device Da	ashboard: V	Wware: Virtual Ma	achine 💌												
Case       Whate       Sub-Case       Vitual Machine         Organization       System       Upwer       0 days, 0.00.00       Upwer       0 days, 0.00.00         Peet Dace       100:00.46       Documents       CUS (mm2/a)       CUS (mm2/a)       CUS (mm2/a)         Vitals (current)       Current       Cur		Device Name	7-5_AIO_10.100	0.100.8			Managed Typ	Component De	vice							
Vitual Machine Rod Dece Habour Habour Peret Dece 11 10: 10: 0.46 Drough Collector Cover Habour A character Cover Habour Cover Habour A character Cover Habour Cover Habour A character Cover Habour Habour Cover Habour A character Cover Habour Habour Cover Habour A character Cover Habour Habour Cover Habour Habour Habour Habour Cover Habour Habour Habour Habour Habour Cover Habour H		D	441				Categor	Servers.VMwa	re					V		
See Device between terife5       Group / Caletor       DUG i em7_ao         Parent Device 10:100.100.45       Concentration       Concentration         Undata       Concentration       Concentration       Concentration         Visia (Current)       Concentration       Concentration       Concentration         Overait Healthy       Concentration       Concentration       Concentration         Visia (Current)       Concentration       Concentration       Concentration         Concentration       Concentration       Concentration       Concentration         Visia (Current)       Concentration       Concentration       Concentration         Concentration       Concentration       Concentration       Concentration       Concentration         Visia (Cust 12 hours)       Memory Performance (Last 12 hours)       Network Performance (Last 12 hours)       Overall       Concentration         Operand       Concentration       Concentration       Concentration       Concentration       Concentration		Class	VMware				Sub-Clas	Virtual Machin	e						1 0	
Peret Drive 10 100 100 46  Drive Hestame Vitals Current Availability A		Organization	System				Uptim	0 days, 00:00:	00					Virtual Ma	chine	
Visits (Current)       Active Events       Image: Elements       Active Events       Image: Elements         Visits (Current)       Active Events       Image: Elements       Active Events       Image: Elements       Active Events       Image: Elements       Image: Elements       Active Events       Image: Elements       Image: Elements       Active Events       Image: Elements		Root Device	labvcenter55				Group / Collecto	CUG   em7_ao						A 22 4	- 0	
United Currently         Active Testame         Elements         Active Testame         Current team treating         Lateory riss         Lateory riss         Current team treating         Lateory risk for this device         Vitals (Last 12 hours)         Veloce Read Rate (KB)         Lateory risk read Rate (KB)         Out on the read Rate (KB) <th colspa="&lt;/td"><td></td><td>Parent Device</td><td>10.100.100.46</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>_</td></th>	<td></td> <td>Parent Device</td> <td>10.100.100.46</td> <td></td> <td>_</td>		Parent Device	10.100.100.46												_
Overalt team 1 fealthy       Active Teets       -         A value of 103       Edentify 100%       -       -         Lister (18.45%)       There are no events or tickets for this device       -       -         Viais [Average]       -       -       -       -         Active Teets (19.100%       -       -       -       -       -         Lister (24.17)       00%       - <td>De</td> <td>vice Hostname</td> <td></td> <td>7-5_AIO_10.</td> <td>100.100.8</td>	De	vice Hostname												7-5_AIO_10.	100.100.8	
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Vidas (Last 12 hours)       Memory Performance (Last 12 hours)       Network Performance (Last 12 hours)         100%       0%	Men	mory (1 Hr.) <mark>22.</mark>	9%											Service	s 🕺	
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50%       03       Feb       03/00       06/00       09/00       vmild         0%       03       Feb       03/00       06/00       09/00       vmild         Memory Swapped Average (KB)       Memory Consumed Average (KB)       Memory Consumed Average (KB)       Network Transmitted Average         Storage Performance (Last 12 hours)       Disk Performance (Last 12 hours)       Datastore Performance (Last 12 hours)       Datastore Performance (Last 12 hours)         50GB       1MBps       03/6 b       04/00       08/00       08/00         0MBps       03/6 b       04/00       08/00       08/00	10070									4000						
0%     03. Feb     04.00     06.00     06.00     09.00     Vmni2       0%     03. Feb     03.00     06.00     09.00     Vmni2       0     Device Stats Availability — CPU Usage Average (%) (%)     Memory Swapped Average (KB)     Vmni2     Vmni2       0     Memory Swapped Average (KB)     Memory Average (KB)     Network Transmitted Average       0     Memory Station Average (KB)     Network Transmitted Average       0     Memory Station Average (KB)     Network Transmitted Average       0     Network Transmitted Average     Network Transmitted Average					5GB					vmnic0						
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SOGB         MBps         MBps <th< td=""><td>Storage</td><td>Performance</td><td>(Last 12 hours)</td><td></td><td>Disk F</td><td>Performance (Last</td><td>: 12 hours)</td><td></td><td></td><td>Datastor</td><td>e Perform</td><td>ance (Last 1</td><td>2 hours)</td><td></td><td></td></th<>	Storage	Performance	(Last 12 hours)		Disk F	Performance (Last	: 12 hours)			Datastor	e Perform	ance (Last 1	2 hours)			
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- Storage Committed (B) - Storage Uncommitted (B) - Disk Commands Aborted Summation - Datastore Write Latency (ms)	-	- Storage	Committed (B)	Storage Uncommitted (B)		- Disk Comman	ds Aborted Summ	ation								

The VMware: Virtual Machine device dashboard displays the following information:

- The basic information about the virtual machine
- The current health, availability, latency, CPU, and memory for the virtual machine
- A list of active events and open tickets associated with the virtual machine
- A count of, and links to, the elements associated with the virtual machine
- Six instances of the Multi-series Performance Widget that display the following metrics trended over the last 12 hours:
  - Availability
  - CPU (%)
  - Memory (%)
  - Memory Swapped Average
  - Memory Consumed Average
  - Memory Balloon Average
  - Memory Active Average
  - Network Transmitted Average

- Network Received Average
- Storage Committed
- Storage Uncommitted
- Disk Read Average
- Disk Write Average
- ° Disk Commands Aborted Summation
- ° Datastore Read Rate
- Datastore Write Rate
- Datastore Read Latency
- Datastore Write Latency

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