

Pure Storage FlashArray Management Pack for Microsoft System Center Operations Manager User Guide (Version 1.0)



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Chapter 1. Introduction

Overview

The Microsoft® System Center is a suite of products that can be leveraged to monitor health, capacity, and usage to diagnose and troubleshoot issues across applications, workloads, and infrastructure before these result in costly downtime or slow performance.

This suite is widely used by large enterprise customers in various capacities. A component of this suite is System Center Operations Manager (SCOM), which provides IT monitoring and access to rich analytics and insights as well as alerting and notifications.

SCOM uses vendor-supplied management packs to talk to infrastructure components from various manufacturers. These management packs integrate manufacturer-specific APIs and product logic.

SCOM works naturally with other components of the System Center suite, such as SCVMM, SCO, and SCCM, to offer a complete solution to deploy, monitor and manage the whole infrastructure

Installing the management pack involves installing the Pure Storage® FlashArray solution and then configuring a Pure Storage FlashArray endpoint for each FlashArray to be monitored. Once the Pure Storage FlashArray endpoints are configured, FlashArray object data and alert information is collected.

After the data has been pulled into SCOM, the information can be used to analyze capacity and performance statistics, determine the health of the array objects, determine any risks, forecast growth, generate custom workloads, analyze alerts, and monitor FlashArrays' volumes, hosts, and host groups.

About This Guide

This document provides an overview of the features available in the Pure Storage FlashArray Management Pack.

Audience

This document is intended for administrators who use SCOM with virtual machines hosted on Pure Storage FlashArrays.

Limitation

In this release, the management pack does not provide support for FlashBlade arrays.





Chapter 2. Before You Begin

Before you install and configure the Pure Storage® FlashArray Management Pack for the Microsoft System Center Operations Manager (SCOM), review the release notes, verify that your system meets the minimum requirements, and verify that you have the appropriate privileges to perform the installation.

Verify the System Requirements

 $\hfill\square$ Verify the Microsoft System Center Operations Manager version.

SCOM 2012R2 or 2016 is required.

For more information about SCOM, refer to the *Microsoft System Center Operations Manager* website. Refer to Microsoft documentation for server size and other requirements.

□ Verify the Purity version installed on your FlashArray.

Purity 4.7.0 or later version is required.

Determine the Purity version through the Purity GUI (System > Configuration > Array) or Purity CLI (purearray list command.)

For more information, refer to the Purity 4.x or 5.x FlashArray User Guide in Pure1 Knowledge at <u>http://support.purestorage.com</u> [http://support.purestorage.com].

Verify the Administrator Privileges

SCOM Credentials

You must have the following credentials to install and configure the management pack:

On SCOM, verify that you have virtual infrastructure administrator privileges. These credentials are required to install and configure the management pack on the SCOM server.
 You must have SCOM administrator privileges to view FlashArray information in the SCOM pages.

FlashArray Credentials

□ On each Pure Storage FlashArray, verify that you have a Purity account with at least Storage Administrator privileges.

The Purity account can be either a local FlashArray administrator such as **pureuser** or a Purity administrator enabled through a directory service such as Microsoft Active Directory or OpenLDAP.

Note about read-only FlashArray administrators: a read-only FlashArray administrator can successfully display data from the array in SCOM. However, a read-only administrator is not able to modify alerts on the array for alerts that are modified in SCOM.





Chapter 3. Installation

Installing the Pure Storage FlashArray Solution

Install the Pure Storage® FlashArray solution by adding the Pure Storage FlashArray Management Pack to your SCOM server.

These steps require that the Pure Storage Management Pack installer file,

PureStorageFlashArray.msi, is either on your local machine or accessible from your local machine. Download the installer from one of the following locations:

- <u>Pure1 Support Microsoft Platform Guide System Center Suite</u> [https://support.purestorage.com/ Solutions/Microsoft_Platform_Guide/System_Center_Suite]
- Pure Storage Connect on GitHub [https://github.com/PureStorage-Connect]

Important: If the Management Group contains multiple SCOM servers, you must run the MSI installer separately on each Management Server.

To install the Pure Storage Management Pack on a SCOM server:

- 1. If you are using a freshly-deployed SCOM server, under Administration, change the security settings to deselect **Reject new manual agent installations**.
- 2. Credentials with virtual infrastructure administrator privileges are required to install and configure the management pack on the SCOM server.
- 3. Double-click on the **PureStorageFlashArray.msi** file. The Management Pack Setup Wizard welcome screen opens.





Click Next.

4. Read the End-User License Agreement in its entirety.

🕼 🛛 Pure Storage FlashArray Management Pack Setup 🛛 🗕 🗖 🗙
End-User License Agreement Please read the following license agreement carefully
END USER LICENSE AGREEMENT Pure Storage Plugin / Adaptor / Provider / SDK / Tool / Management Pack (v09 2017) IMPORTANT: Please read this End User Agreement ("Agreement") before installi using a Pure Storage Plugin, Adaptor, Provider, SDK, or Management Pack ("Produ This Agreement applies to the Product that you or the entity that you represent ("End U obtained either directly from Pure Storage, Inc. ("Pure") or from an authorized Pure re or partner. By installing or using the Product, you represent and warrant that you hav authority to bind End User and agree that End User is bound by this Agreement with Purc 1. Software License.
Print Back Next Cancel

If you accept the terms of the license agreement, click the I accept check box and click Next.

If you do not accept the terms of the license agreement, click **Cancel** to exit the installer.

Note: The version and date shown in your installer will be different.

5. In the Destination Folder screen, click **Next** to accept the default installation location (C: \Program Files\Pure Storage\SCOM FlashArray Management Pack) or click **Change** to choose a different location.



16	Pure Storage FlashArray Management Pack Setup 🛛 🗕 🗖 🗙
D	estination Folder Click Next to install to the default folder or click Change to choose another.
1	Install Pure Storage FlashArray Management Pack to:
 [C:\Program Files\Pure Storage\SCOM FlashArray Management Pack\ <u>C</u> hange
	<u>B</u> ack <u>N</u> ext Cancel

6. The Ready To Install screen opens.

18	Pure Storage FlashArray Management Pack Setup 🛛 🗕 🗖 🗙
R	eady to install Pure Storage FlashArray Management Pack
	Click Install to begin the installation. Click Back to review or change any of your installation settings. Click Cancel to exit the wizard.
	Back install Cancel

Click **Back** to review or change the installation location, or click **Install** to continue with the installation.

7. The Installing screen shows the progress of the installation.



ß	Pure S	torage FlashArray Mar	nagement Pack	Setup	_ □	X
	Installing	Pure Storage FlashArray	y Management Pac	k		0
	Please wait v	while the Setup Wizard installs P	Pure Storage FlashArray	Manageme	nt Pack.	
	Status:	Removing backup files				
			Back	Next		

Wait until the Next button is enabled, then click Next.

8. In the Completed screen, click **Finish**.

😥 🛛 Pure Storage Flash	Array Management Pack Setup 🛛 🗕 🗖 🗙
PURE STORAGE	Completed the Pure Storage FlashArray Management Pack Setup Wizard Click the Finish button to exit the Setup Wizard.
	<u>B</u> ack <u>Finish</u> Cancel

 To confirm that the solution has been successfully installed, open the SCOM console to Administration > Management Packs. Verify that the Pure Storage FlashArray Management Pack appears in the list of management packs.



		Installed Management Packs - TM-SCOM12-1	- Operation	s Manager
File Edit View Go Tasks Tools Help				
Search 🔻 🔤 🌆 Scope 👂 Find 🚺	Task	s 🔞 _		
	-			
Administration	<	Installed Management Packs (104)		
4 🍄 Administration	^	Q Look for: Find Now Clear		
Connected Management Groups Device Management		Name	Version	Sealed
Agent Managed		Gerations Manager Application Monitoring Library	7.3.13142.0	Yes
Agentless Managed		🚟 Operations Manager Internal Library	7.3.13142.0	Yes
🔛 Management Servers		🚟 overridemp	1.0.0.0	
💕 Pending Management		Ferformance Library	7.0.8438.6	Yes
UNIX/Linux Computers		Frocess Monitoring Library	7.3.13142.0	Yes
Management Packs		🚟 Pure Storage FlashArray	1.0.0.365	Yes
Installed Management Packs		SNMP Library	7.0.8438.6	Yes
W Tune Management Packs	=	🚟 Summary Dashboard	7.3.13142.0	Yes
Instruct Management		Synthetic Transactions Library	7.3.13142.0	Yes
Discovery Rules		System Administration Item Library	7.5.8501.0	Yes
Retwork Devices		🚟 System Application Log Library	7.0.8438.6	Yes
🚰 Network Devices Pending Management		system Center Core Library	7.0.8438.6	Yes
Notifications		System Center Core Monitoring	7.3.13142.0	Yes
🛃 Channels		🚟 System Center Core Monitoring Agent Management	7.3.13142.0	Yes
a Subscribers		System Center Core Monitoring Reports	7.3.13142.0	Yes
Subscriptions		system Center Core Monitoring Views	7.3.13142.0	Yes
Øperations Management Suite		🚟 System Center Data Warehouse Olan Base Library	7 5 4542 0	Yes

10. If the Management Group contains multiple SCOM servers, repeat the installation on each Management Server.

Uninstalling or Reinstalling the Pure Storage FlashArray Solution

To uninstall or reinstall the Management Pack:

1. In the Start menu search bar, type Apps. Under the Settings section, select Apps & Features, and scroll down to Pure Storage FlashArray Management Pack.



😥 Pure Storage FlashArray Management Pack Setup 📃 🗖 🗙
Change, repair, or remove installation Select the operation you wish to perform.
Change Pure Storage FlashArray Management Pack has no independently selectable features. Repair Repairs errors in the most recent installation by fixing missing and corrupt files, electable
Remove Removes Pure Storage FlashArray Management Pack from your computer. Back Next Cancel

2. To uninstall, click **Remove**. To reinstall, click **Repair**. Follow the steps in the Setup wizard.



Chapter 4. Configuration

This chapter cover required configuration steps.

- 1. Adding your Pure Storage FlashArray Endpoints
- 2. Configuring your SCOM Run As Credentials and Profiles

Adding your Pure Storage FlashArray Endpoints

Configure a Pure Storage® FlashArray endpoint for each FlashArray you want to monitor in SCOM.

These steps require that you provide a Purity administrator username and password for each FlashArray endpoint.

Important: For the first endpoint, create a new management pack. Do not select an existing management pack from the dropdown menu.

To add and/or configure a Pure Storage FlashArray adapter instance in SCOM:

- 1. Log in to the SCOM Authoring console with Administrator credentials.
- 2. In the left pane, select Authoring > Management Pack Templates. Right-click and select Add Monitoring Wizard....
- 3. Either right-click **Management Pack Templates** and select **Add Monitoring Wizard...**, or in the right pane, select **Add Monitoring Wizard...**.

In the Add Monitoring Wizard Monitoring Type screen, select Pure Storage Array Discovery.

5	Add Monitoring Wizard	
Select	Monitoring Type	
Monitoring Type		🕢 Help
General Properties	Select the monitoring type	
Endpoint Details		
	INET Application Performance Monitoring OLE DB Data Source Process Monitoring Pure Storage Array Discovery TCP Port	

Click Next.

4. In the General Properties screen, enter a name and description that will be meaningful to SCOM administrators.

Note: The object name you specify here will be displayed in the Authoring > Management Pack Templates > Pure Storage Array Discovery screen. The Monitoring screens display the actual FlashArray names (as defined on the FlashArrays). **PURE**STORAGE[®]

- 5. In the General Properties screen Management pack menu section, for the first endpoint only, create a management pack override that you will use for all FlashArray endpoints. *For the first endpoint only*:
 - a. In the Management pack menu section, click the New... button.
 - b. Skip the ID field. The wizard supplies this value.
 - c. In the **Name** field, enter a name that is meaningful to SCOM administrators. For example: "PureStorageFlashArray_override".
 - d. In the version field, leave the value 1.0.0.0.
 - e. In the description field, enter a description that is meaningful to SCOM administrators. For example: "Management pack override for Pure Storage FlashArray endpoints". Click Next.
 - f. In the Knowledge tab, click Create.You return to the Add Monitoring Wizard.

For any subsequent endpoints:

a. in the **Management pack** menu, select the override management pack that you created for the first endpoint, such as **PureStorageFlashArray_override**.

5	Add Monitoring Wizard	x
Select N	Ionitoring Type	
Monitoring Type General Properties Endpoint Details	Enter a friendly name and description	🕜 Help
	Name:	
	PureStorageFlashArray_override	
	Description:	
	Management pack override for Pure Storage Flasharray endpoints	< >
	Management pack	
	Select destination management pack:	
	PureStorageFlashArray_ovenide	New
	< Previous Next > Create	Cancel

In the Add Monitoring Wizard, click Next.

- **PURE**STORAGE[®]
 - 6. In the Endpoint Details screen, enter IP address or fully-qualified domain name (FQDN) of the FlashArray to be monitored.

Note: In IPv6 environments, if the IP address is used, it must be entered with square brackets. For example: [2015:0db8:85a3:0042:1000:8a2e:0360:2037].

Click Create.

Note: An added endpoint appears as **Awaiting Discovery** until a Run As profile with valid credentials is associated with the endpoint.

Detail View

Display Name	10.231.128.202
Full Path Name	10.231.128.202
Endpoint	10.231.128.202
Name	10.231.128.202 (Awaiting discovery
API Version	
Role	

The profile can either be associated with all targeted objects or a specific array.

Configuring your SCOM Run As Credentials and Profiles

This step creates a SCOM Run As account for each of your FlashArray administrators.

A separate SCOM Run As account is required for each unique Purity username/password combination used to monitor your FlashArrays.

For example, if you have three FlashArrays monitored in SCOM, and each FlashArray has a pureuser account with the same password, one SCOM Run As account is used for all three FlashArrays. But if a fourth FlashArray has a different pureuser password, a separate SCOM Run As account is required for that FlashArray.

In a separate step, use SCOM profiles to tie your Run As accounts to your FlashArrays.

Configuring your SCOM Run As Account

To create a SCOM Run As Account for your FlashArray administrator:

- Log in to the SCOM console with Administrator credentials. Go to Administration > Run As Configuration > Accounts.
- 2. In the right pane, click the **Create Run As Account** link.



Administration	< Accounts (5)			Tasks
Subscribers	△	Find Now Clear		
Subscriptions	Name	Description	Last Modified	Actions
P Operations Management Suite Connection Managed Computers Printer Solutions	Type: Action Account (1) Local System Action Account Type: Windows (4)	Built in SYSTEM account to be used as an action account	7/27/2017 12:53:02 PM	Properties Delete Create Run As Account
Verdez-Solarder Verdez-Solarder	Bata Warehouze Report Deployment Local System Windows Account Metwork Service Windows Account	Data Warehouse Report Deployment Account Built in SYSTEM account Built in Network service account	7/27/2017 1:05:52 PM 7/27/2017 12:52:49 PM 7/27/2017 12:52:49 PM 17 12:58:18 PM	
Security Security Super Roles Settings Discovery Wizard Monitoring				
Authoring Reporting Administration My Workspace				

The Create Run As Account Wizard opens.

Depending on your settings, the wizard may open to an Introduction page. If so, read the information and click **Next**.

3. Enter the following information in the Create Run As Account Wizard General Properties page:

a. Run As account type:

Select Windows.

b. Display name:

Enter a meaningful name. This name will be shown in the SCOM console and used by SCOM administrators to select the appropriate FlashArray administrator credentials.

c. **Description:**

Enter a description that is meaningful to SCOM administrators.



8	Create Run As Account Wizard	x
General Properties		
Introduction		
General Properties	Specify general properties for the Run As account	
Credentials Distribution Security Completion	Select the type of Run As account that you want to create, and then provide a display name and description.	e
	Windows V Display name:	
	pureuser	
	Description(optional):	
	Run As Account for Pure Storage Management Pack Profile	
	< Previous Next > Create Cancel	

4. In the Credentials tab, enter the credentials of a FlashArray administrator. SCOM will use these credentials to connect to the FlashArray and to gather array metrics.



8	Create Run As Account Wizard	x
Credentials		
Introduction		
General Properties	Provide account credentials	
Credentials	Denside and estimate for this 10% dama Due for exercise	
Distribution Security	Provide credentials for this windows Run As account.	
Completion	User name:	
	pureuser	
	Password:	
	•••••	
	Confirm password:	
	••••••	
	Domain:	
	¥	
	< Previous Create Canc	el

5. Select a more secure or less secure distribution option for the new Run As account.

Create Run As Account Wizard			
Distribution Securi	ty		
Introduction	a dia dia dia dia dia dia dia dia dia di		
General Properties	Select a distribution security option		
Credentials			
Distribution Security	The credentials for this Run As account must be distributed to the agent-managed computers or management servers to perform the monitoring operations that are associated with a Run		
Completion	As profile. Distribution cannot occur until the Run As account is added to a Run As profile.		
	Select a distribution security option for this Run As account:		
	 Less secure - I want the credentials to be distributed automatically to all managed computers. 		
	Caution: Administrators of all recipient computers will be able to access the Run As account credentials.		
	More secure - I want to manually select the computers to which the credentials will be distributed.		
	< Previous Next > Create Cancel		

The **More secure** option is recommended. Click **Create**.

6. On the wizard Completion tab, note the requirement to associate the new Run As account with an appropriate SCOM Run As profile.



R	Create Run As Account Wizard
Run As Accour	nt Creation Progress
Introduction	a dia dia dia dia dia dia dia dia dia di
General Properties	Wizard completed successfully
Credentials	
Distribution Security	You have successfully created this Run As account.
Completion	You must now associate this Run As account with an appropriate Run As profile. You can edit an existing profile or create a new one.
	and the Theory and a second second
	< Previous Next > Cloce Cancel

Click Close.

7. Confirm that the new Run As account (pureuser in this example) appears in the SCOM console.

	4	Accounts (6)			
Administration	^	🔍 Look for:		Find Now	Clear
📃 Resource Pools		Name	Description		
Run As Configuration	_	Type: Action Account (1)			
Accounts	-	Local System Action Account	Built in SYSTEM	M account to be	used as an action account
by Profiles		Type: Windows (5)			
DNIX/Linux Accounts		See Data Warehouse Report Deployment	Data Warehou	se Report Deploy	ment Account
4 🔒 Security		See Local System Windows Account	Built in SYSTEM	M account	
User Roles		Service Windows Account	Built in Netwo	rk service accou	nt
Settings	\checkmark	Sep pureuser	Run As Accou	nt for Pure Stora	ge Management Pack Profile
Discovery Wizard	_				
Monitoring		-			
Authoring					
Reporting	_				
Administration					
My Workspace					

- Add the appropriate SCOM management or gateway servers to the new user account. This step applies only to accounts with the "More secure" distribution option. Skip this step for other accounts.
 - a. In the SCOM Administration view, double-click on the account, such as pureuser.
 - b. In the Run As Account Properties wizard, click the **Distribution** tab.
 - c. In the "Selected computers" area, click the PAdd... button.
 - d. In the Computer Search screen, under the "Available items" section, highlight the appropriate SCOM server or servers and click **Add**.

The SCOM server or servers are listed under "Selected objects".



Computer Search	?	x
To add computers, search for available computers and then add them to the selected computers list.		
Option:		
Show management servers		~
Filter by (optional):		
	Sear	ch
Available items		
Name		
tm-scom 12-3.tmt.local		
Add	Ren	101/8
Selected objects	T VGH	
Name		
tm-scom 12-3.tmt.local		
ОК	Can	cel

Click **OK** to exit the Computer Search screen.

e. You are returned to the Run As Account Properties Distribution tab. Click **Apply**, then click **OK** to exit the wizard.

Now the credentials for this FlashArray administrator will be shared with the specified SCOM server or servers.

9. Repeat these steps for each distinct FlashArray administrator account you will use with SCOM.



PURESTORAGE[®]

These steps connect your new SCOM Run As accounts to your FlashArray objects, using the **FlashArray Admin Account** profile that is created when the Pure Storage Management Pack is installed.

1. Log in to the SCOM console with Administrator credentials. Go to Administration > Run As Configuration > Profiles. In the center Profiles pane, click on FlashArray Admin Account.

Profiles - TM-SCOM12						
File Edit View Go Tasks Tools Help						
Search 🔻 🖕 🗄 🐺 Scope 🔎 Find 😰 Tasks 🔞 🖕						
Administration <	Profiles (33)					
Network Devices	🔍 Look for: Find					
Network Devices Pending Management	Name Description					
	Read Microsoft.SystemCenter.WebAp					
a Subscribers	Notive Directory Based Agent A Account used by AD base					
Subscriptions	Agent Health OpsMgr Databas Account used to access the					
Operations Management Suite Operations	APM CSM Encryption Profile The encryption profile use					
Managed Computers	Automatic Agent Management This account will be used					
Monaged compares A Operations Manager Products	Client Menitoring Action Account Inis Windows account is					
a Agents	Connected Management Group This profile determines w					
Audit Collection Servers	Data Warehouse Account If specified, this account is					
Databases	Data Warehouse Report Deplo This account is used by Da					
Management Servers	Nota Warehouse SQL Server Au If specified, this login nam					
Operations Consoles	Regult Action Account The default Health Service					
Reporting Servers	FlashArray Admin Account Run As profile account for					
Web Servers	MPUpdate Action Account This account is used by the					
Product Connectors	Notification Account Windows account used by					
🖳 Internal Connectors	Privileged Monitoring Account This account is used to rea					
Resource Pools	Reporting SDK SOL Server Auth If specified, this login nam					
A Second Seco	Reserved This profile is reserved an					
Profiles	Reserved This profile is reserved an					
UNIX/Linux Accounts	Reserved This profile is reserved and					
4 🗟 Security	SNMP Monitoring Account This account is used for SI					
User Roles	SNMPv3 Monitoring Account This account is used for SI					
V Settings	System Center Advisor Lync Run This Runas account is used					
	System Center Advisor Run As P Certificate Authentication					
Discovery Wizard	System Center Advisor Run As P Proxy Addientication for A					
	UNIX/Linux Action Account This account is used for lo					
Monitoring	UNIX/Linux Agent Maintenance This account is used for pr					
Authoring	NIX/Linux Privileged Account This account is used for a					
- Automig	Regularity of the valid term of					
Reporting	Windows Cluster Action Account This profile is used for all					
Administration	5 WS-Management Action Accou This account is used for W					
My Workspace						
•						
Ready						

The Run As Profile Wizard opens.
 In the Run As Profile Wizard, the following information is filled in automatically:



- Display name:
 FlashArray Admin Account
- Select destination management pack: PureStorageFlashArray
- 3. Skip the **Description:** field. Click **Next**.
- 4. The Run As Accounts tab opens.

Click the **Add...** button **Add...** In the Add a Run As Account pop-up, in the **Run As account** menu, select the **pureuser** account. The **pureuser** account is identified by the display name you provided previously in the Run As Account wizard.

To apply the Run As Account to all FlashArrays, select All targeted objects.

To instead associate the Run As account to a specific FlashArray:

a. Under the This Run As account that will be used to manage the following objects: section, select A selected class, group, or object:.

絕		Run As Profile Wizard
Run As A	Accounts	
General Propertie		
Run As Accounts		Add Run As accounts
Completion		Add a Run As account to this Run As profile. Additional Run As accounts can be added to manage specific classes, groups, or objects.
	\$ 5	Add a Run As Account
	Select a f sufficient Run As a	Run As account to add to this profile. Choose an account that has privileges that are to monitor the objects that you specify.
	pureuser	2 v New
	This Run O All tar	As Account will be used to manage the following objects: rgeted objects
	A sele	ected class, group, or object:
		OK Object
		< Previous Next > Save Cancel

Click Select > Object....

b. In the Object Search page, find the FlashArray to be associated with this Run As account. The FlashArray object can be found in the Available Items field as a Pure Storage Array object.



8	Run As Profile Wizard	X
Run /	As Accounts	
Introduction		
General Properties	Add Run As account	
Run As Accounts	Object Search	classes,
Completion	To add objects, search for the objects and then add them to the selected objects list.	
	Look for:	× Remove
	Pure Storage Array	
	Filter by:	
	Search	
	Available items	
	Name 10 231.128.202	
	Selected objects Add Remove	
	Name	
		Cancel
	OK Cancel	

c. The Add a Run As Account page shows the Run As account and the specific FlashArray that it will be associated with.

Add a Run As Account	-	
Select a Run As account to add to this profile. Choose an account that has privileges t sufficient to monitor the objects that you specify.	hat ar	e
Run As account:		
pureuser2		New
This Run As Account will be used to manage the following objects: All targeted objects A selected class, group, or object:		
10.231.128.202		Select
OK		Cancel

Click **OK** to exit the pop-up.



Click **SAVE** to complete the wizard.

5. This example Run As Accounts page shows two Run As accounts to be used in this profile. The account named pureuser is used for all FlashArrays. The account named pureuser2 is used for a specific FlashArray (10.231.128.202).

8		Run As Prof	ile Wizard			x
Run As Accounts						
General Propertie						
Run As Accounts	Add Run As accounts					
Completion	Add a Run As account to groups, or objects. Run As accounts:	this Run As pro	file. Additional Run As a	accounts can be added	to manage specific clas	i ses , Remove
	Account Name	Association	Used For	Class	Path	
	Dureuser	Class Object	All targeted objects 10.231.128.202	Object Pure Storage Array		
			< Prev	ious Next >	Save	ancel

Click Save.

6. Wait while SCOM discovers the FlashArrays and creates the profile. On the completion tab, click **Close** to exit the wizard.



Verifying your SCOM Run As Credentials

Use the Verify Endpoints link to verify that you can connect to a FlashArray successfully using your Run As credentials.

To verify your Run As credentials:

 Log in to the SCOM Monitoring console with Administrator credentials. In the right panel, under Pure Storage Array Tasks, click Verify Endpoint.

 Tasks
2
State Actions
💕 Start Maintenance Mode
Edit Maintenance Mode Settings
Stop Maintenance Mode
Personalize view
Tasks ^
Entity Properties
🙀 Health Explorer
Navigation ^
Alert View
🗲 Diagram View
Event View
Performance View
State View
Retwork Vicinity Dashboard
PureStorage Object State Dashb
Pure Storage Array Tasks
Verify Endpoint

- 2. The Run Task Verify Endpoint screen opens.
 - a. In the Target section, select the FlashArray (or FlashArrays) on which the credentials will be verified.
 - b. In the Task credentials section, select Use the predefined Run As Account.



Tamat	Pue Looption
fab6.purestorage.com	Kuri Location
Task Parameters	
Name	Value
Timeout Seconds	60
Override ask credentials Use the predefined Bun As Acco	Task description Verify PureArray endpoint used for array
Override ask credentials • Use the predefined Run As Acco • Other :	Task description Verify PureArray endpoint used for array discovery
Override ask credentials • Use the predefined Run As Acco • Other : User name :	Task description Verify PureArray endpoint used for array discovery
Override ask credentials Use the predefined Run As Accord Other : User name : Password :	Task description Dunt Verify PureArray endpoint used for array discovery
Override ask credentials Use the predefined Run As Acco Other : User name : Password : Domain : TMTEST	Task description ount Verify PureArray endpoint used for array discovery
Override ask credentials Use the predefined Run As Acco Other : User name : Password : Domain : TMTEST	Task description Dunt Verify PureArray endpoint used for array discovery

- c. Click Run.
- 3. The Task Status Verify Endpoint screen reports success or failure of the connection attempt. A success example is shown here.



		Task Status - Verify Endpoint	
he task completed s	uccessfully.		() Не
「ask ⊘Verify Endpoint	Status Succe	Task Target fab6.purestorage.com	
ask Output		🖹 Copy Text	t 🗎 Copy HTM
 Verify Endp 	oint	Task Description	
Status: Scheduled Time: Start Time: Submitted By: Run As: Run Location: Taraet:	Success 10/17/2018 1:58:18 P 10/17/2018 1:58:18 P TMTEST\admin	Verify PureArray endpoint used for array disco I	very
Target Type: Category:	Pure Storage Array Custom		
Task Output: Verifying en Success. fab6	ipoint: fab6.pur(.purestorage.com	storage.com is accessible.	
ou can close this di ew.	alog at any time. Doir	so will not interrupt executing tasks. You can check the status of ta	isks in a task stat





Chapter 5. Optional Configuration Steps

Overriding Rules

Change what FlashArray data is collected by SCOM and optionally change parameters such as collection frequency.

 <u>Removing a FlashArray from SCOM Monitoring</u> Remove an array from SCOM monitoring.

Overriding Rules

SCOM rules control the content and frequency of data collection from monitored FlashArrays.

Changing a rule involves overriding it, identifying the scope for the change (in terms of which objects will by affected), and saving the change into a management pack.

Changing the log level and the IgnoreCertificateErrors setting are shown as examples in these steps.

To override a rule:

- In the SCOM console, go to Authoring > Rules and select the rule to be changed. In the Look for field, enter Pure and click Find now.
- 2. Scroll to find the PureStorage.FlashArray.Fleet.Sync.Rule entry. Double click **PureStorage.FlashArray.Fleet.Sync.Rule**.
- 3. The PureStorage.FlashArray.Fleet.Sync.Rule Properties screen opens. In the Override tab, click the **Override** and select **For all objects of class: Root Management Server Emulator**.
- The Override Properties screen opens.
 Make the following changes in the Override-controlled parameters table:
 - a. In the IgnoreCertificateErrors row, click the check box in the Override column to select it. Change the setting in the Override Value column from False to True.

These changes (when applied) cause FlashArray certificate errors to be reported as alerts. By default, these are not reported.

- b. In the LogLevel row, click the check box in the Override column to select it.
- c. Change the setting in the Override Value column from its default ("4") to 2.
- d. This change (when applied) reduces the number of log entries created by the FlashArray management pack.
- e. In the Management pack section, select the FlashArray override management pack created during <u>Adding your Pure Storage FlashArray Endpoints</u> (for example, Pure Storage FlashArray_override).

This example shows overrides for IgnoreCertificateErrors and LogLevel:



					Override	Properties		
Rule na	ame:	PureSto	rage.FlashArray.Flee	t.Sync.Rule				
Catego	ry:	Operatio	ons					
Overrio	les target:	Class: A	II Management Serve	rs Resource Po	lool			
Overrio	de-controlle	d parameters:						
	Override	Parameter Name 🔺	Parameter Type	Default Value	Override Value	Effective Value	Change Status	Enforced
		Enabled	Boolean	True	True	True	[No change]	
E.	~	IgnoreCertificateErr	Boolean	True	False 🗸	True	[Added]	
		IntervalSeconds	Integer	60	60	60	[No change]	
	~	LogLevel	Integer	4	2	4	[Added]	
		TimeoutSeconds	Integer	120	120	120	[No change]	
	1							

f. When the override settings are correct, click **Apply**.

Click **OK** to close the **Override-controlled parameters** table.

Click **Close** to close the pop-up.

Note: Override for discovery frequency can also be created at Authoring > Management Pack Objects > Object Discoveries. Right click the appropriate object and select Overrides.

Removing a FlashArray from SCOM Monitoring

To stop monitoring a FlashArray:

- 1. Go to Authoring > Management Pack Templates > Pure Storage Array Discovery.
- 2. In the middle pane, select the FlashArray, right click, and select Delete.
- 3. If you are sure, in the Delete Monitoring confirmation pop-up, click Yes.



Chapter 6. The Pure Storage Dashboard

The Pure Storage Dashboard provides a birds-eye view into the capacity, performance, and alert details of various FlashArrays that are integrated with SCOM, giving administrators the ability to monitor trends and troubleshoot any issues with FlashArray resources.

Through the dashboard, administrators can monitor trends and troubleshoot problems with the FlashArray resources and quickly determine if an issue is isolated to, say, a particular virtual machine, or one that is more wide-scale across the environment.

To see the Pure Storage dashboard, log in to the SCOM Monitoring console with Administrator credentials. Select **Monitoring > Pure Storage FlashArray > Pure Storage Dashboard**.



The Pure Storage Dashboard opens.

This example displays graphed read and write latency information in the lower part of the SCOM console, for the FlashArray selected in the Pure Arrays table.

Notes about dashboard data:

- The Latency, Bandwidth, and IOPS tables display the average data for the past hour.
- The Used Space tables displays current data every time the dashboard is loaded or refreshed.
- The performance graph, when selected, displays data from the past 24 hours.
- Data collections from FlashArrays into SCOM is configurable through SCOM Rules. Whatever the collection frequency is set to, the FlashArray information displayed in SCOM lags by that amount of time behind the real-time data displayed in the Purity GUI.



Pure Storage Dashboard Tables

The following tables of FlashArrays and FlashArray metrics appear in the Pure Storage Dashboard.

Click on any column header to sort the table by that column.

• Pure Arrays

Displays FlashArrays that are monitored by SCOM.

Select a FlashArray in this table in order to display its performance graph or to select a task in the right Task pane.

Active Alerts

Displays all active alerts for monitored FlashArrays.

Click the Severity column header to sort the list by alert severity.

Information in the Active Alerts table:

- Severity: The alert level
- Source: The FlashArray or FlashArray component issuing the alert
- **Maintenance Mode**: Whether or not the array is in maintenance mode
- Name: The name of the alert
- **Resolution State**: The current state of the alert
- Created: Creation date of the alert
- Age: How old the alert is currently

Arrays by Used Space

Displays FlashArrays' capacity and storage metrics.

The Used Space table displays current data every time the dashboard is loaded or refreshed. Space metrics are typically shown in gigabytes or terabytes.

Information in the Arrays by Used Space table:

- ArrayName: FlashArray name
- **Capacity**: The FlashArray's physical storage capacity
- Used Space: Physical storage space occupied by volume, snapshot, shared space, and system data
- Free Space: Unused space available for allocation
- **Percentage Used**: Used Space divided by Capacity

• Arrays by IOPS

Displays the FlashArrays' average I/Os per second metrics for the last hour.

Information in the Arrays by IOPS table:

- **PURE**STORAGE®
 - ArrayName: FlashArray name
 - Read: The number of read I/Os per second, in kilobytes
 - Write: The number of write I/Os per second, in kilobytes
 - Read + Write: The number of read and write I/Os per second, in kilobytes

• Arrays by Latency

Displays the FlashArrays' average read and write latency metrics for the last hour. Information in the Arrays by Latency table:

- ArrayName: FlashArray name
- Read: Read latency, in milliseconds
- Write: Write latency, in milliseconds

• Arrays by Bandwidth

Displays the FlashArrays' average read and write metrics for the last hour. Information in the Arrays by Bandwidth table:

- ArrayName: FlashArray name
- **Read**: The number of read I/Os per second, in kilobytes
- Write: The number of write I/Os per second, in kilobytes
- Read + Write: The number of read and write I/Os per second, in kilobytes

Pure Storage Dashboard Task Pane

The Task pane appears to the right of the Pure Storage Dashboard.





Click any of the Task or Navigation links to open that view for the FlashArray that is selected in the Pure Arrays table.

To View the Volumes for a Specific FlashArray

To view the volumes for a FlashArray:

- 1. In the Pure Storage Dashboard, select the FlashArray in the Pure Arrays table.
- Either click the Object State Dashboard link in the Tasks pane on the right, or right-click the FlashArray in the Pure Arrays table and select Navigation > Object State Dashboard. The Object State Dashboard opens.

ilter	[2				
State Monitor name	Object Category Type Last State Chang	e Cont	tained	objects (38)		
		Filter				م
		lcon	Health	Display Name 🔺	Class	Path
			\bigcirc	cinder-fad1.dev.purestorage.com:CT0	PureController	cinder-fad1.dev.purestorage.c
biect Details		-0	\checkmark	cinder-fad1.dev.purestorage.com:CT1	PureController	cinder-fad1.dev.purestorage.c
inglass Name	sinder folt des ausstances and		0	CT0.ETH2	PurePort	cinder-fad1.dev.purestorage.c
isplay Name	cinder-lad Ldev.purestorage.com	-0	0	CT0.ETH3	PurePort	cinder-fad1.dev.purestorage.c
ath	cinder-fad1.dev.purestorage.com	-0	0	CT0.FC0	PurePort	cinder-fad1.dev.purestorage.c
ealth		-0	0	CT0.FC1	PurePort	cinder-fad1.dev.purestorage.c
bject Display Name	cinder-fad1.dev.purestorage.com	-0	0	CT1.ETH2	PurePort	cinder-fad1.dev.purestorage.c
dpoint	cinder-fad1.dev.purestorage.com		0	CT1.ETH3	PurePort	cinder-fad1.dev.purestorage.c
ravName	cinder-fad1		0	CT1.FC0	PurePort	cinder-fad1.dev.purestorage.c
			-	III		+

3. Scroll down the **Contained objects** table to view the volumes on the selected FlashArray.

Contained objects (38)

Filter				P
lcon	Health	Display Name	Class	Path
-	0	volume-1fc0b2b8-a96d-4463-89b7-95228dff2adf-cinder	PureVolume	cinder-fa
	0	volume-2071192b-01b7-409e-8c26-4a7738ba1935-cinder	PureVolume	cinder-fa
	0	volume-2d5f2709-6e9b-4d81-a226-a4f5c04b2015-cinder	PureVolume	cinder-fa
-0	0	volume-336a7b16-7929-4d13-81bb-c4d69c1dd805-cinder	PureVolume	cinder-fa
	0	volume-54acdef8-791f-449d-9d9c-888cacbe7e72-cinder	PureVolume	cinder-fa
-	0	volume-67d379ce-6e93-45fc-b0a0-30a49ae21a72-cinder	PureVolume	cinder-fa
	0	volume-6fad8a66-06d4-4ebd-ae7d-00e8d6ea532d-cinder	PureVolume	cinder-fa
	0	volume-777810e9-98cf-4e7d-bea2-a6f64e7843f6-cinder	Pure	cinder-fa
-	0	volume-83e9396f-c88c-40c8-ba7a-20d057f80a2b-cinder	PureVolume	cinder-fa
	~	- 11		



To instead view all volumes on any FlashArray, go to the **Monitoring > PureStorage FlashArray > FlashArray Objects > Arrays** view (see <u>*The FlashArray Objects Views*</u>).



Chapter 7. The FlashArray Objects Views

The **Monitoring > Pure Storage FlashArray > FlashArray Objects** section contains pages with more details about Arrays, Controllers, Hosts, Ports, and Volumes.

The following views are available: <u>Arrays</u>, <u>Controllers</u>, <u>Hosts</u>, <u>Ports</u>, and <u>Volumes</u>.

Arrays

Gear Gear Gear	
 Network Monitoring Operations Management Suite Operations Manager Operatio	ersion Role ArrayAdmin ArrayAdmin

The following information is displayed in the Arrays view:

State:

The highest alert level, if any, active on the FlashArrays

ArrayName:

The FlashArray name

- Endpoint: The FlashArray's IP address or FQDN
- ApiVersion:

The highest Purity REST API version supported on the FlashArray

Role:

The role associated with the Purity credentials used to connect to the FlashArray



Controllers

Monitoring	<	Controllers (3)					
Microsoft Windows Server	^	🔍 Look for:			Find Now	Clear	
Operations Management !	Suite	State -	Name	Status	Model	Version	Mode
Operations Manager		Healthy	10.14.87.70:CT1	ready	FA-m20	5.1.0	secondary
🧧 overridemp		Healthy	10.14.87.70:CT0	ready	FA-m20	5.1.0	primary
a 済 Pure Storage FlashArray		Healthy	10.14.227.80:CT0	ready	VMware	4.6.12	primary
Active Alerts							
📳 Pure Storage Dashboard							
4 👰 FlashArray Objects							
🛄 Arrays							
Controllers							
Hosts	_						
Ports	=						
Volumes							
Synthetic Transaction							
UNIX/Linux Computers							

The following information is displayed in the Controllers view:

Name:

The controller name

Status:

The controller's current status (ready, not ready, etc.)

Model:

The FlashArray model number, or VMware in the case of a virtual machine (VM)

Version:

The version of Purity running on the controller

• Mode:

The controller's current mode (primary or secondary)

Note: For virtual machines, one controller is displayed. For actual FlashArrays, two controllers are displayed.

Hosts

Monitoring	<	Hosts (20)			
Microsoft Windows Server	^	🔍 Look for:		Find Now Clear	
Operations Management Suite		State -	Name	IQN	WWN
Operations Manager		Healthy	init87-7-tmtest-local-host1	iqn.1991-05.com.microsoft:init87-7	
📫 overridemp		Healthy	3m-ssms-tst1-host	iqn.1991-05.com.microsoft:3m-ssms-tst1	
🔺 🙀 Pure Storage FlashArray		Healthy	PureSQLSnapTestBLD2	iqn.1991-05.com.microsoft:3rdman-bld2.dev.pure	
Active Alerts		Healthy	3m-sql16-tmtest-local-host	iqn.vsstest.com:test1	
🐏 Pure Storage Dashboard		Healthy	snap-manager-test	iqn.1991-05.com.microsoft:3m-sql14	
A G FlashArray Objects		Healthy	myhost		200000E1E
Arrays		Healthy	hfa-win2016-tmtest-local-h	iqn.1991-05.com.microsoft:hfa-win2016.tmtest.loc	
iii Controllers		Healthy	hfa-win2016-tmtest-local-h	iqn.1991-05.com.microsoft:hfa-win2016.tmtest.loc	
Hosts	=	Healthy	init87-4-2-tmtest-local-host1	iqn.1991-05.com.microsoft:init87-4-2.tmtest.local	
Wolumes		Healthy	ssms-test	iqn.1991-05.com.microsoft:win-t1fpe31q9cb	
Synthetic Transaction		Healthy	cinder-init5-host1	iqn.1991-05.com.microsoft:cinder-init5	
UNIX/Linux Computers		Healthy	vss-demo1	iqn.1991-05.com.microsoft:ama-dev-1	
Veb Application Transaction Monitoring		Healthy	PureSQLSnap-bld4	iqn.1991-05.com.microsoft:3rdman-bld4.dev.pure	



The following information is displayed in the Hosts view:

Name:

The host name

IQN:

The iSCSI qualified names (IQNs), if any, that identify the host computer initiators

• WWN:

The Fibre Channel worldwide names (WWNs), if any, that identify the host computer initiators

Hostgroup:

The name of the host group the host belongs to, if any

Ports



The following information is displayed in the Ports view:

Name:

The port name

• IQN:

The IQNs, if any, that communicate on this port

• WWN:

The WWNs, if any, that communicate on this port

Portal:

The IP address and port number of a controller's Ethernet interface



Volumes

Select a volume in the center Volumes pane to have its details displayed in the lower Detail View.

Monitoring	٠	Volumes (155)			
Gamma Microsoft Windows Server Metwork Monitoring	^	🔍 Look for:		Find Now Clear	
Operations Management Suite		State -	Name	Serial	Size(MB)
Operations Manager		Not monitored	vol1212	3B05F2E3B81F4E02000114AB	7168
i overridemp		Not monitored	3m-sql16-tmtest-local-vol002836	3B05F2E3B81F4E02000114B8	1024
4 宿 Pure Storage FlashArray		Not monitored	VSS-F164D56EC900C2B0000127	F164D56EC900C2B000012713	250
Active Alerts		Not monitored	@offloadnfs_boot	3B05F2E3B81F4E02000113F9	65536
遭 Pure Storage Dashboard		Not monitored	VSS-F164D56EC900C2B0000127	F164D56EC900C2B0000127B5	5120
FlashArray Objects		Not monitored	VSS-F164D56EC900C2B0000122	F164D56EC900C2B0000122E5	250
Arrays		Not monitored	VSS-F164D56EC900C2B0000126	F164D56EC900C2B0000126D7	250
Controllers		Not monitored	VSS-F164D56EC900C2B000012B	F164D56EC900C2B000012B61	5120
Hosts	=	Not monitored	vol918	3B05F2E3B81F4E02000114BB	10240
Wolumes		Not monitored	VSS-F164D56EC900C2B0000127	F164D56EC900C2B000012770	250
Synthetic Transaction		ONot monitored	VSS-F164D56EC900C2B0000129	F164D56EC900C2B00001299F	5120
UNIX/Linux Computers		ONot monitored	VSS-F164D56EC900C2B000012A	F164D56EC900C2B000012A20	250

The following information is displayed in the Volumes view:

Name:

The volume name

Serial:

The serial number for the volume

• Size (MB):

The volume's size, in megabytes



Chapter 8. The Object State Dashboard

The Object State Dashboard displays details for a specific FlashArray.

	T					
	1	<u>م</u>				
State Monitor nam	e 🔺 Object Category 🔺 Type Last Sta	ate Change		- h :+- (20)		
		Cor	tained	objects (38)		
		Filter				م
		lcor	Health	Display Name 🔹 🔺	Class	Path
			\bigcirc	cinder-fad1.dev.purestorage.com:CT0	PureController	cinder-fad1.dev.purestorage.c
biect Details		-0	\bigcirc	cinder-fad1.dev.purestorage.com:CT1	PureController	cinder-fad1.dev.purestorage.c
index Marca	de des Call des services services		0	CT0.ETH2	PurePort	cinder-fad1.dev.purestorage.c
isplay Name	cinder-tad i.dev.purestorage.com		0	CT0.ETH3	PurePort	cinder-fad1.dev.purestorage.c
ath	cinder-fad1.dev.purestorage.com	-0	\bigcirc	CT0.FC0	PurePort	cinder-fad1.dev.purestorage.c
lealth		-	0	CT0.FC1	PurePort	cinder-fad1.dev.purestorage.c
bject Display Name	cinder-fad1.dev.purestorage.com		0	CT1.ETH2	PurePort	cinder-fad1.dev.purestorage.c
ndpoint	cinder-fad1.dev.purestorage.com		0	CT1.ETH3	PurePort	cinder-fad1.dev.purestorage.c
rravName	cinder-fad1	-	0	CT1.FC0	PurePort	cinder-fad1.dev.purestorage.c
			~			
		Aler	ts			

The Health (only unhealthy monitors) table is empty when the FlashArray is in a healthy state.

The Contained Objects table shows the FlashArray's controllers, ports, hosts, and volumes.

To open the Object State Dashboard:

- 1. In the Pure Storage Dashboard, select the FlashArray in the Pure Arrays table.
- Either click the Object State Dashboard link in the Tasks pane on the right, or right-click the FlashArray in the Pure Arrays table and select Navigation > Object State Dashboard. The Object State Dashboard opens.



Chapter 9. Health Monitoring

Dashboard Summary

A summary of the health of monitored FlashArrays is displayed in the Pure Arrays table in the Pure Storage Dashboard.

Filter		Q
State	Array Name	
\checkmark	vss-purity-vm1	
\otimes	fs87-7	

The State column shows the highest alert level for each FlashArray.

- **CRITICAL** (red): Urgent messages that require immediate attention.
- WARNING (yellow): Important messages that warn of an impending error if action is not taken.

The Health Explorer

The Health Explorer shows more detailed information about a FlashArray with health issues.

Monitoring	<	Arrays (2)					
Operations Manager	^	🔍 Look for:		Find Now	Clear		
Gene Storage ElashArray		State	Name		Endpoint	API Version	Role
Active Alerts		Healthy	vss-purity-vm1		10.14.227.80	1.5	ArrayAdmin
Pure Storage Dashboard		🛞 Critical	fs87-7		10.14.87.70	1.13	ArrayAdmin
4 宿 FlashArray Objects							
H Arrays							
III Controllers							
Hosts							
III Ports							
1 Volumes	_						
Synthetic Transaction	=						
Discrete Sector Sect							
Web Application Transaction Monitoring							
Windows Service And Process Monitoring	$\overline{\mathbf{v}}$						

Alerts propagate up from the most granular to higher levels. The last alert listed in this example is a PureStorage FlashArray Controller Health Monitor alert, indicating a problem with the controller's status or connectivity.

To open the Health Explorer:

1. In the Pure Storage Dashboard Pure Arrays table, select the FlashArray.



2. Either click the **Health Explorer** link in the Tasks pane, or right-click the FlashArray in the Pure Arrays table and select **Health Explorer**.



FlashArray Objects Views

The FlashArray Objects Arrays and Controllers views also show array and controller health.

The Arrays view shows the health status for each array.

Monitoring	۰	Arrays (2)					
Microsoft Windows Server	^	🔍 Look for:		Find Now	Clear		
Operations Management Suite		State	Name		Endpoint	API Version	Role
Operations Manager		Healthy	vss-purity-vm1		10.14.227.80	1.5	ArrayAdmin
overridemp		Critical	fs87-7		10.14.87.70	1.13	ArrayAdmin
Pure Storage FlashArray		-					-
Active Alerts							
📴 Pure Storage Dashboard							
4 痛 FlashArray Objects							
HTTAYS							
III Controllers							
Hosts							
Ports	≡						
🚻 Volumes							
Image: Synthetic Transaction							
UNIX/Linux Computers							
Web Application Transaction Mon							

The Controllers view shows the Status of each controller.

Monitoring	<	Controllers (3)					
Gamma Microsoft Windows Server	^	🔍 Look for:			Find Now	Clear	
Development Suite		State -	Name	Status	Model	Version	Mode
Operations Manager		Healthy	10.14.87.70:CT1	ready	FA-m20	5.1.0	secondary
🖾 overridemp		Healthy	10.14.87.70:CT0	ready	FA-m20	5.1.0	primary
a 宿 Pure Storage FlashArray		Healthy	10.14.227.80:CT0	ready	VMware	4.6.12	primary
Active Alerts							
📴 Pure Storage Dashboard							
FlashArray Objects							
Le Arrays							
Controllers							
Hosts	=						
Ports	-						
Volumes Synthetic Transaction							
Synthetic Transaction							
P a oracy Endx Computers							



To open the FlashArray Objects Arrays or Controllers view:

- 1. In the SCOM console, go to **Monitoring > PureStorage FlashArray > FlashArray Objects**.
- 2. Then select **Arrays** or **Controllers**.





Chapter 10. Performance Monitoring

A summary of FlashArray IOPS, latency, and bandwidth information is shown in the Pure Storage Dashboard (go to **Monitoring > Pure Storage FlashArray > Pure Storage Dashboard**).

Pure A	rravs (2)					A	ctive Ale	rts (4)					Arrays by U	sed Spa	ice			
												ρ	ArrayName	Capacity	Used	d Space	Free Space	Percentage U
	Anna Alama						Country	C	Malas		Aleres	~	fs87-7	2.79 T	6.56	G	2.79 T	0.23%
	Array Name					_	4 Conceptor	Source	Maine	mance mode	Name		vss-purity-vm1	3.51 G	0.64	G	2.88 G	18.12%
ě.	fc87-7						eventy.	10 14 87	70		27849 Pure 4	array Alert 67						
	1307 7						ă	10.14.87	70		461862 Pure	Array Alert 6						
							ā	10.14.87.	70		564111 Pure	Array Alert 67						
							8	10.14.87.	70		812121 Pure	Array Alert 67						
						٩						+	< [m		
	1.000																	
rrays	by IOPS		_			A	rrays by	Latency	(Arrays by Ba	anawia	in			
urrayNa	ime Read	Write 0.K/c	Read + Write				ArrayName	Read	0 mc				ArrayName	Read	Write	0 KR/c		
507-7	0 K/s	0 K/s	0 K/s				30/-/	0 ms	0 ms				1507-7	O KD/S	O KD/S	0 KD/S		
0.000	٨				1.						٨.							
0.000 0.000	٨	Γ			1											4		
0.000 0.000													Λ		1	1		
0,000 0,000 0,000				Å												1		
0.000 0.000 0.000 0.000																		
0,000																		
10,000 10,000 10,000 10,000 10,000																		
10,000																		
12,000									~ /								٨	
1.000									~/									
.000		400 PM	500 PPM ()	00 PM 700 0		9.00 FM	1000 PM 1	100 PM 12	00 AM 12			00 AM 550 AM	60 M 70 M	BODAM	900 AM	1000 AI	4 110 ⁰ AM	1200 PM 1001
000 000 000 000 000 2 000 2 2 v C	S0 PM 200 PM	400 PM	Sol PM 6	00 PM 700 0	м ворм	9:00 PM	1000 PM 1	100 PM 12	L MA 00	200 AM	DOTAL A	30 AM 50 AM	600 AM 200 AM	ECOAM	900 AM	1000 AI	4 1100 AM	1200 PM 1000
000	100 Mu 200 Mu	400 PM ance Coun	Soopan e	00 PM 7:00 0	м ворм	800 PM	1000 PM 9	100 944 12		erforman fs87-7	BO AM 4	00 AM 500 AM	eiw 2014	BOOAM	900 AM	1000 AI	u tob AM	1200 PM COI A Target 10.14.8
1.000	oor M Soor M Perform Write L Write L	400 PM ance Coun indwidth itency	Sol Prime G	00 PM 200 R	м ворм	900 PM	1000 PM 9	100 PM 12	CO AM 15	2014 Performan 1687-7	200 AM d ce instance	200 AM EQ0 AM	00 M 20 M	800 AM	900 AM	TODE AR	4 1100 AM	1200 PM c000 A Target 10.148 hostgrc
1.000	sol hu 200 hu Vinte B Write L	400 Minimum Annu Annu Annu Annu Annu Annu Annu A	Sco PM e	0 PM 7:00 T	м вори	900 PM	1009м у	100 PM 12	00 AM 12	200AM 200AM Performan fs87-7 ts87-7	300 M 4	50°AM 50°AM		BODAM	900 AM	1000 AM	U TEDAM	1200 FM 1000 A Target 10.14.8 hostgrr 10.14.8

In the lower part of the SCOM console, you can graph selected performance metrics for the FlashArray selected in the Pure Arrays table.

The performance graph displays data from the past 24 hours.

- 1. In the Pure Storage Dashboard Pure Arrays table, select the FlashArray.
- 2. In the Show column at the bottom of the console, select the check boxes for the metrics you want to graph.

The following metrics can be graphed:

- Reads per second
- Writes per second
- Total IOPS (read and write combined)
- Write latency
- Read latency
- Read bandwidth
- Write bandwidth



- Total bandwidth
- Capacity
- Used Space

The performance graph is not shown until both a FlashArray is selected in the Pure Arrays table and at least one metric is selected at the bottom of the console.

For a larger graph, open the Performance View:

- Go to Monitoring > Pure Storage FlashArray > FlashArray Objects or FlashArray Objects > Arrays.
- 2. Select the array of interest. Right click and select **Open > Performance View.**
- 3. In the Legends area (lower section of the page), select the performance metrics to be displayed.



Chapter 11. Capacity Monitoring

The Pure Storage dashboard provides a birds-eye view into the capacity metrics of monitored FlashArrays.

ArrayName	Capacity	Used Space	Free Space	Percentage
vm-xwang	0 G	0 G	0 G	0%
vm-mudassir-latif1	3.49 G	0 G	3.49 G	0%
vm-mudassir-latif2	3.5 G	0 G	3.5 G	0%
cinder-fad1	6.37 T	908.57 G	5613.02 G	13.93%
vm-wwu	0 G	0 G	0 G	0%
4				

The Arrays by Used Space graph displays the following capacity metrics:

- ArrayName: FlashArray name
- Capacity: The FlashArray's physical storage capacity
- **Used Space**: Physical storage space occupied by volume, snapshot, shared space, and system data
- Free Space: Unused space available for allocation
- Percentage Used: Used Space divided by Capacity

Double click on a FlashArray in order to open details for that array.





Chapter 12. Alerts

Alerts help identify problem areas in the SCOM operations environment.

The Pure Storage FlashArray management pack includes preconfigured alerts, many of which are closely mapped to the alerts generated through the Purity array. SCOM leverages these alerts to analyze the all monitored FlashArray objects and to generate health alerts for problems areas.

Critical alerts mainly focus on FlashArray problems and require immediate attention.

Warning alerts mainly focus on capacity. For example, a warning alert is generated when SCOM detects that storage consumption has reached a high percentage of usable capacity.

Alerts are further organized by criticality levels which indicate the current operational state of each object and whether any problems must be addressed.

Alert criticality is quickly identifiable based on badge color and is divided into the following levels:

- CRITICAL (red): Urgent messages that require immediate attention.
- WARNING (yellow): Important messages that warn of an impending error if action is not taken.
- **INFO (no badge color):** Informational messages that are generated due to a change in state. INFO messages can be used for reporting and analysis purposes. No action is required.

Alerts Views and Information

FlashArray-related alerts can be seen in the following views:

- Monitoring > Pure Storage FlashArray > Pure Storage Dashboard
- Monitoring > Pure Storage FlashArray > Active Alerts
- Monitoring > Active Alerts

The following is an example of the **Monitoring > Pure Storage FlashArray > Active Alerts** view:



					Active	Alerts - TM-S	SCOM12-1	- Operations	Manager		
File Edit View Go Tasks Tools Help											
Search 🔻 🝦 🛛 Overrides 👻 🍦	H I+	Scope	₽ Find	🖸 Tasks 🔞 💡							
Monitoring	<)	Active Al	erts (4)								
Monitoring Active Alerts	^	🔍 Look	for:			Find Now	Clear				
Discovered Inventory	C	👂 Icon	Path	Source	Name				Resolution	Created	Age
III Distributed Applications		▲ Severi	ty: Critical	(4)							
Ø Maintenance Schedules		8		10.14.87.70	27849 Pu	e Array Alert 67 a	at 07/01/2018	03:20:53 from	New	11/15/2018 2:45:06	2 Minutes
Task Status		8		10.14.87.70	564111 P	ure Array Alert 67	at 09/11/201	8 13:18:31 from	New	11/15/2018 2:45:06	1 Minute
UNIX/Linux Computers		8		10.14.87.70	461862 P	re Array Alert 6/	at 09/06/201	8 10:07:25 from	New	11/15/2018 2:45:06	1 Minute
Agentless Exception Monitoring		\mathbf{x}		10.14.87.70	812121 P	ure Array Alert 67	at 09/16/201	8 17:22:32 from	New	11/15/2018 2:45:06	1 Minute
Application Monitoring	_										
Data Warehouse	=										
Microsoft Audit Collection Services											
Microsoft Windows Client											
Microsoft Windows Server											
Network Monitoring											
Operations Management Suite											
overridemp											
4 G Pure Storage FlashArray											
Active Alerts											
Pure Storage Dashboard											
4 🦓 FlashArray Objects											
Arrays											
Controllers	_										
Hosts	· .										
Show or Hide Views											
New View >											
Monitoring		Alert [Jetails								
Authoring		27	849 Pure Array	Alert 67 at 07/01/2018 0	3:20:53 from REST A	PI		Alert Description			
Autioning		Source:	T 1	0.14.87.70				Alert 67:			
Reporting		Full Path	Name: 1	0.14.87.70				ID: 27849			
		Alert Rul	e: 🔘 F	istory Critical Alerts (Rule)			TimeOpened: 07/01/2	018 03:20:53		
🙆 Administration		Created:	1	1/15/2018 2:45:06 PM				Severity: critical Category: software			
								Code: 67			
My Workspace								Component: host			
								Name: vss-demo1			
	*							Event: miscontigurati Expected:	on		
Ready											

Information listed in alerts views includes:

• Path:

The FlashArray or FlashArray component that issued the alert

Source:

The FlashArray IP address or FQDN

- Wrench lcon: Whether the object is in maintenance mode or not (currently not supported)
- Name:
 Name of the alert
- Resolution State:
 Current state of the alert
- Created: Creation date of the alert
- Age:
 How old the alert is currently

Open Alerts Details

A summary of an alert's details is available in the **Monitoring > Pure Storage FlashArray > Active Alerts** view. Complete information for critical alerts, including possible impact and troubleshooting tips, is available in Pure1 Knowledge <u>http://support.purestorage.com</u> [http://support.purestorage.com]. To view the summary for an alert:

- 1. In the **Monitoring > Pure Storage FlashArray > Active Alerts** view, click on the alert to highlight it.
- 2. View the alert information in the Alert Details section (toward the bottom of the page).

To open the Pure Storage knowledge base article for an alert:

1. In the **Monitoring > Pure Storage FlashArray > Active Alerts** view, double click on the critical alert.

The Alert Properties pop-up opens:

-	Alert Properties
General Product Knowle	edge Company Knowledge History Alert Context Custom Fields
Alert 4 - Contro Alert Properties	oller Failure
Property	Description
Knowledge Base URL	https://support.purestorage.com/?cid=Alert_0004
Severity	Critical
CA Routing Rule	 NullRoutingRule - If has the tag "puresetup" NullRoutingRule - If has the tag "maintenance" NullRoutingRule - If has the tag "hardware_upgrade" SalesforceRoutingRule - Default Routing Rule
Triggers	 Two controllers with primary status Two controllers with secondary status A secondary controller with a status other than 'ready'

2. Go to the Knowledge tab and double click on the Knowledge Base URL, or copy the URL to a browser. The alerts page describes the impact of the issue as well as troubleshooting tips.





Appendix A. Resources

Pure Storage Documentation

The Purity documentation resources are available in Pure1 Knowledge at <u>*Pure1 Knowledge*</u> [http:// support.purestorage.com]

At the time of this writing, documentation for the Pure Storage SCOM Management Pack is available under **System Center Operations Manager (SCOM)** [https:// support.purestorage.com/Solutions/Microsoft_Platform_Guide/System_Center_Suite/ aaaaa_System_Center_Operations_Manager_(SCOM)].

At the time of this writing, the FlashArray User Guides are available under <u>*Purity FlashArray User*</u> <u>*Guide*</u> [https://support.purestorage.com/FlashArray/PurityOE/FlashArray_User_Guide].

Links are subject to change without notice.

Documentation Feedback

We welcome your feedback about Pure Storage documentation and encourage you to send your questions and comments to com. We would love to hear from you.





Appendix B. Legal Information

End-User License Agreement

<u>End User License Agreement</u> [http://www.purestorage.com/content/dam/purestorage/pdf/legal/pure-plugin-end-user-license-agmt-sept-18-2017.pdf]

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