

Monitoring Microsoft Azure

Microsoft: Azure PowerPack version 111

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Chapter

Introduction

Overview

This manual describes how to monitor Microsoft Azure resources that are managed with Azure Resource Manager (ARM) in SL1 using the *Microsoft: Azure* PowerPack.

The following sections provide an overview of Microsoft Azure and the Microsoft: Azure 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 Azure?

Azure is a Microsoft service that provides both infrastructure and platform capabilities for cloud computing. Azure enables users to build, deploy, and manage applications and services using Microsoft data centers, and offers users numerous capabilities such as website hosting, virtual machine creation, data management, business analytics, and media services.

What Does the Microsoft: Azure PowerPack Monitor?

To monitor Microsoft Azure resources using SL1, you must install the *Microsoft: Azure* PowerPack. This PowerPack enables you to discover, model, and collect data about Azure resources.

The Microsoft: Azure PowerPack includes:

- Dynamic Applications to discover, model, and monitor performance metrics and/or collect configuration data for the following Azure resources:
 - Active Directory tenants
 - Application gateways
 - Application services
 - Cosmos DB accounts
 - $\circ \quad DNS \ zones$
 - ExpressRoute circuits
 - ExpressRoute gateways
 - Function apps
 - Load balancers
 - Managed storage disks
 - Network security groups
 - Recovery Services vaults
 - Resource groups
 - Site recovery configurations
 - SQL databases
 - SQL servers
 - Storage accounts
 - Traffic Manager profiles
 - Virtual machine scale sets
 - Virtual machines
 - Virtual network subnets
 - Virtual network gateways
 - Virtual networks
 - Web apps
- Device Classes for each Azure data center location and all of the Azure resources SL1 monitors
- Event Policies and corresponding alerts that are triggered when Azure resources meet certain status criteria

- Example credentials you can use as templates to create SOAP/XML credentials to connect to Azure
- A Credential Test to ensure that your Azure credential works as expected
- Run Book Action and Automation policies that can automate certain Azure monitoring processes

What are Azure Locations?

An Azure location is an individual data center located in a specific geographic locale. The Dynamic Applications in the *Microsoft: Azure* PowerPack create a "location" component device for each discovered data center location.

The PowerPack supports the following Azure data center locations:

- Australia Central (Canberra)
- Australia Central 2 (Canberra)
- Australia East (New South Wales)
- Australia Southeast (Victoria)
- Brazil South (Sao Paulo)
- Canada Central (Toronto)
- Canada East (Quebec)
- Central India (Pune)
- Central US (lowa)
- China East (Shanghai)
- China East 2 (Shanghai)
- China North (Beijing)
- China North 2 (Beijing)
- East Asia (Hong Kong)
- East US (Virginia)
- East US 2 (Virginia)
- France Central (Paris)
- France South (Marseille)
- Germany Central (Frankfurt)
- Germany North
- Germany Northeast (Magdeburg)
- Germany West Central
- Japan East (Saitama)
- Japan West (Osaka)
- Korea Central (Seoul)
- Korea South (Busan)
- North Central US (Illinois)

- North Europe (Ireland)
- South Central US (Texas)
- South India (Chennai)
- Southeast Asia (Singapore)
- US DoD Central (for Microsoft Azure Government only)
- US DoD East (for Microsoft Azure Government only)
- US Gov Arizona (for Microsoft Azure Government only)
- US Gov Iowa (for Microsoft Azure Government only)
- US Gov Texas (for Microsoft Azure Government only)
- US Gov Virginia (for Microsoft Azure Government only)
- UK South (London)
- UK West (Cardiff)
- West Central US
- West Europe (Netherlands)
- West India (Mumbai)
- West US (California)
- West US 2

Installing the Microsoft: Azure PowerPack

Before completing the steps in this manual, you must import and install the latest version of the *Microsoft: Azure* PowerPack.

NOTE: The following instructions describe how to install the *Microsoft: Azure* PowerPack for the first time. If you are upgrading to the latest version from a previous version, see the *Microsoft: Azure* PowerPack Release Notes for specific upgrade instructions.

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 <u>ScienceLogic Customer Portal</u>.
- 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	PowerPack™	×
L	Browse for file Browse icense: Import	

- 5. Click the [Browse] button and navigate to the PowerPack file.
- 6. When the **PowerPack Installer** modal page 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*.

Chapter

2

Configuration and Credentials

Overview

The following sections describe how to configure Microsoft Azure resources for monitoring by SL1 using the *Microsoft: Azure* PowerPack:

NOTE: The Microsoft: Azure PowerPack can monitor Microsoft Azure resources, Microsoft Azure Government resources, and Microsoft Azure resources in Germany and China regions.

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Configuring an Azure Active Directory Application

To create a SOAP/XML credential that allows SL1 to access Microsoft Azure, you must provide the following information about an Azure application that is already registered with an Azure AD tenant:

- Application ID
- Subscription ID (if monitoring a single subscription)
- Tenant ID
- Secret key

To capture the above information, you must first create (or already have) an application that is registered with Azure Active Directory. The registered application must have Reader access in the subscription. You can then enter the required information about the application when configuring the SOAP/XML credential in SL1. The registered application and the ScienceLogic credential allow SL1 to retrieve information from Microsoft Azure.

TIP: For details on registering an Azure application, see <u>https://docs.microsoft.com/en-us/azure/active-</u> <u>directory/develop/quickstart-register-app</u>.

Creating an Active Directory Application in the Azure Portal

When configuring a SOAP/XML credential in SL1, you must provide the application ID, subscription ID, tenant ID, and secret key of an application that is registered with Azure Active Directory. You will use this registered application to authenticate your Azure account.

NOTE: You must have Service Administrator rights to create an Azure Active Directory application.

To create an application in Azure and register it with Azure Active Directory:

1. Log in to the Azure portal and type "active directory" in the **Search** field at the top of the window.

2. From the search results, select *Azure Active Directory*, and then click **App registrations**. The **App registrations** page appears:



3. Click the [New registration] button.

azureteamsciencelogic (Defau Azure Active Directory - PREVIEW	t Directory) - App registrations	
,P Search (Ctrl+/)	+ New registration	nooting 📔 💙 Got feedback?
Overview Getting started	All applications Owned applications Applicat	ions from personal account
Manage	DISPLAY NAME	APPLICATION (CLIENT) ID
🔓 Users	No results	
🝰 Groups		
Organizational relationships		
Roles and administrators		
Enterprise applications		
Devices		
App registrations		
App registrations		
Application proxy		
🔓 Licenses		
Azure AD Connect		
Custom domain names		
Mobility (MDM and MAM)		
📍 Password reset		

- 4. When the **Register an application page** appears, enter your application's registration information:
 - Name. Type a name for the application.
 - Supported account types. Select Accounts in this organizational directory only.
 - Redirect URI (optional). Select Web in the drop-down menu and type a valid URL.

* Name	
The user-facing display name for th	application (this can be changed later).
Contracting display name for a	approximent (into can be citaliged rate))
Sciencelogic Monitoring	
Supported account types	
Who can use this application or acc	is this API?
<u>.</u>	
 Accounts in this organizational 	rectory only (azureteamsciencelogic (Default Directory))
 Accounts in any organizational 	rectory
Accounts in any organizational	rectory and personal Microsoft accounts (e.g. Skype, Xbox, Outlook.com)
Upla ma change	
Help me choose	
Redirect URI (optional)	
We'll return the authentication resp	se to this URI after successfully authenticating the user. Providing this now is
optional and it can be changed late	but a value is required for most authentication scenarios.
Web	https://localhost.com
By proceeding, you agree to the Mi	osoft Platform Policies 🔀

5. Click the [Register] button. A message appears confirming that your application was added.

Adding Microsoft Graph APIs Permissions to the Application

By default, any new Application has Microsoft Graph API permission. At a minimum, the Microsoft Graph APIs must have permission to directly read data.

To add the Microsoft Graph APIs:

1. In the Search field of the Azure portal (<u>https://portal.azure.com</u>), type "active directory".

- 2. Click **[App registrations]**, and then click on the name of the Azure Active Directory application you will use to authenticate your Azure account.
- 3. Click API Permissions, and then click [Add a permission]. Next, select the Microsoft Graph option.

Microsoft Azure		P Search resources, services, and docs	1.0.0	>_ 67 ⊄" ©	azureteam@sciencel azureteamsciencelogic
Microsoft Azure	Home 3 Azuretaensciencelogic (Default Scienceologic Monitoring - AP Provide Counter Co	Sorch resources periodes and dos Directory) - App registrations Preview() > Sciencelogic Monitoring - API permissions Permissions API permissions Appl	Request API permissions Receive Select an API Merosoft APIs APIs my organization Commonly used Microsoft APIs Microsoft Graph Security, and Windows 10. Access Asure AD Oxelater, BanePoint, Planer, and more the	Avar Key Kudt	Apartham Goderoot Adarthamedoculooc
i App Services Storage accounts I Virtual machine scale sets I hetevoit interfaces Recovery Services vaalts App Service plans Autoritor Virtual machines App registrations SQL databasees	AP permission Appendix Disorter Disorter Tradificationson New support request	Undersed Delegated Sign in and read in These are the permissions that supplication requests statically. You may also request user c able permissions dynamically through code. See best practices for requesting permissions Grant consent As an administrator, you can grant consent on behalf of all users in this directory. Granting ad users ments that outsers will not be shown a consent screen when using the application. Grant administrator consent for azurstamsciencologic (behaut Directory)	Aver Batch Schedule trige-scale parallel and HPC applications in the cloud	 Anne Key Watt! Managa your key wurks as well as the keys, secert, and confrictents within your Key Varks. Office 365 Management AP/s Retries information about sure, admini, system, and paloy scients and versits from Office 305 and Asure AD activity Wand Studio Team Service: Monte your Walt Studio Team 	Azer Service Management Programmedic access to much of the functionally available through the Azer portal SharePoint Interact remotely with SharePoint data

4. In the **Request API permissions** pane, under Select permissions, click the arrow next to **Directory** to open the submenu and select the checkbox for **Directory.Read.all** permission.

Microsoft Azure		,P Search resources, services, and docs		
ĸ	Home > azureteamsciencelogic (Default	Directory) - App registrations (Preview) > Sciencelogic Monitoring - API permissions	Request API permissions	
+ Create a resource	Sciencelogic Monitoring - API	permissions	PREVIEW	
A Home	wanter Nation		Microsoft Graph	
🔲 Dashboard	R Overview	API permissions	https://graph.microsoft.com/ Docs 🕜	
i≡ All services	du Quickstart	Applications are authorized to use APIs by requesting permissions. These permissions show up	What type of permissions does your application require?	
	Managa	grant/deny access.	Delegated permissions Application permissions	
🚱 Resource groups	Reading	+ Add a permission	Your application needs to access the API as the signed-in user. Your application runs as a background service or daemon without a signed-in user.	
All resources	Authentication	API / PERMISSIONS NAME TYPE DESCRIPTION		
💡 Subscriptions		 Microsoft Graph (1) 	Select permissions expand all	
S App Services	Cerunicates a secrets	UserRead Delegated Sign in and read t	Type to search	
E Storage accounts	API permissions	These are the permissions that this application requests statically. You may also request user c	PERMISSION ADMIN CONSENT REQUIRED	
🧐 Virtual machine scale sets		able permissions dynamically through code. See best practices for requesting permissions	AccessReview	
Hetwork interfaces	Manifect		Application	
a Recovery Services vaults	Grant consent	Grant consent	▶ AuditLog	
🛃 App Service plans	Support + Troubleshooting	As an administrator, you can grant consent on behalf of all users in this directory. Granting ad-	Calendars	
Monitor	X Troubleshooting	users means that end users will not be shown a consent screen when using the application.		
Virtual machines	New support request	Grant admin consent for azureteamsciencelogic (Default Directory)	r Jana	
😽 App registrations			ChannelMessage	
🗃 SQL databases			► Chat	
🗟 SQL servers			▶ Contacts	
			Device	
			▼ Directory (1)	
			Directory.Read.All Yes	
			Directory:ReadWrite All Read and write directory data Yes	
			+ Domain	
			K. Pilo, R. duela lateration	
			Add permissions Discard	

- 5. After you have added the Read directory data, in the **API permissions** page, click the **[Add Permissions]** button.
- 6. Click [Grant admin consent for [Directory Name]].

7. A pop-up window appears asking if you grant consent for the required permissions for all accounts in your directory. Click **[Yes]**.

Microsoft Azure	₽ se	arch resources, services, and de	II II II	> 다	₫ ⊗ ? ©	azureteam@sciencelo AzureteamscienceLosic (p
Home > zuretzamstered Create a resource Create a	ge (Default Directory) - App registrations (Provided) > Scient ing - API permissions (* Do you want to grant consent for the rep below. be	eelogic Monitoring - AP perr uested permissions for all a vrrg Application Delegated on request statically. You m, See best practices for reque	Resolution of the second secon	rectory)? This will update any existing admin conser Americ coester REQUEED Yes A Not granted for azureteems_ -	nt records this application after	ADUITUMACINELIOUS D

Generating the Secret Key

When configuring a SOAP/XML credential for Azure in SL1, you need to provide a secret key for the Azure Active Directory application that you will use to authenticate your account.

To generate a secret key:

- 1. Log in to the Azure portal at https://portal.azure.com, and type "active directory" in the Search field at the top of the window.
- 2. From the search results, select Azure Active Directory, and then click **App registrations**.
- 3. Select the app and then click [Certificates & secrets].
- 4. In the Client secrets pane, click [+ New client secret].

Microsoft Azure		P Search resources, services, and docs
×	Home > azureteamsciencelogic (Default D	irectory) - App registrations (Preview) > Sciencelogic Monitoring - Certificates & secrets
+ Create a resource	Sciencelogic Monitoring - Cert	ificates & secrets
f Home	*	Add a client secret
🔚 Dashboard	Overview	Add a client secret
E All services	📣 Quickstart	Description
🔶 FAVORITES	Manage	keySL
🔞 Resource groups	🔤 Branding	Expires
🗰 All resources	Authentication	In 2 years
? Subscriptions	P Certificates & secrets	O Never
🔇 App Services	API permissions	
🧮 Storage accounts	Expose an API	Add Cancel
Dirtual machine scale sets	R Owners	
📝 Network interfaces	🔟 Manifest	Client secrets
Recovery Services vaults	Support + Traublachapting	A secret string that the application uses to prove its identity when requesting a token. Also can be referred to as application password.
📕 App Service plans		+ New client secret
Monitor		DESCRIPTION EXPIRES VALUE
Virtual machines	Mew support request	No client secrets have been created for this application.
😽 App registrations		
🗟 SQL databases		
😹 SQL servers		

- 5. In the **Add a client secret** pane, type a name in the **Description** field and select a duration in the **Expires** field.
- 6. Click [Add] to generate the secret key. A new key value displays in the Client secrets pane.
- 7. Copy and save the key value.

Locating the Application ID and Tenant ID

When configuring a SOAP/XML credential for Azure in SL1, you need to provide the Application ID of the Azure Active Directory application you will use to authenticate your Azure account.

To locate the Application ID:

- 1. Log in to the Azure portal at https://portal.azure.com, and type "active directory" in the Search field at the top of the window.
- 2. From the search results, select Azure Active Directory, and then click App registrations.
- 3. Click the name of the Active Directory application you will use to authenticate your Azure account. The Application ID and Tenant ID appear in the **Overview** section.

Microsoft Azure		$\mathcal P$ Search resources, services, and docs	→ Q ³
×	Home > azureteamsciencelogic (Default (Directory) - App registrations (Preview) > Sciencelogic Monitoring	
+ Create a resource	Sciencelogic Monitoring		
n Home	*	Delete Endpoints	
🔜 Dashboard	Overview	Display appear	Connected account times a bit accounting and
E All services	📣 Quickstart	Application (client) ID :	Redirect LIRIs : 1 web 0 public client
- * FAVORITES	Марала	Directory (tenant) ID :	Managed application in : Sciencelogic Monitoring
🔞 Resource groups	Branding	Object ID : 50d4e006-9479-4588-b69d-74ct25e2401e	
All resources	Authentication		8
P Subscriptions	Cartificator & correte	Call APIs	Documentation
🔇 App Services	API permissions		Microsoft identity platform
Storage accounts	Expose an API	🔚 o 🗹 👔 🍝 💷	Authentication scenarios Authentication libraries
Virtual machine scale sets	Cowners	x 🗉 💿 🖕 🚸	Code samples Microsoft Granh
Hetwork interfaces	Manifest		Glossary Help and Support
Recovery Services vaults		Build more powerful apps with rich user and business data from Microsoft services and your own company's data	True and support
💁 App Service plans	Support + Troubleshooting	sources.	
Monitor	X Troubleshooting	View API Permissions	
📃 Virtual machines	New support request		
Sector App registrations		Sign in users in 5 minutes	
🧧 SQL databases		ís (a) (3) 11 (1) (3) 11 (4)	
🗟 SQL servers			
		Use our SDKs to sign in users and call APIs in a few steps	
		View all quickstart guides	

4. Copy and save the values in the corresponding credential fields.

Locating the Subscription ID

If you are monitoring only a single Azure subscription, you must provide the Subscription ID of the Azure Active Directory application you will use to authenticate your account when you configure your SOAP/XML credential for Azure in SL1.

NOTE: If you are monitoring an account with multiple child subscriptions, you can skip this section.

To locate the Subscription ID:

- 1. In the left pane of the Azure portal (<u>https://portal.azure.com</u>), click [Subscriptions].
- 2. Copy and save the **Subscription ID** of the subscription where you created the Azure Active Directory application you will use to authenticate your account.

Microsoft Azure	۶ مر	ective directory		≻_⊑r ⊈³ © ?	azureteam@sciencelo Azureteamsciencelogic (p
«	Home > Subscriptions				
+ Create a resource	Subscriptions				\$ X
E All services	azureteamsciencelogic (Default Directory)				
— 🛨 FAVORITES —	- Add				
All resources	Showing subscriptions in azureteamsciencelog	ic (Default Directory). Don't see a subscription? Sw	itch directories		
Resource groups	7 selected		✓ 3 selected		~
App Services	Apply				
Virtual machines	Show only subscriptions selected in the gl	obal subscriptions filter 👩			
	,∕⊃ azd				
	SUBSCRIPTION	SUBSCRIPTION ID	°↓ MY ROLE	℃ CURRENT COST	STATUS î.
Subscriptions	AZdevelopment		Account admin	Not available	Active
Virtual machine scale sets					
Recovery Services vaults					
interfaces					

Adding Reader Access to the Active Directory Application

To allow ScienceLogic to access your Azure account, you must specify the type of access the user whose information you will use in your SOAP/XML credential has to the Active Directory application used to authenticate your account. Use the **Reader** access role, which is a read-only user that can view everything but cannot make changes.

To specify the access role to the Azure Active Directory application:

- 1. In the left pane of the Azure Portal (https://portal.azure.com), click [Subscriptions].
- 2. Click the name of your subscription, and then click [Access control (IAM)].

3. In the Access Control (IAM) pane, click the [Add] button in the Add a role assignment section.



4. In the Add a role assignment pane, select Reader in the Role field.



5. In the **Select** field, type the name of the Azure Active Directory application you will use to authenticate your account.



6. Select the application from the search results and click [Save].

Setting Up a Proxy Server

Depending on your needs, you can optionally enable SL1 to connect to Azure through a third-party proxy server such as SQUID. With this configuration, SL1 connects to the proxy server, which then connects to Azure. Azure relays information to the proxy server and SL1 then retrieves that information from the proxy.

NOTE: You can connect to Azure via a proxy server regardless of whether you are monitoring a single subscription or an account with multiple child subscriptions. You can connect to Microsoft Azure, Microsoft Azure Government, and Microsoft Azure Germany and China regions via a proxy server.

NOTE: The Microsoft: Azure PowerPack is certified to work with SQUID version 3.5.12 proxy servers.

If you choose to use a proxy server, configure the third-party proxy server based on the third-party documentation. Depending on the type of authentication you require, you might need to specify a user name and password for the proxy server configuration. Also, make a note of the port you opened for the configuration, as this information is needed when creating the SOAP/XML credential.

NOTE: To configure the third-party proxy server, you must have openssh-server.x86_64 and telnet installed.

Creating a SOAP/XML Credential for Azure

After you note the application ID, subscription ID, tenant ID, and secret key of the application (that is registered with Azure Active Directory) that you will use to authenticate your Azure account, you can create a SOAP/XML credential for Azure in SL1. This credential allows the Dynamic Applications in the *Microsoft: Azure* PowerPack to communicate with your Azure subscriptions.

If you want to connect to your Azure account through a third-party proxy server, you must also add the proxy information in the credential. This applies to Microsoft Azure, Microsoft Azure Government, and the Microsoft Azure German and Chinese regions.

The *Microsoft: Azure* PowerPack includes multiple sample credentials you can use as templates for creating SOAP/XML credentials for Azure. They are:

- Azure Credential China, for users who connect to an Azure data center in a Chinese region
- Azure Credential Germany, for users who connect to an Azure data center in a German region (requires a subscription in Germany or Europe)
- Azure Credential Government, for users who subscribe to Microsoft Azure Government
- Azure Credential Proxy, for users who connect to Azure through a third-party proxy server
- Azure Credential SOAP/XML, for all other users

To create a SOAP/XML credential for Azure:

1. Go to the Credential Management page (System > Manage > Credentials).

2. Locate the sample credential you want to use and then click its wrench icon (*P*). The **Edit SOAP/XML Credential** modal page appears:

Credential Editor [88]				
Edit SOAP/XML Credential #88	New Reset			
Basic Settings Profile Name Content Encoding Method HTTP Version Azure Credential - Germany [text/xml] [POST] [HTTP/1.1] URL [http(s)://Host:Port/Path %D = Aligned Device Address %N = Aligned Device Host Name] [https://login.microsoftonline.us/ <tenant_id>/oauth2/token HTTP Auth User HTTP Auth Password Timeout (seconds) 120</tenant_id>	Soap Options Embedded Password [%P] Embed Value [%1] Embed Value [%1] Embed Value [%2] <app_id> <tenant_id> Embed Value [%3] EMbed Value [%3]</tenant_id></app_id>			
Proxy Settings Hostname/IP Port User Password	HTTP Headers + Add a header AZGER			
CAINFO CAPATH CLOSEPOLICY CONKECTIMEOUT COOKIE & COOKIEFILE COOKIEJST CRLF CUSTOMREQUEST DNSCACHETIMEOUT DNSCHCETIMEOUT				
Save Save As				

3. Enter values in the following fields:

Basic Settings

- Profile Name. Type a new name for the Azure credential.
- Content Encoding. Select text/xml.
- Method. Select POST.
- HTTP Version. Select HTTP/1.1.
- URL. Type the tenant ID in the appropriate place in the URL provided in the sample credential.
- HTTP Auth User. Leave this field blank.
- HTTP Auth Password. Leave this field blank.
- Timeout (seconds). Type "120".

Proxy Settings

- Hostname/IP. If you are connecting to Azure via a proxy server, type the server's hostname or IP address. Otherwise, leave this field blank.
- **Port**. If you are connecting to Azure via a proxy server, type the port number you opened when setting up the proxy server. Otherwise, leave this field blank.

- **User**. If you are connecting to Azure via a proxy server using basic authentication, type the server's administrator username. Otherwise, leave this field blank.
- **Password**. If you are connecting to Azure via a proxy server using basic authentication, type the server's administrator password. Otherwise, leave this field blank.

CURL Options

• CURL Options. Do not make any selections in this field.

SOAP Options

- Embedded Password [%P]. Leave this field blank.
- Embed Value [%1]. Type the Application ID for the Azure Active Directory application.
- Embed Value [%2]. Type the Tenant ID for the Azure Active Directory application.
- **Embed Value [%3]**. If you are monitoring only a single Azure subscription, type the Subscription ID for the Azure Active Directory application. If you are monitoring multiple subscriptions, leave this field blank.
- Embed Value [%4]. Type the secret key for the Azure Active Directory application.

HTTP Headers

- HTTP Headers. Leave this field blank, unless one of the following scenarios applies to you:
 - If you are using Microsoft Azure Government, this field contains the text "AZGOV".
 - If you are monitoring Microsoft Azure resources in Germany, this field contains the text "AZGER".
 - If you are monitoring Microsoft Azure resources in China, this field contains the text "AZCHINA".

4. Click [Save As].

5. In the confirmation message, click **[OK]**.

Load-Balancing an Account with Multiple Subscriptions

When monitoring an account with multiple child subscriptions, instead of discovering all child subscriptions in a single dynamic component map under their parent account, you can load-balance subscriptions and their components across multiple Data Collectors.

To do this:

- The Collector Group that discovers a group of subscriptions can contain only one Data Collector. You cannot use multiple Data Collectors to discover the Azure components in a single dynamic component map or discover the same device in multiple dynamic component maps.
- To group multiple Azure subscriptions into a single dynamic component map, you need to create a shared credential for that group of subscriptions.
- To create the credential:
 - Perform all of the steps in the section on Configuring an Azure Active Directory Application.

- Align each subscription in the group with the same application that you registered with Azure AD.
- In the credential, enter the application ID in the *Embed Value [%1]* field.
- In the credential, leave the *Embed Value [%3]* field blank.
- During discovery, use this credential to discover the group of subscriptions.
- During discovery, specify the Data Collector you want to use for the group of subscriptions.
- The discovered subscriptions will reside in a common dynamic component map.
- Repeat these steps for each group of subscriptions.

Testing the Azure Credential

The *Microsoft: Azure* PowerPack includes a Credential Test for Microsoft Azure. Credential Tests define a series of steps that SL1 can execute on demand to validate whether a credential works as expected.

The "Azure Credential Test - ARM" can be used to test a SOAP/XML credential for monitoring Azure using the Dynamic Applications in the *Microsoft: Azure* PowerPack.

CAUTION: When testing Azure credentials for version 110 or greater of the Microsoft: Azure PowerPack, you should use the "Azure Credential Test - ARM" that is included in the PowerPack rather than the "Azure Credential Test" that is included by default in SL1. The "Azure Credential Test - ARM" supports proxy server entries in the credential being tested and can test that your Azure credential has the latest required permissions in Azure, whereas the older "Azure Credential Test" cannot do these things.

The "Azure Credential Test - ARM" performs the following steps:

- Test Port Availability. Performs an NMAP request to test the availability of the Azure endpoint HTTPS port.
- Test Name Resolution. Performs an nslookup request on the Azure endpoint.
- Make connection to Azure account. Attempts to connect to the Azure service using the account specified in the credential.
- Validate Azure Microsoft Graph Permission. Verifies that the Azure Active Directory application has Microsoft Graph API permissions.
- Validate Azure subscription assignments. Verifies that the Azure Active Directory application is assigned to the subscription.

To test the Azure credential:

1. Go to the Credential Test Management page (System > Customize > Credential Tests).

2. Locate the Azure Credential Test - ARM and click its lightning bolt icon (). The Credential Tester modal page appears:

Credential Tester [BETA] ×			
Test Type	[Azure Credential Test - ARM]			
Credential	Azure Credential - SOAP/XML			
Hostname/IP				
Collector	em7ao 🔹			
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. Leave this field blank.
 - 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. Mouse over the question mark icon (2) 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".

Chapter



Discovery

Overview

The following sections describe how to discover Microsoft Azure resources for monitoring by SL1 using the *Microsoft: Azure PowerPack*.

Creating an Azure Virtual Device	23
Aligning the Azure Dynamic Applications	24
Discovering Azure Component Devices	
Viewing Azure Component Devices	
Relationships Between Component Devices	

Creating an Azure Virtual Device

Because the Azure service does not have a static IP address, you cannot discover an Azure device using discovery. Instead, you must create a **virtual device** that represents the Azure service. A virtual device is a user-defined container that represents a device or service that cannot be discovered by SL1. You can use the virtual device to store information gathered by policies or Dynamic Applications.

To create a virtual device that represents your Azure service:

- 1. Go to the **Device Manager** page (Registry > Devices > Device Manager).
- 2. Click the **[Actions]** button and select Create Virtual Device from the menu. The Virtual Device modal page appears.

3. Enter values in the following fields:

Virtual Device		×	
Create Virtual Device		Reset	
Device Name	Azure Cloud		
Organization	Azure	T	
Device Class	Microsoft Azure Services	T	
Collector	CUG	•	
Add			

- Device Name. Enter a name for the device. For example, "Azure Cloud".
- **Organization**. Select the organization for this device. The organization you associate with the device limits the users that will be able to view and edit the device. Typically, only members of the organization will be able to view and edit the device.
- Device Class. Select Microsoft | Azure Services.
- Collector. Select the collector group that will monitor the device.

TIP: When monitoring an account with multiple child subscriptions, you can load-balance how SL1 monitors your Azure components by discovering groups of subscriptions and their components across multiple collectors. For details, see the section on *Load-Balancing an Account with Multiple Subscriptions*.

4. Click [Add] to create the virtual device.

Aligning the Azure Dynamic Applications

The Dynamic Applications in the Microsoft: Azure PowerPack are divided into the following types:

- **Discovery**. These Dynamic Applications poll Azure for new instances of services or changes to existing instances of services.
- **Configuration**. These Dynamic Applications retrieve configuration information about each service instance and retrieve any changes to that configuration information.
- Performance. These Dynamic Applications poll Azure for performance metrics.

When configuring SL1 to monitor Azure services, you can manually align Dynamic Applications to discover Azure component devices.

Discovering Azure Component Devices

To discover all the components of your Azure platform, you must manually align the "Microsoft: Azure Account Discovery" Dynamic Application with the Azure virtual device.

TIP: When monitoring an account with multiple child subscriptions, ScienceLogic recommends that you first review your device capacity and load limits to determine the best method for implementation prior to discovery. For details, see the section on *Load-Balancing an Account with Multiple Subscriptions*.

To manually align the "Microsoft: Azure Account Discovery" Dynamic Application:

- 1. Go to the **Device Manager** page (Registry > Devices > Device Manager).
- 2. Click the wrench icon (It for your Azure virtual device.
- 3. In the **Device Administration** panel, click the **[Collections]** tab. The **Dynamic Application Collections** page appears.
- 4. Click the [Actions] button and select Add Dynamic Application from the menu.
- 5. In the Dynamic Application Alignment modal:

Dynamic Application		×
Dynamic Application Dynamic Application Alignment Dynamic Application Alignment Dynamic Applications Microsoft: Azure Microsoft: Azure Virtual Machine CPU Perform Microsoft: Azure Virtual Machine Disk Perform Microsoft: Azure Virtual Machine Performance Microsoft: Azure Virtual Machine Performance Microsoft: Azure VMSS Performance Microsoft: Azure VMSS Virtual Machine Performance Microsoft: Azure Active Directory Classic Microsoft: Azure Active Directory Tenant Coni Microsoft: Azure Active Directory Tenant Disc Microsoft: Azure Active Directory Tenant	Credentials EM7 DB SOAP/XPL Host: AWS Credential AWS Credential - Specific Region AZure Credential - Specific Region Azure Credential - Government Azure Credential - SoAP/XML Cisco CE Series Configuration Cisco CE Series Status Cisco OVS SOAP - Example Cisco: Conductor Example (Discov Cisco: Conductor Example (Discov	Reset
Microsoft: Azure Account Discovery Microsoft: Azure Account Discovery Classic Microsoft: Azure Active Directory Service Dis Microsoft: Azure Active Directory Tenant Coni Microsoft: Azure Active Directory Tenant Disc Microsoft: Azure Active Directory Tenant Disc Microsoft: Azure App Discovery Microsoft: Azure App Service Discovery Microsoft: Azure App Service Plan Discovery Microsoft: Azure App Service Plan Discovery Microsoft: Azure Application Gateway Discov Microsoft: Azure Application Gateway Servici Microsoft: Azure Biob Storage Account Disco Microsoft: Azure Cloud Service Discovery Cla Microsoft: Azure Compute Discovery Classic Microsoft: Azure Compute Discovery Classic Microsoft: Azure Data & Storage Discovery Classic Microsoft: Azure Data & Storage Discovery Classic	Azure Credential - Proxy Azure Credential - SOAP/XML Cisco CE Series Configuration Cisco CE Series Status Cisco VOS SOAP - Example Cisco: Conductor Example (Discov Cisco: Conductor Example (Discov Cisco: Conductor Example Dell EMC XtremIO Example Dell EMC XtremIO Example EM7 DB - OB Info EM7 DB - DB Info EM7 DB - My.cnf EM7 DB - My.cnf EM7 DB - My.cnf NetApp w/SSL Option OpenStack Admin - Example	
S	ave	

- In the Dynamic Applications field, select Microsoft: Azure Account Discovery.
- In the **Credentials** field, select the credential you created for your Azure service.
- 6. Click [Save] to align the Dynamic Application with the Azure virtual device.

When you align the "Microsoft: Azure Account Discovery" Dynamic Application with the Azure virtual device, SL1 does one of the following, depending on your subscription model:

- If you are monitoring an account with multiple child subscriptions, SL1 creates a root component device representing the Azure account and one or more child component devices representing all of your Azure subscriptions.
- If you are monitoring a single subscription, SL1 creates a root component device representing your Azure subscription.

TIP: When monitoring an account with multiple child subscriptions, you can load-balance how SL1 monitors your Azure components by discovering groups of subscriptions and their components across multiple collectors. For details, see the section on *Load-Balancing an Account with Multiple Subscriptions*.

SL1 then automatically aligns several other Dynamic Applications to the subscription component devices. These additional Dynamic Applications discover and create component devices for Active Directory tenants, Traffic Manager profiles, and each location used by the Azure account.

Under each location, SL1 then discovers the following component devices:

- Application Gateway Services
 - Application Gateways
- App Services
 - App Service Plan
 - Function App
 - Web App
- Cosmos DB Accounts
- DNS Services
 - DNS Zones
- ExpressRoute Services
 - ExpressRoute Circuits
 - ExpressRoute Peering
 - ExpressRoute Circuit Connections
- Load Balancer Services
 - Load Balancers
- Network Security Group Services
 - Network Security Groups
- Recovery Service Vaults Services
 - Recovery Service Vaults

- Resource Groups Services
 - Resource Groups
- SQL Server Services
 - SQL Servers
 - SQL Databases
- Storage Manage Disks
 - Manage Disk Service
 - Manage Disk
- Storage Services
 - Storage Accounts
- Virtual Machines Services
 - Virtual Machines
- Virtual Network Services
 - Virtual Networks
 - ExpressRoute Gateways
 - Virtual Network Gateways
 - Virtual Network Subnets
- VM Scale Set Services
 - $\circ ~~ \text{VM Scale Sets}$
 - Virtual Machines

NOTE: SL1 might take several minutes to align these Dynamic Applications and create the component devices in your Azure service.

NOTE: When discovering a large number of component devices, such as when discovering an account with multiple child subscriptions, the discovery process can cause the appearance of numerous critical events with the message, "Large backlog of asynchronous jobs detected". This will occur only during the initial discovery session.

Viewing Azure Component Devices

In addition to the **Device Manager** page (Registry > Devices > Device Manager), you can view the Azure service and all associated component devices in the following places in the user interface:

• The **Device View** modal page (click the bar-graph icon [**1**] for a device, then click the **Topology** tab) displays a map of a particular device and all of the devices with which it has parent-child relationships. Double-clicking any of the devices listed reloads the page to make the selected device the primary device:



• The **Device Components** page (Registry > Devices > Device Components) displays a list of all root devices and component devices discovered by SL1 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 an Azure service, find the Azure virtual device and click its plus icon (+):



The Component Map page (Views > 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 an Azure service, 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 Views manual.



Relationships Between Component Devices

In addition to parent/child relationships between component devices, SL1 also creates relationships between the following component devices:

- Apps and Resource Groups
- Application Gateways and Resource Groups
- Application Gateways and Virtual Network Subnets
- Azure CosmosDB and Resource Groups
- Azure CosmosDB and Virtual Networks
- Azure CosmosDB and Virtual Network Subnets
- Azure Traffic Managers and Traffic Managers
- Load Balancers and Resource Groups
- Managed Disks and Resource Groups
- Managed Disks and Virtual Machines
- Network Security Groups and Resource Groups
- Network Security Groups and Virtual Network Subnets
- Recovery Service Vaults and Resource Groups
- SQL Databases and Resource Groups
- SQL Servers and Resource Groups
- Storage Accounts and Resource Groups
- Traffic Manager Profiles and Resource Groups
- Virtual Machines and Network Security Groups
- Virtual Machines and Resource Groups
- Virtual Machines and Storage Accounts
- Virtual Machines and Virtual Networks
- Virtual Machines and Virtual Network Subnets
- Virtual Machine Scale Sets and Load Balancers
- Virtual Machine Scale Sets and Resource Groups
- Virtual Machine Scale Sets and Virtual Network Subnets
- Virtual Machine Scale Set Virtual Machines and Resource Groups
- Virtual Networks and Resource Groups
- VPN Gateways and Resource Groups
- VPN Gateways and Virtual Network Subnets

Additionally, the platform can automatically build relationships between Azure component devices and other associated devices:

- If you discover Cisco Cloud Center devices using the Dynamic Applications in the Cisco: CloudCenter PowerPack version 103 or later, SL1 will automatically create relationships between Azure Virtual Machines and Cisco Cloud Center applications.
- If you discover Dynatrace environments using the Dynamic Applications in the Dynatrace PowerPack, SL1 will automatically create relationships between the following device types:
 - Azure Virtual Machines and Dynatrace Hosts
 - Azure Virtual Machine Scale Sets and Dynatrace Hosts
- If you discover Office 365 services using the Dynamic Applications in the *Microsoft: Office 365* PowerPack version 101 or later, SL1 will automatically create relationships between Azure Active Directory tenants and Office 365 Active Directory tenants.

Chapter

4

Azure Unified Alerts

Overview

The following sections describe the Azure unified alert Event Policies that are included in the *Microsoft: Azure* PowerPack and information about configuring Azure and SL1 to generate events based on Azure unified alerts:

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Azure Unified Alert Event Policies	33
Enabling the "Microsoft: Azure Unified Alerts Performance" Dynamic Application	33
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Prerequisites for Configuring Azure Unified Alerts

In addition to SL1 collecting metrics for Azure resources, you can configure Azure to send alert information to SL1 via API. SL1 can then generate an event for each alert.

However, before you can monitor Azure unified alerts in SL1 using the *Microsoft: Azure* PowerPack, you must first configure Azure to proactively send alerts when important conditions are found in your Azure monitoring data. These alerts are based on metrics and activity logs, and are raised when the alert's monitor condition is set to "fired".

You must also create alert rules in Azure that determine the following:

- The resource that the alert is targeting
- The signal from the target resource that could trigger the alert
- The logic that determines whether the signal from the target resource actually triggers the alert

For details about how to create and manage alert rules, see <u>https://docs.microsoft.com/en-us/azure/azure-monitor/platform/alerts-overview</u>.

Azure Unified Alert Event Policies

The *Microsoft: Azure* PowerPack includes several pre-defined event policies for unified alerts, based on their severity:

Event Policy Name	Event Source	Severity
Microsoft: Azure Alert Severity 0	API	Critical
Microsoft: Azure Alert Severity 1	API	Major
Microsoft: Azure Alert Severity 2	API	Minor
Microsoft: Azure Alert Severity 3	API	Notice
Microsoft: Azure Alert Severity 4	API	Notice
Microsoft: Azure Alert Severity O Resolved Microsoft: Azure Alert Severity 1 Resolved Microsoft: Azure Alert Severity 2 Resolved Microsoft: Azure Alert Severity 3 Resolved Microsoft: Azure Alert Severity 4 Resolved	API	Healthy

These events are aligned to Azure component devices in the following way:

- If the alert is targeted to a component device that is discovered in SL1, then the event in SL1 will be aligned with that component device.
- If the alert is targeted to a component device that either is not discovered in SL1 or if SL1 cannot determine the appropriate component device, then that alert will be aligned to the Azure subscription component device.

NOTE: The **Healthy** events are raised when the alert's monitor condition is "resolved" or the alert state is "acknowledged" or "closed".

Enabling the "Microsoft: Azure Unified Alerts Performance" Dynamic Application

The *Microsoft: Azure* PowerPack also includes a "Microsoft: Azure Unified Alerts Performance" Dynamic Application. This Dynamic Application collect alerts from the Azure API for all available resources and associates the alerts with the appropriate Azure component devices in SL1, if applicable. If an appropriate component device does not exist in SL1 or cannot be determined, the alert is instead associated with the component device for the Azure subscription.

This Dynamic Application must be enabled if you want SL1 to generate unified alert events.

To enable the "Microsoft: Azure Unified Alerts Performance" Dynamic Application:

- 1. Go to the **Dynamic Applications Manager** page (System > Manage > Applications).
- Locate the "Microsoft: Azure Unified Alerts Performance" Dynamic Application and then click its wrench icon (
 The Dynamic Applications Properties Editor page appears.

Close <u>P</u> roperties	<u>C</u> ollections	Presentations	<u>S</u> nippets	Thr	esholds	Ale	rts	Subscribers	
Dynamic Applications [1612] Properties	Editor							Gu	ide Reset
Application Name Microsoft: Azure Unified Alerts Perfo	rmance 😧	Version No [Version 1.0]	umber	[Default]	Abandon C	ollection	▼ 😯	Dis	able Rollup of Data
Application Type [Snippet Performance] Execution Environment	▼ 🕄	Operationa [[Enabled]	I State ▼ 😧		Conte	ext		Co	omponent Mapping
[Default: Microsoft: Azure] Caching	▼ 😧	Collector A	xffinity ▼ 😯	[values]	Null Row	Option	▼ 😧		
Device Dashboard	0	Poll Frequ [Every 2 Minute	iency s] v 😧	[values]	Null Colum	n Option	▼ 🕄		Save As
This dynamic application monitors Azure Alerts performance information.									
B I U S A	A - Ti - 6 -	¶ - ≫-			⊞	°o 🖬	<i>_</i> >		
Version 1.0: 1. Initial version of the Microsoft: Azure Unified Alerts Performance dynamic application.									
Copyright (c) 2003-2019 ScienceLogic, Inc.									
This software is the copyrighted work of ScienceLogic, Inc. Use of the Software is governed by the terms of the software license									
("License Agreement"). An end user is not permitted to install any Software									
Inacis accompanied by or includ	les à License A	greement, unle	ss në or shë						

- 3. In the **Operational State** field, select Enabled.
- 4. Click [Save].

Viewing Azure Unified Alert Counts

After you have enabled the "Microsoft: Azure Unified Alerts Performance" Dynamic Application and it has begun collecting alerts from the Azure API, you can view a count of the total number of alerts generated for each severity level for a given component device.

NOTE: By default, the "Microsoft: Azure Unified Alerts Performance" Dynamic Application collects alerts over a 1-day period.

To view Azure unified alert counts:

- 1. Go to the **Device Components** page (Registry > Devices > Device Components).
- 2. Click the plus-sign icon (+) for your Azure service until you locate the Azure component device for which you want to see an alert count. Click its graph icon (
- 3. Click the [Performance] tab. The Device Performance page appears.
- 4. Click the Microsoft: Azure Unified Alerts Performance link to expand the options listed, and then select the alert severity for which you want to see metrics. The performance graph displays a graph detailing the count for your selected alert severity over the selected timespan.



Chapter

5

Azure Run Book Actions and Automations

Overview

The following sections describe how to use the Run Book Action policies and Run Book Automation policies that are included in the *Microsoft: Azure* PowerPack:

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About the Azure Run Book Actions and Automations

The Microsoft: Azure PowerPack includes Run Book Actions and Run Book Automation policies that can be used to:

- Automatically disable data collection for Virtual Machines, Virtual Machine Scale Sets (VMSS), and Storage Disks based on their VM tag
- Automatically create and start a discovery session using the public or private IP address of a Virtual Machine, and after the device is discovered, merge the physical device with the corresponding component
- Automatically move a Virtual Machine to a vanished state if the component is in a terminated state

The following table describes the Run Book Automation policies and what they do:

Run Book Automation Policy Name	Result
Microsoft Azure: Disable and Discover from IP	If a component device belongs to the Virtual Machines device group and has a relevant Azure tag, SL1 disables the device.
Microsoft Azure: Disable Storage Disks	If a component device belongs to the Storage Disks device group and has a relevant Azure tag, SL1 disables the device.
Microsoft Azure: Discover from IP	SL1 automatically discovers VM instances by public or private IP address.
Microsoft Azure: Merge with VM	If SL1 finds the "Device Record Created" event on the newly discovered physical device, SL1 merges the newly discovered physical device with the corresponding component device.
Microsoft Azure: Vanish Terminated VMs	If a device is in a terminated or terminating state, SL1 un-merges the VM instance and physical device (if applicable), clears the device's associated events, and then moves the device to a vanished state.

NOTE: The Run Book Automation policies in the *Microsoft: Azure* PowerPack are disabled by default. To use these Run Book Automations, you must enable the Run Book Automation policies and modify the parameters in the Run Book Actions as needed. See the following procedures for more information.

As a prerequisite for discovering physical devices, make sure that traffic to the following ports is allowed in the inbound security rules on the Azure Portal for a Virtual Machine:

- Port 161. Allows the discovery session to use SNMP credentials.
- Ports 5985, 5986. Allows the discovery session to use PowerShell credentials.

If the above ports are not open or cannot be opened, you can include extra credentials for the discovery session by modifying the following parameter in the "Microsoft Azure: Discover from IP" Run Book Action, using a commaseparated list of credential IDs:

EXTRA CREDS = "<ID1>, <ID2>, <ID3>"

NOTE: When a discovery session is given a list of credentials, the first credential that successfully authenticates is used to discover a physical device.

For more information about Microsoft Azure inbound security rules, see the following Microsoft article: <u>How to</u> open ports to a virtual machine with the Azure portal.

Disabling VMs or Storage Disks by VM Tag

NOTE: The following Run Book Automation policies do not enable data collection for Azure VMs or Storage Disks. You must manually enable data collection for these VMs or Storage Disks.

Run Book Automation Policy: Disable and Discover from IP

The "Disable and Discover from IP" Run Book Automation policy runs only on newly discovered VMs. The policy takes no action for existing VMs.

The automation for disabling Azure VMs or Azure VMSS includes the following Run Book Actions, which are executed in the following order:

- *Microsoft Azure: Get Unique ID*. This action retrieves the unique ID of the component. This action runs on the Database Server.
- Microsoft Azure: Collect VM Configuration. This action retrieves VM configuration, including the tags used to disable the VM. This action runs on the Collector.
- Microsoft Azure: Disable By VM Tag. If a newly discovered VM contains the tags specified in the snippet, this action disables collection for this component.
- Microsoft Azure: Discover from IP. If the VM is running and is newly discovered, this action creates the discovery session and runs automatically to discover the physical device. This action will not create a discovery session for a discovered VM that was disabled right after being discovered.

The following Run Book Automation policy triggers the above Run Book Actions:

• Microsoft Azure: Disable and Discover from IP. This Run Book Automation policy executes when the "Component Device Record Created" event is active on the matching devices, immediately after the devices are discovered in the system. Enable this Run Book Automation policy if you want to disable VM instances by Azure tag and want to enable automated discovery of VM instances by public or private IP address. This policy is configured to run both processes in the correct order for VM instances.

Run Book Automation Policy: Disable Storage Disks

The "Disable Storage Disks" Run Book Automation policy runs only on newly discovered Storage Disks. The policy takes no action for existing Storage Disks.

The automation for disabling Azure Storage Disks includes the following Run Book Actions, which are executed in the following order:

- *Microsoft Azure: Get Unique ID*. This action retrieves the unique ID of the component. This action runs on the Database Server.
- *Microsoft Azure: Collect Storage Disk Configuration*. This action retrieves disk and VM configurations, including the tags that belong to the VM used by the Storage Disk. This action runs on the Collector.
- Microsoft Azure: Disable By VM Tag. If a newly discovered Storage Disk belong to a VM that contains the tags specified in the snippet, this action disables collection for the component.

The following Run Book Automation policy triggers the above actions:

• Microsoft Azure: Disable Storage Disks. This Run Book Automation policy executes when the "Component Device Record Created" event is active on the matching devices, immediately after the devices are discovered in the system. Enable this policy if you want to disable Storage Disk instances by Azure tag, but do not want to enable automated discovery of Storage Disk instances by public or private IP address.

Configuration Steps

To use these automations, you must:

- Modify the parameters of the "Disable By VM Tag" Run Book Action
- Enable the "Component Device Record Created" event policy
- Enable the Run Book Automation policies
- Configure your system to preserve these changes

Modifying the Parameters of the "Disable By VM Tag" Run Book Action

The snippet for the "Microsoft Azure: Disable by VM Tag" Run Book Action includes the pre-defined list of key/value pairs that SL1 compares to the tags collected from Azure. You must modify this list to include the key/value pairs that you want to use to disable VM instances.

To modify the parameters for the "Microsoft Azure: Disable by VM Tag" Run Book Action:

- 1. Go to the Action Policy Manager page (Registry > Run Book > Actions).
- 2. Click the wrench icon (🎤) for the "Microsoft Azure: Disable by VM Tag" Run Book Action.

Policy Editor Editing Action [16]	Reset					
Action Name	Action State					
Microsoft Azure: Disable By VM Tag	[Enabled]					
Desc	ription					
]					
Organization	Action Type					
[System] V	Run a Snippet					
Snippet Credential Action Ru	In Context Execution Environment					
[EM7 Central Database] [Database]	[Default: Microsoft: Azure]					
Snippe	at Code					
	нин					
DISABLE_TAGS is a list of tuples	e matched against an Azure tag					
Devices with tag that matches at least one	Devices with tag that matches at least one entry in this list.					

DISABLE_TAGS = [('Examplekey', 'Examplevalu						
import traceback	import traceback					
<pre>import silo_common.snippets as em7_snippets</pre>						
from silo_arm.azure_tactory import Azurera	natch					
from silo_common.database import local_db						
logfile = '/tmp/azure rha disable devices.log'						
logOut = open(logfile. 'a')	•					
Save	Save As					

3. In the **Snippet Code** field, locate and edit the following line:

DISABLE_TAGS = [('ExampleKey', 'ExampleValue')]

The line must be in the following format, with each key and each value inside single-quotes and each key/value pair comma-separated inside parentheses, with commas separating each key/value pair.

DISABLE TAGS [('Key', 'Value'), ('Key', 'Value'), ..., ('Key', 'Value')]

For example, suppose you want to disable a VM instance where the "Environment" key is either "dev" or "test" or the "Owner" key is "Sales". You would update the line so it looks like this:

DISABLE TAGS [('Environment', 'dev'), ('Environment', 'test'), ('Owner', 'Sales')]

- 4. As needed, update the following lines:
 - To disable discovery using SNMP credentials:

```
USE_SNMP = False
Discover_Non_SNMP = '1'
```

• To include additional user-defined credentials in the discovery session, use a comma-separated list of credential IDs:

EXTRA CREDS = "<ID1>, <ID2>, <ID3>"

- To apply a device template to all newly discovered physical devices, specify the name of the template:
 TEMPLATE_NAME = "<Name>"
- 5. When you are done editing, click the **[Save]** button.

Enabling the "Component Device Record Created" Event Policy

To enable the "Component Device Record Created" event policy:

- 1. Go to the **Event Policy Manager** page (Registry > Events > Event Manager).
- 2. Click the wrench icon (I for the "Component Device Record Created" event policy.
- 3. In the **Operational State** field, select Enabled.
- 4. Click [Save].

To prevent this change from being overwritten when the PowerPacks installed on the system are updated, you can enable the **Selective PowerPack Field Protection** option. To enable this option:

- 1. Go to the **Behavior Settings** page (System > Settings > Behavior).
- 2. Check the Enable Selective PowerPack Field Protection checkbox.
- 3. Click [Save].

Enabling the Run Book Automation Policies

To enable one or more Run Book Automation policies in the Microsoft: Azure PowerPack:

- 1. Go to the Automation Policy Manager page (Registry > Run Book > Automation).
- 2. Click the wrench icon (I for the Run Book Automation policy you want to enable.
- 3. In the **Policy State** field, select Enabled.
- 4. Click [Save].

Preserving Automation Changes

If you have modified Run Book Actions and Run Book Automation policies that are included in the *Microsoft: Azure* PowerPack, those changes will be overwritten when the PowerPack is updated in your system. If you have modified Run Book Actions and Run Book Automation policies that are included in the PowerPack, you can:

- Re-implement those changes after each update of the Microsoft: AzurePowerPack.
- Remove the content from the PowerPack on your system. When the *Microsoft: AzurePowerPack* is updated in your system, updated versions of this content will not be installed on your system and your local changes will be preserved.

To remove Run Book Action or Run Book Automation policy content from the *Microsoft: Azure* PowerPack on your system:

- 1. Go to the **PowerPack Manager** page (System > Manage > PowerPacks).
- 2. Click the wrench icon (*P*) for the Microsoft: Azure PowerPack. The **Editing PowerPack** page appears.
- 3. In the left NavBar of the **Editing PowerPack** page, select the type of content you want to remove:
 - To remove a Run Book Action, click **Run Book Actions**. The **Embedded Run Book Actions** and **Available Run Book Actions** panes appear.
 - To remove a Run Book Automation policy, click **Run Book Policies**. The **Embedded Run Book Policies** and **Available Run Book Policies** panes appear.
- 4. In the upper pane, click the bomb icon () for each Run Book Action or Run Book Automation policy that you want to remove from the *Microsoft: Azure* PowerPack on your system.

Discovering VMs and Merging Physical Devices with Components

Run Book Automation Policy: Discover from IP

The "Discover from IP" Run Book Automation policy runs only on newly discovered VMs. The policy takes no action for existing VMs.

The automation for discovering Azure VMs or VMSSs by public or private IP addresses and then discovering the physical device includes three Run Book Actions that are executed in the following order:

- Microsoft Azure: Get Unique ID. This action retrieves the unique ID of the component. This action runs on the Database Server.
- *Microsoft Azure: Collect VM Configuration*. This action retrieves VM configuration, including public or private IP address and open ports. This action runs on the Collector.
- Microsoft Azure: Discover from IP. If the VM is running and is newly discovered, this action creates the discovery session and runs automatically to discover the physical device. The discovery session name uses the following format: Azure VM-IP address.

The following Run Book Automation policy triggers the above Run Book Actions:

• Microsoft Azure: Discover From IP. This Run Book Automation policy executes when the "Component Device Record Created" event is active on the matching devices, immediately after the devices are discovered in the system. Use this action to enable automated discovery of VM instances by public or private IP address.

Note: If a VM was created as "Stopped" by default, and that VM was discovered by the PowerPack, the Run Book Action will not create a discovery session. The action cannot collect an IP address for a stopped VM.

Run Book Automation Policy: Merge with VM

When the "Merge with VM" Run Book Automation policy finds the "Device Record Created" event on the newly discovered physical device, the policy triggers the following Run Book Action:

• *Microsoft Azure: Merge Physical with Component*. This action merges the newly discovered physical device with the corresponding component device.

The "Merge with VM" Run Book Automation policy runs only on newly discovered devices. The policy takes no action for existing VMs. The discovery session created with the "Discover from IP" Run Book Action, above, will discover the physical device.

Configuration Steps

To use these automations, you must:

- Modify the parameters of the Run Book Actions
- Enable the "Component Device Record Created" event policy (Discover from IP policy only)
- Enable the "Device Record Created" event policy
- Enable the Run Book Automation policies
- Configure your system to preserve these changes

Modifying the Parameters of the Run Book Actions

The snippet for the "Microsoft Azure: Discover from IP" Run Book Action includes parameters that define how the Run Book Action creates discovery sessions. By default the snippet uses the public IP address and SNMP port 161 to create the discovery session. You can update these parameters as needed.

To modify the parameters for the "Microsoft Azure: Discover from IP" Run Book Action:

- 1. Go to the Action Policy Manager page (Registry > Run Book > Actions).
- 2. Click the wrench icon (It is the "Microsoft Azure: Discover from IP" Run Book Action.
- 3. In the **Snippet Code** field, locate and edit the lines for the parameters you want to change:

Policy Editor Editing Action [27] Reset	
Action Name	Action State
Microsoft Azure: Discover from IP	[Enabled]
Description	
Discover Physical device using IP address	
Organization	Action Type
[System]	 Run a Snippet
Snippet Credential	Action Run Context Execution Environment
[EM7 Central Database]] The fault: Microsoft: Azure]
Snippet Code	
<pre>log = em7_snippets.logger(filename=logfile)</pre>	
#IP_ATTRIBUTE is the IP address used during discovery. Use either public_ip_address	
or private_ip_address.	
#EXTRA CREDS is a comma-separated string of credential IDs that will always be	
included in every discovery session created by the automation.	
EXTRA CREDS = ""	
SWMF_FORD = 101 # SWMF FORT. USE SNMP = True # Use SNMP for discovery otherwise change to False.	
#IF TEMPLATE NAME is the name of a device template in the system, that device	
template will be included in every discovery session created by the automation.	
TEMPLATE_NAME = ""	
TACLUDE ALL ORG CREDS = True	
#If DISCOVER NON SNMP is "0", discovery sessions created with this automation will	

- 4. As needed, update the following lines:
 - To change from the default public IP address to private IP address:

IP_ATTRIBUTE = 'private_ip_address'

If you change the IP address value to private for this Run Book Action, then you must also update the following line in the "Microsoft Azure: Merge with VM" Run Book Action: $IP_ATTRIBUTE = 'c-VM-public_ipaddress"$.

• To include additional user-defined credentials in the discovery session, use a comma-separated list of credential IDs:

```
EXTRA CREDS = "<ID1>, <ID2>, <ID3>"
```

• To disable discovery using SNMP credentials, update the following lines:

USE_SNMP = False DISCOVER_NON_SNMP = '1'

• To apply a device template to all newly discovered physical devices, specify the name of the template:

TEMPLATE NAME = "<Name>"

• To disable the automatic alignment of credentials to the discovery session, change this line to:

AUTO_INCLUDE_CREDS = False

• If INCLUDE_ALL_ORG_CREDS is "True" and the AUTO_INCLUDE_CREDS parameter is "True", credentials that are aligned with all organizations (credentials that do not have an explicit organization alignment) are automatically included in the discovery session when that credential meets the other requirements for being automatically included in the discovery session.

INCLUDE_ALL_ORG_CREDS = True

5. When you are done editing, click the [Save] button.

Enabling the "Component Device Record Created" Event Policy (Discover from IP Only)

To enable the "Component Device Record Created" event policy:

- 1. Go to the **Event Policy Manager** page (Registry > Events > Event Manager).
- 2. Click the wrench icon (I for the "Component Device Record Created" event policy.
- 3. In the Operational State field, select Enabled.
- 4. Click [Save].

To prevent this change from being overwritten when the PowerPacks installed on the system are updated, you can enable the **Selective PowerPack Field Protection** option. To enable this option:

- 1. Go to the **Behavior Settings** page (System > Settings > Behavior).
- 2. Check the **Enable Selective PowerPack Field Protection** checkbox.
- 3. Click [Save].

Enabling the "Device Record Created" Event Policy

To enable the "Device Record Created" event policy:

- 1. Go to the **Event Policy Manager** page (Registry > Events > Event Manager).
- 2. Click the wrench icon (*for the "Device Record Created" event policy.*
- 3. In the Operational State field, select Enabled.
- 4. Click [Save].

To prevent this change from being overwritten when the PowerPacks installed on the system are updated, you can enable the **Selective PowerPack Field Protection** option. To enable this option:

- 1. Go to the **Behavior Settings** page (System > Settings > Behavior).
- 2. Check the Enable Selective PowerPack Field Protection checkbox.
- 3. Click [Save].

Enabling the Run Book Policies

To enable one or more Run Book Automation policies in the Microsoft: Azure PowerPack:

- 1. Go to the **Automation Policy Manager** page (Registry > Run Book > Automation).
- 2. Click the wrench icon (*for the Run Book Automation policy you want to enable.*
- 3. In the **Policy State** field, select Enabled.
- 4. Click [Save].

Preserving Automation Changes

If you have modified Run Book Actions and Run Book Automation policies that are included in the *Microsoft: Azure* PowerPack, those changes will be overwritten when the PowerPack is updated in your system. If you have modified Run Book Actions and Run Book Automation policies that are included in the PowerPack, you can:

- Re-implement those changes after each update of the Microsoft: AzurePowerPack.
- Remove the content from the PowerPack on your system. When the *Microsoft: AzurePowerPack* is updated in your system, updated versions of this content will not be installed on your system and your local changes will be preserved.

To remove Run Book Action or Run Book Automation policy content from the *Microsoft: Azure* PowerPack on your system:

- 1. Go to the **PowerPack Manager** page (System > Manage > PowerPacks).
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- 4. In the upper pane, click the bomb icon () for each Run Book Action or Run Book Automation policy that you want to remove from the *Microsoft: Azure* PowerPack on your system.

Vanishing Terminated or Terminating VM Instances

If a device is in a terminated or terminating state, the "Vanish Terminated VMs" Run Book Action un-merges the VM instance and physical device (if applicable), clears the device's associated events, and then moves the device to a vanished state.

The "Vanish Terminated VMs" Run Book Automation policy runs only on newly discovered VMs. The policy takes no action for existing VMs.

The automation for vanishing terminated VM instances includes the following Run Book Actions:

- Microsoft Azure: Get Unique ID. This action retrieves the unique ID of the component. This action runs on the Database Server.
- *Microsoft Azure: Check VM Availability*. This action uses the unique ID of the component to get the device availability status. If the device availability status is "Terminated", this action moves to the following Run Book Action, "Vanish Terminated VMs". This action runs on the Collector.
- Microsoft Azure: Vanish Terminated VMs. This action moves the device to the Vanish state when the VM has been terminated in the Azure Portal. This action runs on the Database Server. This action determines if the component was merged with a physical device:
 - If the component was not merged, the action will delete the device's events and move the device to a Vanish state.
 - If the component was merged, the action will un-merge the component with the physical device, and then it will clear the device's events and move the device to a Vanish state.
 - If the component was merged, but the VM was powered off, the action will not do anything until the VM is powered on, at which point the action will update the IP address of the physical device.

When a merged device is un-merged, the component device vanishes, and the physical device is moved to an automatically created Collector group named "Virtual Group".

The following Run Book Automation policy triggers the above actions:

• *Microsoft Azure: Vanish Terminated Instances*. This Run Book Automation policy executes when the "Availability Check Failed" event is raised on the virtual machine when it terminated.

To use this automation, you must:

- Enable the Run Book Automation policies
- Configure your system to preserve this change

Enabling the Run Book Automation Policies

To enable one or more Run Book Automation policies in the Microsoft: Azure PowerPack:

- 1. Go to the Automation Policy Manager page (Registry > Run Book > Automation).
- 2. Click the wrench icon (I for the Run Book Automation policy you want to enable.
- 3. In the **Policy State** field, select Enabled.
- 4. Click [Save].

Preserving Automation Changes

If you have modified Run Book Actions and Run Book Automation policies that are included in the *Microsoft: Azure* PowerPack, those changes will be overwritten when the PowerPack is updated in your system. If you have modified Run Book Actions and Run Book Automation policies that are included in the PowerPack, you can:

- Re-implement those changes after each update of the Microsoft: AzurePowerPack.
- Remove the content from the PowerPack on your system. When the *Microsoft: AzurePowerPack* is updated in your system, updated versions of this content will not be installed on your system and your local changes will be preserved.

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- 4. In the upper pane, click the bomb icon () for each Run Book Action or Run Book Automation policy that you want to remove from the *Microsoft: Azure* PowerPack on your system.

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