

## **Monitoring Microsoft Azure**

Microsoft: Azure PowerPack version 109

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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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### 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:

- Example credentials you can use as templates to create SOAP/XML credentials to connect to Azure
- 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
  - $\circ \quad DNS \ zones$
  - 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

• 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 in that PowerPack that has already been installed on the target system. You can use the *Enable Selective PowerPack Field Protection* setting in the **Behavior Settings** page (System > Settings > Behavior) to prevent new PowerPacks from overwriting local changes for some commonly customized fields. (For more information, see the *System Administration* manual.)

To download and install a PowerPack:

- 1. Download the PowerPack from the ScienceLogic Customer Portal.
- 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 Powe	rPack™	×
Brow	wse for file Erowse 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 page 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 page. This page appears when you click the **[Actions]** menu and select *Install PowerPack*.

1

## Chapter

2

## **Configuring Azure for Monitoring**

### 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:

	K Home > azureteamsciencelogic (Default D		
+ Create a resource	azureteamsciencelogic (Defaul	It Directory) - App registrations (Preview)	
🕈 Home	P Search (Ctrl+/)	+ New registration I Endpoints X Troubleshooting State Got feedback?	
🔜 Dashboard	Ju search (Utri+/)	<ul> <li>Second Science Management Activity (Second Science Sci Science Science Sc</li></ul>	
All services	Overview	You are currently using the preview experience for App registrations. Click this banner to switch to the existing GA experience.	
* FAVORITES	Getting started	All applications Owned applications Applications from personal account	
🜍 Resource groups	Manage	٩.	
All resources	🛓 Users	DISPLAY NAME APPLICATION (CLIENT) ID	CREATED ON
<b>?</b> Subscriptions	Groups	No results	
App Services	Organizational relationships		
Storage accounts	Roles and administrators		
Virtual machine scale sets	Enterprise applications		
Network interfaces	Devices		
Recovery Services vaults	App registrations (Preview)		
App Service plans	App registrations		
Monitor	Application proxy		
Virtual machines	Licenses		
App registrations	Azure AD Connect		
🗟 SQL databases	😥 Custom domain names		
SQL servers	Mobility (MDM and MAM)		

3. Click the **[New registration]** button.

Microsoft Azure		${\cal P}$ active direc $\qquad$
	Home > azureteamsciencelogic (Default D	Directory) - App registrations (Preview)
+ Create a resource	azureteamsciencelogic (Defaul Azure Active Directory - PREVIEW	ult Directory) - App registrations (Preview)
🛧 Home		+ New registration)
🛄 Dashboard	P Search (Ctrl+/)	
\Xi All services	Overview	
+ FAVORITES	g <sup>*</sup> Getting started	All applications Owned applications Applications from personal account
📦 Resource groups	Manage	Q
III resources	Lusers	DISPLAY NAME APPLICATION (CLIENT) ID
<b>9</b> Subscriptions	🝰 Groups	No results
🔕 App Services	Organizational relationships	
🧱 Storage accounts	Roles and administrators	
🐚 Virtual machine scale sets	Enterprise applications	
📝 Network interfaces	Devices	
Recovery Services vaults	App registrations (Preview)	
💁 App Service plans	App registrations	
Monitor	Application proxy	
🛄 Virtual machines	🔓 Licenses	
📙 App registrations	Azure AD Connect	
🗟 SQL databases	Custom domain names	
🗟 SQL servers	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.

Microsoft Azure	P Search resources, services, and docs
«	Home > azureteamsciencelogic (Default Directory) - App registrations (Preview) > Register an application
+ Create a resource	Register an application
🛧 Home	PRIVEW
🛄 Dashboard	
E All services	* Name
+ FAVORITES	The user-facing display name for this application (this can be changed later).
📦 Resource groups	Sciencelogic Monitoring
III resources	
💡 Subscriptions	Supported account types
🔇 App Services	Supported December 49 Per 2010
Storage accounts	Accounts in this organizational directory only (azureteamsciencelogic (Default Directory))
🐚 Virtual machine scale sets	Accounts in ons organizational directory
🔜 Network interfaces	Accounts in any organizational directory     Accounts in any organizational directory and personal Microsoft accounts (e.g. Skype, Xbox, Outlook.com)
Secovery Services vaults	
App Service plans	Help me choose_
Monitor	
Virtual machines	Redirect URI (optional)
😽 App registrations	We'll return the authentication response to this URI after successfully authenticating the user. Providing this now is optional and it can be changed later, but a value is required for most authentication scenarios.
👼 SQL databases	Web V https://localhost.com
🗟 SQL servers	
	By proceeding, you agree to the Microsoft Platform Policies [2]
	Register

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		>_ 6₽ 6₽ @	?
Create a resource	Home > azureteamsciencelogic (Del Sciencelogic Monitoring - PREVIEW	ault Directory) - App registrations (Preview) > Sciencelogic Monitoring - API permissions API permissions	Request API permissions PREMEW Select an API		
Home     Dashboard     Lai Sentees     Al sentees     wootms     Resource groups     Al resources     Subscriptions	Coversiew Cuickstart Manage Exanding Authentication Conflicture & secrets	<ul> <li>API permissions Applications are authorized to use APIs by requesting permissions. These permissions show up and applications are authorized to use APIs by requesting permissions. These permissions show up and requestions used to use the application of the appli</li></ul>	Microsoft APIs APIs my organization uses My APIs		
S App Services Storage accounts Virtual machine scale sets Network interfaces Recovery Services vaults App Service plans	API permissions     API permissions     Expose an API     Owners     Manifest     Support + Troubleshooting	Uninitial         Delegated         Sign in and read in           These are the permission of symmetrically through code. See best practices for requesting permissions         See best practices for requesting permissions           Grant Consent         As an administrator: you can crant consent on behalf of all users in this directory. Grantma additional processions	Arure Batch Schedule large-scale parallel and HPC applications in the cloud	Azure Key Vault     Manage your key vaults as well as the     keys, secrets, and certificates within your     Key Vaults     Office 365 Management APIs     Retrieve information about user, admin,	Azure Service Management Programmatic access to much of the functionality available through the Azure portal SharePoint Interact remotely with SharePoint data
App Service plans Monitor Virtual machines App registrations SQL databases SQL servers	X Troubleshooting	overs means that of divers will not be shown a convert soreen when using the application. Grant elmin consent for azurnteamodenoologic (Default Directory)	Programmane acces to data and functionality in Dynamics 365 Business Central System for Business Integrate real-time presence, secure messaging, calling, and conference capabilities	Notifiede minimation about user, aonin, system, and policy actions and events from Office 365 and Azure AD activity Visual Studio Team Services Integrate with Visual Studio Team Services (VSTS) and Team Foundation Server (TFS) accounts	menes covery with self grain set

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		P
ĸ	Home > azureteamsciencelogic (Default	Directory) - App registrations (Preview) > Sciencelogic Monitoring - API permissions	Request API permissions	>
+ Create a resource	Sciencelogic Monitoring - AP	I permissions	All ADIS	
A Home	wanten		Microsoft Graph	
Dashboard  All services  All services  Anorette  Resource groups  All resources  Subscriptions  App Services	Crenview Cuickstant Manage Eranding Cathenticates & secrets APp permissions	API permissions Applications are authorized to use APIs by requesting permissions. These permissions show up approximation API resultations API results Science Number API results Science Number User Results Delegated Sign in and read to	https://graph.microsoft.com/ Docs [2] What type of permissions Delogitation needs to access the API as the signed-in use. Performance Select permissions Cyper to search Pathemotive Path	)
Consequences Cons	Expose an API     Expose an API     Manfest     Manfest     Support - Tradischooring     New support request	These are the permissions that this application requests statically, two may also request our c able permissions dynamically through code. See beel practices for requesting permissions of an a doministry of the permission of the statical sector requesting permission. Class and addimication pot any period context an behalf of all users in this directory. Outsing and sorrs means that end users will not be shown a consent screen when using the application. Class addimication of the azurrtamsciencelogic (Ortheat Directory)	Name Consult Records Accessive Accessive Records Auditor Auditor Auditor Calindars	

- 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		earch resources, services, and de	acs. # # #	>_ 6	¢° ⊗ ? ©	azureteam@sciencelo AzureteamScienceLogic (p
K Home > azureteamsc	seclogic (break Directory) - App registrations (hreaked) > Soci hitoring - API permissions           «         Do you want to grant consent for the n below.           •         No           •         No           •         Add a permission           •         More than the permission water           •         •           •         No           •         •           • <t< th=""><th>ncelogic Montoring - All perr quested permissions for all a nore Application Delegated tion requests statically. You m 6. See best practices for reque to o bohad of all queer in thick some man a consent screen when usin</th><th>issions counts in azureteamsciencelogic (Default Di esscuernow Read directory data Sign is and read user profile ay also request user conset- sion parmission intercory. Granting admin conset for all</th><th>rectory)? This will update any existing admin conter Admans conester Meganate Yes 🚵 Nat granted for azursteams</th><th></th><th></th></t<>	ncelogic Montoring - All perr quested permissions for all a nore Application Delegated tion requests statically. You m 6. See best practices for reque to o bohad of all queer in thick some man a consent screen when usin	issions counts in azureteamsciencelogic (Default Di esscuernow Read directory data Sign is and read user profile ay also request user conset- sion parmission intercory. Granting admin conset for all	rectory)? This will update any existing admin conter Admans conester Meganate Yes 🚵 Nat granted for azursteams		

### 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 <a href="https://portal.azure.com">https://portal.azure.com</a>, 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		${\cal P}$ 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
🛧 Home	«	
🛄 Dashboard	Overview	Add a client secret
€ All services	📣 Quickstart	Description
* FAVORITES	Manage	keySL
🚱 Resource groups	Branding	Expires
III resources	Authentication	In 1 year     In 2 years
💡 Subscriptions	Certificates & secrets	O Never
🔇 App Services	API permissions	
🧮 Storage accounts	Expose an API	Add Cancel
Virtual machine scale sets	R Owners	
🔝 Network interfaces	m Manifest	Client secrets
Recovery Services vaults		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	Support + Troubleshooting	+ New client secret
Monitor	X Troubleshooting	DESCRIPTION EXPIRES VALUE
🔯 Virtual machines	New support request	
😽 App registrations		No client secrets have been created for this application.
🗟 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 <a href="https://portal.azure.com">https://portal.azure.com</a>, 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		${\cal P}$ . Search resources, services, and docs	····
≪ + Create a resource ★ Home	Home > azureteamsciencelogic (Defaul Sciencelogic Monitoring PREVIEW	L Directory) - App registrations (Preview) > Sciencelogic Monitoring	_
Dashboard  All services  Kovorites  Resource groups  All resources	Image       Image       Image       Image	Delete     Delete     Display name     Sciencelogic Monitoring     Application (client) ID     Directory (tenant) ID     Directory (tenant) ID     Soster(ID     Sost	Supported account types : My organization only Redirect URs : 1 web; 0 public client Managed application in : Sciencelogic Monitoring
<ul> <li>Subscriptions</li> <li>App Services</li> <li>Storage accounts</li> <li>Virtual machine scale sets</li> <li>Network interfaces</li> <li>Recovery Services vaults</li> <li>App Service plans</li> <li>Monitor</li> </ul>	Authentication Certificates & secrets API permissions Compose an API Comers Manifest Support - Troubleshooting Troubleshooting Newsport request	Call APIS	Documentation Microsoft identity platform Authentication scenarios Authentication literaries Code samples Clossary Help and Support
Virtual machines App registrations SQL databases SQL servers		Sign in users in 5 minutes Sign were were as a state of the state of	

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.

2

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	; جر	active directory		>_ ⊑ dz ⊗ ?	azureteam@sciencelo     Azureteam@sciencelo
«	Home > Subscriptions				
+ Create a resource	Subscriptions azureteamsciencelogic (Default Directory)				x ×
E All services	+ Add				
— 🛨 FAVORITES ————————————————————————————————————					
III resources	Showing subscriptions in azureteamsciencelog My role <b>()</b>	ic (Default Directory). Don't see a subscription? Sw	itch directories Status 🚯		
😭 Resource groups	7 selected		✓ 3 selected		~
🔇 App Services	Apply				
👰 Virtual machines	Show only subscriptions selected in the gl	obal subscriptions filter 👩			
Storage accounts	SUBSCRIPTION	SUBSCRIPTION ID	NY ROLE	to CURRENT COST	STATUS
💡 Subscriptions		SUBSCRIPTION ID			
nachine scale sets	AZdevelopment		Account admin	Not available	Active
are covery Services vaults			•		
📑 Network interfaces					

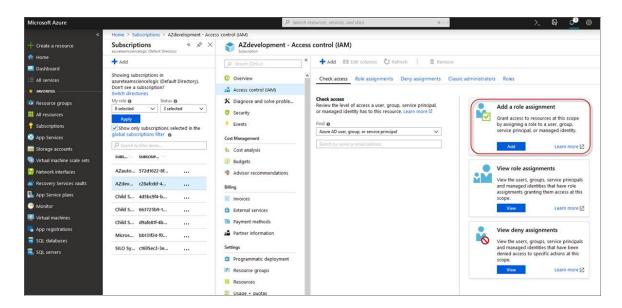
### Adding Reader Access to the Active Directory Application

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.

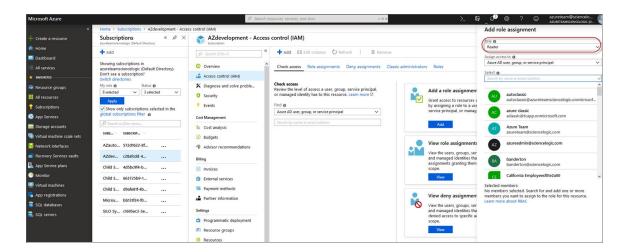
To specify the access role to the Azure Active Directory application:

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

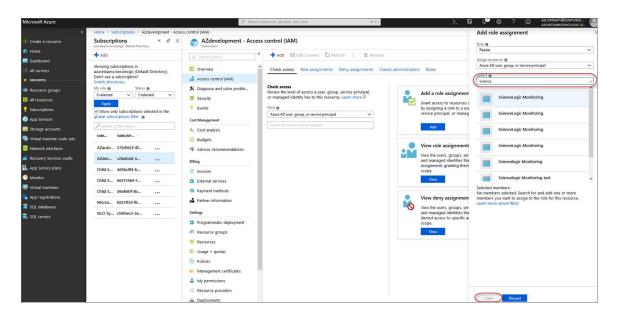
3. In the Access Control (IAM) pane, click the [Add] button in the Add a role assignment section.



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 (Azure Credential - Germany URL [ http(s)://Host:Port/Path (https://login.microsoftonline.us/ <tenai HTTP Auth User</tenai 	Content Encoding     Method     HTTP Version       [ text/xml ]      [ POST ]     ( [ HTTP/1.1 ]       I %D = Aligned Device Address   %N = Aligned Device Host Name ]       VT_D>/oauth2/token       HTTP Auth Password     Timeout (seconds)       [ 120	Soap Options         Embedded Password [%P]         Embed Value [%1]         Embed Value [%1]         CAPP_ID>         CTENANT_ID>         Embed Value [%3]         Embed Value [%4] <subscription_id></subscription_id>
Proxy Settings Hostname/IP	Port User Password	HTTP Headers + Add a header AZGER
CAINFO CAPATH CLOSEPOLICY CONNECTTIMEOUT COOKIE COOKIEFILE COOKIEFILE COOKIELIST CRUF CUSTOMREQUEST DNSCACHETIMEOUT		
	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

SL1 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 can be used to test a SOAP/XML credential for monitoring Azure using the Dynamic Applications in the *Microsoft: Azure* PowerPack. The Azure Credential Test 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.
- Make Azure Active Directory Request. Verifies that the Azure Active Directory service can be queried.

NOTE: The Azure Credential Test has not been certified for use with credentials that use a proxy server.

To test the Azure credential:

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

Credential Tester [	BETA] ×
Test Type	[Azure Credential Test ]
Credential	Azure Credential - SOAP/XML
Hostname/IP	
Collector	RS-ISO-DCU-33
	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 (<sup>2</sup>) 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

**Discovering Azure Resources** 

### 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	25
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	•		
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.

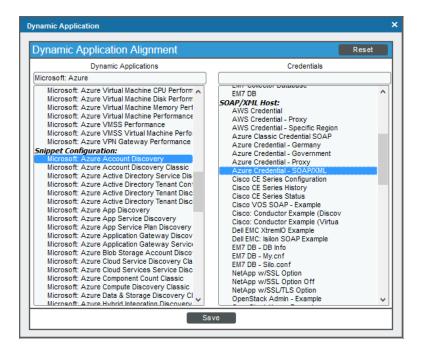
### **Discovering Azure Component Devices**

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 (*P*) 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:



- 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
- 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

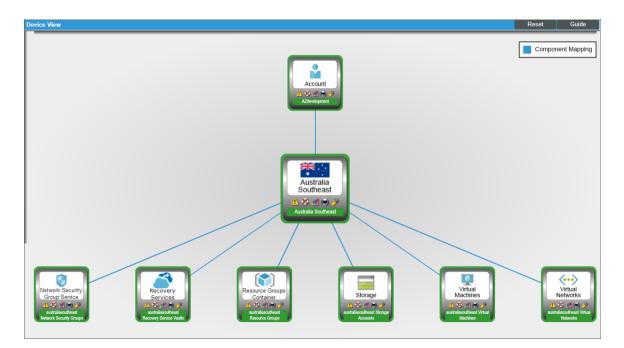
**NOTE:** SL1 might take several minutes to align these Dynamic Applications and create the component devices in your Azure service.

**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.

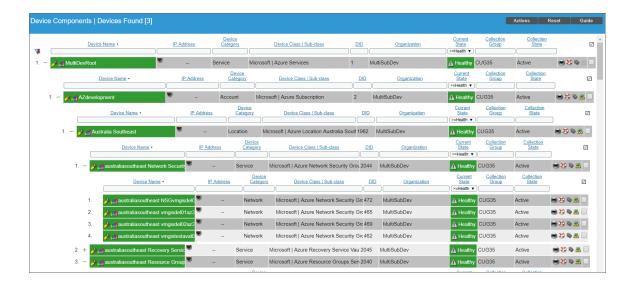
### Viewing Azure Component Devices

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:

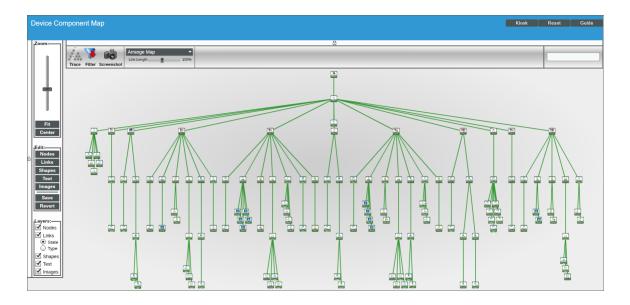
• The **Device View** modal page (click the bar-graph icon [dd]) for a device, then click the **Topology** tab) displays a map of a particular device and all of the devices with which it has parent-child relationships. Double-clicking any of the devices listed reloads the page to make the selected device 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 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: Cloud Center 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, SL1 will automatically create relationships between Azure Active Directory tenants and Office 365 Active Directory tenants.

## Chapter

## **Monitoring Azure Unified Alerts**

Overview	0	۷	е	rv	i	e	w
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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:

Prerequisites for Configuring Azure Unified Alerts	32
Azure Unified Alert Event Policies	33
Enabling the "Microsoft: Azure Unified Alerts Performance" Dynamic Application	33
Viewing Azure Unified Alert Counts	34

### 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>Properties</u> <u>C</u> ollections	Presentations <u>S</u> nippets	<u>T</u> hresholds <u>A</u> lerts	Subscribers		
Dynamic Applications [1612]   Properties Editor			Guide Reset		
Application Name Microsoft: Azure Unified Alerts Performance	Version Number [Version 1.0]	Abandon Collection	Disable Rollup of Data		
Application Type [Inippet Performance] Execution Environment	Operational State [Enabled]	Context	Component Mapping		
[ Default: Microsoft: Azure ]  Caching [ No caching ]  V @	Collector Affinity	Null Row Option	Save		
Device Dashboard None	Poll Frequency [Every 2 Minutes] V	Null Column Option	Save As		
This dynamic application monitors Azure Alerts perform	nance information.				
Release Notes & Change Log					
🖹 - 🎤 B I U S A- Ti- 🌢	• ¶ • »• ≣• ≣ ⊡	<u>i</u> ≡ ≡ ≡ % ≦ <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 agreement, which accompanies or is included with the Software					
("License Agreement"). An end user is not permitted to install any Software					
that is accompanied by or includes a License Agreement, unless he or she					
first agrees to the License Agreement terms.			*		

- 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 (<sup>dd</sup>). The **Device Summary** page appears.
- 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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Disabling VMs or Storage Disks by VM Tag	
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Configuration Steps	
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V	anishing Terminated or Terminating VM Instances	.47
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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]			
Description				
Organization	Action Type			
[System]	Run a Snippet			
[EM7 Central Database]	un Context Execution Environment			
""" DISABLE_TAGS is a list of tuples Each tuple is a key/value pair that will be matched against an Azure tag Devices with tag that matches at least one entry in this list. """				
<pre>import traceback import silo_common.snippets as em7_snippets from silo_arm.azure_factory import AzureFactory from silo_arm.azure_utils import find tag_match from silo_common.database import local_db</pre>				
<pre>logfile = '/tmp/azure_rba_disable_devices. logOut = onen(logfile. 'a<sup>+</sup>)</pre>	log'			
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 (🎤) 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 (🌮) for the Run Book Automation policy you want to enable.
- 3. In the **Policy State** field, select Enabled.
- 4. Click [Save].

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.

**Preserving Automation Changes** 

• 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.

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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 (🎤) for 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 R	un Context Execution Environment				
[EM7 Central Database]	[ Default: Microsoft: Azure ]				
Snippet Code					
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. IP_ATTRIBUTE = "public_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 = "" SNMP PORT = '161' # SNMP PORT.</pre>					
<pre>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 = "" AUTO_INCLUDE_CREDS = True INCLUDE_ALL_ORG_CREDS = True #IF DISCOVER NON SNMP is "0", discovery sessions created with this automation will ▼</pre>					

- 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 (🎤) 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].

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).
- 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.

# 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". Any physical device in the Virtual Group can be safely deleted by

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 (🌮) 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:

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

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  - 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.

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