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1. Setup Azure API Access

1.1.Overview

NetBrain accesses Azure through either Managed Identity or Service Principle and uses Rest APIs to retrieve the data from Azure. To enable the NetBrain IE system to retrieve the Azure data, you need to:

- 1. Create a Custom IAM Role
- 2. Access APIs (you can select option a or b)
 - a) Set Up VM Identity (for Managed Identity)
 - b) Register App (for Service Principle)
- 3. Assign Subscription Role
- 4. Set up API Server

1.2. Create a Custom IAM Role

Azure provides role-based access control (RBAC) to manage access to Azure resources. Follow these steps to create a custom IAM (Identity and Access Management) role for the NetBrain IE system to access Azure APIs:

1. Go to Access control (IAM) under Subscriptions in Azure Portal.

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2. Go to **Roles** and click **+Add** and click **New custom role** to create a custom IAM role.

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3. Define **Basics** Configuration.

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Baseline permissions ①	Clone a role OStart from scratch Start from JSON										
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Select **Start from JSON** in the **Baseline permissions** field and import the JSON file below to customize the role with the minimal permissions required for NetBrain IE system discovery and data retrieval.

To get the latest JSON file, refer to NetBrain Online Help: <u>NetBrain Required Azure IAM Permissions</u>

4. Review **Permissions**.

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5. Select proper subscription or management groups as **Assignable Scopes.**



6. Review Custom Role in JSON Format. Finally, click **Create** button after reviewing the **Review + create** page.

NetBrain supports both Managed Identity and Service Principal types to access Azure APIs.

- If you select Managed Identity, follow the steps in section Access APIs With Managed Identity (Option 1) :
- If you select Service Principal, follow the steps in section Access APIs With Service Principal(Option 2).

1.3. Access APIs With Managed Identity (Option 1)

1.3.1. Set Up VM Identity

NetBrain supports both Azure-system-assigned and user-assigned Identity for VM, which acts as an application server to access APIs. You only need to choose either one of the following methods below.

Set Up Azure-system-assigned Identity

- 1. Go to the **Identity** page of Virtual Machine, which will be used as a NetBrain server from Azure Portal.
- 2. Select **System assigned menu,** switch to **On** for **Status** and click the **Save** button.



Set Up User-assigned Identity

- 1. Go to the **Identity** page of Virtual Machine, which will be used as a NetBrain server from Azure Portal.
- Select the User assigned menu and click + Add button. Refer to <u>Azure's official guide</u> to create a managed identity and select it.

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1.3.2. Assign Subscription Role

NetBrain supports both service principal and managed identity as role assignment types. Follow these steps to assign the previously created custom role to managed identity for the NetBrain IE system to access Azure APIs:

- 1. Go to **Access control (IAM)** within the subscription.
- Select the previously created custom IAM role, add the new role assignment, and click + Select members to select the previously created VM with managed identity for the NetBrain IE system.

Microsoft Azure		⇒ Sear	ch resources, services, and docs (G+/)		N 🖶 🗘	O P Iony. Iong@netbraintec				
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1.3.3. Set Up API Server

Note: Before setting up your API server, read NetBrain Requirements for API Server Setup first.

Follow these steps to set up a NetBrain API server:

 Open the Domain Management page of the NetBrain IE system, select Operations > Discover Settings > API Server Manager from the quick access tab, and click Add API server.

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2. Add a new external API Server for Azure access.

Edit External API Server			×
* Server Name:	App_NetBrain_IE		
Description:	For App_NetBrain_IE		
* API Source Type:			\sim
* Access Method:	Managed Identity		\sim
* Endpoint (Client/VM ID):	ee5}6d8		
* Directory (Tenant) ID:	e20[}804		
* Front Server:	FS_X(10)		\sim
Advanced V			
Managed Devices: 113			
Test		Cancel	ОК

- Server Name: a unique name.
- **Description:** an optional field to describe this server.
- API Source Type: select Microsoft Azure.
- Access Method: select Managed Identity.
- Endpoint (Client/VM ID): copy/paste the VM ID value from the JSON format data in Azure Virtual Machine(VM) portal.



• **Directory (Tenant) ID:** copy/paste the Tenant ID.

≡ Microsoft Azure	∠ Search resources, services, and docs (G+/)
Home > NetBrain Technologies Inc >	
🔣 NetBrain 🖉	
Search (Ctrl+/) «	🗎 Delete 🌐 Endpoints 💀 Preview features
Soverview	Got a second? We would love your feedback on Microsoft identity platform (previously Azure AD fo
🍪 Quickstart	∧ Essentials
🚀 Integration assistant	Display name : NetBrain
Manage	Application (client) ID : ea415da6ee
Branding	Directory (tenant) ID : e203
Authentication	Object ID : e215

- **Front Server**: select one front server VM with managed identity to access Azure.
- 3. Click **Test** to verify that this API server works.



Once the API server is successfully verified and saved, you can proceed to Discover Azure resources.

1.4. Access APIs With Service Principal (Option 2)

1.4.1. Register App

The Microsoft identity platform performs IAM only for registered applications. Therefore, an App must be registered in the Azure portal to establish a trusting relationship between NetBrain IE and Azure.

Follow these steps to register an App for the NetBrain IE system:

1. Go to Azure Active Directory in Azure Portal.

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💠 Load balancers	A Bur-Netbond				Express	Route circuit			3 days ago			
Storage accounts	🧒 VWAN-TO-BUR	1			Virtual	WAN			3 days ago			
Virtual networks	🔒 Central-VPN-G	w			Virtual	network gateway			3 days ago			
Azure Active Directory	📍 NetBrain Azure	subscription			Subscr	iption			4 days ago			
Monitor	Central-VPN-G	w-AWS-CSR1000	v.		Conne	tion			2 weeks ago			
Advisor	East-VPN-GW				Virtual	network gateway			2 weeks ago			
O Security Center	East-VPN-GW-	Burlington-Lab-AS	SA		Conner	ction			2 weeks ago			

2. Go to App registrations and click New registration.

≡	Microsoft Azure	, P Search resources, services, and docs (G+/)		🗵 🕼 🗘	🕸 ? ©	Y L
Hor	ne 🗧 NetBrain Technologies I	ic .				
	NetBrain Techn Azure Active Directory	ologies Inc App registrations ≉				×
0	Overview	Key	view features 🛛 🛇 Got feedback?			
4	Getting started	1 Try out the new App registrations search preview! Click to enable the preview. \rightarrow				×
*2	Preview hub					
×	Diagnose and solve problems	Starting lune 30th 2020 we will no longer add any new features to Azure Active Directory	Authentication Library (ADAL) and Azure AD Granh. We wi	Il continue to provide tech	nical support and secu	ity undates but we will no
Mar	hage	Inger provide feature updates. Applications will need to be upgraded to Microsoft Author	entication Library (MSAL) and Microsoft Graph. Learn more	e continue to provide tech	incar support and seco	ty updates but we will no
8	Users					
24	Groups	All applications Owned applications				
0	External Identities	Start typing a name or Application ID to filter these results				
2	Roles and administrators					
3	Administrative units	Display name	Application (client) ID		Created on	Certificates & secrets
щ,	Enterprise applications	AT Azu pty	d1	b7	2/1/2021	🥝 Current
	Devices	ar QA Sub	83(190	11/16/2020	
Ш,	App registrations	τε Test	20:	22	12/7/2020	
۵	Identity Governance	Jay_	830	2	12/8/2020	🥝 Current
15	Application proxy	NE Net	98:	lcd1	12/15/2020	🤣 Current
4	Licenses	Jay tail	51-	d7e	1/13/2021	🕑 Current
٠	Azure AD Connect	AP App	f8b	9ad	12/8/2020	🛛 Current

3. Define an App **name**, select the account type Accounts in this organizational directory only (Single tenant), and then click **register**.

Register un applicatio	••				
* Name					
The user-facing display name for this app	lication (this can be changed later).				
NetBrain	✓				
Supported account types					
Who can use this application or access th	IS API?				
Accounts in this organizational direct	tory only (NetBrain Technologies Inc only - Single tenant)				
Accounts in any organizational direct	tory (Any Azure AD directory - Multitenant)				
 Accounts in any organizational direct 	tory (Any Azure AD directory - Multitenant) and personal Microsoft accounts (e.g. Skype, Xbox)				
 Personal Microsoft accounts only 					
Help me choose					
Redirect URI (optional)					
We'll return the authentication response t changed later, but a value is required for	o this URI after successfully authenticating the user. Providing this now is optional and it can be most authentication scenarios.				
By proceeding, you agree to the Microsof	t Platform Policies ra				
by proceeding, you agree to the microsol	chatom Policies B				

Note: NetBrain only fully supports the "Single Tenant" account type.

4. Go to the **Overview** page of the newly registered App. The **Application (Client) ID** and **Directory (Tenant) ID** information will be used to set up the NetBrain external API server later.

	Delete 4 Endpoints 5 Preview features
🐻 Overview	
44 Quickstart	^ Essentials
1 Integration assistant	Display name : App_Netbrain_IE Client credentials : 0 certificate, 2 secret
	Application (client) ID : f8b9i d Redirect URI : Add a Redirect URI
Manage	Object ID : 34bf Application ID URI : Add an Application ID URI
Branding	Directory (tenant) ID : c2039 4 Managed application in L. : App_Netbrain_JE
Authentication	Supported account types : Multiple organizations
📍 Certificates & secrets	Station Line 30th 2020 we will no longer add any new features to As we Artise Directory & detection linear / ADA 1 and As we AD Grash. We will reading to nonively features of security undates but we will no longer provide features undates
11 Token configuration	Applications will need to be upgraded to Microsoft Authentication Library (MSAL) and Microsoft Graph. Learn more
API permissions	
📤 Expose an API	A Starting November 9th, 2020 end users will no longer be able to grant consent to newly registered multitenant apps without verified publishers. Add MIN ID to verify publisher
App roles	Get Started Documentation
🌲 Owners	
🚴 Roles and administrators Preview	Puild your application with the Missoroft identity platform
Manifest	build your application with the microsoft dentity platform
Support + Troubleshooting	The Microsoft identity platform is an authentication service, open-source libraries, and application management tools. You can create modern, standards-based authentication solutions, access and protect APIs, and add sign-in for your users and customers. Learn more cited to the solution solution of the solution of th
/>P Troubleshooting	
New support request	

5. Go to **Certificate & secrets** within the created App to add a new **client secret**. The value of the newly created client secrets will be used to set up the NetBrain external API server later.

	, P Search resources, services	, and docs (G+/)		🗵 🕞 🗳 🔅
Home > NetBrain Technologies Inc >	NetBrain			
🔶 NetBrain Certifica	ates & secrets 👒			
•				
Search (Ctrl+/) «	Got feedback?			
Overview	Copy the new client secret value.	You won't be able to retrieve it after you perform another	operation or leave this blade.	
ڬ Quickstart			1 × 1	
🚀 Integration assistant	Turland castificate			
Manage	pi opioau certificate			
Branding	Thumbprint	Start date	Expires ID	
Authentication	No certificates have been added for th	is application.		
Certificates & secrets				
Token configuration				
 API permissions 	Client secrets			
Expose an API	A secret string that the application use	es to prove its identity when requesting a token. Also o	an be referred to as application password.	
App roles Preview	+ New client secret			
Cwners	Description	Expires Value	ID	
Roles and administrators Pr	Authentication testing	2/15/2022 -V-F	16 0 1	04 🗈 📋
0 Manifest		L		0
Support + Troubleshooting				

1.4.2. Assign Subscription Role

NetBrain supports both service principal and Managed identity as role assignment targets. Follow these steps to assign the previously created custom role to the service principal for the NetBrain IE system to access Azure APIs:

- 1. Go to **Access control (IAM)** within the subscription.
- Select the previously created custom IAM role, add a new role assignment, and click + Select members to select the previously registered Application for the NetBrain IE system.

Microsoft Azure			${\mathcal P}_{-}$ Search resources, services, and docs (G+/)		6	コ 昭 ロ ③ ⑦ デ Tony.Tong@netbraintec 🌾
*						Select members
+ Create a resource	Add role assig	gnment …				
🟫 Home						Select O
2 Dashboard	R Got feedback?					Арр
All services						App Protection
* FAVORITES	Role Members	Review + assign				
III resources	Colorited colo	Ann Natharin IC				App Studio for Microsoft Teams
Resource groups	Selected role	App_Netorain_IE				
😵 App Services	Assign access to	User, group, or service principal				AJAP-Splunk-lest
Function App		 Managed identity 				APP MutiTenant
🧧 SQL databases	Members	+ Select members]			
🧟 Azure Cosmos DB						Application Insights API
Virtual machines		Nome	Object ID	Туре		
Load balancers		No members selected				Application Insights Configuration Service
Storage accounts	Description					Application Registration Portal
Virtual networks						_
Azure Active Directory						SO Approval
Monitor						
🔷 Advisor						Selected members:
Microsoft Defender for Cloud						App_Netbrain_IE Remove
Cost Management + Billing						
🙎 Help + support						

1.4.3. Set Up API Server

Note: Before setting up your API server, read NetBrain Requirements for API Server Setup first.

Once you have completed the steps above, follow these steps to set up a NetBrain API Server:

 Open the Domain Management page of the NetBrain IE system, select Operations > Discover Settings > API Server Manager from the quick access tab, and click Add API server.

omain Management						Tenant	Initial Tenant Domain: Go	Operations 🚊 Ya	ଡ ⊾⊮⊟
Start Page API Server Mar	nager \times								
Total Items: 17 + Add API Serve	er		Add External API Server		×	All	API Source Types V	Q 🕞 Backup 🕞	Restore 🕄 Refres
API Source Type	Serve	r Name				Front Server		Device Counts	
Microsoft Azure		Joth Sub	* Server Name	c		FS		120	
Microsoft Azure		D2	Description	c .		FS		7	
Cisco ACI		48.135				FS		0	
Amazon AWS	1	Account_747895045325				FS	p	215	~
Amazon AWS	1	Account_070113567925	* API Source Type	a ACI MSO	~	FS	þ	56	
Amazon AWS	1		* Endpoints	e.g. https://192.168.10.2:8080; http://www.cisco.com/controller		FS	p	35	
Amazon AWS	4	r1_DirectConnect		* Password:		yd	29.24)	0	
Amazon AWS	¢	r1_ClientVpc_A	- Opername			yd	29.24)	0	
Amazon AWS	4	r1_TGW_us-east-2	* Front Server	a select	~	yd	29.24)	0	
Amazon AWS	¢	r1_ClientVpc_B	Managed Devices 0			yd	29.24)	0	
Amazon AWS	٩	r1_TGW_us-west-2	managed Devices. 0			yd	29.24)	0	
Amazon AWS	٩	r1_ClientVpc_C				yd	29.24)	0	
Amazon AWS	d	r2_TransitVIF	Test	Cancel	OK	yd	29.24)	0	
Amazon AWS	¢	r3_Good			_	yd	29.24)	0	
Splunk API Adapter	9	ws	https: 089	1	U I	FS	þ	260	
DataDog Azure API Server	c	Azure API Server	https://www.income	2		FS	p	260	
Datadog API Adapter	4		https://www.			FS	h	263	

2. Add a new external API Server for Azure access.

Edit External API Server		×
* Server Name:	App_NetBrain_IE	
Description:	For App_NetBrain_IE	
* API Source Type:	Microsoft Azure	\sim
* Access Method:	Service Principle	\checkmark
* Endpoint (Client/VM ID):	e4d8	
* Client Secret:	****	
* Directory (Tenant) ID:	e2]4	
* Front Server:	F)	\checkmark
Advanced ∨ Managed Devices: 113		
Test		Cancel OK

- Server Name: a unique name.
- **Description:** an optional field to describe this server.

- API Source Type: select Microsoft Azure.
- Access Method: select Service Principle.
- **Endpoint (Client/VM ID)**: copy/paste the ID from your registered App.



• **Client Secret**: copy/paste the value from created client secret within your registered App.

Client secrets A secret string that the application uses	to prove its identity when requ	uesting a token. Also can be referre	ed to as application password.	
+ New client secret				
Description	Expires	Value	ID	
test1	2021-11-12	-a8*****	b2f1	eec 🗅 📋
roletest	2021-12-11	UZO******	Сору	:43 🗅 📋
testnew	2021-12-11	IVLI		41 🗈 📋
jay-test-1	2299-12-31	87J******	1560	Dc8 🗈 📋

• **Directory (Tenant) ID**: copy/paste the ID from your registered App.

\equiv Microsoft Azure	
Home > NetBrain Technologies Inc >	
ң NetBrain 🖈	
	📋 Delete 🌐 Endpoints 💀 Preview features
Noverview	Got a second? We would love your feedback on Microsoft identity platform (previously Azure AD fe
🍪 Quickstart	↑ Essentials
💉 Integration assistant	Display name : NetBrain
Manage	Application (client) ID : eajee
🚍 Branding	Directory (tenant) ID : e204
Authentication	Object ID : eaf34

• Front Server: select one front server which can access Azure.

3. Click **Test** to verify that the API server works.



Once the API server is successfully verified and saved, you can proceed to Discover Azure resources.

2. Discover Azure Resources

Follow these steps to discover Azure networking resources via APIs:

- 1. Log in to your NetBrain IE system.
- 2. Click the **Discover** link from the **Domain Management** page.

Domain Management						Tenant:	: Initial Tenant Domain: (
Start Page	Domain: Cloud-Test Description:						Refrest
	O Discover	🚯 Fine	Tune	0	Site	Sch	edule Task
	0 Last Discovered Devices	all Discovere	0 ed Devices	4	Sites		i 7 Tasks
	Result Succeeded Duration 2 mins 11 secs Execution Time 11/25/2021 03:58:10 PM	Fully CLI-Accessed Device SNMP-Only Devices Missed Devices Unknown SNMP SysObje Unknown IP Subnet with Conflicted IF	es 6 (100%) 0 ectID 0 2 Ps 3	Container Sites Leef Sites Leef Sites (over 100 I Unassigned Devices	0 0 Devices) 0 319	Discovery Task Benchmark Task DivTr/Parser Task Qapp Task Plugin Task	1 3 1 1
	Current Users Session Count: 2 Client Type:	IE, Smart CLI, Embe	v			Set	orch Q
	Username +	ClientType	Machine Name	IP Address	Browser	Login Time 🔺	End Session
	🔺 🗄 tonytong (NetBrain)						
	Session2	IE		ł	Chrome	11/26/2021, 9:10:39 AM	
	🔺 🖻 skanal (NetBrain)						
	Session1	IE			Chrome	11/26/2021, 8:54:40 AM	End Session

- 3. Click + Select API Servers and select the Azure API Server you just created.
- 4. Click **Start Discovery** to start the Azure discovery. Run the discovery task manually or schedule a discovery task to discover Azure resources.

Start Page	Discover	×							
Discover							View Historical Resu	ult: Select	
Discover De	vices via SNMP/(CLI Network Settings							
Me	ethod: 🔘 Discov	er via Seed Routers 🛛 Sc	an IP Range	Access Mode:	SNMP and SSH/Te	lnet 🗸 🚯	Discovery Depth:	30	
IP/Hostr	name: e.g; 10.10).10.1; NY_R1							Import IP List 🗸
Discover De	vices via API +	+ Select API Servers Uns	elect All						
API Se	rvers: APP for A	AD2							
-					Adva	nced Options	 Start Dis 	covery	46365058756938
Discovery is	completed. but	t there are some issues nee	d to be resolved in F	ine Tune. For tr	oubleshooting, pleas	e Contact NetB	rain.		
r foundation l	license, 4 nodes d	discovered, 4 added to doma	in. For Microsoft Azur	e, 3 vnets discove	red, 3 added to domai	n.			
scovered 1 IP	addresses, found	d 8 devices within 00:00:48.	Duration spent in perf	orming additiona	l operations: 00:01:56.				
Device Log	Execution L	.og <u> </u> Plugin Log 📄 I	Report						
Discovery Surr	nmary License D	etails							
		<··>	٠						
Azure \	/irtual M	Azure VNet Dist	Azure NAT Gate.						
	4	3	1						

5. Wait till the discovery finishes. The number of discovered objects will be displayed.

Domain Managem	ient									Tenant: Initial Tenant	Dom
Start Page Disc	over ×										
Discover				View Historical Result: 11/19	9/2021, 2:00:29 PM						
Discover Devices vi	ia SNMP/CLI Network Settings	5									
Method: (Discover via Seed Routers	Scan IP Range Acco	ess Mode: SNMP and SS	H/Telnet V 🚺 Discove	ery Depth: 0						
IP/Hostname:	e.g: 10.10.10.1; NY_R1				Imp	ort IP List 🗸					
Discover Devices vi	ia API + Select API Servers	Unselect All									
API Servers:	03-Azure Tenant with Two Subs	04-Azure Tenant for CrossTen	ant Test								
				Advanced Options 🗸	Start Discovery						
A Discovery task is c For foundation license,	ompleted! but there are some is 8 nodes discovered, 8 added to d	ssues need to be resolved in Fir Iomain. For Microsoft Azure, 41 vr	ne Tune. For troubleshooti nets discovered, 41 added to	ng, please Contact NetBrain. domain.							
Discovered 2 IP address	ses, found 144 devices within 00:0	02:42. Duration spent in performi	ing additional operations: 00	:02:54.							
👩 Device Log 🔛 E:	xecution Log 🔡 Plugin Log	Report									
Discovery Summary	License Details										
0				<							
Azure Virtual I	M Azure VNet Dist	Azure VPN Gate	Azure ExpressR	Azure NAT Gate	Azure Firewall	Azure Load Bala	Azure Virtual Hub	Azure Applicatio	Azure MSEE	Azure Virtual Ne	
61	41	2	2	8	2	10	4	2	2	10	

3. Auto-Update and Enrich Azure Data

The discovery process only retrieves the basic data of your Azure network and builds L3 topology. After the discovery, you need to set up a NetBrain benchmark task to retrieve all data, including visual spaces and data views.

To create a benchmark for Azure resources, complete the following steps.

- 1. On the Start Page, click the **Schedule Task** link.
- 2. On the Schedule Discovery/Benchmark tab, click Add Benchmark Task.
- 3. On the **Frequency** tab, define the task frequency.
- 4. On the **Device Scope** tab, check the **Select external API servers to retrieve data** check box and select the API server for Azure.

t Benchmark Task		
Task Name: Azure Retrieve Basic Info Description:		
Frequency Device Scope Retrieve Live Data	CLI Commands Additiona	Il Operations after Benchmark Plugins Summary
Select Device	Select external API servers to retr	ieve data of SDN nodes
○ All Devices ○ Device Group ○ Site	Total Items: 5	All API Source Types 🗸 Search
Load Balancer(1)	API Source Type	Server Name EndPoints Description
	Microsoft Azure	APP for Both Sub 85914d98-0e74-495f-98
Nouter(26)	Microsoft Azure	APP for AD2 c6afdece-c96f-4924-82b
End System(157)	Amazon AWS	AWS_Lab_Account_7478 747895045325 The Lab account
Eirounall/(10)	Amazon AWS	AWS_Lab_Account_0701 070113567925
Firewai(10)	Amazon AWS	AWS Lab 041444721655
e Cloud(12)		
4 L3 Switch(8)		
Exclude Device Groups: <please select=""></please>		
N		
νΣ		Cancel Submi

Note: It's highly recommended to re-use the "Basic System Benchmark" with a full benchmark task to ensure all Azureconnected physical or virtual devices are selected within the device scope. 5. On the **Retrieve Live Data** tab, select the **Microsoft Azure Basic Data** check box, keep the default selected NCT tables as they are, and select **BGP Advertised Route Table**.

Edit Benchmark Task		×
Task Name: Azure Retrieve Basic Info Description:		
Frequency Device Scope Retrieve Live Data CLI Commands Additional Operations after Benchmark Plu	ugins	Summary
Stop retrieving after Hours O Minutes		
Basic Data		
▲ L Ruckus SmartZone		
Basic Data		
✓ ✓ Microsoft Azure		
Basic Data		
Big Switch		
Basic Data		
▲ _ Cisco Meraki		
Basic Data		
▲ Cisco FMC		
Basic Data		
AudioCodes API		
Basic Data		
CheckPoint R80 API		
Basic Data		
CloudGenix SD-WAN		
Basic Data		
*		
	Control	Submit
	Cancel	Submit

- 6. On the Additional Operation After Benchmark tab, select the check boxes for:
 - Update MPLS Cloud
 - Update Public Cloud (Recalculate Azure Virtual Route Table)

Update Build Topology

Fask Name: Basic S	Istem Benchmark Description: Default system benchmark task		
Frequency	Device Scope Retrieve Live Data CLI Commands Additional Operations after Benchmark	Plugins	Summar
✓ Update MPLS Cl	ud		
Enable	Operation Name		
	Recalculate Cloud		
	Recalculate Cloud NCT		
✓ Update Public Cl Eastella	Operation Name		
chable			
	Recalculate AWS Virtual Route Table		
	Recalculate Azure Virtual Route Table		
	Recalculate Google Cloud Virtual Route Table		
✓ Build Topology			
Enable	Operation Name		
	IPv4 L3 Topology		
	IPv6 L3 Topology		
	L2 Topology		
	L3 VPN Tunnel		

7. Click Submit.

8. Trigger the benchmark task by clicking **Run Now**.

≡	l	Domain Management	t							1	enant: Initial Tenant	Domain: Cloud-Test	🚨 skanal	0 _N	e:Brain
	Start Page	e Discover X Scheo	dule Task \times												
	Schedul	e Discovery/Benchmark	Schedule Data View	Template/Parser Sc	hedule Qapp Sched	lule Plugin Schedule Platform Validation									
	+ Add B	enchmark Task + Add Dis	covery Task											🕄 Ref	fresh
	Enabl	Task Name	Туре	Last Run Time	Duration	Last Result	Current Status	Next Run Time	Device Scope	Frequency	Author				
		Basic System Benchmark	Benchmark Task	3/15/2022, 7:07:26 PM	49 mins 20 secs	Succeeded with warnings	Idle		All Devices;03-App_Net	Once	NetBrain				~
	0	Scheduled System Discovery	Discovery Task						All Live Network	Once	NetBrain		Edit		
	0	benchmark	Benchmark Task	1/25/2022, 12:18:35 AM	2 mins 5 secs	Manually Stopped	Idle		All Devices;03-App_Net	Once	tonytong		Run Now		
		Jay Test - Azure Topo	Benchmark Task	1/25/2022, 7:06:42 PM	6 mins 10 secs	Succeeded	Idle			Once	jwei		View Result		
		build _GCP_topo	Benchmark Task	3/8/2022, 11:06:26 AM	3 mins 50 secs	Succeeded with warnings	Idle		03-App_NetBrain_IE;07	Once	admin		Delete		

9. Open the network tree and select **Azure** in the **Category** field to view the Azure resource. Select **Network View** in the View field.



All Azure resources discovered are displayed on the network tree. In addition, you can click a resource to open its context map.



4. Appendix

4.1. NetBrain Requirements for API Server Setup

- The minimum resource unit for an API Server scope is a subscription that includes all the resources under it. Therefore, NetBrain does not recommend separating resources under one subscription to a different API Server.
- The API Server is associated with an AD Tenant. Use IAM to control the subscription level of resources API discovery. If you have multiple AD Tenants, set up at least one API Server for each AD Tenant.
- NetBrain does not retrieve tenant details (including tenant name) using Azure Management APIs but
 instead creates a random tenant name. However, as below, you can manually define your Tenant Name in
 the API server manager:

Add External API Server	Parameter			×	×
* S	Key:	Directory (Tenant) Name	\sim		
_	Value:				
* API :		Cancel	Save		\checkmark
* Endpoint (Applicatio	n/Client ID):	ea4 51	a6ee		
* C	lient Secret:				
* Directory	(Tenant) ID:	±20	e5804		
* F	ront Server	F51(192.168.31.46)			\sim
Advanced A	+ Add	1			
Key	-	Value			
Managed Devices: 0					
Test				Cancel	ОК

To collect data from Azure successfully, NetBrain Front Server must have access to *.core.windows.net,
 *.azure.com, *.microsoft.com, and *.microsoftonline.com.

4.2. NetBrain Required Azure IAM Permissions

{	
"рі	roperties": {
"r	oleName": "App_Netbrain_IE",
"0	iescription": "Used for Netbrain IE API access",
"a	ssignableScopes": [
	'/subscriptions/modifytoyoursubscription1",
,	'/subscriptions/modifytoyoursubscriptions"
],	
"F	ermissions": [
{	
	"actions": [
	"Microsoft.Resources/tenants/*/read",
	"Microsoft.Resources/subscriptions/*/read",
	"Microsoft.Subscription/*/read",
	"Microsoft.Network/*/read",
	"Microsoft.Compute/*/read",
	"Microsoft.Insights/Metrics/*/Read",
	"Microsoft.DocumentDB/databaseAccounts/*/Read",
	"Microsoft.DBforMariaDB/servers/*/Read",
	"Microsoft.DBforMySQL/servers/*/Read",
	"Microsoft.DBforPostgreSQL/servers/*/Read",
	"Microsoft.Sql/servers/*/Read",
	"Microsoft.Storage/storageAccounts/*/read",
	"Microsoft.Network/applicationGateways/backendhealth/action",
	"Microsoft.Network/applicationGateways/getBackendHealthOnDemand/action",
	"Microsoft.Network/applicationGateways/effectiveNetworkSecurityGroups/action",
	"Microsoft.Network/applicationGateways/effectiveRouteTable/action",
	"Microsoft.Network/networkInterfaces/effectiveRouteTable/action",
	"Microsoft.Network/networkInterfaces/effectiveNetworkSecurityGroups/action",
	"Microsoft.Network/virtualHubs/effectiveRoutes/action",
	"microsoft.network/virtualnetworkgateways/getadvertisedroutes/action",
	"microsoft.network/virtualnetworkgateways/getbgppeerstatus/action",
	"microsoft.network/virtualnetworkgateways/getlearnedroutes/action",
	"Microsoft.Network/virtualnetworkgateways/supportedvpndevices/action",
	"Microsoft.Network/virtualwans/vpnconfiguration/action",
	"microsoft.Network/vpngateways/getlearnedroutes/action",
	"microsoft.Network/vpngateways/getadvertisedroutes/action"
ľ	
	"notActions": [],
	"dataActions": [],
	"notDataActions": []
]	
}	

---THE END----