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# 1. Set Up GCP API Access

### **1.1. Overview**

NetBrain IE system retrieves the data from Google Cloud Platform (GCP) via REST API as a **Service Account** or **OAuth Client**. To enable NetBrain IE to retrieve the GCP data, you need to:

- ✓ Enable GCP APIs
- ✓ Set up Service Account (Recommended)
- ✓ Set up OAuth 2.0 Client (Alternative)

### **1.2. Enable GCP APIs**

NetBrain IE system requires access to the following GCP APIs:

- Compute Engine API
- Cloud Logging API
- Cloud Resource Manager API
- Cloud DNS API
- Service Usage Viewer
- Stackdriver Monitoring API

Follow these steps to enable the required API libraries:

1. In the GCP Console, go to the **API Library** page.

2. Search or browse the library to find the required APIs like **Compute Engine API**.

	rm 🚦 Project Test 👻					a 🖬 🛛 🔺 E 🞑
← API Library						
D. 4		Welcome to The API Library ha	o the API Library  o s documentation, links, and a smart sea	rch experience.		. 7
		Q compute engine a compute engine a compute engine in	gine pi stance groups api	×	n •	•
Filter by	Maps	compute engine in	istance group upoater api istance group manager api		VIEW ALL (15)	
VIGBLITY Public (255) Private (2) CATEGORY Adventising (14) Analytica (5) Big data (16) Big da CAS (1) Compute (8)	Maps SDK for Android Orogie Maps for your notive Android app.	Maps SDK for IOS Google Maps for your native IOS app.	Maps JavaScript API Coople Maps for your evelosite	Places API     Coogle Enterprise API     Oragle Enterprise API     Oragle Enterprise API     Oragle Information about 100     million places	Roads API Otogië Enterprise API Brageto read functionality to accurately trace OPS breadmunds.	
CRM (1) Databases (6) Developer stacks (2)	Machine learning				VIEW ALL (9)	
Leveraper toos (18) Email (1) Google Enterprise APis (182) Financial services (1) Google Workspace (18) Healthcare (4) Machine Identing (9) Mage (15)	Dialogflow API Osogie Enterprise API Builds conversational interfaces	Cloud Vision API Oogie Erterprise API Image Content Analysis	Cloud Natural Language API Dogle Etheptite API  Provides natural language understanding technologies, such as settiment analysis, entry.	Cloud Speech-to-Text API Coogle Enterprise API  Speech recognition	Cloud Translation API Coogle Enterprise API Integrates text translation into your website or application.	

3. Select **Compute Engine API** to open it. Click **ENABLE**.

≡ Google Cloud	Platform 🔹 Project Test 👻	
÷		
۲	Compute Engine API Google Enterprise API Compute Engine API	
OVERVIEW	DOCUMENTATION SUPPORT	
Overview Creates and runs	virtual machines on Google Cloud Platform.	Additional details Type: <u>SaaS &amp; APIs</u> Last updated: 7/22/21 Category: <u>Compute, Networking, Google Enterprise APIs</u> Service name: compute.googleapis.com

4. Repeat steps 2 and 3 to enable all other required APIs.

### **1.3. Set Up Service Account**

### **1.3.1. Create Service Account**

Follow these steps to create a service account for the NetBrain IE system:

1. In the GCP Console, go to IAM & Admin → Service Accounts page, select PROJECT, and click CREATE SERVICE ACCOUNT.



#### 2. Add a new service account. Click **DONE**.

≡	Google Cloud Platform 🔹 N 👘 👘 👘 👘
θ	Create service account
+ <u>*</u>	<ol> <li>Service account details</li> </ol>
Θ	Service account name
٩	App_Netorain_IE Display name for this service account
R	Service account ID *
	app-netbrain-ie-186 @norse-fragment-296509.iam.gserviceaccoun X C
92	Service account description     For Netbrain IE
	Describe what this service account will do
•	
	CREATE AND CONTINUE
۵	Grant this service account access to project
0	(optional)
	<ul> <li>Grant users access to this service account (optional)</li> </ul>
*	
≡	CANCEL
•	

3. Go back to the service account page and click the service account created for the NetBrain IE system. On the

#### ≡ Google Cloud Platform Se NetBrain GoogleCloud Host Pro1 ▼ θ ← App\_Netbrain\_IE DETAILS PERMISSIONS KEYS METRICS LOGS <u>بد</u> θ Keys ٩ Service account keys could pose a security risk if compromised. We recommend you avoid downloading service account keys and instead use the Workload Identity Federation, You can learn more about the best way to authenticate service E, Add a new key pair or upload a public key certificate from an existing key pair. Block service account key creation using organization policies. Learn more about setting organization policies for service accounts 연 . ADD KEY 👻 ۰ Create new key Key creation date Key expiration date Upload existing key . ф Ø -\*

#### KEYS tab, click ADD KEY > Create new key.

4. Select JSON in the Key type field and click CREATE to create a service account key. The key file in JSON format

will be downloaded automatically. The file has the private key ID and value.

#### Create private key for "App\_Netbrain\_IE"

Do\ car	wnloads a file tha i't be recovered if	t contains the private key. Store the file securely because lost.	this key
Key	type		
$\odot$	JSON		
	Recommended		
0	P12		
	For backward cor	npatibility with code using the P12 format	
		CANCEL	CREATE

5. Save this file in a folder you can remember. You will need this key to set up the GCP API Server later.

in noise in the second se
File Edit Format View Help
type : service_account;
provec_e_v · · · · · · · · · · · · · · · · · · ·
nu4aBY31uDoptAm/c0Vmv2ZeKxW0YguIa/guM5VtxX0IZmmC4NMDTsfDKAZV111JU\n6gwR68bTFrfbf2gd6cBle8LLU010Fp/JCMeTpJe1e1mnoUJvc402ADwM1UmC8Cea\n41PgCv6/6D6UJfKSeeV3DFDUtvuc3he7z31DwkzXPC07zmvgewI1MI/tv6/bH0tI
nXIV7Up/MGnWE1xBMoZ3IwQBLu1
n9FrFMXB4Eo6vWkjxvoaJaFxL11SUaBbL4WLRyfpIdJHkoy4kIU7AeucPxyK/cJYI\nmUMmqAN+XwZGF8Qb592V/+tpq0Vv1Uk9C8nVc14bMRHgc+3ZQT0cRBqrE12TIGqq\nkNjwAMVs5K6ygRCGNec3odD5Az91SHaMKf2AD7wrMe1R1EJKizeFG/1+RLVu//9d
nbpn89sCIRUPk+vpxh3JYYxttU5P/CpF+MGuFPVgMLuQywoa7PHS1m4dYMGrs
nAOzP+JWocQUoItvWJ1T1IW+iVQKBgQDTFAxzUMUr5ONzPX1e46dPSn5iNqUf2Uq+\nYs2dwGN5kd1gIsMGCKFRfwFKFzEb2cgcNSAmM4oYJKfDGIvo9o4KHXHTVWkssISG\n8k2jn42Wm/234J0joXs/9Xe+Ztv4FcKMs9s/XGxEoT6kWco7mmwi84vi9wBdJi+X
nD438o1yFPQKBgQCshj9Wx9QFL
n]BhUlyejoTm/RFX33tA1qdBLsTlq3Ub6jxJCnypf5Cy85RKGKsAeCb8xNuDtznL\nWNd6IcjKCjXkwjBqzvzVuCh7IQgbwag/zzh58ScBVX04XhqJEoDrdj7hQnm9JXxW\nTpGe+W2e5ZHrd0+ZF9XN80YVMWXBWS51EdB98FpAoGBA1T3yFFYeFjYS4tpmAv1
INFSUSQUEZTEEDUKTSZVOSOUSA
Citem_cli: "https://documts.goople.com/o/oauth2/auth".
"token uni": "https://oauth2.googleapis.com/token".
"auth provider x509_cert_url": "https://www.googleapis.com/oauth2/v1/certs",
"client_x509_cert_url": "https://www.googleapis.com/robot/v1/metadata/x509/test1-264%40norse-fragment-296509.iam.gserviceaccount.com"

**Note:** Copy all the private\_key value inside the double quotation marks for Step 3 in section 1.3.3 Set Up API Server, shown as below.



### 1.3.2. Assign IAM Permissions

There are different approaches to assign your IAM permissions to the service principal created before based on various scenarios and needs. Recommended best practices are shown below,

#### **Best Practices 1:**

Scenario: Discover resources of all the Projects under the Organization.

Permissions assignment approach: Assign all the required permissions (or system roles) under the Organization.

#### **Organization Roles Required:**

- Browser (ID: roles/browser)
- Compute Organization Security Policy User (ID: roles/compute.orgSecurityPolicyUser)
- Compute Viewer (ID: roles/compute.viewer)
- DNS Reader (ID: roles/dns.reader)
- Logs Viewer (ID: roles/logging.viewer)
- Monitoring Viewer (ID: roles/monitoring.viewer)
- Private Logs Viewer (ID: roles/logging.privateLogViewer)
- Service Usage Viewer (ID: roles/serviceusage.serviceUsageViewer)

#### **Best Practices 2:**

Scenario: Discover resources of some Projects under the Organization.

Permissions assignment approach: Assign the Organization required permission or system roles under Organization level. And assign the Project required permission or system roles under Project level.

#### **Organization Role Required:**

- Browser (ID: roles/browser)
- Compute Organization Security Policy User (ID: roles/compute.orgSecurityPolicyUser)
- Logs Viewer (ID: roles/logging.viewer)
- Monitoring Viewer (ID: roles/monitoring.viewer)
- Private Logs Viewer (ID: roles/logging.privateLogViewer)
- Service Usage Viewer (ID: roles/serviceusage.serviceUsageViewer)

#### **Projects Role Required:**

- Compute Viewer (ID: roles/compute.viewer)
- DNS Reader (ID: roles/dns.reader)

The principal of these best practices is to ensure the resources discovered by NetBrain should be assigned with IAM permission in the organization-scope or project-scope properly.

#### Required build-in Role for Org:

- Browser (ID: roles/browser)
- Compute Organization Security Policy User (ID: roles/compute.orgSecurityPolicyUser)
- Logs Viewer (ID: roles/logging.viewer)
- Monitoring Viewer (ID: roles/monitoring.viewer)
- Private Logs Viewer (ID: roles/logging.privateLogViewer)
- Service Usage Viewer (ID: roles/serviceusage.serviceUsageViewer)

#### **Required built-in roles for Projects:**

- Compute Viewer (ID: roles/compute.viewer)
- DNS Reader (ID: roles/dns.reader)
- Logs Viewer (ID: roles/logging.viewer)
- Monitoring Viewer (ID: roles/monitoring.viewer)
- Private Logs Viewer (ID: roles/logging.privateLogViewer)

• Service Usage Viewer (ID: roles/serviceusage.serviceUsageViewer)

# 1. Go to IAM & Admin $\rightarrow$ IAM, select the GCP Organization or Project from the top drop-down menu and click GRANT ACCESS.



2. Paste the service account email under the **New principals**, select the system role required in the Role field, and click **SAVE**.



### 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 GCP API Server:

1. Log in to your NetBrain IE system.

#### 2. On the **Domain Management** page, select **Operations** $\rightarrow$ **Discover Settings** $\rightarrow$ **API Server Manager**, and click

+ Add API Server.

Domain Management						Tenant: Initial Tenant	Domain: d_xj	Operations	
Start Page Discover	× API Server Manager ×						Start Page		
Total Items: 44 + Add API Se	erver				All API Sour	ce Tvoes 🗸 Searc	Discover	_	ackup
API Source Type	Server Name	EndPoints	Description	Username	Front Server	Network Settings	Discover Setting	gs >	5
Microsoft Azure	AP Both Sub	89 d98-0e74-495f-988e-d8c8cc3921b	4		FS1(192.168.28	Do-Not-Scan	Fine Tune		
Microsoft Azure	AP AD2	c6			FS1(192.168.28	Network Definition	Topology Mana	ger >	
Cisco ACI	19. (48.135	ht 7/192.168.48.135		QA		API Server Manager	Site Manager		
Amazon AWS	AV b_Account_747895045325	74 5045325	The Lab account that has configured tr				Schedule Task		
Amazon AWS	AV b_Account_070113567925	03567925					Benchmark Too	ls >	
Amazon AWS	AW	4721655					Advanced Tools	>	
Amazon AWS	Cu er1_DirectConnect	42 2911589	AWS Account hosting Direct Connectio				Domain Setting	s >	
Amazon AWS	Cu er1_ClientVpc_A	58 6287447					Change Baltan		
Amazon AWS	Cu er1_TGW_us-east-2	16 5992535	Hosting account of Transit Gateway to c				snare Policy		
Amazon AW5	Cu er1_ClientVpc_B	24 2573057					Domain Health	Report	
Amazon AWS	Cu er1_TGW_us-west-2	30 4760814	Host Transit Gateway which connects cl					0	÷
· · · · · ·									

#### 3. Set up the GCP API Server via Service Account.

Add External API Server			×
* Server Name:	App_Netbrain_IE		
Description:	For NetBrain IE API Access		
* API Source Type:	Google Cloud		$\sim$
* Access Method:	Service Account		$\sim$
* Endpoint(OAuth Client/Service	Input OAuth Client ID/Service Account Email		
Account):			
* Organization ID:	Input Google Cloud Organization ID		
* Private Key:	Input Google Cloud Private Key Content		
* Front Server/Front Server Group:	select		$\checkmark$
Managed Devices: 0			
Test		Cancel	ОК

Add External API Server configuration using the following information.

- ✓ Server Name: a unique name.
- ✓ **Description**: an optional field to describe this server.
- ✓ API Source Type: select Google Cloud.
- ✓ Access Method: select Service Account.
- ✓ Endpoint: service account in email format just created. See step 2 of section <u>1.3.1 Create Service</u> <u>Account</u>.
- ✓ **Organization ID**: your actual GCP Organization ID.
- ✓ Private Key: key value. See step 5 of section <u>1.3.1 Create Service Account</u>. You can copy it from the downloaded JSON file.
- ✓ **Front Server**: select one front server which can access GCP.

**Note:** If you have any issues while setting up an API server, contact **NetBrain Support**.

### 1.4. Set Up OAuth 2.0 Client

Google APIs use <u>OAuth 2.0 protocol</u> for authentication and authorization. To allow a client application such as the NetBrain IE system, you need to set up the OAuth consent screen and then create an OAuth 2.0 client. NetBrain system will request an access token from the Google Authorization Server, extract the token from the response, and send the token back with the Google API.



### 1.4.1. Set Up OAuth Consent Screen

To set up OAuth Consent Screen for each project, refer to the GCP official guide:

https://support.google.com/cloud/answer/10311615?hl=en#.



**Note:** For security purposes, using the Internal User Type is highly recommended.

### 1.4.2. Create OAuth Client & Credential

Follow these steps to create an OAuth Client and credential:

1. In the GCP Console, go to APIs & Services → Credentials page, click CREATE CREDENTIALS, and select OAuth

#### client ID.

	Google Cloud Platfo	rm 🔹 NetBrain GoogleCloud Host Pro1 👻
API	Credentials	+ CREATE CREDENTIALS
٢	Create credentials to ac	API key Identifies your project using a simple API key to check quota and access
卌	API Keys	OAuth client ID Requests user consent so your app can access the user's data
0+	Name	Service account
	🔲 🔺 API key 2	Enables server-to-server, app-level authentication using robot accounts
V	Browser	Help me choose
≡¢	OAuth 2.0 Client It	Asks a few questions to help you decide which type of credential to use
	Name	

### 2. Select **Web application** in the **Application type** field.

≡	Google Cloud Platform 💲 NetBrain GoogleCloud Host Pro1 👻
API	← Create OAuth client ID
*\$*	A client ID is used to identify a single app to Google's OAuth servers. If your app runs on multiple platforms, each will need its own client ID. See <u>Setting up OAuth 2.0</u> for more information. <u>Learn more</u> about OAuth client types.
0+	Application type *
92	Web application
$\checkmark$	Android Chrome app
≡¢	ios
	TVs and Limited Input devices
	Desktop app
	Universal Windows Platform (UWP)

#### 3. Set the name and add <u>http://localhost/oauth2callback as Authorized redirect URLs. Click CREATE.</u>

=	Google Cloud Platform South NetBrain GoogleCloud Host Pro1 -
API	← Create OAuth client ID
♦	A client ID is used to identify a single app to Google's OAuth servers. If your app runs on multiple platforms, each will need its own client ID. See <u>Setting up OAuth 2.0</u> for more information. <u>Learn more</u> about OAuth client types.
0+	Application type *
:: ! !	Name *
	<ul> <li>The domains of the URIs you add below will be automatically added to your <u>OAuth consent screen</u> as <u>authorized domains</u>.</li> <li>Authorized JavaScript origins </li> <li>For use with requests from a browser</li> <li>+ ADD URI</li> </ul>
	Authorized redirect URIs For use with requests from a web server URIs * http://localhost/oauth2callback
	+ ADD URI CREATE CANCEL

4. Click **DOWNLOAD JSON** to download the OAuth credential JSON file locally. The client ID and secret are saved in this file, and you need this information while setting up the API server in the NetBrain IE system.

0	OAuth access is restricted to the <u>test use</u> consent screen	ers listed on your OAuth
Your Clie	ent ID	
596		.gc 🗖
Your Clie	ent Secret	
GO	auV	6

### 1.4.3. Obtain Refresh Token

Follow these steps to obtain a refresh token from GCP via a built-in GCP OAuth Client Tool:

1. Download the GCP OAuth Client Tool from the link: <u>http://download.netbraintech.com/tools/GCP-</u>

<u>OAuthClientTool.zip</u>. Unzip the file <u>GCP-OAuthClientTool.zip</u> to a folder.

2. Rename the **OAuth credential JSON** file as **client\_secret.json**, downloaded in step 4 of section <u>1.5.2 Create</u> <u>OAuth Client & Credential</u>, and move it to the same folder with **auth\_setup.py** in the GCP OAuth Client Tool folder.



3. Double-click the **auto\_setup.py** file and run it automatically to install Python library files.



It takes several minutes to install the python library installation the first time. The website browser with URL **http://localhost:9000/** will pop up automatically after the installation.

4. Click Authorize API Access to obtain the refresh token.

Authorize API Access	Start GCPAPI access authorization procedure for OAuth 2.0 Client, and then generate the API access refresh token, which will be used for NetBrain API server setup. If the API access authorization has been granted already, it requires to revoke the API access by running Revoke API Access procedure and re-do Authorize API Access.
Revoke API Access	Revoke the GCP access authorization granted before.
	Authorize API Access

5. Enter the account login information or select the correct user account for API access.

	to continue to Google API test
T	Tong 12@gmail.com
T	Tong tong@netbraintech.com
T	Tong ig6@gmail.com
0	Use another account

The current user account used in this step should have been assigned with proper permissions. For permissions required, please refer to <u>1.3.2 Assign IAM Permission</u>.

6. Click **Allow** to authorize the API access.

Sign in with Google	
Google API test your Goog tony.tong@	wants to access Je Account netbraintech.com
This will allow Google AF	PI test to:
<ul> <li>See, edit, configure, an Cloud data and see the Google Account.</li> </ul>	d delete your Google (j) e email address for your
Make sure you trust Goo	ogle API test
You may be sharing sensitive can always see or remove ac	info with this site or app. You cess in your <b>Google Account</b> .
Learn how Google helps you	share data safely.
See Google API test's Privacy	Policy and Terms of Service.
Cancel	Allow
n (United States) 🔻	Help Privacy

Finally, the refresh token will show up on the website browser. Also, a JSON file named **credential.json** will be created automatically in the same folder as **client\_screte.json** in the GCP OAuth Client Tool folder.

G	oogleCloud	>	02.Document	s >	Final Version	>	GCP OAuth Client Tool →	GCP OAuth Client Tool
	Name						^	
	🛃 au	th_ enf	setup.py _secret.json					
	🗹 🗋 cre	ede	ntial.json					
,	rea	dr	ne.txt					

7. Store the file in a local folder. Use the client ID, client secret, and refresh token value to set up the GCP API Server later.

🔚 cre	edentia	al json 🖾 🔚 readme.txt 🗵	
1 2		"token": "va29.a0ABrdaM8lI8TtFo0.bGw%	V15eLh4rGM_dH1DS-981ZVXxxxkv8312zrih9cV55i_cCm9a-MChXxxxxxxvxxxxxCaHrMxVD&wPBtmvPcmd9nInTT1itwidhnVxSMIP
		8 aBFwfOzzcKwhf2WF7Utdu",	icomitar and international and a second second and a second s
3		"refresh_token": "1//0dAuXO5	AAGA0SNwF-L9IrqpqiuLgaRF2SVn2Hq67aS2dpb8zF0zAxXD10jcNrHTZet0oPAQTwWqORip1W9HpcIzE",
4		"token_uri": "https://oauth2.good	<pre>gleapis.com/token",</pre>
5		"client id": "596315864195	fkav748ta615245ro5no7.apps.googleusercontent.com",
6		"client_secret": "GOCSPX-1	b-t4Tcj7CRbhyauV",
7		"scopes": [	
8		"https://www.googleapis.com/au	th/cloud-platform"
9			
10			

**Note:** If you have issues obtaining the refresh token, contact **NetBrain Support**.

If you want to remove the existing credential access or obtain a refresh token again, follow these steps:

1) Click **Manage credential access** to remove the credential access.



2) Select the 3<sup>rd</sup>-party apps that need to remove access and click **REMOVE ACCESS**.

#### ← Apps with access to your account

y be sensitive. Remove acc	ess for those you no longer trust or use. Learn about the risk
Google API test Has access to Google	a Cloud Platform
Has access to:	<ul> <li>Google Cloud Platform</li> <li>See, edit, configure, and delete your Google Cloud data and see the email address for your Google Account.</li> </ul>

3) Click **OK** to confirm.

#### Remove access?

Google API test will no longer have access to your Google Account. You'll need to grant access if you want to use this app or service again.

Cancel OK

### 1.4.4. 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 GCP API Server via OAuth Client:

1. Log in to your NetBrain IE system, select **Operations → Discover Settings → API Server Manager** in the

**Domain Management** page, and click the **+ Add API Server**.

Do	main Management						Tenant: Initial Tenant	Domain: d_xj	Operations	<b>.</b>
	Start Page Discover × API	Server Manager 🛛 🗙						Start Page		
	Total Items: 44 + Add API Server					All API Sourc	e Tvpes 🗸 🛛 Searc	Discover	_	ackup
	API Source Type	Server Name	EndPoints	Description	Username	Front Server	Network Settings	Discover Setting	5	) S
	Microsoft Azure	AP Both Sub	d98-0e74-495f-988e-d8c8cc3921b	4		FS1(192.168.28.	Do-Not-Scan	Fine Tune		
	Microsoft Azure	AP AD2	c6 ce-c96f-4924-82bd-315304a8c1ab			F51(192.168.28.	Network Definition	Topology Manaj	jer 2	>
	Cisco ACI	19 .48.135	ht 7/192.168.48.135		QA		API Server Manager	Site Manager		
	Amazon AWS	AW b_Account_747895045325	74 5045325	The Lab account that has configured tr				Schedule Task		
	Amazon AWS	AV b_Account_070113567925	03567925					Benchmark Too	ls ?	>

#### 2. Set up the GCP API Server via OAuth Client.

<u> </u>	Add External API Server			×
	* Server Name:	App_NetBrain_IE		
	Description:	For NetBrain IE API Access		
	* API Source Type:	Google Cloud		$\sim$
	* Access Method:	OAuth 2.0 Client		$\sim$
	* Endpoint(OAuth Client/Service	Input OAuth Client ID/Service Account Email		
	Account):			
	* Client Secret:	Input OAuth 2.0 Client Secret		
	* Organization ID:	Input Google Cloud Organization ID		
	* Refresh Token:	Input OAuth 2.0 Refresh Token		
	* Front Server/Front Server Group:	select		$\sim$
	Managed Devices: 0			
	Test		Cancel	OK

Add External API Server configuration using the following information.

- ✓ Server Name: a unique name.
- ✓ **Description**: an optional field to describe this server.
- ✓ API Source Type: Select Google Cloud.
- ✓ Access Method: Select OAuth 2.0 Client.
- ✓ Endpoint: OAuth 2.0 Client ID. Refer to step 7 of section <u>1.4.3 Obtain Refresh Token</u>. You can copy it from the downloaded JSON file.
- ✓ Client Secret: refer to step 7 of section <u>1.4.3 Obtain Refresh Token</u>. You can copy it from the downloaded JSON file.
- ✓ **Organization ID**: your actual GCP Organization ID.

- ✓ Refresh Token: refer to step 7 of section <u>1.4.3 Obtain Refresh Token</u>. You can copy it from the downloaded JSON file.
- ✓ **Front Server/Front Server Group**: select the front server/front server group that can access GCP.

**Note:** If you have any issues with the setup of an API server, contact **NetBrain Support**.

# 2. Start GCP Discovery

### 2.1. Discover Cloud Resources via APIs

Follow these steps to discover GCP networking resources via APIs:

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

Start Page							
	Domain: Cloud-Test Description:						Ø Sa Re
	<b>O</b> Discover	🚯 Fine	e Tune	C	) Site	Sch	edule Task
	<b>O</b> Last Discovered Devices	all Discove	10 red Devices		Sites		<b>7</b> Tasks
	Result Succeeded Duration 2 mins 11 secs Execution Time 11/25/2021 03:58:10 PM	Fully CLI-Accessed Devi SNI/IP-Only Devices Missed Devices Unknown SNIMP SysOb Unknown IP Subnet with Conflicted	ices 6 (100%) 0 0 ijectID 0 2 IPs 3	Container Sites Leaf Sites Leaf Sites (over 10 Unassigned Device	0 0 Devices) 0 es 319	Discovery Task Benchmark Task DVT/Parser Task Qapp Task Plugin Task	1 3 1 1
	Current Users Session Count: 2 Client Typ	PE: IE, Smart CLI, Embe	v			Sec	arch
	Username +	ClientType	Machine Name	IP Address	Browser	Login Time 🔺	End Session
	🖌 🖹 tonytong (NetBrain)						
	Session2	IE			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**. Select the GCP API Server that you created. Click **Start Discovery** to start the GCP discovery.

main Management						
Start Page Discover ×						
Discover			v	iew Historical Result: Se	elect	
Discover Devices via SNMP/CLI Network Settings Method:	Access Mode: S	5NMP and SSH/Telnet 🗸 🗸	0	Discovery Depth: 0		
IP/Hostname: e.g: 10.10.1; NY_R1						Import IP List
Discover Devices via API + Select API Servers Unselect AII						
API Servers: App_NetBrain_IE						
		Advanced Op	otions	Start Discover	у	J

After the discovery finishes, the number of discovered objects will be displayed.

art Page Discover	imes Schedule Task $ imes$								
Ain Management str Page Discover × Schedule Task × Scover Vew Historical Result: 10/30/2021, 4:31:30 PM Discover Devices via SNMP/CLI Network Settings Method: @ Discover via Seed Routers O Scan IP Range Access Mode: SNMP and SSH/Telnet V • Discovery Deptr: 30 IP/Hostname: gg 10.10.10.1; NV_RI IP/Hostname: gg 10.10.10.1; NV_RI Discover Devices via API + Select API Servers Unselect AII API Servers: Original_OAuth Temp_New_Second Chustored Deptione v Start Discovery Discovery task is completed but there are some issues need to be resolved in Fine Tune. For troubleshooting, please Contact NetBrain. rfoundation license, 165 nodes discovered, 165 addet to domain. Scoverd 21/8 dadvets within 000529. Duration spent in performing additional operations: 00:01:11. Device Log Precision Log Plugin Log Report Discovery Summary License Details ESCOVER Second ESCOVERSIONES Discovery Summary License Details									
h Management  Page Discover X Schedule Task X  sover Verv Historical Result: 10/30/2021, 4:31:30 PM  iscover Devices via SNMP/CLI Network Settings  Method: © Discover Ve Seed Routers O Scan IP Range Access Mode: SNMP and SSH/Teinet V  Discovery Depth: 30  IP/Hostname: @g 10.10.10.1; W_R1  Import IP List v  iscover Devices via API + Select API Servers Unselect AII  API Servers: Original_OAuth Temp, New, Second  Status Completed but there are some issues need to be resolved in Fine Tune. For troubleshooting, please Contact NetBrain.  sundation license, 165 nodes discovered, 165 added to domain.  wered 2P addresses, found 165 devices winn 00:82-9. Duration spent in performing additional operations: 00:01:11.  evice Log Execution Log Plugin Log Preport  covery Summary. License Details   Coogle VPR Rou									
Method: 💿 Disco	ver via Seed Routers 🛛 Sca	in IP Range Acc	ess Mode: SNMP and SSH	l/Telnet V 🜖 Disco	very Depth: 30				
Alm Management  Int Page Discover X Schedule Task X  Scover Vew Historical Result: 10/30/2021, 4/31:30 PM  Discover Devices via SNMP/CLI Network Settings  Method: Discover via Seed Routers O scan IP Range Access Mode: SNMP and SSH/Telnet V O Discovery Depth: 30  IP/Hostname: eg: 10.10.101; NV_R1 Import IP List  Discover Devices via API + Select API Servers Unselect All  API Servers: Original_Dauth Temp_New_Second  Advaced Option: V Start DiscoverV  Discovery task is completed but there are some issues need to be resolved in Fine Tune. For troubleshooting, please Contact NetBrain.  Foundation licence, 165 nodes discovered, 165 added to domain.  covered 2 IP addresses, found 165 devices within 000829. Duration spent in performing additional operations: 00:01:11.  Device to Please Details  Coogle VPC Rou Coogle Cloud R Coogle Priveall Coogle Prime en Coogle Cloud R Coogle Priveall Coog									
Discover Devices via API	+ Select API Servers Uns	elect All							
API Servers: Origina	I_OAuth Temp_New_Secon	nd			*				
					Canal Diseases				
				dvanced Options x	Start Discovery				
Discovery task is complete	d! but there are some issue	s need to be resolved in Fi	ne Tune. For troubleshootii	ng, please Contact NetBrai	n.				
	es discovered, 165 added to d	omain.							
r foundation license, 165 noc		Duration spent in perform	ing additional operations: 00:	01:11.					
r foundation license, 165 noc scovered 2 IP addresses, four	nd 165 devices within 00:08:29								
r foundation license, 165 noc scovered 2 IP addresses, four Device Log	nd 165 devices within 00:08:29 Log 🙀 Plugin Log 🖻 I	Report							
r foundation license, 165 noc scovered 2 IP addresses, four Device Log Execution Discovery Summary License	nd 165 devices within 00:08:29 Log 🔛 Plugin Log 📄 1 Details	Report							
r foundation license, 165 noc scovered 2 IP addresses, four Device Log Execution Discovery Summary License	nd 165 devices within 00:08:29 Log 🔛 Plugin Log 📄 I Details	Report							
r foundation license, 165 noc scovered 2 IP addresses, four I Device Log Execution Discovery Summary License	Id 165 devices within 00:08:29	Report	<del>;</del> )+		Æ	•			
r foundation license, 165 noc scovered 2 IP addresses, four J Device Log Execution Discovery Summary License Google VPC Rou	Id 165 devices within 00:08:29 Log Plugin Log I Details Google VPN Gat	Google Cloud R	Google Cloud N	Google Firewall	Google Load Ba	Google Partner	Google Private		

4. Click the Scheduled Task tab and run the Basic System Benchmark.

≡	C	omain Management	:							Tenant: Initial Te	nant <b>Domain:</b> sk3	test_	💄 skanal	
Star	: Page	Fine Tune X Disco	ver × Schedule	Task ×										
Schedule Discovery/Benchmark Schedule Data View Template/Parser Schedule Qapp Schedule Plugin Schedule Plugin Schedule Plugin														
+	Add Be	nchmark Task + Add Dise	covery Task											G Refresh
Er	abi	Task Name	Type	Last Run Time	Duration	Last Result		Current Status	Next Run Time	Device Scope	Frequency	Author		
C	2	Basic System Benchmark	Benchmark Task	3/3/2022, 1:03:24 PM	13 mins 2 secs	Succeeded		Idle		All Devices;NB_App_acc	Once	NetBra	in	~
C	)	Scheduled System Discovery	Discovery Task							All Live Network	Once	NetBr	Edit	
													Run Now	
													View Kesult Delete	

5. Open the network tree and select **Google Cloud** in the **Category** field to view the GCP resource. Select **Network View** in the **View** field.

≡	NotBrain Search for device, c	onfiguration text Q	Į
	Network	C # X	
+	Category Vie	2W -	
	Azure 🗸 Ne	etwork View 🗸 🗉	
	Built-in	0	
Files	🖦 AWS 📃	×	
	😑 😓 Azure		
٠	BigSwitch		
Site	≒ Cisco ACI		
	😜 ESXi		
	🖦 Google Cloud		
<b>~</b>	😪 MERAKI		
vetwork	👟 NSX-V		
- 0	🐂 Physical Network		
<u> </u>	·		
Path			

**Note:** The Network View is only visible after the successful execution of the Basic System Benchmark.

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

≡	NotBrain Search for device,		٩
	Network	C # X	1
+	Category \	/iew	н
	Google Cloud ∨ 1	Network View 🗸 🗧	
<b>Files</b>	Find	٩	
oite Site	<ul> <li>Original_OAuth(1)</li> <li>Organization: netbraintech.co</li> <li>&amp; Project: HQ-1(3)</li> </ul>	m(10)	
8	Project: My First Project(3)		
Network	A Service: NetBrain GoogelClo	) Jud Ser Pro 5(6)	
99 Path	<ul> <li>&gt; &gt; VPC Network: default(60)</li> <li>&gt; &gt; VPC Network: europe-ce</li> <li>VPC Router: europe-ce</li> </ul>	90870125544969174)(31) htral-hub-vpc(7442057383647796191)(8) ntral-hub-vpc-router(744205738364779	
	Firewall: europe-centr	al-hub-vpc-firewall(74420573836477961	
Runbook	Subnet: europe-central VM: europecentral	al-subnet(europe-central2)(49935778448 aub.voc.soet1.vm1/36461306184654228	
Template	Subnet: europe-north	subnet(europe-north1)(9840686352453	
	🧏 Subnet: inte-https-loa	d-balancer-subnet(europe-west1)(38664	
	🧏 Subnet: private-servic	e-connect-subnet(europe-north1)(22937	
Dashboard	Cloud Router: service-	pro5-to-ser-pro4-cloudrouter(14549411	
	Cloud VPN: service-pro	55-to-ser-pro4-vpn(49444170693231078	
<b>5</b>	I load Balancers	st-vbc(2000140140000257200)(0)	
Network Change	Partner Interconnect		
	Dedicated Interconnect		
	👂 👶 Project: NetBrain GoogelClo	oud Sta Pro(5)	
	🕨 👶 Project: NetBrain GoogleClo	oud Host Pro1(14)	
	🕨 👶 Project: NetBrain GoogleClo	oud Host Pro2(6)	
	🕨 👶 Project: netbrain-eveng-lab	5)	
	Folder: Dep-A(2)		
	Folder: Dep-B(2)		
	Temp_New_Second(1)		

### 2.2. Discover Network Virtual Appliance

Network Virtual Appliance (NVA) can be loaded with any vendor's virtual machine (VM) images to support networking, security, and other functions. NetBrain supports visualizing the topology and path of GCP NVA after discovery and multi-source data merging.

To discover the Network Virtual Appliance (NVA), you need to:

- ✓ Discover the Virtual Machine with Cloud API
- ✓ Discover Legacy Device with CLI

To perform the multi-source data merging properly via CLI discovery, go to the NetBrain IE **Discover** page, click the **Advanced Options**, and check **Retrieve device/module/interface information**.

Domain Management	i .
Start Page         Network Settings         Fine Tune         Plugin Manager         Discover         Schedule Task         Network Definition         X	
Discover View Historical Result: Select	
Discover Devices via SNMP/CLI Network Settings	
Method:	
IP/Hostname: 192.168.0.100	Import IP List 🐱
Discover Devices via API + Select API Servers	
API Servers: Click 'Select API Servers' to add servers	
Advanced Options	1
Advanced Options X	-
Run additional operations after discovery	
SNMP/CLI Discovery Options	
Retrieve device/module/interface information	
CLI forced timeout: 600 seconds	
Discovery Methods via Seed Routers	
Use NDP to discover neighbor devices	
Use CLI routing table to discover next-hops	
After Discovery via Seed Routers	
Scan destination subnets	
Scan all connected subnets	
Minimum mask bits: 24	
Cancel Save	

After the NVA multi-source data merging is finished, the GCP NVA device topology sample is shown below.



# 3. Set Up MPLS Cloud

**Note:** If you want to show the provider's MPLS network in the NetBrain IE system, you must set up the MPLS cloud by following NetBrian's MPLS setup instructions. If not, skip this section.

NetBrain GCP support requires excluding all the Google Cloud Router devices connected with MPLS Cloud because the Cloud Router in GCP is in the control plane and should not involve the data plane.

Follow these steps to exclude all the Google Cloud Router devices:

1. Log in to your NetBrain IE system.

2. Go to the Cloud Manager page from the **Fine Tune** tab of the **Domain Management** page. Add your new MPLS or edit the existing one, and select **Exclude Device**.

Domain Management					Tenant: Initial Tenant	omain: Cloud-Test	Operations
Start Page Fine Tune ×							
🕃 Refresh	Define your cloud for	r WAN connectivity.					
a 💼 Live Access	+ Add						Search
All Discovered Devices (25)							
Fully CLI-Accessed Devices (19)	Cloud Name	Cloud Type	dge Device Count		Cloud Description		
SNMP-Only Devices (2)	Google Cloud Storage	Google Cloud Public Se			auto generated for Google Cloud	d Public Service	
Latest CLI Configuration Retrieval Failed (0)     Others (4)	_for_Google_Cloud_In	Internet Cloud	ø		auto create for Google Cloud Int	ernet Cloud	
Missed Devices (2)	_for_Azure_Internet_C	Internet Cloud	8		auto create for Azure Internet Cl	oud	
Unknown SNMP SysObjectID (0)	_for_AWS_IGW	Internet Cloud	8		auto generated for AWS Internet	Cloud	
🔺 🔤 Unknown IP (9)	Amazon S3	AWS Public Service			auto generated for AWS Public S	ervice	
	AWS Systems Manager	AWS Public Service			auto generated for AWS Public S	ervice	
Routing Neighbor (1)	Amazon API Gateway	AWS Public Service			auto generated for AWS Public S	ervice	
Others (2)	AWS App Mesh	AWS Public Service			_		
SSH Fingerprint Check Failed (0)	Amazon EC2	AWS Public Service	Edit Cloud			×	
a 📹 Network and Topology	Amazon SageMaker N	AWS Public Service	Name: ATT N-sP	1			
Duplicated IP and Subnet Manager	Amaton Dunamo DP	AWS Dublic Service	Name. Arr_NetBond	-			
Court Manager (14)	AMS Cloud Test	AMC Dublic Service	Cloud Type: MPLS L3 VP			~	
Generic Devices (0)	AWS Cloud Irail	ANS Public Service	Description: For ATT NetBr	ond MPLS Cloud			
🔺 📹 Other	AWS PrivateLink Service	AWS PUBlic Service					
Hostname Change (0)	ATT_NetBond	MPLS L3 VPN					
Data Migration Tasks							
Devices Exceeding License (0)			+ Static Interface + I	Dynamic Search Interface 👻 🕂 Exclude 🕶	Search Q	( B B 📕	
WAP (0)				Exclude Interface			
			CE Device	CE Interface Exclude Device	IP of PE Inte PE Interface VPN	N	
			Dynamic Searched (Searched)	(9)			
			Excluded (27)				
			Edge Device Count: 9				
			Help		Cancel	ок	

3. Select the **Google Cloud Router** from the drop-down menu, and click the *icon* icon to move all selected devices from left to right. Click **OK** to finish.

Select Devices						
Select Devices by: 💿 Device Type 🔾	Device Group	⊖ Site				27 Devices Selected
Google Cloud Router	✓ Search			Q		Sasia-vpc-spoke4(249067765155245
Google Cloud NAT	emt IP	Vendor	Model			oasia-vpc-spoke4(493937754797832
Google Cloud Public Service		Google Clo	Google Cloud Router	<u>^</u>		Sasia-vpc-spoke4-cloudrouter(2834
Google Cloud Router		Google Clo	Google Cloud Router			📀 central-cloud-router-1(3385503352
Google Firewall		Google Clo	Google Cloud Router	ъ		📀 central-cloud-router-2(4743863124
Google Partner Interconnect		Google Clo	Google Cloud Router			📀 central-vpc-hub-cloudrouter-1(807
Google Private Service Connect Endpoin	t	Google Clo	Google Cloud Router	ъ	>	Scloudvpntunnel-router(903709844
Google VPC Router		Google Clo	Google Cloud Router			Seast-router-1(30773385345620368
Google VPN Gateway	-	Google Clo	Google Cloud Router	ъ		Seast-router-2(12554324300089908
east-router-1(3077338534562036868)		Google Clo	Google Cloud Router		<	⊘gcp-router-a(33647971308700226
east-router-2(1255432430008990873)		Google Clo	Google Cloud Router		<<	Sgcp-router-b(90709173268656219
gcp-router-a(3364797130870022678)		Google Clo	Google Cloud Router			📀 netbrain-eveng-router(163135426
gcp-router-b(9070917326865621995)		Google Clo	Google Cloud Router			Second-org-cloud-router-1(701438
onetbrain-eveng-router(16313542605		Google Clo	Google Cloud Router			Second-organization-us-central-vp
second-org-cloud-router-1(70143824		Google Clo	Google Cloud Router			Second-organization-us-east-cloud
second-organization-us-central-vpc2		Google Clo	Google Cloud Router			serv-proj2-us-west4-cloudvpn(265
second-organization-us-east-cloudro		Google Clo	Google Cloud Router	-		Acons anal2 us control cloudrouter/

**Note:** Failure to exclude all the Google Cloud Router devices connected to MPLS may cause the path calculation issue. If you have any issue creating MPLS Cloud in the NetBrain IE system, contact **NetBrain Support**.

Cancel

ОК

# 4. Set Up Benchmark Task to Auto-Update GCP Data

The discovery process only retrieves the basic data of your GCP 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 GCP resources, complete the following steps.

- 1. On the Start Page, click **Schedule Task**.
- 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 GCP.

al denchmark task		
Task Name: Basic System Benchmark Description: Default system b	penchmark task	
Frequency Device Scope Retrieve Live Data	CLI Commands Addition	al Operations after Benchmark Plugins Summary
Select Device	Select external API servers to ret	trieve data
All Devices      Device Group      Site	Total Items: 7	All API Source Types V Search
Figure II(5)	<ul> <li>API Source Type</li> </ul>	Server Name EndPoints Description
Firewaii(5)	Google Cloud	App_NetBrain_IE 596315864195-hid7fehc Discovery for GCP
🚹 End System(259)	Amazon AWS	07-AWS Lab 041444721655
Cloud(14)	Amazon AWS	05-AWS_Lab_Account_74 747895045325
	Amazon AWS	06-AWS_Lab_Account_07 070113567925
o Router(35)	<ul> <li>Microsoft Azure</li> </ul>	03-Azure Tenant with Tw f8b92556-1265-426e-be
	<ul> <li>Microsoft Azure</li> </ul>	04-Azure Tenant for Cro c6afdece-c96f-4924-82b
	Google Cloud	02-GCP - Second Org 744042742179-di8563hg

**Note:** It is highly recommended to re-use the "Basic System Benchmark" with a full benchmark task to ensure all GCP-connected physical or virtual devices are selected within the device scope.

5. On the **Retrieve Live Data** tab, select the **Google Cloud Basic Data** check box, keep the default selected GCP NCT tables as they are, and select **BGP Advertised Route Table**.



- 6. On the Additional Operation After Benchmark tab, select all the checkboxes for:
  - Update MPLS Cloud
  - Update Public Cloud (Recalculate Google Cloud Virtual Route Table)
  - Update Build Topology

Name: Basic Syst	em Benchmark Description: Default system benchmark task
equency	Device Scope Retrieve Live Data CLI Commands Additional Operations after Benchmark Plugins Summary
Update MPLS Cloud	i la
Enable	Operation Name
2	Recalculate Cloud
<b>~</b>	Recalculate Cloud NCT
	Recalculate AWS Virtual Route Table Recalculate Azure Virtual Route Table Recalculate Google Cloud Virtual Route Table
/ Build Topology	
Enable	Operation Name
2	IPv4 L3 Topology
<b>Z</b>	IPv6 L3 Topology
	L2 Topology
<b>Z</b>	L3 VPN Tunnel
	Logical Topology

- 7. On the **Plugins** tab, add the GCP\_VRT plugin following the steps below:
  - Scroll down to Execution Point: After rebuilding visual space and Click on Add Plugin
  - Navigate to **Built-in Plugins** → NB\_System\_Use
  - Select GCP\_VRT and click "OK"

Cancel Submit



#### 8. Click Submit.

### 5.1. NetBrain Requirements for API Server Setup

- The minimum resource unit for an API Server scope is a Project that includes all the resources under it.
   Therefore, NetBrain does not recommend separating resources under one Project to a different API Server.
- The API Server is associated with an Organization. Use IAM to control the project level of resources API discovery. If you have multiple Organizations, set up at least one API Server for each Organization.