

SDCI: Configure Megaport License Management

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Introduction

This document describes how to configure and check the license management feature of Megaport in vManage.

Prerequisites

Requirements

Cisco recommends that you have knowledge of Cisco Software Defined Wide Area Network (SDWAN) solution.

Components Used

The policy in this article was tested on software version 20.9.1 and Cisco IOS-XE 17.9.1.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

Background Information

Starting with 20.9.1/17.9.1, Megaport service licenses (Interconnect Gateways and Interconnect Connections) are purchased through Cisco Commerce Workspace and would be visible to users in vManage. With this feature, Cisco vManage operates together with Megaport to enable you to monitor your licenses while Cisco and Megaport jointly enforce the license requirements when you create Interconnect Gateways or Interconnect Connections. You purchase entitlements through Cisco and Megaport enforces the entitlement for the creation of resources.

Acronyms

Acronym	Description
SDCI	Software Defined Cloud Interconnect
MVE	Megaport Virtual Edge
VXC	Virtual Cross Connect
SKU	Stock Keeping Unit
CCW	Cisco Commerce Workbench

What is New?

Prior:

- Megaport Postpaid bill Model: Bill for resources created in Megaport is done by Megaport for accounts held directly with Megaport
- For licenses purchased through Cisco Commerce Workspace, there was no visibility or enforcement on licenses consumed by the user.

Now:

- Acquire entitlements through Cisco: All entitlements are displayed with pertinent information about which ones have been consumed, and which ones are still available for use.
- Creates resources in Megaport with the acquired entitlements
- Prepaid Bill Model: Purchase licenses for a minimum 1 Year duration. The enforcement of licenses happens only on accounts that have been created when Megaport services are purchased through CCW.

- Postpaid Bill Model: Users can have direct accounts with Megaport and be billed directly by Megaport usage-based. No license enforcement happens on direct Megaport accounts.

Software Requirements

- vManage 20.9
- Entitlement enabled Megaport account

Architecture Overview

- User purchases license from CCW.
- The license payload is pushed from CCW to Megaport.
- Megaport builds a database of licenses and does enforcement.
- License types: Gateway (MVE)Connection (VXC)AWS Hosted Connect (AWSHC)
- Megaport exposes APIs and vManage uses this data and assists users before it brings up MVE/Connections. GET: display the status of the license.Validate: Validate license availability before it is created.Displays license acquired on create operation.

Licenses (Entitlements)

Before you create the Interconnect Gateways and Interconnect Connections in the Megaport fabric, you must purchase the required licenses that are available as Stock Keeping Units (SKUs) on the Cisco Commerce workspace. The licenses belong to these three categories:

Gateway Licenses

An Interconnect Gateway license enables you to deploy an Interconnect Gateway in any metro of a particular region in the Megaport fabric, that is, Cisco SDCI Router (ICGW). The SKUs are named in this format: **MVE-<region-code>-<form-factor-code>-C**

Region and Metro:

Region: Geographical area that encompasses many metros is called Region. For example, North America, Europe, and others.

Metro: Metro is located within a region, For example, Dallas, Denver, and others.

General Structure for MVE License: **MVE-<Region>-<Size>-C**

Example:

1. **MVE-EU-SML-C**: Gateway in Europe Region, instance size is small
2. **MVE-NA-LRG-C**: Gateway in North America Region, instance size is large.

- Use one of these form factors for the Interconnect Gateway:
- -C at the end of an SKU name indicates that it is a prepaid license. (Commit model)

Connection Licenses

You can create two types of Interconnect Connections

- Within a metro in a Megaport region: The Interconnect Connections within a metro are short-haul connections.
- Between metros: The Interconnect Connections between metros are long-haul connections.

General Structure for IN Metro License - Short-Haul:

VXC-IM-<Bandwidth>-<Region>-C

Example: **VXC-IM-1G-NA-C**

IM – In a metro, any same source and destination metro within North America Region.

Speed – 1G

C – Commit Model (prepaid model)

General Structure for Inter-Intra Connection License - Long-Haul:

VXC-II-<source>-<Destination>-C

Example: **VXC-II-NA-EU-C**

II: The license subtype is Inter Intra region, which can be across continents.

NA: Any metro in North America Region

EU: Any metro in Europe Region.

C – Commit Model (Prepaid)

Supplemental Licenses

To create an AWS-hosted connection, in addition to a short-haul or long-haul Interconnect Connection license, you must purchase an AWS-hosted connection license on the Cisco Commerce workspace.

General Structure for IN Metro License - Short-Haul:

Example: **AWS-HC-IMVXC-1G-C**

HC: The license subtype is Hosted Connect

IM – In Metro, the source and destination are the same metros.

1G – Speed for hosted connection

General Structure for Inter-Intra Connection License - Long-Haul:

Example: **AWS-HC-IIVXC-C** (Inter-Intra host connect)

HC: License subtype is hosted connection.

II - Inter Intra-region, can be within or across regions

C – commit model (prepaid)

License Enforcement

When you create an Interconnect Gateway on Cisco vManage, Cisco vManage sends the request to Megaport. Megaport checks whether you have the necessary license in your account before it approves.

To create the Interconnect Gateway, you must have an Interconnect Gateway license that matches these criteria:

- The license must not have expired and must not be in use.
- The license must apply to the region in which you wish to create the Interconnect Gateway.
- The license must match the form factor of the Interconnect Gateway you wish to create.
- If you have multiple licenses that are not in use and support the requested region and form factor, the license with the earliest expiration time is selected.

If you have a license that matches the required criteria, Megaport marks the license as in-use and approves the request to create the Interconnect Gateway.

If you do not have a license that matches the required criteria, Interconnect Gateway creation fails and Cisco vManage displays an appropriate error message such as this: "No license for <ICGWName> MVE"

Purchase the necessary license on the Cisco Commerce workspace or make an in-use license available and try to create the Interconnect Gateway again. When you delete an Interconnect Gateway, the status of the associated license changes to available.

Entitlement Match – MVE

If two entitlements match a call:

- Choose the exact match first with the earliest expiration date.
- If you have the necessary licenses, Megaport changes the license status to in-use and creates the requested resource. The license status is also updated on Cisco vManage.
- If you do not have the necessary licenses, Megaport does not create the requested resource and Cisco vManage displays an error message to indicate that you do not have the necessary licenses. Purchase the necessary licenses on the Cisco Commerce workspace and create the resource.
- The earliest expiration entitlement gets used in case of multiple exact matches.

Entitlement Match – Inter-Intra region VXC

If two entitlements match a call:

- Choose the exact bandwidth match first with the earliest expiration date.
- Choose the closest bandwidth match that is > bandwidth entitlement.
- For example: If you hold VXC-II-NA-NA-C for 500 Mbps and 2000 Mbps, and try to provision 400Mbps, then the 500Mbps gets chosen. If they try to provision 1000Mbps, then the 2000Mbps gets chosen.
- The earliest expiration entitlement gets used in case of multiple exact matches.

Entitlement Match – InMetro VXC

If two entitlements match a call:

- Choose the exact bandwidth match first with the earliest expiration date.
- Choose the closest bandwidth match that is > bandwidth entitlement.

For example: If you hold VXC-IM-NA-1G-C, VXC-IM-NA-10G-C, and try to provision 400Mbps, then the VXC-IM-NA-1G-C get chosen.

If they try to provision 1500Mbps, then the VXC-IM-NA-10G-C get chosen.

- The earliest expiration entitlement gets used in case of multiple exact matches.

License Enforcement

Alarms are the notifications generated on specific events in vManage, we generate alarms for these events.

- The license end date is less than 90 days
- License has expired
- The license has been renewed

vManage Workflow

Summary of steps to be followed at a high level:

- Account Management
- ICGW Global Settings
- Checking Licenses
- Workflows-QuickConnect
- Assign a Template
- Create ICGW

Account Management

[Cloud OnRamp for Multicloud](#) > [Interconnect Account Management](#) > [Associate Interconnect Account](#)

Provide Interconnect Account Details

Interconnect Provider	<input type="text" value="MEGAPORT"/>
Account Name 	<input type="text" value="SV-MP-20.8.1"/>
Description (optional)	<input type="text"/>
User Name 	<input type="text" value="@cisco.com"/>
Password 	<input type="password"/> <input type="checkbox"/> Show Password

Add

Cancel

Account Management

```

[2022-09-24T00:49:58Z] [INFO] [44070] [44070] [INFO] [ca-v2] [gprc_service.py:442] Processing ValidateAccountInfo Request: {
  "username": "XXXXXXXXXXXX",
  "password": "XXXXXXXXXXXX",
  "edgeAccountInfo": {
    "edgeType": "MEGAPORT",
    "edgeAccountName": "SV-MP-28.9.1",
    "description": "",
    "software": "XXXXXXXXXXXX",
    "requestAccountInfo": {
      "requestAccountInfo": {
        "username": "...@einos.com",
        "password": "XXXXXXXXXXXX"
      }
    }
  }
}

[2022-09-24T00:49:58Z] [INFO] [44070] [44070] [INFO] [ca-v2] [megaport.py:382] edgeType: "MEGAPORT"
edgeAccountName: "SV-MP-28.9.1"
description: ""
software: "XXXXXXXXXXXX"
requestAccountInfo: {
  requestAccountInfo: {
    username: "...@einos.com"
    password: "XXXXXXXXXXXX"
  }
}
}

[2022-09-24T00:49:58Z] [INFO] [44070] [44070] [INFO] [ca-v2] [validate_account.py:72] {"message": "login successfully", "terms": "This data is subject to the Acceptable Use Policy at https://www.megaport.com/legal/acceptable-use-policy", "data": {"permissions": ["FINANCIAL", "AGENT_CREATE_EMPLOYEE", "AGENT_CREATE_SUB_AGENTY", "TRICKLE", "APPROVE_ORDER", "AGENT_AND_USER", "ADVISED", "TOOLS", "MODIFY_SERVICE", "POSITION_MANAGER", "MARKETING", "GRAPH", "PLACE_ORDER", "COMPANY_ADMIN", "VIRTUAL_EMPLOYEE", "NOTIFICATIONS"], "sourceIp": "44.229.25.247", "username": "...@einos.com", "firstName": "George", "lastName": "Mendez", "companyName": "Einos Systems Fast @ rder", "loginDate": "2022-09-24T00:49:58Z", "expiryDate": None, "locale": "United States", "timezone": None, "session": "XXXXXXXXXXXX", "language": "English", "vanAgent": "XXXXXXXXXXXX", "systemRequestId": "XXXXXXXXXXXX", "personId": "XXXXXXXXXXXX", "personCid": "XXXXXXXXXXXX", "companyId": "XXXXXXXXXXXX", "companyCid": "XXXXXXXXXXXX", "clientId": "XXXXXXXXXXXX", "channelPartner": False, "supportOverride": False, "supportOverrideCid": None, "region": None, "accessToken": None, "accessToken": "XXXXXXXXXXXX"}

```

Log Messages

ICGW Global Settings

The screenshot shows the 'Interconnect Global Settings - View' page. At the top, there are two tabs: 'Cloud Global Settings' and 'Interconnect Global Settings'. The main content area has a title 'Interconnect Global Settings - View' and an 'Add' button. Below this, there are several configuration items:

- Interconnect Provider:** MEGAPORT (with a warning icon)
- Software Image:** Select Software Version
- Instance Size:** Select Instance Size
- Interconnect Transit Color:** Select Interconnect Transit Color
- BGP ASN:** Range: 64512-65500 or 420000000-421000000
- Interconnect CGW SDWAN Color:** Select Interconnect CGW SDWAN Color

ICGW Global Settings

Checking Licenses

The screenshot shows the 'Account Licenses' page. At the top, there are tabs for 'Interconnection Gateway Licenses', 'Interconnect Connection Licenses', and 'Supplemental Licenses'. The 'Interconnection Gateway Licenses' tab is active. Below the tabs, there is a search bar and a 'Total Rows: 24' indicator. The main content is a table with the following data:

ID	Name	Status	License End Date	Start Date	Gateway Size	Account Name	Smart Account	Virtual Account	Subscription ID	Web Order
1	WAS-40-9A-C	AVAILABLE	2025-01-15	2023-01-15	9A	SV-MP-28.9.1	10028	10070	Sub112261	\$1,280.00
2	WAS-4A-9A-C	PLUMB	2025-01-15	2023-01-15	9A	SV-MP-28.9.1	10028	10070	Sub112261	\$1,280.00
3	WAS-60-9A-C	AVAILABLE	2025-01-15	2023-01-15	9A	SV-MP-28.9.1	10028	10070	Sub112261	\$1,280.00
101	WAS-42-1A-C	AVAILABLE	2025-02-28	2023-02-07	1A	SV-MP-28.9.1	10028	10070	Sub112262	\$1,120.00
102	WAS-62A-1A-C	AVAILABLE	2025-02-28	2023-02-07	1A	SV-MP-28.9.1	10028	10070	Sub112262	\$1,120.00
103	WAS-80-1A-C	AVAILABLE	2025-02-28	2023-02-07	1A	SV-MP-28.9.1	10028	10070	Sub112262	\$1,120.00
104	WAS-62A-1A-C	PLUMB	2025-02-28	2023-02-07	1A	SV-MP-28.9.1	10028	10070	Sub112262	\$1,120.00
105	WAS-4A-1A-C	AVAILABLE	2025-02-28	2023-02-07	1A	SV-MP-28.9.1	10028	10070	Sub112262	\$1,120.00
107	WAS-4A-MED-C	AVAILABLE	2025-02-28	2023-02-07	MED	SV-MP-28.9.1	10028	10070	Sub112262	\$1,120.00

Checking Licenses

```

24-Sep-2020 01:37:30.447 UTC INFO [[ [MultiCloudEdgePaaS] [pool-14747-thread-1] ]] [Checking GetAccountLicenses License call] with request {
  tenantId: "XY202-0200"
  vTid: "gptLicense"
  subCtxId: "860d8f9-a367-4c7d-832d-644af44d25f"
}
edgeType: MEGAPORT
edgeAccountName: "EV-WP-20.9.1"
edgeAccountID: "3760f8a3-664a-4b4a-b4e2-c4b6d8f8e4d"
edgeAccountInfoList:
  edgeType: "MEGAPORT"
  edgeAccountName: "EV-WP-20.9.1"
  edgeAccountID: "3760f8a3-664a-4b4a-b4e2-c4b6d8f8e4d"
  description: ""
  regionList:
    regionInfo:
      regionName: "XY202-0200"
      regionInfoList:
        regionInfo:
          baseInfo:
            username: "...@1000.com"
            password: "*****"
}
}

24-Sep-2020 01:37:30.458 UTC INFO [[ [MultiCloudEdgePaaS] [gprc-default-executor-13] ]] [GetAccountLicensesResponse received for callType=getLicense call MultiCloudEdgeLicense]
response:
  tenantId: "XY202-0200"
  vTid: "gptLicense"
  subCtxId: "860d8f9-a367-4c7d-832d-644af44d25f"
}

```

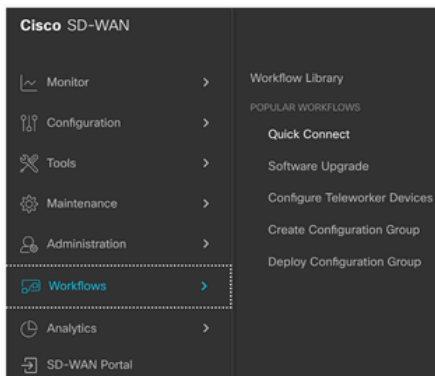
Checking License Logs

WorkFlows - Quick Connect

There is a new workflow with 20.9.x which needs to be configured first. Otherwise, no new instances can be spun. It is also known as Megaport instances.

As part of this workflow, you need to select the C8Kv and attach the site to the C8Kv.

The same System-IP and Site-ID need to be configured for the same chassis in Attach Template option. Navigate to **configuration > Template** . Ensure to note this down when it is applied to the Device Template.



Process Overview

Use this workflow to create device templates to onboard Cisco IOS XE SD-WAN devices using ZTP or PnP, and to generate bootstrap CLI configuration for WAN settings only.



Next

Sync your device inventory

Sync your Smart Account or upload an Authorized Serial Number Device List to add your devices to your vManage device inventory. This operation cannot be undone.

3

- Log into your Smart Account
- Upload an Authorized Serial Number Device List
- Skip for now

Review

Back

Next

Add and Review Device Configuration

We've autogenerated minimal configurations to make it easier for you to bring up your devices. Modify them as needed and directly edit the table (double click on the table rows) to add System IP and Site IDs.

Edge Devices (1) Import Export

Search Table

Chassis Number	Hostname	System IP	Site ID	Configure Interface	IP Configuration	IPv4 Address	Default Gateway	DNS
CBK-34C73580-F202-7889-9852-4673F7C3C49E	CBK-34C73580-F202-78	21.1.1.1	211	GigabitEthernet1	DHCP			

Cancel Apply Items per page: 25 1 - 1 of 1

Exit Review Back Next

Summary

Please review the details of the tag and configuration to be added to the devices. When ready, click Deploy.

Tagged Devices associated with Config Groups (0)

Chassis Number	Tag	Configuration Group	Hostname	System IP	Site ID	Configure Interface	IP Configuration	IPv4 Address	Default Gateway	DNS
No data available										

Items per page: 25 0 of 0

Other Devices (1)

Chassis Number	Tag	Configuration Group	Hostname	System IP	Site ID	Configure Interface	IP Configuration	IPv4 Address	Default Gateway	DNS
CBK-34C73580-F202-7889-9852-4673F7C3C49E	None	None	CBK-34C73580-F202-7889-9852-467	21.1.1.1	211	GigabitEthernet1	DHCP			

Exit

Back

Deploy

Add & Review Device Configuration

Assign a Template

Ensure to assign to the same chassis/UUID from the Workflows-QuickConnect workflow from the top.

Template Type: Default

Total Rows: 1 of 17

Name	Description	Type	Device Mode	Device Role	Resource Group	Feature Templates	Draft Mode	Devices Attached	Updated
Default_MEGAPORT_ICGW_C8000V_Template_V01	Default device template for Megaport Interconnect Gateway C8000V	Feature	C8000v	SDWAN Edge	global	9	Disabled	0	system

Attach Devices

Attach device from the list below

Available Devices Select All

All Search

Name	Device IP
CBK-563EC016-D6E6-E0E9-5177-A0E78D893D2A	
CBK-8A755929-6416-E2A7-C40A-324CA82EA42F	

1 Items Selected



Selected Devices Select All

All Search

Name	Device IP
CBK-34C73580-F202-7889-9852-4673F7C3C49E	

Attach

Cancel

Attach Devices to Default Template

Create ICGW

Manage Interconnect Gateway - Create

Interconnect Provider

Gateway Name

Description (optional)

Account Name
[Check available licenses](#)

Location

UUID

Settings Default Custom

[Add](#) [Cancel](#)

Create ICGW

Verify

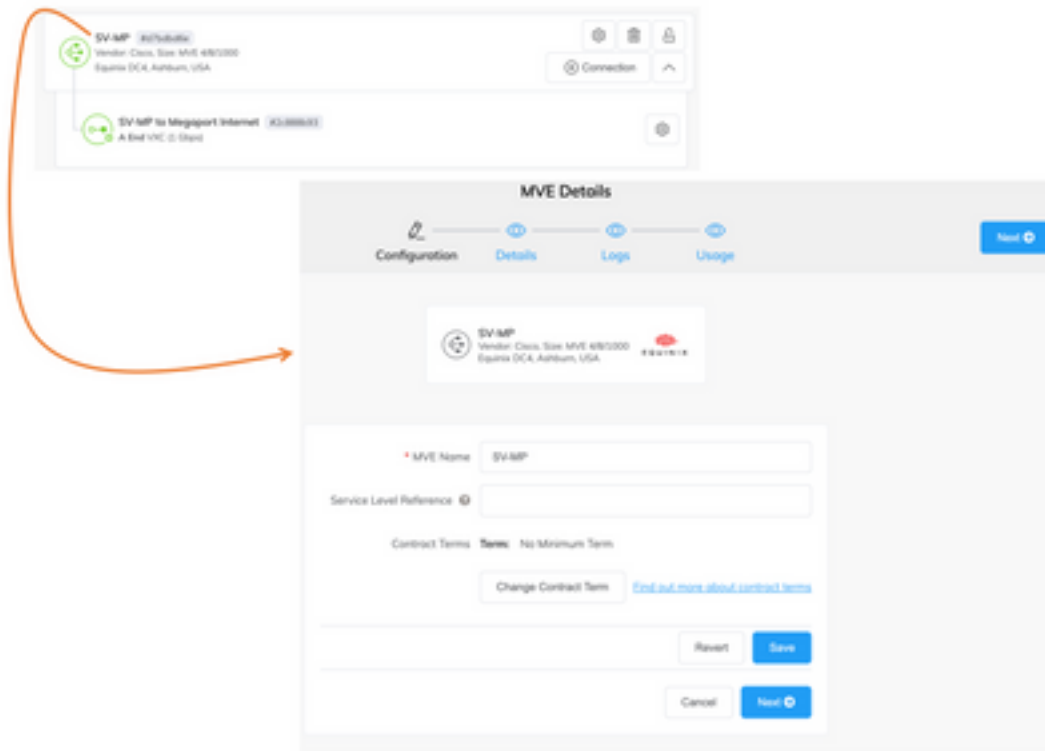
Use this section in order to confirm that your configuration works properly.

Here are the relevant logs on vManage which show a successful creation of ICGW.

```
[2022-09-26T20:45:01UTC+0000:148278358755884:INFO:ca-v2:grpc_service.py:278] Processing CreateEgw Request: {
  "mcCtx": {
    "tenantId": "XYZXYZ-SDWAN",
    "ctxId": "createEgw",
    "subCtxId": "a8ae39fa-5ff5-479f-bd9d-509af86eb431"
  },
  "edgeType": "MEGAPORT",
  "edgeAccountName": "SV-MP-20.9.1",
  "edgeAccountInfoList": [
    {
      "edgeType": "MEGAPORT",
      "edgeAccountName": "SV-MP-20.9.1",
      "edgeAccountId": "378df0a3-b54a-484c-b0e2-cd65dc8fb640",
      "description": "",
      "orgName": "XYZXYZ-SDWAN",
      "megaportAccountInfo": {
        "mpAccountSpecificInfo": {
          "basicAuth": {
            "username": "...@cisco.com",
            "password": "Bq8GILzcrVRkUSRRZMjosp+VXAcLxnU4qIDEnS0b/Mc="
          }
        }
      }
    }
  ],
  "edgeGatewayDetail": {
    "name": "SV-MP",
    "description": "",
    "region": "Equinix DC4, Ashburn, VA, USA : Ashburn",
    "regionId": "67",
    "settings": {
      "ipSubnetPool": "",
      "instanceSize": "Medium",
      "softwareImageId": "C8000v 17.08.01a",
      "edgeGatewaySolution": "MVE"
    }
  },
  "egwRouterCfgList": [
    {
      "uuid": "C8K-34C73580-F202-7889-9852-4673F7C3C49E",
      "bootstrapConfig": {
        "Content-Type": multipart/mixed; boundary="=====9522388058943925065==\"\\nMIME-Version: 1.0\\n\\n-----9522388058943925065==\\nContent-Type: text/cloud-config; charset=\\\"us-ascii\\\"\\nMIME-Version: 1.0\\nContent-Transfer-Encoding: 7bit\\nContent-Disposition: attachment; filename=\\\"tmp514kiyo3\\\"\\n\\ncloud-config\\n\\n\\ninitparam: \\n - uuid : C8K-34C73580-F202-7889-9852-4673F7C3C49E\\n - otp : b8e98f09a9644c797d1ca072b9bffc4\\n - vbond : 52.36.235.214\\n - org : XYZXYZ-SDWAN\\n\\n-----9522388058943925065==\\nContent-Type: text/cloud-boothook; charset=\\\"us-ascii\\\"\\nMIME-Version: 1.0\\nContent-Transfer-Encoding: 7bit\\nContent-Disposition: attachment; filename=\\\"config-C8K-34C73580-F202-7889-9852-4673F7C3C49E.txt\\\"\\n\\n#cloud-boothook\\n system\\n ztp-status success\\n pseudo-confirm-commit 300\\n personality vedge\\n device-model vedge-C8000v\\n chassis-number C8K-34C73580-F202-7889-9852-4673F7C3C49E\\n system-ip 21.1.1.1\\n overlay-id 1\\n site-id 211\\n no transport-gateway enable\\n port-offset 1\\n control-session-pps 300\\n admin-tech-on-failure\\n sp-organization-name XYZXYZ-SDWAN\\n organization-name XYZXYZ-SDWAN\\n port-hop\\n track-trap-nspv\\n track-default-gateway\\n console-baud-rate 19200\\n config-template-name Default_MEGAPORT_ICGW_C8000v_Template_V01\\n no on-demand enable\\n on-demand idle-timeout 18\\n vbond 52.36.235.214 port 12346\\n
      }
    }
  ]
}
```

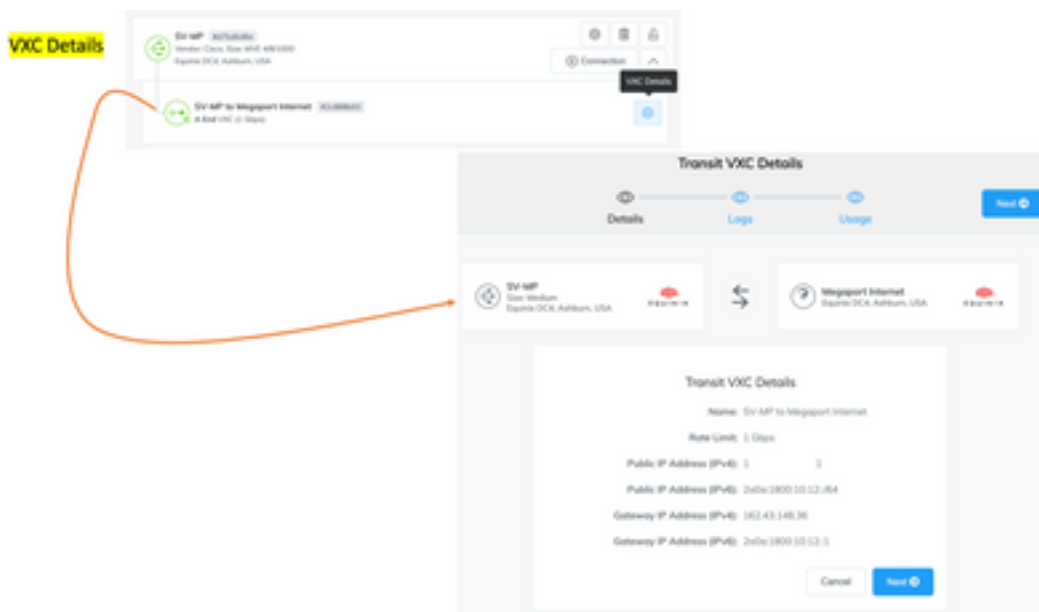
Verification Logs

On Megaport Portal



ICGW Details on Megaport

Portal



VXC Details on Megaport

Portal

Troubleshooting

This section provides information you can use in order to troubleshoot your configuration.

When you troubleshoot the issue(s), all the logs are either in vManage-Server.log or CloudAgent-(v2).log. You can do a tail -f on these files to look at the issue live.

Generate API and store it in the DB:

```
vmanage:~$ tail -f /var/log/nms/vmanage-server.log
```

Scenario 1. MVE/Connection creation failure:

- Look at the account licenses page to see if there are any licenses available.
- If licenses are not available, add new license(s) and retry.

Scenario 2. License status shows used and not consumed by vManage:

- The stale resource left in Megaport is deleted by vManage. Also, we can clear it up in the Megaport account, which helps to release a license.
- If this does not release a license, we need to check with Megaport.

Scenario 3. If the same Megaport account is used by multiple vManage instances, the user needs to be careful when those resources are deleted from the Megaport portal.

Scenario 4. If the bandwidth update fails, the requested bandwidth is greater than the licensed bandwidth.

Related Information

- [Cisco SD-WAN Cloud Interconnect with Megaport](#)
- [License Management for Cloud Interconnect with Megaport](#)
- [Technical Support & Documentation - Cisco Systems](#)