Configure Cisco Crosswork Data Gateway Base VM

This appendix describes how to configure a Cisco Crosswork Data Gateway Base VM.

This section contains the following topics:

About Cisco Crosswork Data Gateway Base VM

A Cisco Crosswork Data Gateway instance is created as a standalone VM and can be geographically separate from the controller application (the controller application could be Crosswork Cloud or a Crosswork On-Prem application, such as Cisco Crosswork Change Automation and Health Insights). This Base VM is capable of connecting to the controller application and enable data collection from the network.

Crosswork orchestrates the collection from the distributed Cisco Crosswork Data Gateway VM instances.

The Cisco Crosswork Data Gateway VM is delivered as an OVA file and the additional functional images are delivered as Docker images.

Base VM Contents

The Base VM (OVA) is pre-packaged with basic functionality required to reach the controller application.

The Cisco Crosswork Data Gateway VM (OVA) contains the following pre-packaged contents:

- Cisco hardened Ubuntu distribution of Linux
- Cisco Crosswork Data Gateway services:
  - Vitals Monitor - Monitors resource usage on the VM.

- Controller Gateway – Establishes trusted connection with the controller application via the Controller Gateway and downloads functional images and configuration files.
- Image Manager – Coordinates between the Cisco Crosswork Data Gateway and the controller application to download functional images and configuration files.
- Route Manager – Directs traffic to devices on different south-bound destinations and also connects to the controller application and data devices via the north-bound interface.
- Docker IPv6nat - Programs IPv6 routes for docker containers.

Note Functional images (CLI, SNMP, and MDT collectors) are not included in the Base VM. They are downloaded by Cisco Crosswork Data Gateway from the controller application after successful authentication and bootstrap.

Log In and Log Out

You can use either of the following two ways to access Cisco Crosswork Data Gateway:

- Access Cisco Crosswork Data Gateway Through vCenter, on page 2
- Access Cisco Crosswork Data Gateway Via SSH, on page 3

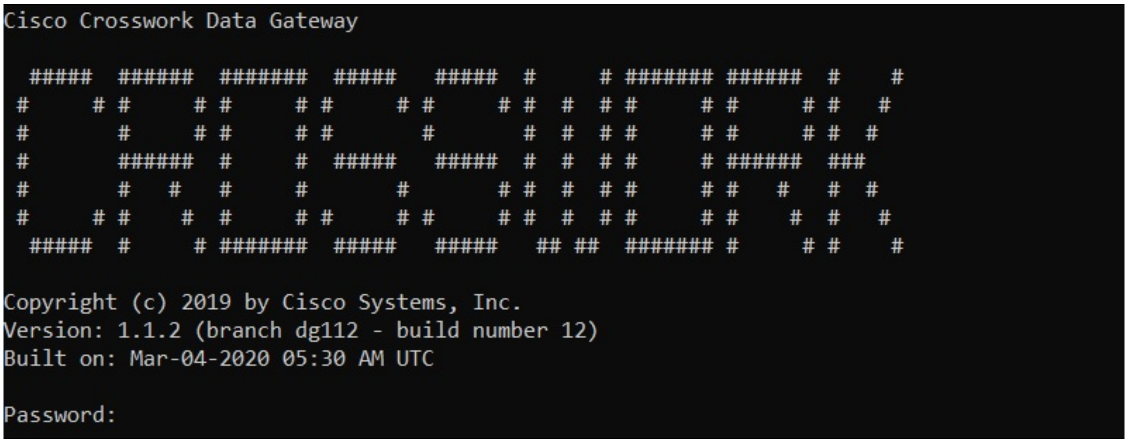
Access Cisco Crosswork Data Gateway Through vCenter

Follow these steps to log in via vCenter:

Step 1 Locate the VM in vCenter and then right click and select **Open Console**.

The Cisco Crosswork Data Gateway flash screen comes up.

Step 2 Enter username (`dg-admin` or `dg-oper` as per the role assigned to you) and the corresponding password (the one that you created during installation process) and press **Enter**.



```
Cisco Crosswork Data Gateway

  #####  ######  #######  #####   #####  #     # ####### ######  #    #
 #     # #     # #     # #     # #     # #  #  # #     # #     # #   #
 #       #     # #     # #       #       #  #  # #     # #     # #  #
 #       ######  #     #  #####   #####  #  #  # #     # ######  ###
 #       #   #   #     #       #       # #  #  # #     # #   #   #  #
 #     # #    #  #     # #     # #     # #  #  # #     # #    #  #   #
  #####  #     # #######  #####   #####   ## ##  ####### #     # #    #

Copyright (c) 2019 by Cisco Systems, Inc.
Version: 1.1.2 (branch dg112 - build number 12)
Built on: Mar-04-2020 05:30 AM UTC

Password:
```

Access Cisco Crosswork Data Gateway Via SSH

Note The SSH process is protected from brute force attacks by blocking the client IP after a number of login failures. Failures such as incorrect username or password, connection disconnect, or algorithm mismatch are counted against the IP. Up to 4 failures within a 20 minute window will cause the client IP to be blocked for at least 7 minutes. Continuing to accumulate failures will cause the blocked time to be increased. Each client IP is tracked separately.

Follow these steps to login via SSH.

Step 1 Run the following command:

ssh <username>@<ManagementNetworkIP>

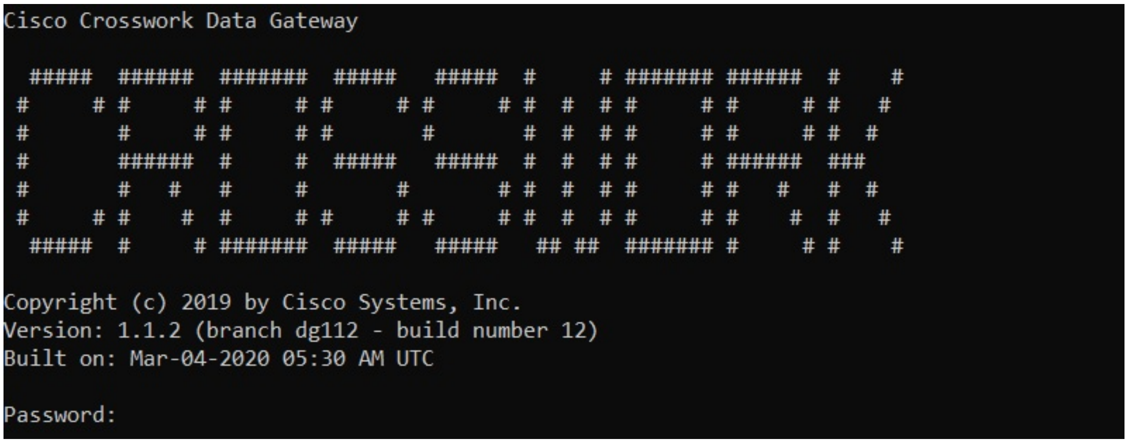
where **ManagementNetworkIP** is the management network IP address.

For example,

To login as adminstrator user: **ssh dg-admin@<ManagementNetworkIP>**

To login as operator user: **ssh dg-oper@<ManagementNetworkIP>**

The Cisco Crosswork Data Gateway flash screen opens prompting for password.



```
Cisco Crosswork Data Gateway

  #####  ######  #######  #####   #####  #     # ####### ######  #    #
 #     # #     # #     # #     # #     # #  #  # #     # #     # #   #
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 #       ######  #     #  #####   #####  #  #  # #     # ######  ###
 #       #   #   #     #       #       # #  #  # #     # #   #   #  #
 #     # #    #  #     # #     # #     # #  #  # #     # #    #  #   #
  #####  #     # #######  #####   #####   ## ##  ####### #     # #    #

Copyright (c) 2019 by Cisco Systems, Inc.
Version: 1.1.2 (branch dg112 - build number 12)
Built on: Mar-04-2020 05:30 AM UTC

Password:
```
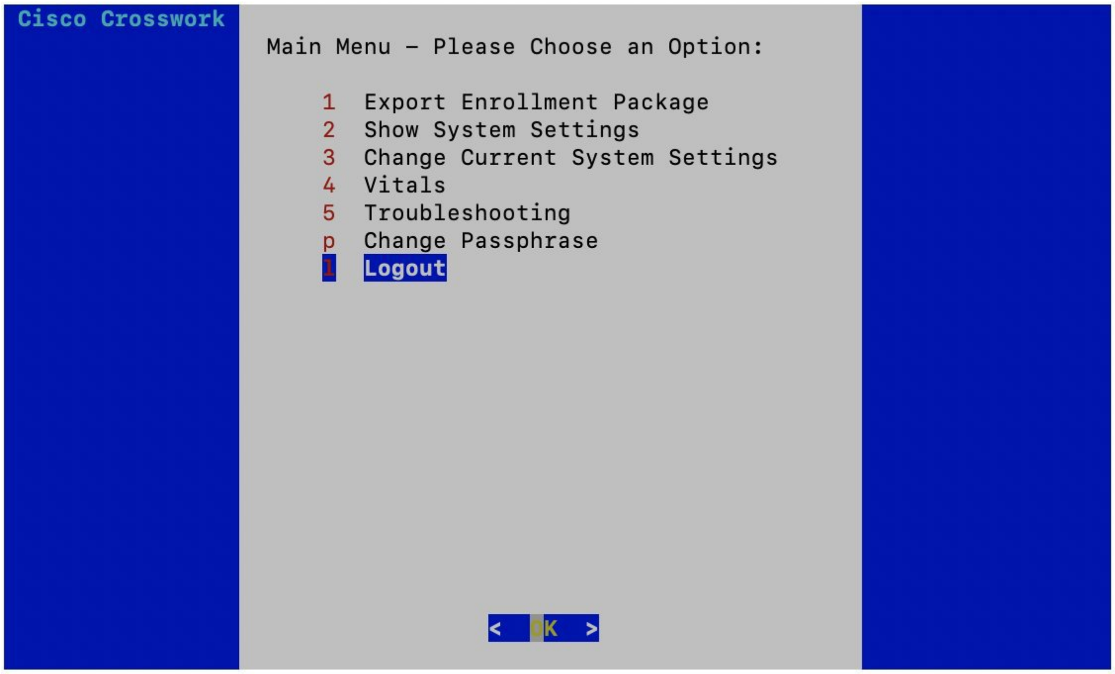

Step 2 Input the corresponding password (the one that you created during installation process) and press **Enter**.

Use the Interactive Console

Cisco Crosswork Data Gateway launches an interactive console upon successful login. The interactive console displays the Main Menu as shown in the following figure:

Note The Main Menu shown here corresponds to **dg-admin** user. It is different for **dg-oper** user as the operator does not have same privileges as the adminstrator. See Supported User Roles, on page 6.



```
Cisco Crosswork
                 Main Menu - Please Choose an Option:

                     1  Export Enrollment Package
                     2  Show System Settings
                     3  Change Current System Settings
                     4  Vitals
                     5  Troubleshooting
                     p  Change Passphrase
                     l  Logout




                                 < OK >
```

The Main Menu presents the following options:

1. Export Enrollment Package
2. Show System Settings
3. Change Current System Settings
4. Vitals
5. Troubleshooting

p. Change Passphrase

l. Logout

Basic Concepts

Cisco Crosswork Data Gateway makes extensive use of certain concepts. It is helpful to be familiar with them before you get started.

Cisco Crosswork Data Gateway Components

Cisco Crosswork Data Gateway has the following five main components or services:

- Controller Gateway, on page 5
- Image Manager, on page 5
- Vitals Monitor, on page 5

- Route Manager, on page 6
- Docker IPv6nat, on page 6

Controller Gateway

Controller Gateway is the component responsible for all the interaction between a Cisco Crosswork Data Gateway instance and its controller application. It manages the session creation with the controller application and makes sure all the payloads and responses are signed and verified for integrity. Components such as Image Manager, Vitals Monitor, and Route manager interact via Controller Gateway with the controller application to exchange the details those components need.

Note When the Controller Gateway stops, any alerts are not updated in cdg-alerts.log. However, when it starts, it sends an alert that it has started. This is because all the alerts go through the Controller Gateway and if it is down, the controller application won't receive the alerts. To access log files, see Run show-tech, on page 29.

Image Manager

The Image Manager starts up when Cisco Crosswork Data Gateway VM boots. It downloads the functional images from the repository as instructed by the controller application and brings up the services.

It has the following responsibilities:

- Periodically pull boot-config file from the controller application via Controller Gateway.
- Based on the boot-config and local images metadata cache, determine if the functional images and docker-compose file need to be downloaded.
- Send appropriate alerts to the controller application, if there are issues while processing the boot-config.
- Stop and remove any services that are no longer called for in the latest boot-config.
- Cleanup the local images metadata cache to keep it synchronized with the latest boot-config received from the controller application.
- Downloads collectors environment and other files that facilitate establishment of connection between collectors and Crosswork.
- Downloads system device packages and MIB packages required by the collectors from Crosswork.
- Downloads custom software to the collectors when uploaded via Crosswork UI.

Note Functional images are downloaded only when there is a change in boot-config response.

Vitals Monitor

The Vitals Monitor monitors the health and vitals of the Cisco Crosswork Data Gateway VM. It collects the CPU, memory, disk usage, docker containers metrics, etc. and aggregates this information in a file on the host filesystem.

For more information, see Monitor Cisco Crosswork Data Gateway Health, on page 19.

Route Manager

Route Manager manages south-bound routes to devices and north-bound routes to data destinations based on add/delete requests from collector upon the updates of inventory and collection jobs.

Route manager adds/deletes the static routes by comparing the existing routes configured on the VM with the routes configuration. This configuration is pushed to the Route Manager by the controller application in case of Crosswork On-Premise deployment.

Appropriate alerts are sent to the controller application if there is any failure in processing route request.

Docker IPv6nat

docker-ipv6nat is a special process that programs ipv6 routes for docker containers.

Manage Users

This section contains the following topics:

- Supported User Roles, on page 6
- Change Password, on page 8

Supported User Roles

Cisco Crosswork Data Gateway supports only two users with the following user roles:

- **Administrator**: One default user with administrator role is created when Cisco Crosswork Data Gateway is brought up for the first time. This user cannot be deleted and has both read and write privileges such as start/shut down Cisco Crosswork Data Gateway, register an application, apply authentication certificates, configure server settings, and perform kernel upgrade.
- **Operator**: This user is also created by default during the initial VM bring up. Operator can review the state/health of theCisco Crosswork Data Gateway, retrieve health/error logs, receive error notifications and run connectivity tests between Cisco Crosswork Data Gateway instance and the output destination.

Note

- Both users' credentials are configured during Cisco Crosswork Data Gateway installation.
- Users are locally authenticated.

The following table shows the permissions available to each role:

Table 1: Permissions Per Role

Permissions	Administrator	Operator
Export enrollment package	✓	✓
Show system settings		

Permissions	Administrator	Operator
Management and South/North-bound Data Addresses NTP DNS Proxy UUID Syslog Certificates First Boot Provisioning Log	✓	✓
Change Current System Settings		
Configure NTP Configure DNS Configure Control Proxy Configure Static Routes Configure Syslog Create new SSH keys Import Certificate	✓	×
Vitals		
Docker Containers Docker Images Controller Reachability NTP Reachability Route Table ARP Table Network Connections Disk Space Usage	✓	✓
Troubleshooting		

Permissions	Administrator	Operator
Ping a Host	✓	✓
Traceroute to a Host	✓	✓
NTP Status	✓	✓
System Uptime	✓	✓
Run show-tech	✓	✓
Remove All Collectors and Reboot VM	✓	×
Reboot VM	✓	×
Change Passphrase	✓	✓

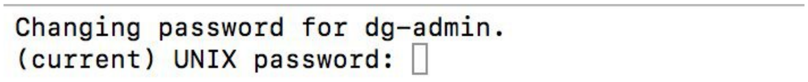
Change Password

Both Adminstrator and Operator users can change their own passphrases but not each others'.

Follow these steps to change your passphrase:

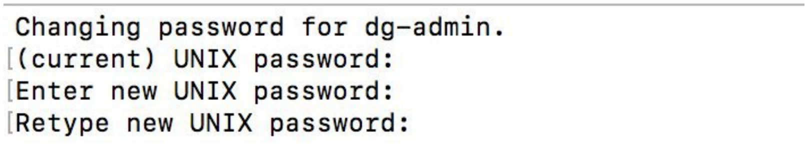
Step 1 From the Main Menu, select **p Change Passphrase** and click **OK**.

Step 2 Input your current password and press Enter.



```
Changing password for dg-admin.
(current) UNIX password: 
```

Step 3 Enter new password and press Enter. Re-type the new password and press Enter.



```
 Changing password for dg-admin.
[(current) UNIX password:
[Enter new UNIX password:
[Retype new UNIX password:
```

View Current System Settings

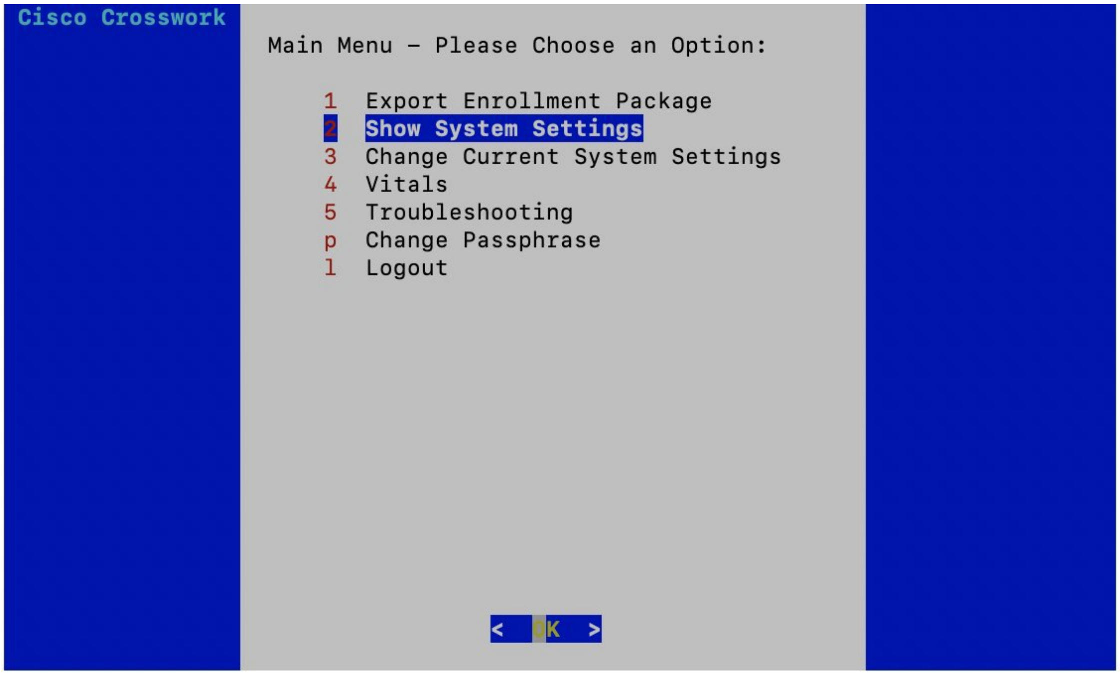
Cisco Crosswork Data Gateway allows you to view the following settings:

- Management and South/North-bound Data Addresses
- NTP
- DNS

- Proxy
- UUID
- Syslog
- Certificates

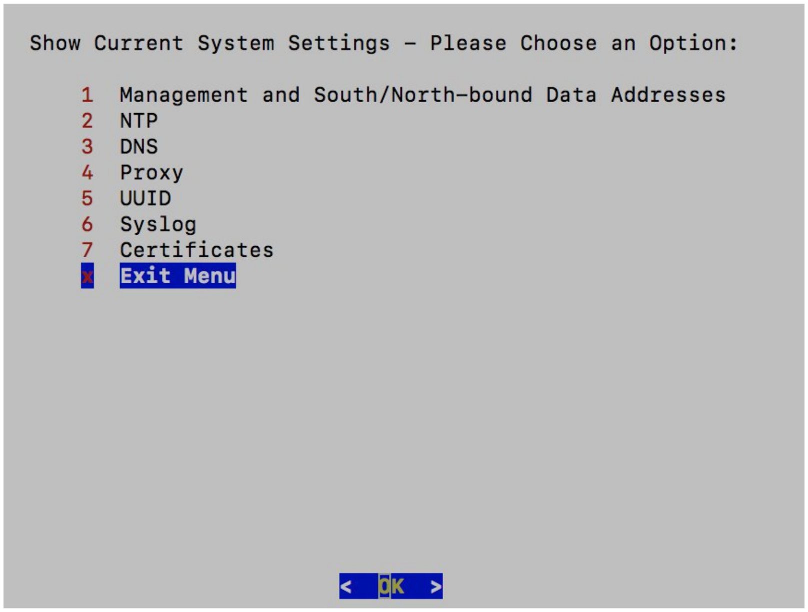
Follow these steps to view the current system settings:

Step 1 From the Main Menu, select **2 Show System Settings**, as shown in the following figure:



```
Cisco Crosswork
                    Main Menu - Please Choose an Option:

                        1  Export Enrollment Package
                        2  Show System Settings
                        3  Change Current System Settings
                        4  Vitals
                        5  Troubleshooting
                        p  Change Passphrase
                        l  Logout

                                  <  OK  >
```

Step 2 Click **OK**. The **Show Current System Settings** menu opens.



```
Show Current System Settings - Please Choose an Option:

    1  Management and South/North-bound Data Addresses
    2  NTP
    3  DNS
    4  Proxy
    5  UUID
    6  Syslog
    7  Certificates
    x  Exit Menu

                          <  OK  >
```

Step 3 Select the setting you want to view.

Setting Option	**Description**
1 Management and South/North-bound Data Addresses	Displays the addresses of the management, northbound, and southbound interfaces.
2 NTP	Displays NTP settings. It is important that NTP time be synchronized with the controller application and its Cisco Crosswork Data Gateway instances. If not, then session handshake doesn't happen and functional images are not downloaded. In such cases, error message `clock time not matched and sync failed` is logged in controller-gateway.log. To access log files, see Run show-tech, on page 29. You can use Controller Reachability and NTP Reachability options from **Main Menu** > **Vitals** to check NTP reachability for the controller application as well as the Cisco Crosswork Data Gateway instance. See View Cisco Crosswork Data Gateway Vitals, on page 20. If NTP has been set incorrectly,you will see error Session not established. To configure NTP settings, see Configure NTP, on page 13.
3 DNS	Displays addresses of the DNS servers.
4 Proxy	Displays proxy server settings if there's any.

Setting Option	Description
5 UUID	Displays the unique identifier of the Cisco Crosswork Data Gateway VM.
6 Syslog	Displays syslog settings. The Controller Gateway doesn't send a start event to the Syslog server. Also, SNMP, MDT, and CLI events are not updated in the local syslog file, but are sent to the external syslog server. To configure syslog settings, see Configure Syslog, on page 17.
7 Certificates	Provides the following options to view certificate files: • Collector certificate file • Controller signing certificate file • Controller SSL/TLS certificate file • Syslog certificate file

Step 4 Click **OK**. Cisco Crosswork Data Gateway displays the selected setting.

After you are done viewing the settings, press any key to return to the **Show Current System Settings** menu.

To return to the Main Menu, select **x Exit Menu** and click **OK**.

Change Current System Settings

Note

- Cisco Crosswork Data Gateway System settings can only be configured by the Administrator.
- In settings options where you require to use SCP, if you are not using the default SCP port 22, you can specify the port as a part of the SCP command. For example,

  ```
  -P55 user@host:path/to/file
  ```

  where 55 is a custom port.

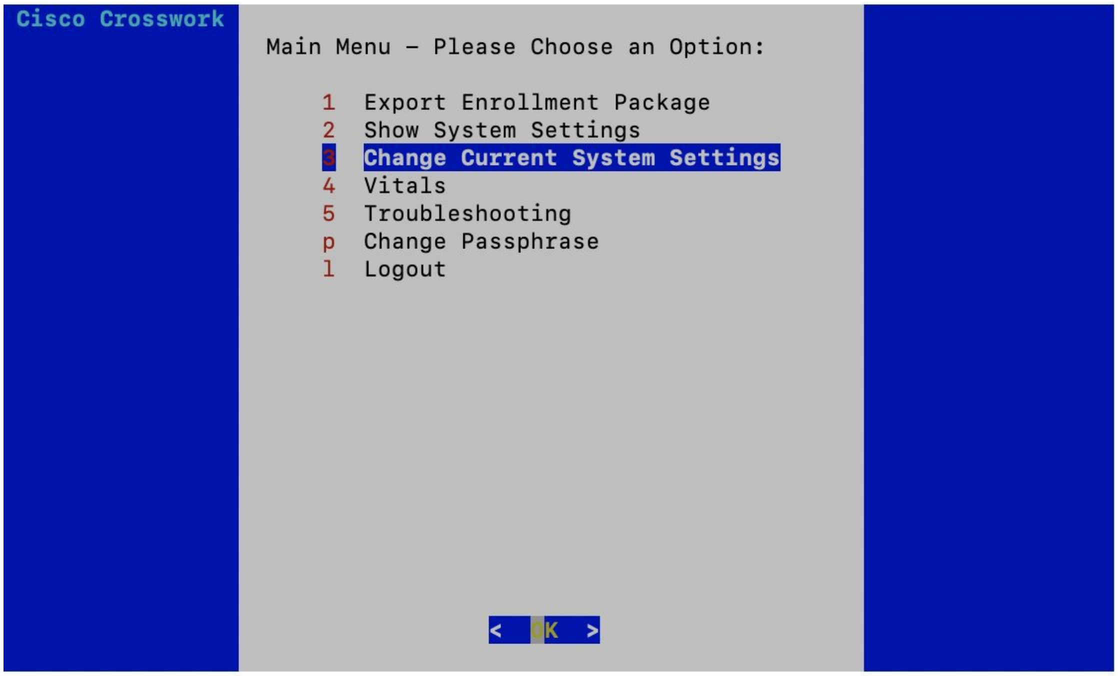
Cisco Crosswork Data Gateway allows you to change the following settings:

- NTP
- DNS
- Control Proxy
- Static routes
- Syslog

- SSH keys
- Certificate

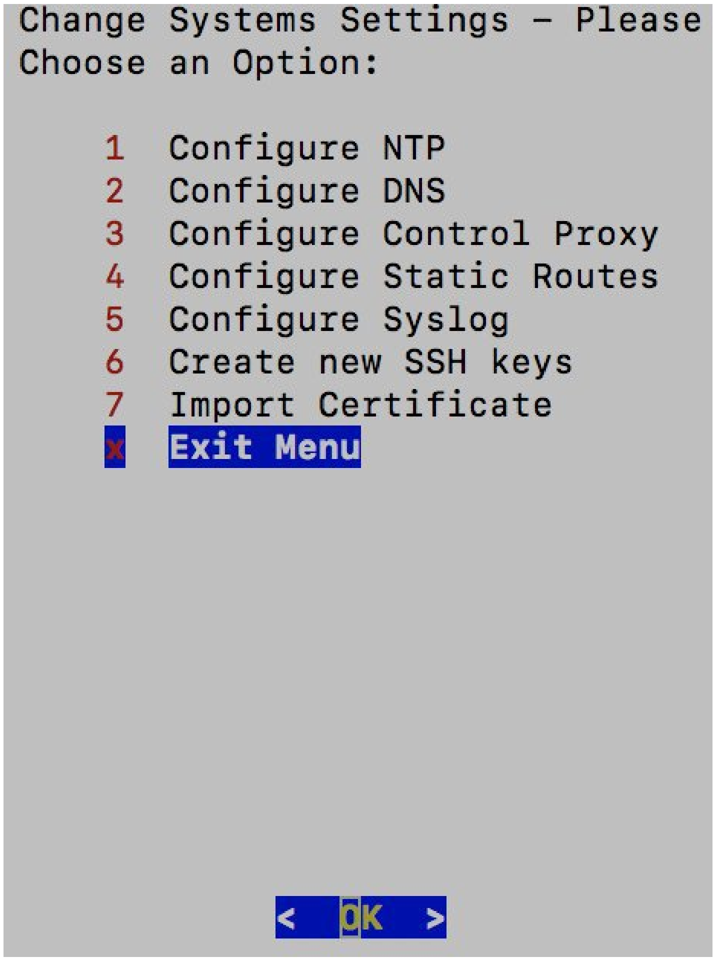
Follow these steps to change the current system settings:

Step 1 From the Main Menu, select **3 Change Current System Settings**, as shown in the following figure.



```
Cisco Crosswork
                Main Menu - Please Choose an Option:

                    1   Export Enrollment Package
                    2   Show System Settings
                    3   Change Current System Settings
                    4   Vitals
                    5   Troubleshooting
                    p   Change Passphrase
                    l   Logout

                             <  OK  >
```

Step 2 Click **OK**. The **Change System Settings** menu opens.



```
Change Systems Settings - Please
Choose an Option:

    1  Configure NTP
    2  Configure DNS
    3  Configure Control Proxy
    4  Configure Static Routes
    5  Configure Syslog
    6  Create new SSH keys
    7  Import Certificate
    x  Exit Menu

              <  OK  >
```

Step 3 Select the setting you want to change.

Step 4 Click **OK**. Cisco Crosswork Data Gateway prompts you to input new value for the selected setting.

Step 5 After you have entered the new settings, click **OK** to save the settings and return to the **Change System System Settings** menu.

To return to the Main Menu, select **x Exit Menu** and click **OK**.

Configure NTP

Step 1 From the **Change Current System Settings** Menu, select **1 Configure NTP** and click **OK**.

Step 2 Enter the new NTP server.

Step 3 Click **OK** to save the settings.

Configure DNS

Step 1 From the **Change Current System Settings** menu, select **2 Configure DNS** and click **OK**.

Step 2 Enter the new DNS domain and server address.

Step 3 Click **OK** to save the settings.

Configure Control Proxy

Step 1 From the **Change Current System Settings** menu, select **3 Configure Control Proxy** and click **OK**.

Step 2 Enter the new Proxy server URL and the exception list.

Step 3 Click **OK** to save the settings.

Configure Static Routes

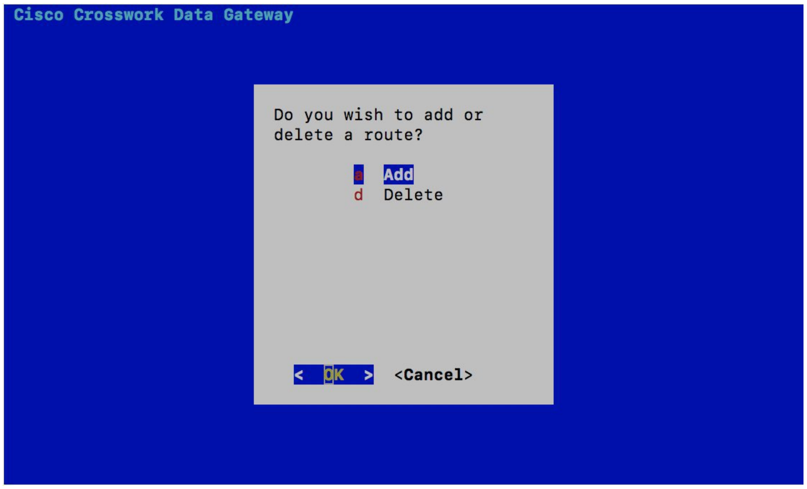
In Cisco Crosswork Data Gateway, the static routes are configured when the Route Manager receives add/delete requests from the collectors. The **Configure Static Routes** option from the main menu can be used for troubleshooting purpose.

Note Static routes configured using this option are lost when the Cisco Crosswork Data Gateway reboots.

Add Static Routes

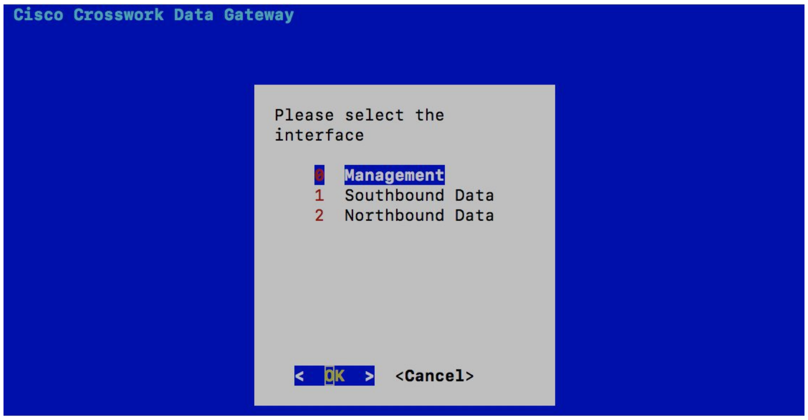
Step 1 From the **Change Current System Settings** menu, select **4 Configure Static Routes** and click **OK**.

Step 2 To add a static route, select **a Add** and click **OK**.



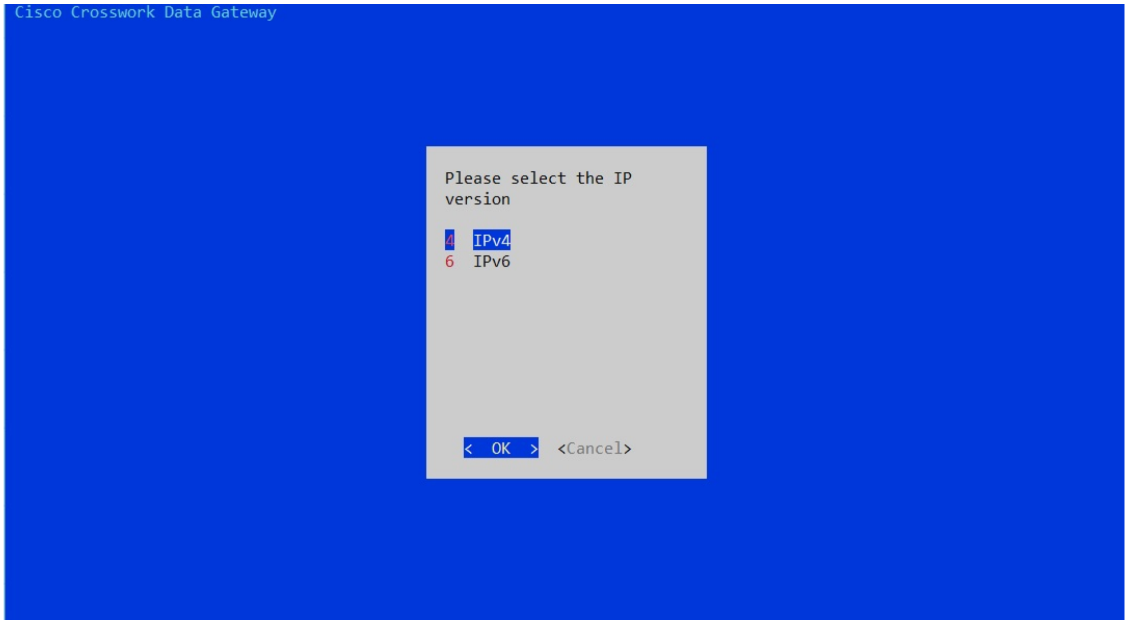
```
Do you wish to add or
delete a route?
```

Step 3 Select the interface for which you want to add a static route and click **OK**.



```
Please select the
interface
```

Step 4 Select the IP address version for which you want to add a route and click **OK**.



Cisco Crosswork Data Gateway

Please select the IP version

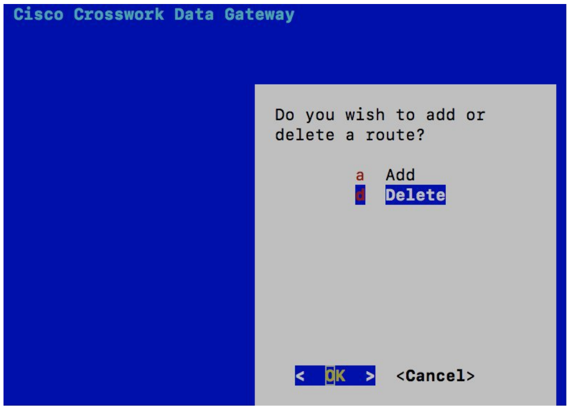
Step 5 Enter IPv4/IPv6 subnet in CIDR format when prompted.

Step 6 Click **OK** to save the settings.

Delete Static Routes

Step 1 From the **Change Current System Settings** Menu, select **4 Configure Static Routes** and click **OK**.

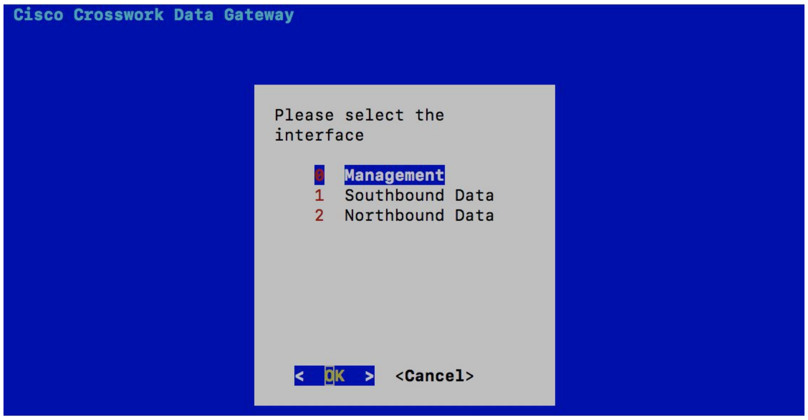
Step 2 To delete a static route, select **d Delete** and click **OK**.



Cisco Crosswork Data Gateway

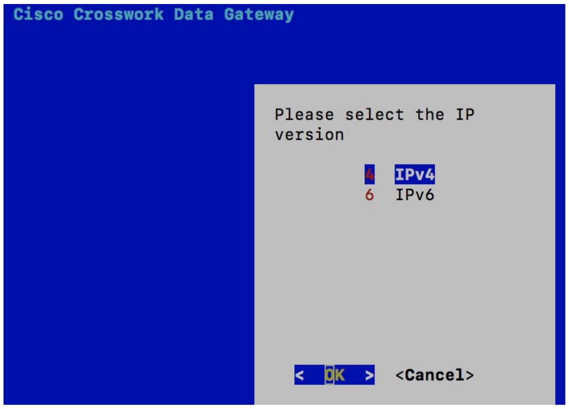
Do you wish to add or delete a route?

Step 3 Select the interface for which you want to delete a static route and click **OK**.



```
Cisco Crosswork Data Gateway

Please select the
interface
```

Step 4 Select the IP address version for which you want to delete a route and click **OK**.



```
Cisco Crosswork Data Gateway

Please select the IP
version
```

Step 5 Enter IPv4/IPv6 subnet in CIDR format.

Step 6 Click **OK** to save the settings.

Configure Syslog

Note For any Syslog server configuration with IPv4/IPv6 support for different linux distributions, please refer your system administrator and configuration guides.

Step 1 From the **Change Current System Settings** Menu, select **5 Configure Syslog** and click **OK**.

Step 2 Enter the new values for the following syslog attributes:.

- Server address: IPv4 or IPv6 address of a syslog server accessible from the management interface. If you are using an IPv6 addres, it must be surrounded by square brackets ([1::1]).
- Port: Port number of the syslog server
- Protocol: Use UDP, TCP, or RELP when sending syslog.
- Use Syslog over TLS?: Use TLS to encrypt syslog traffic.
- TLS Peer Name: Syslog server's hostname exactly as entered in the server certificate SubjectAltName or subject common name.
- Syslog Root Certificate File URI: PEM formatted root cert of syslog server retrieved using SCP.
- Syslog Certificate File Passphrase: Password of SCP user to retrieve Syslog certificate chain.

Step 3 Click **OK** to save the settings.

Create New SSH Keys

Step 1 From the **Change Current System Settings** Menu, select **6 Create new SSH keys**.

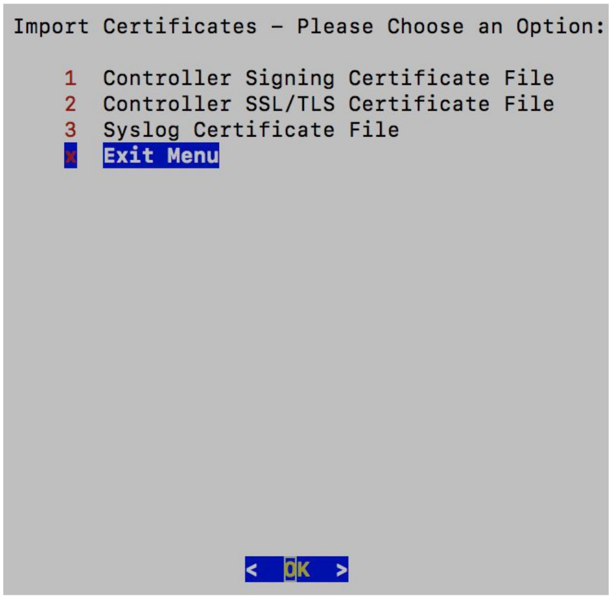
Step 2 Click **OK**. Crosswork Data Gateway launches an auto-configuration process that generates new SSH keys.

Import Certificate

Updating any certificate other than Controller Signing Certificate causes a collector restart.

Step 1 From the **Change Current System Settings** Menu, select **7 Import Certificate** and click **OK**.

Step 2 Select the certificate you want to import and click **OK**.



```
Import Certificates - Please Choose an Option:

    1  Controller Signing Certificate File
    2  Controller SSL/TLS Certificate File
    3  Syslog Certificate File
    x  Exit Menu







                  <  OK  >
```

Step 3 Enter SCP URI for the selected certificate file and click **OK**.

Step 4 Enter passphrase for the SCP URI and click **OK**.

Monitor Cisco Crosswork Data Gateway Health

This section contains the following topics:

- Vitals Monitor, on page 19
- View Cisco Crosswork Data Gateway Vitals, on page 20
- collector-vitals Service, on page 22

Vitals Monitor

The Vitals Monitor component of Cisco Crosswork Data Gateway enables you to view vitals for the following:

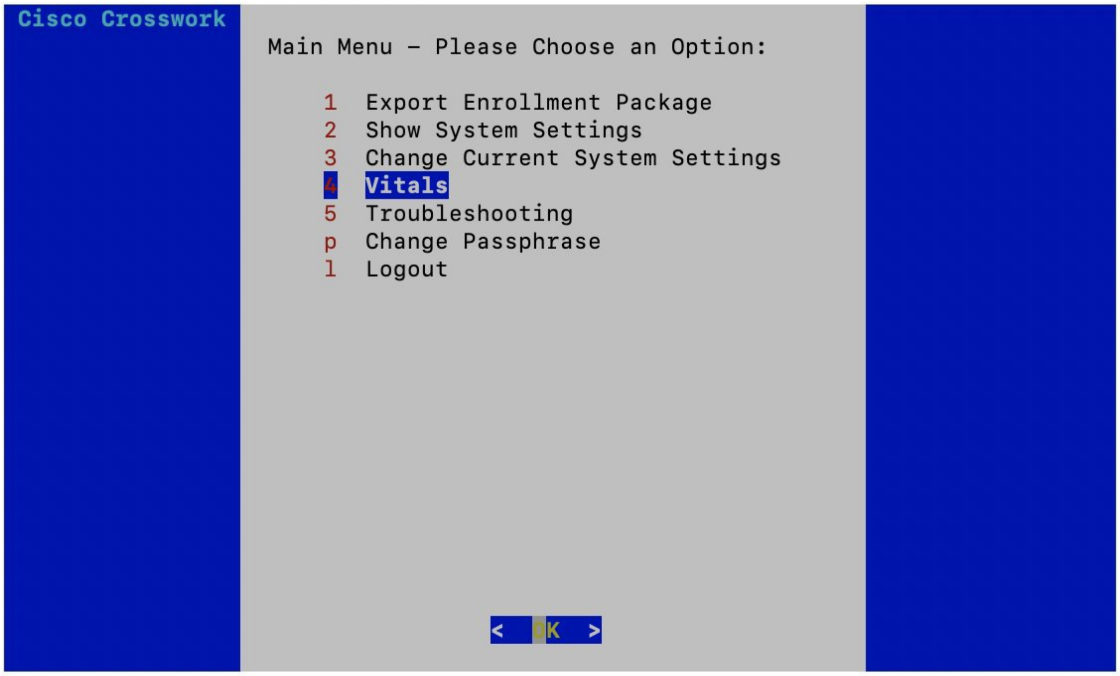
1. Docker containers
2. Docker images
3. Controller reachability
4. NTP reachability
5. Route table
6. ARP table
7. Network connections

8. Disk space usage

View Cisco Crosswork Data Gateway Vitals

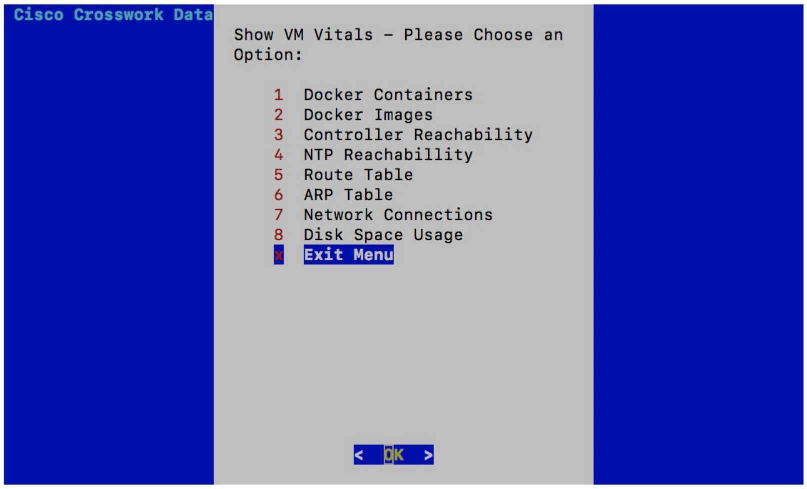
Follow these steps to view Cisco Crosswork Data Gateway vitals:

Step 1 From the Main Menu, select **4 Vitals** and click **OK**.


Cisco Crosswork
Main Menu - Please Choose an Option:
1 Export Enrollment Package
2 Show System Settings
3 Change Current System Settings
4 Vitals
5 Troubleshooting
p Change Passphrase
l Logout
< OK >

The **Show VM Vitals** menu opens.

Step 2 Select the vital you want to view and click **OK**.



Vital	Description
Docker Containers	Displays the following vitals for the docker containers: • Container ID • Image • Name • Command • Created Time • Status • Port
Docker Images	Displays the following vitals for the docker images: • Repository • Image ID • Created Time • Size • Tag
Controller Reachability	Displays the following vitals for controller reachability: • Default gateway status • Reachability test details (number of packets transmitted and received, packet loss percentage, and time) • DNS server • DNS server status • Reachability test details (number of packets transmitted and received, packet loss percentage, and time) • Controller session status
NTP Reachability	Displays the following vitals for NTP reachability: • NTP server • Resolved IP Address • Status • Reachability test details (number of packets transmitted and received, packet loss percentage, and time) • Chrony status • Reference ID • System time
Route Table	Displays IPv4 and IPv6 route tables.

Vital	Description
ARP Table	Displays ARP tables.
Network Connections	Displays the following vitals for network connections: • Netid • State • Recv-Q • Send-Q • Local Address and Port • Peer Address and Port
Disk Space Usage	Displays the following vitals for disk space usage: • Filesystem • Size • Used space • Available space • Use percentage • Mounted on volume

Cisco Crosswork Data Gateway displays the vitals for the selected item.

After you are done viewing the vitals, press any key to return to the **ShowVM Vitals** menu.

To return to the Main Menu, select **x Exit Menu** and click **OK**.

collector-vitals Service

Cisco Crosswork Data Gateway comprises of various containerized services running on an Ubuntu VM. Its overall health depends on health of each containerized service.

As part of collector vitals, Cisco Crosswork Data Gateway collects host and container metrics and writes them to a container mounted path in vitals.json file and sends it to the Controller.

These vitals of a Cisco Crosswork Data Gateway VM can also be viewed in the Crosswork UI as described in Section: View Cisco Crosswork Data Gateway Instance Health.

It collects the following metrics:

Field	Description
Host VM	

Field	Description
Disk Space Used	Percentage of the disk space used for partitions: / /opt/dg/log /var/lib/docker
Disk In/Out	Number of read/write or input/output operations involving a disk for the partitions: / /opt/dg/log /var/lib/docker **Note** This is a cumulative counter, not a delta time series.
CPU Utilization	Amount of actively used CPU and total number of vCPUs.
Load	Load average – is the average system load over a given period of time of 1, 5, and 15 minutes.
Memory	Amount of memory used and available memory. **Note** The value shown for *memory* represents the usable amount for user processes, not the total VM amount. The Cisco Crosswork Data Gateway operating system reserves about 700MB from the total VM memory for itself, which is excluded from memory reporting tools. It is expected for the *memory* value reported here to be 1GB less than the full amount allocated to the VM due to operating system reservation and rounding.
Network In/Out	The amount of data sent/received in MB for NIC interfaces: eth0 eth1 eth2 **Note** This is a cumulative counter, not a delta time series.
Service Status	
Service	Name of the Cisco Crosswork Data Gateway service.

Field	Description
Status	Status of the service: • Running • Degraded • Error
CPU Utilization	Percentage of actively utilized CPU by the service.
Version	Version of the service deployed.
Memory Used (MB)	Amount of memory being used by the service.
Network In/Out	The amount of data sent/received in MB by the service over its interface. **Note** This is a cumulative counter, not a delta time series.
Disk In/Out	Number of read/write or input/output operations that the service has done involving a disk. **Note** This is a cumulative counter, not a delta time series.

Note

- When either of the following components listed below are not responsive, Cisco Crosswork Data Gateway vitals are not updated:
  - Docker Engine
  - Vitals Monitor
  - Controller Gateway

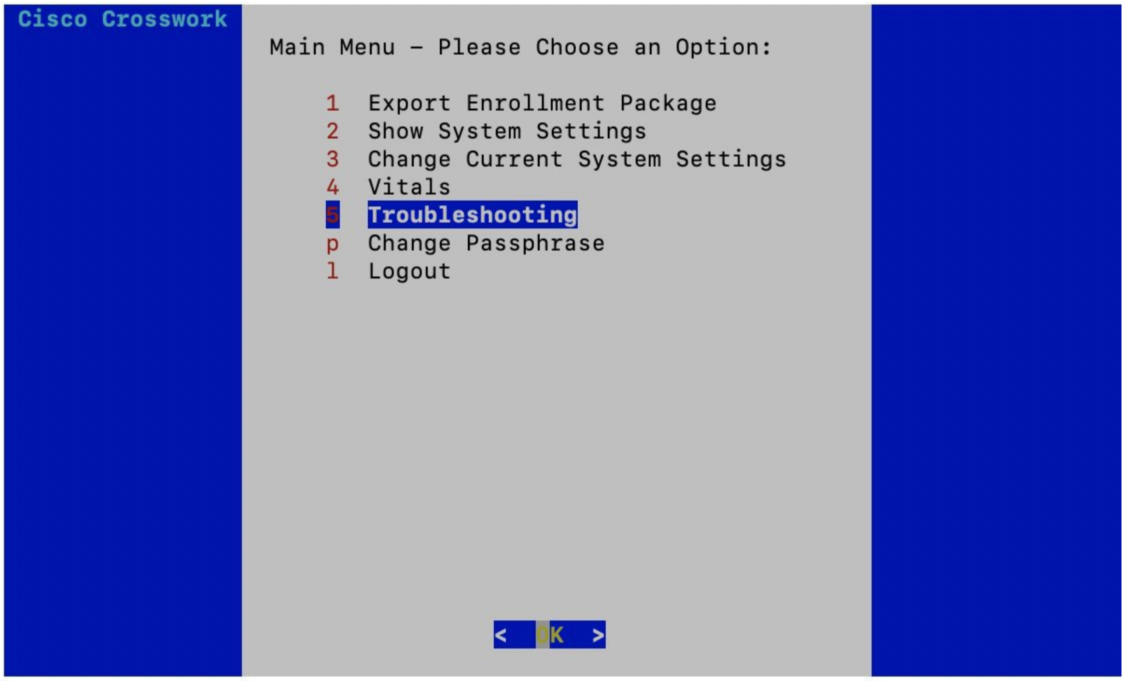
  The "Collector Vitals" and "Controller Gateway" dockers must be up and running for alerts/vitals to get updated.
- When Vitals Monitor stops, no alerts are added to cdg-alerts.log. This is because the monitor service runs as a part of Vitals Monitors and it doesn't trigger any alerts when Vitals Monitor itself is down.
- Also, the alerts are not added to cdg-alerts.log when Vitals Monitor is running and Controller Gateway is down.

  To access log files, see Run show-tech, on page 29.

Troubleshooting

You can troubleshoot a Cisco Crosswork Data Gateway instance directly from the VM. Cisco Crosswork Data Gateway provides logs of errors, requests to the server, and changes made to the VM and reports any process failures/outages.

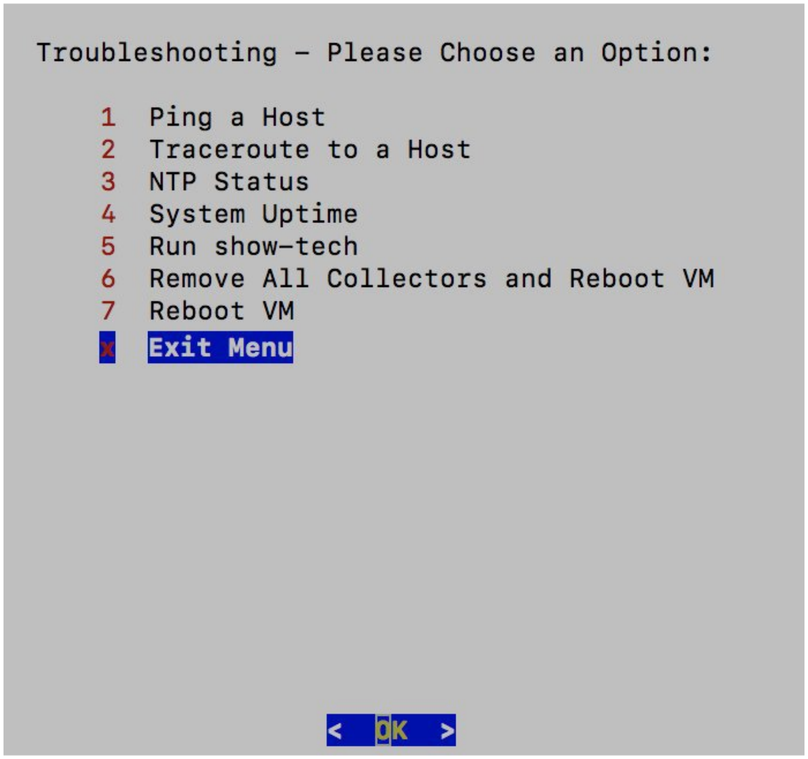
To access **Troubleshooting** menu, select **5 Troubleshooting** from the Main Menu and click **OK**, as shown in the following figure:



```
Cisco Crosswork

Main Menu - Please Choose an Option:

    1  Export Enrollment Package
    2  Show System Settings
    3  Change Current System Settings
    4  Vitals
    5  Troubleshooting
    p  Change Passphrase
    l  Logout

            <  OK  >
```

Cisco Crosswork Data Gateway opens the **Troubleshooting** menu that provides you the following options to troubleshoot your Cisco Crosswork Data Gateway instance:

Note The following figure shows the Troubleshooting Menu corresponding to **dg-admin** user. Few of these options are not available to **dg-oper** user. See Table Table 1: Permissions Per Role, on page 6.



```
Troubleshooting - Please Choose an Option:

    1  Ping a Host
    2  Traceroute to a Host
    3  NTP Status
    4  System Uptime
    5  Run show-tech
    6  Remove All Collectors and Reboot VM
    7  Reboot VM
    x  Exit Menu

                    <  OK  >
```

This section contains the following topics:

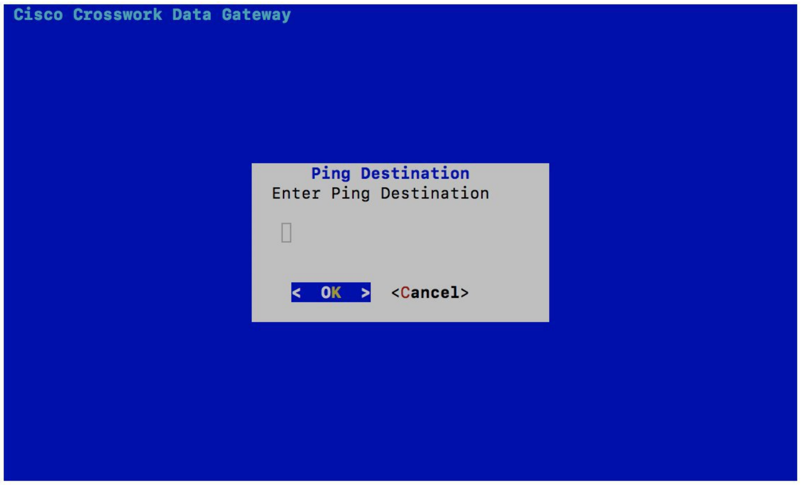
- Ping a Host, on page 26
- Traceroute to a Host, on page 27
- Check NTP Status, on page 28
- Check System Uptime, on page 28
- Run show-tech, on page 29
- Reboot Crosswork Data Gateway VM, on page 30

Ping a Host

To aid troubleshooting, Cisco Crosswork Data Gateway provides you Ping utility that can be used to check reachability to any IP address.

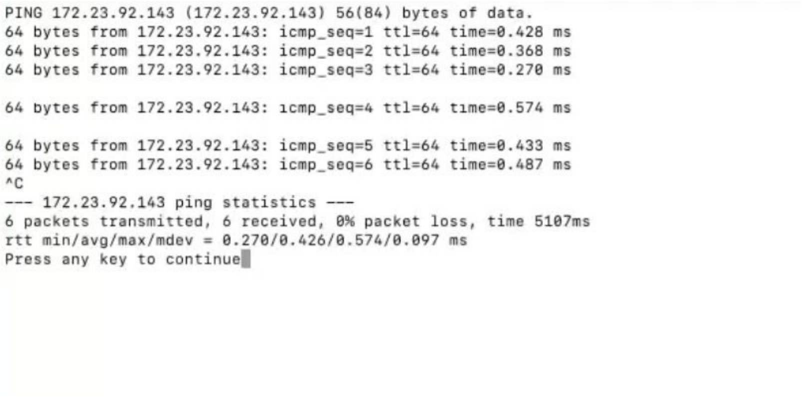
Step 1 From **Troubleshooting** menu, select **1 Ping a Host** and click **OK**.

Step 2 Enter the ping destination.



Step 3 Click **OK**.

Cisco Crosswork Data Gateway displays the result of the ping operation.



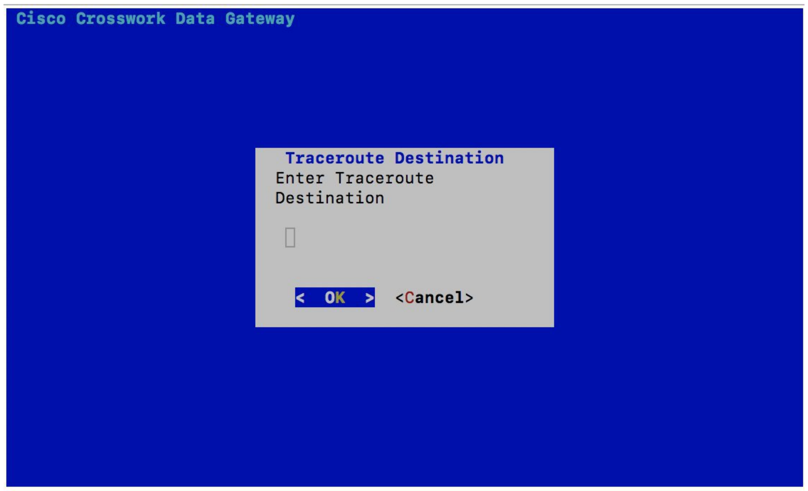
```
PING 172.23.92.143 (172.23.92.143) 56(84) bytes of data.
64 bytes from 172.23.92.143: icmp_seq=1 ttl=64 time=0.428 ms
64 bytes from 172.23.92.143: icmp_seq=2 ttl=64 time=0.368 ms
64 bytes from 172.23.92.143: icmp_seq=3 ttl=64 time=0.270 ms

64 bytes from 172.23.92.143: icmp_seq=4 ttl=64 time=0.574 ms

64 bytes from 172.23.92.143: icmp_seq=5 ttl=64 time=0.433 ms
64 bytes from 172.23.92.143: icmp_seq=6 ttl=64 time=0.487 ms
^C
--- 172.23.92.143 ping statistics ---
6 packets transmitted, 6 received, 0% packet loss, time 5107ms
rtt min/avg/max/mdev = 0.270/0.426/0.574/0.097 ms
Press any key to continue
```

Traceroute to a Host

Cisco Crosswork Data Gateway provides **Traceroute to a Host** option to help troubleshoot latency issues. Using this option provides you a rough time estimate for the Cisco Crosswork Data Gateway to reach the controller application.

Step 1 From **Troubleshooting** menu, select **2 Traceroute to a Host** and click **OK**.

Step 2 Enter the traceroute destination.



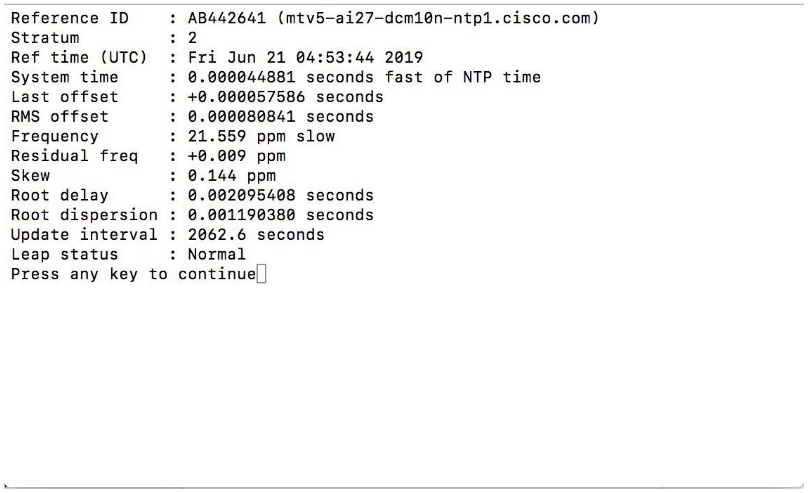
Step 3 Click **OK**.

Check NTP Status

Use this option to check the status of the NTP server.

Step 1 From **Troubleshooting** menu, select **3 NTP Status**.

Step 2 Click **OK**. The Cisco Crosswork Data Gateway displays the NTP server status.



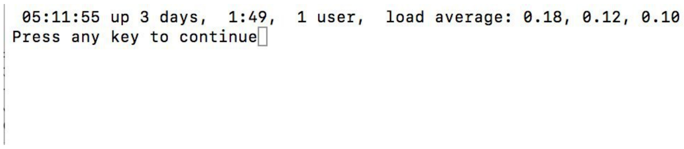
```
Reference ID    : AB442641 (mtv5-ai27-dcm10n-ntp1.cisco.com)
Stratum         : 2
Ref time (UTC)  : Fri Jun 21 04:53:44 2019
System time     : 0.000044881 seconds fast of NTP time
Last offset     : +0.000057586 seconds
RMS offset      : 0.000080841 seconds
Frequency       : 21.559 ppm slow
Residual freq   : +0.009 ppm
Skew            : 0.144 ppm
Root delay      : 0.002095408 seconds
Root dispersion : 0.001190380 seconds
Update interval : 2062.6 seconds
Leap status     : Normal
Press any key to continue
```

Check System Uptime

Use this option to check system uptime.

Step 1 From **Troubleshooting** menu, select **4 System Uptime**.

Step 2 Click **OK**. The Crosswork Data Gateway displays the system uptime.



```
 05:11:55 up 3 days,  1:49,  1 user,  load average: 0.18, 0.12, 0.10
Press any key to continue
```

Run show-tech

Cisco Crosswork Data Gateway provides the option **show_tech** to export its log files to a user-defined SCP destination.

The collected data includes the following:

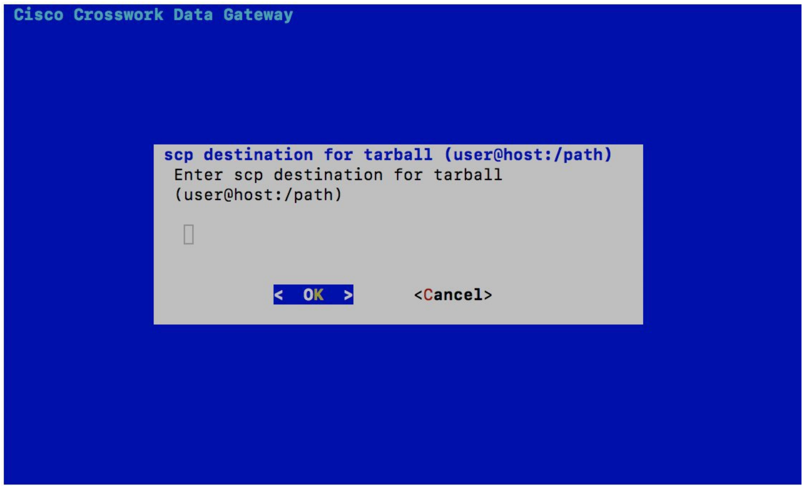
- Logs of all the Data Gateway components running on docker containers
- VM Vitals

It creates a tarball in the directory where it is executed. The output is a tarball named `CDG-<CDG-version>-year-month-day--hour-minute-second-*.tar.bz2`

The execution of this command may take several minutes depending on the state of Crosswork Data Gateway.

Step 1 From **Troubleshooting** menu, select **5 Show-tech** and click **OK**.

Step 2 Enter the destination to save the tarball containing logs and vitals.



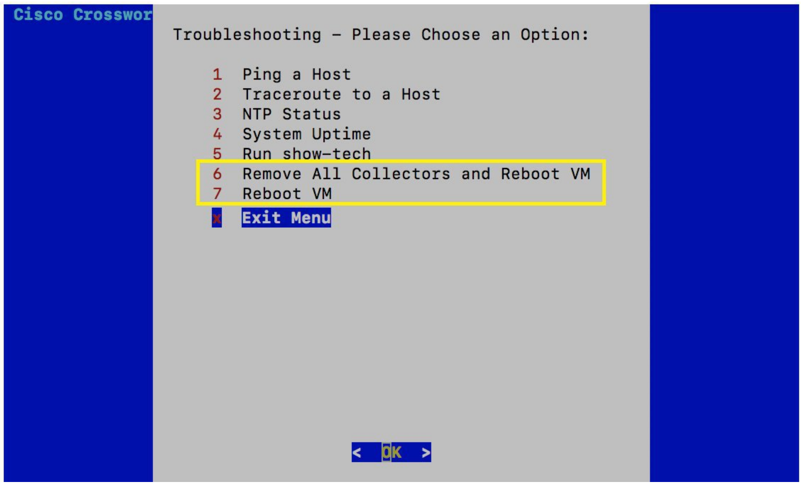
```
Cisco Crosswork Data Gateway

scp destination for tarball (user@host:/path)
 Enter scp destination for tarball
 (user@host:/path)
```

Step 3 Enter your SCP passphrase and click **OK**.

Reboot Crosswork Data Gateway VM

Note This task can only be performed by **dg-admin** user.

Crosswork Data Gateway gives you two options to reboot the VM:



```
Cisco Crosswor
    Troubleshooting - Please Choose an Option:

        1  Ping a Host
        2  Traceroute to a Host
        3  NTP Status
        4  System Uptime
        5  Run show-tech
        6  Remove All Collectors and Reboot VM
        7  Reboot VM
        x  Exit Menu

                    <  OK  >
```

- **Remove All Collectors and Reboot VM**: Select this option from the **Troubleshooting** menu if you want to remove all the collectors (functional images) and reboot VM.
- **Reboot VM**: Select this option from the **Troubleshooting** menu for a normal reboot.