Installation Tasks

This section contains the following topics:

- Install Cisco Crosswork Data Gateway, on page 1
- Cisco Crosswork Data Gateway Deployment Parameters and Scenarios, on page 2
- Install Crosswork Data Gateway Using vCenter vSphere Client, on page 10
- Install Crosswork Data Gateway Via OVF Tool, on page 16
- Install Crosswork Data Gateway on Cisco CSP, on page 18
- Generate Enrollment Package, on page 26
- Export Enrollment Package, on page 27

Install Cisco Crosswork Data Gateway

Cisco Crosswork Data Gateway is initially deployed as a VM called Base VM (containing only enough software to register itself with Crosswork Cloud). Crosswork Cloud orchestrates the collection from the distributed Cisco Crosswork Data Gateway VMs.

Based on the size of your network, you can deploy more than one Cisco Crosswork Data Gateway.

Cisco Crosswork Data Gateway Deployment and Set Up Workflow

To deploy and set up Cisco Crosswork Data Gateway for use with Crosswork Cloud, follows these steps:

1. Plan your installation. Refer to the topic Cisco Crosswork Data Gateway Deployment Parameters and Scenarios, on page 2 for information on deployment parameters and possible deployment scenarios.

2. Install Cisco Crosswork Data Gateway on your preferred platform:

VMware	Install Crosswork Data Gateway Using vCenter vSphere Client, on page 10
	Install Crosswork Data Gateway Via OVF Tool, on page 16
Cisco CSP	Install Crosswork Data Gateway on Cisco CSP, on page 18

3. Enroll Cisco Crosswork Data Gateway with Crosswork Cloud.

Note For procedure to enroll Cisco Crosswork Data Gateway with Crosswork Cloud applications, refer to the Section: Add Cisco Crosswork Data Gateway Information in Cisco Crosswork Cloud User Guide.

- Generate Enrollment Package, on page 26
- Export Enrollment Package, on page 27

In Cloud deployments, Cisco Crosswork Data Gateway must connect to the Internet via TLS, and a proxy server may be required if present in your environment. If there is a proxy server in the network, it needs to be configured either during the installation process or from the Interactive Menu after installation. See:

- Configure Control Proxy
- Verify the Crosswork Data Gateway Connectivity

Cisco Crosswork Data Gateway Deployment Parameters and Scenarios

Before you begin installing the Crosswork Data Gateway, go through this section to read about the deployment parameters and possible deployment scenarios.

Crosswork Data Gateway supports either IPv4 or IPv6 for all interfaces. Crosswork Cloud does not support dual stack configurations. Therefore, plan ALL addresses for the environment as either IPv4 or IPv6.

During installation, Cisco Crosswork Data Gateway creates two default user accounts:

- A Cisco Crosswork Data Gateway administrator, with the username, dg-admin and the password set during installation. The administrator uses this ID to log in to and troubleshoot Cisco Crosswork Data Gateway.
- A Cisco Crosswork Data Gateway operator, with the username, dg-oper and the password set during installation. This is a read-only user and has permissions to perform all ‘read’ operations and some limited ‘action’ commands.
- These two pre-defined usernames are reserved and cannot be changed.
- Change of password is allowed from the console for both the accounts. See Change Password.
- To know what operations an admin and operator can perform, see Section Supported User Roles.
- In case of lost or forgotten passwords, you will have to create a new VM, destroy the current VM, and re-enroll the new one on the Crosswork Cloud.

In the following table:

* Denotes the mandatory parameters. Others are optional. You can choose them based on the kind of deployment scenrio you require. Deployment scenarios are explained wherever applicable in the Additional Information column.

** Denotes parameters that can be entered during install or addressed using additional procedures.

Table 1: Cisco Crosswork Data Gateway Deployment Parameters and Scenarios

VMware Parameter	CSP Parameter	Description	Additional Information
Host Information			
Hostname*	`Hostname`	Name of the Cisco Crosswork Data Gateway VM specified as a fully qualified domain name (FQDN). **Note** For larger systems it is likely that you will have more than one Cisco Crosswork Data Gateway VM. The hostname must, therefore, be unique and created in a way that makes identifying a specific VM easy.	
Description*	`Description`	A detailed description of the Cisco Crosswork Data Gateway.	
Label	`Label`	Label used by Cisco Crosswork Cloud to categorize and group multiple Cisco Crosswork Data Gateways.	
Active vNICs	`ActiveVnics`	Number of vNICs to use for sending traffic.	You can choose to use either 1,2 or 3 interfaces as per your network requirements. For information on how you can route traffic, see Interfaces in the VM Requirements table.

VMware Parameter	CSP Parameter	Description	Additional Information
AllowRFC8190	`AllowRFC8190`	Allow interface address that falls in a usable RFC 8190 range. Select `yes`, `no` or `ask`. The default value is `yes`.	
Private Key URI	`DGCertKey`	SCP URI to private key file for session key signing. You can retrieve this using SCP (user@host:path/to/file).	Certificate chains override any preset or generated certificates in the Cisco Crosswork Data Gateway VM and are given as an SCP URI (user:host:/path/to/file). Crosswork Cloud uses self-signed certificates for handshake with Cisco Crosswork Data Gateway. These certificates are generated at installation. However, if you want to use third-party or your own certificate files, then you must input these three parameters. **Note** The host with the URI files must be reachable on the network (from the vNIC0 interface via SCP) and files must be present at the time of install.
Certificate File URI	`DGCertChain`	SCP URI to PEM formatted signing certificate chain for this VM. You can retrieve this using SCP (user@host:path/to/file).	
Certificate File and Key Passphrase	`DGCertChainPwd`	SCP user passphrase to retrieve the Cisco Crosswork Data Gateway PEM formatted certificate file and private key.	
Data Disk Size	`DGAppdataDisk`	Size in GB of a separate data disk. The default and minimum value is 20GB. Enter a value upto 70 GB.	
Passphrases			

VMware Parameter	CSP Parameter	Description	Additional Information
dg-admin Passphrase*	`dg-adminPassword`	The password you have chosen for the dg-admin user. Password must be 8-64 characters.	
dg-oper Passphrase*	`dg-operPassword`	The password you have chosen for the dg-oper user. Password must be 8-64 characters.	
Interfaces **Note** You must select either an IPv4 or IPv6 address. Selecting None in both vNICx IPv4 Method field and vNICx IPv6 Method field will result in a non-functional deployment.			
vNICx IPv4 Address (VNIC0, VNIC1 and VNIC2 based on the number of interfaces you chooose to use)			
vNICx IPv4 Method* For example, the parameter name for vNIC0 is vNIC0 IPv4 Method.	`VnicxIPv4Method` For example, the parameter name for vNIC0 is `Vnic0IPv4Method`.	How the vNICx interface gets its IPv4 address.	The default value for Method is None. If you choose to use IPv4 address, select Method as Static and enter information in Address, Netmask, Skip Gateway, and Gateway fields.
vNICx IPv4 Address	`VnicxIPv4Address`	IPv4 address of the vNICx interface.	
vNICx IPv4 Netmask	`VnicxIPv4Netmask`	IPv4 netmask of the vNICx interface in dotted quad format.	
vNICx IPv4 Skip Gateway	`VnicxIPv4SkipGateway`	Options are `yes` or `no`. Selecting `yes` skips configuring a gateway.	
vNICx IPv4 Gateway	`VnicxIPv4Gateway`	IPv4 address of the vNICx gateway.	
vNICx IPv6 Address (VNIC0, VNIC1 and VNIC2 based on the number of interfaces you chooose to use)			

VMware Parameter	CSP Parameter	Description	Additional Information
vNICx IPv6 Method* For example, the parameter for vNIC0 is vNIC0 IPv6 Method.	`VnicxIPv6Method` For example, the parameter for vNIC0 is `Vnic0IPv6Method`.	How the vNICx interface gets its IPv6 address.	The default value for Method is None. If you choose to use IPv6 address, select Method as Static and enter information in Address, Netmask, Skip Gateway, and Gateway fields.
vNICx IPv6 Address	`VnicxIPv6Address`	IPv6 address of the vNICx interface.	
vNICx IPv6 Netmask	`VnicxIPv6Netmask`	IPv6 prefix of the vNICx interface.	
vNICx IPv6 Skip Gateway	`VnicxIPv6SkipGateway`	Options are `yes` or `no`. Selecting `yes` skips configuring a gateway.	
vNICx IPv6 Gateway	`VnicxIPv6Gateway`	IPv6 address of the vNICx gateway.	
DNS Servers			
DNS Address*	`DNS`	Space-delimited list of IPv4/IPv6 addresses of the DNS server accessible from the management interface.	
DNS Search Domain*	`Domain`	DNS search domain	
DNS Security Extensions	`DNSSEC`	Use DNS security extensions?	
DNS over TLS	`DNSTLS`	Use DNS over TLS?	
Multicast DNS	`mDNS`	Use multicast DNS?	
Link-Local Multicast Name Resolution	`LLMNR`	Use link-local multicast name resolution?	
NTPv4 Servers			

VMware Parameter	CSP Parameter	Description	Additional Information
NTPv4 Servers*	`NTP`	Space-delimited list of IPv4/IPv6 addresses or hostnames of the NTPv4 servers accessible from the management interface.	You must enter a value here, such as pool.ntp.org. NTP server is critical for time synchronization between Cisco Crosswork Data Gateway, Crosswork Cloud, and devices. Using a non-functional or dummy address may cause issues when Crosswork Cloud and Cisco Crosswork Data Gateway try to communicate with each other. If you are not using an NTP server, ensure that time gap between Cisco Crosswork Data Gateway and Crosswork Cloud is not more than 24 hours. Else, Cisco Crosswork Data Gateway will fail to connect.
Use NTPv4 Authentication	`NTPAuth`	Use NTPv4 authentication?	
NTPv4 Keys	`NTPKey`	Space delimited Key IDs to map to server list.	
NTPv4 Key File URI	`NTPKeyFile`	SCP URI to the chrony key file.	
NTPv4 Key File Passphrase	`NTPKeyFilePwd`	Password of SCP URI to the chrony key file.	
Remote Syslog Servers			

VMware Parameter	CSP Parameter	Description	Additional Information
Use Remote Syslog Server?	`UseRemoteSyslog`	Send syslog messages to a remote host?	Configuring an external syslog server will send service events to the external syslog server. Otherwise, they are logged only to the Cisco Crosswork Data Gateway VM. If you want to use an external syslog server, you must specify these seven settings. **Note** The host with the URI files must be reachable on the network (from vNIC0 interface via SCP) and files must be present at the time of install.
Syslog Server Address	`SyslogAddress`	IPv4 or IPv6 address of a syslog server accessible from the management interface. **Note** If you are using an IPv6 addres, it must be surrounded by square brackets ([1::1]).	
Syslog Server Port	`SyslogPort`	Port number of the syslog server.	
Syslog Server Protocol	`SyslogProtocol`	Use UDP, TCP, or RELP when sending syslog.	
Use Syslog over TLS?	`SyslogTLS`	Use TLS to encrypt syslog traffic.	
Syslog TLS Peer Name	`SyslogPeerName`	Syslog server's hostname exactly as entered in the server certificate SubjectAltName or subject common name.	
Syslog Root Certificate File URI	`SyslogCertChain`	PEM formatted root cert of syslog server retrieved using SCP.	
Syslog Certificate File Passphrase	`SyslogCertChainPwd`	Password of SCP user to retrieve Syslog certificate chain.	
Remote Auditd Servers			

VMware Parameter	CSP Parameter	Description	Additional Information
Use Remote Auditd Server?	`UseRemoteAuditd`	Send Auditd message to a remote host?	If desired, you can configure an external remote auditd server to send change audit notifications when changes are made to the Cisco Crosswork Data Gateway VM. Specify these three settings to use an external Auditd server.
Auditd Server Address	`AuditdAddress`	Hostname, IPv4, or IPv6 address of an optional Auditd server	
Auditd Server Port	`AuditdPort`	Port number of an optional Auditd server.	
Controller Settings			
Proxy Server URL	`ProxyURL`	URL of management network proxy server.	In Cloud deployment, Cisco Crosswork Data Gateway must connect to the Internet via TLS, and a proxy server may be required if it is not present in your environment. If you want to use a proxy server, you must specify these parameters.
Proxy Server Bypass List	`ProxyBypass`	Space-delimited list of subnets and domains that will not be sent to the proxy server.	
Authenticated Proxy Username	`ProxyUsername`	Username for authenticated proxy servers.	
Authenticated Proxy Passphrase	`ProxyPassphrase`	Passphrase for authenticated proxy servers.	
HTTPS Proxy SSL/TLS Certificate File URI	`ProxyCertChain`	HTTPS proxy PEM formatted SSL/TLS certificate file retrieved using SCP.	
HTTPS Proxy SSL/TLS Certificate File Passphrase	`ProxyCertChainPwd`	Password of SCP user to retrieve proxy certificate chain.	
Auto Enrollment Package Transfer			

VMware Parameter	CSP Parameter	Description	Additional Information
Enrollment Destination Host and Path**	`EnrollmentURI`	SCP host and path to transfer the enrollment package using SCP (`user@host:/path/to/file`).	Enrollment package is required for enrolling Cisco Crosswork Data Gateway with Crosswork Cloud. If you specify these parameters during the installation, the enrollment package is automatically transferred to the local host once Cisco Crosswork Data Gateway boots up for the first time. If you do not specify these parameters during installation, then you must export enrollment package manually by following the procedure Export Enrollment Package, on page 27.
Enrollment Passphrase**	`EnrollmentPassphrase`	SCP user passphrase to transfer enrollment package.	

What do next: Proceed to installing the Cisco Crosswork Data Gateway VM.

Install Crosswork Data Gateway Using vCenter vSphere Client

Follow these steps to install Crosswork Data Gateway using vCenter vSphere Client:

Step 1 Refer to the Crosswork Data Gateway 2.0.x Release notes and download the recommended Crosswork Data Gateway image file from CCO (*.ova).

Warning The default VMware vCenter deployment timeout is 15 minutes. If the time taken to complete the OVF template deployment exceeds 15 minutes, vCenter times out and you will have to start over again. To prevent this, we recommend that you plan what you will enter by reviewing the template before you start the deployment.

Step 2 Connect to vCenter vSphere Client. Then select Actions > Deploy OVF Template.

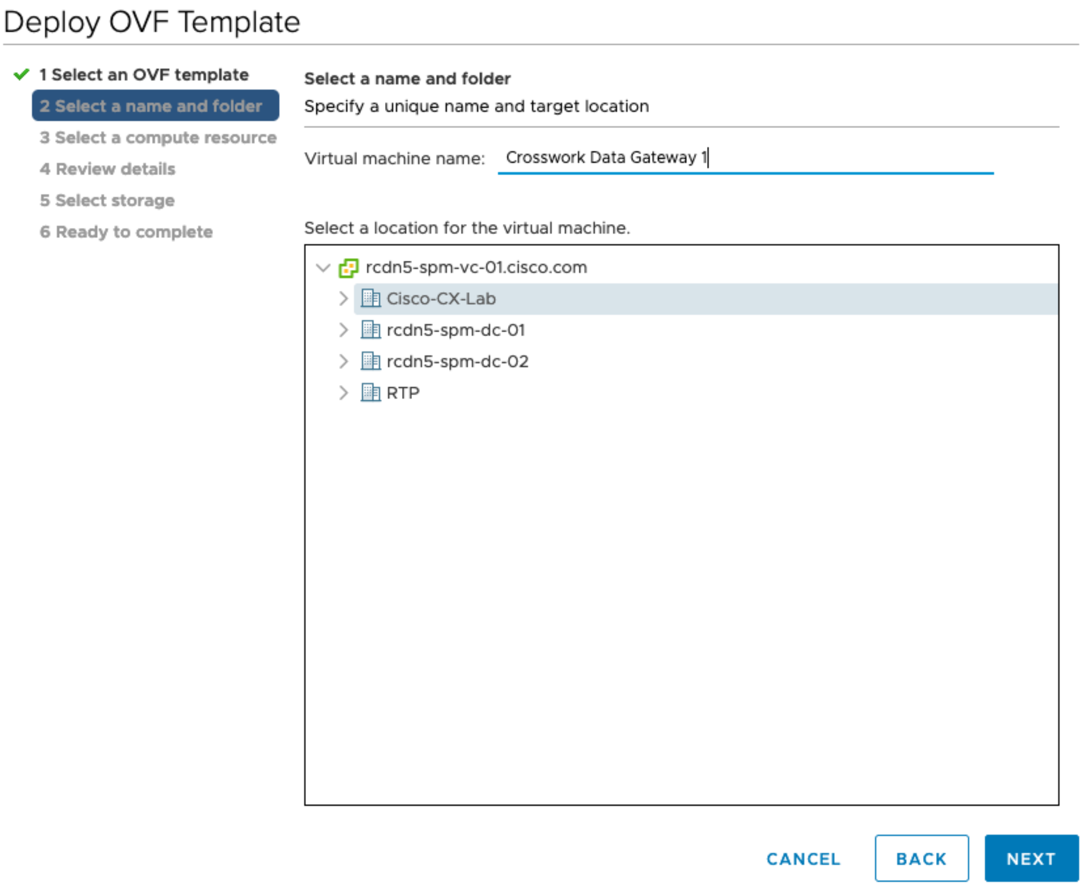
Step 3 The VMware Deploy OVF Template wizard appears and highlights the first step, 1 Select template.

a) Click Browse to navigate to the location where you downloaded the OVA image file and select it.

The filename is displayed in the window.

Step 4 Click Next to go to 2 Select name and location, as shown in the following figure.

a) Enter a name for the Cisco Crosswork Data Gateway VM you are creating.
b) In the Select a location for the virtual machine list, choose the datacenter under which the Cisco Crosswork Data Gateway VM resides.


Deploy OVF Template
✓ 1 Select an OVF template
2 Select a name and folder
3 Select a compute resource
4 Review details
5 Select storage
6 Ready to complete

Select a name and folder

Specify a unique name and target location

Virtual machine name: Crosswork Data Gateway 1

Select a location for the virtual machine.

Step 5 Click Next to go to 3 Select a resource. Choose the VM's host.

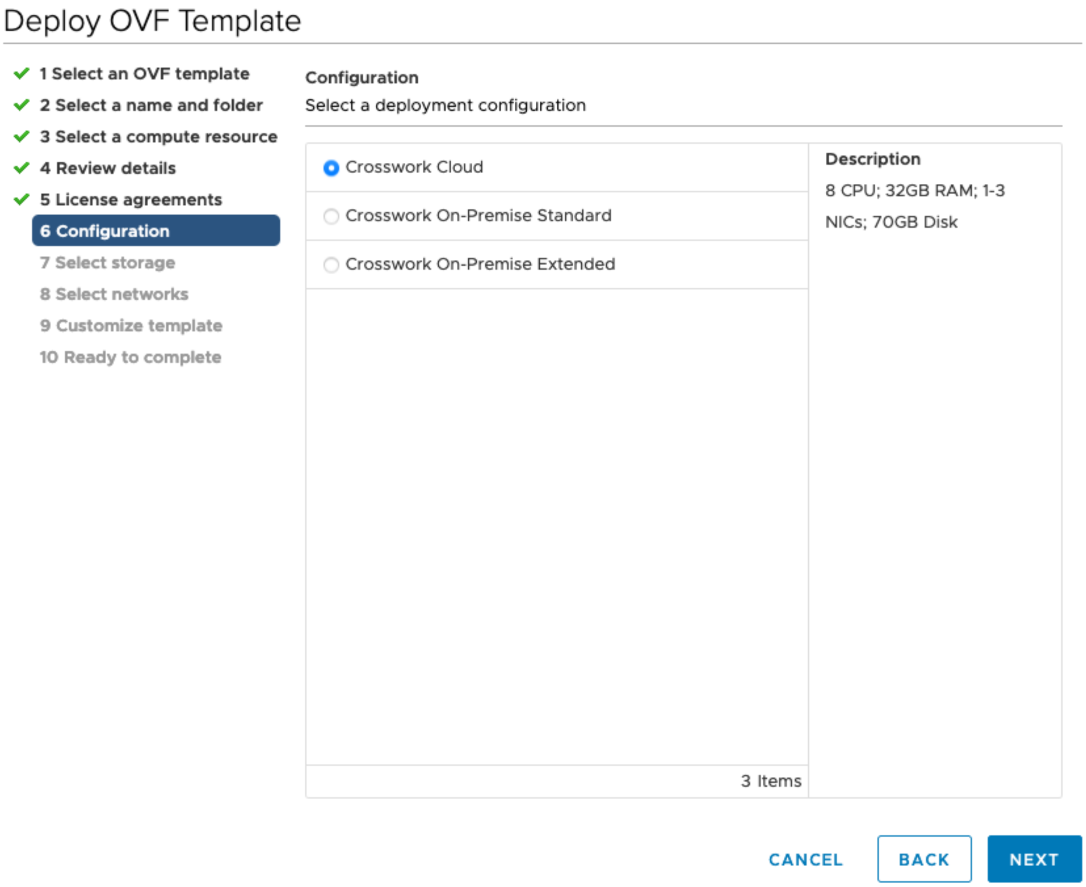
Step 6 Click Next. The VMware vCenter Server validates the OVA. The network speed determines how long the validation takes. When the validation is complete, the wizard moves to 4 Review details. Review the OVA's information and then click Next.

Take a moment to review the OVF template you are deploying.

Note This information is gathered from the OVF and cannot be modified.

Step 7 Click Next to go to 5 accept license agreements. Review the End User License Agreement and click Accept.

Step 8 Click Next to go to 6 Select configuration, as shown in the following figure. Select Crosswork Cloud.



Deploy OVF Template

- ✓ 1 Select an OVF template
- ✓ 2 Select a name and folder
- ✓ 3 Select a compute resource
- ✓ 4 Review details
- ✓ 5 License agreements
- 6 Configuration
- 7 Select storage
- 8 Select networks
- 9 Customize template
- 10 Ready to complete

Configuration

Select a deployment configuration

● Crosswork Cloud

○ Crosswork On-Premise Standard

○ Crosswork On-Premise Extended

3 Items

Description

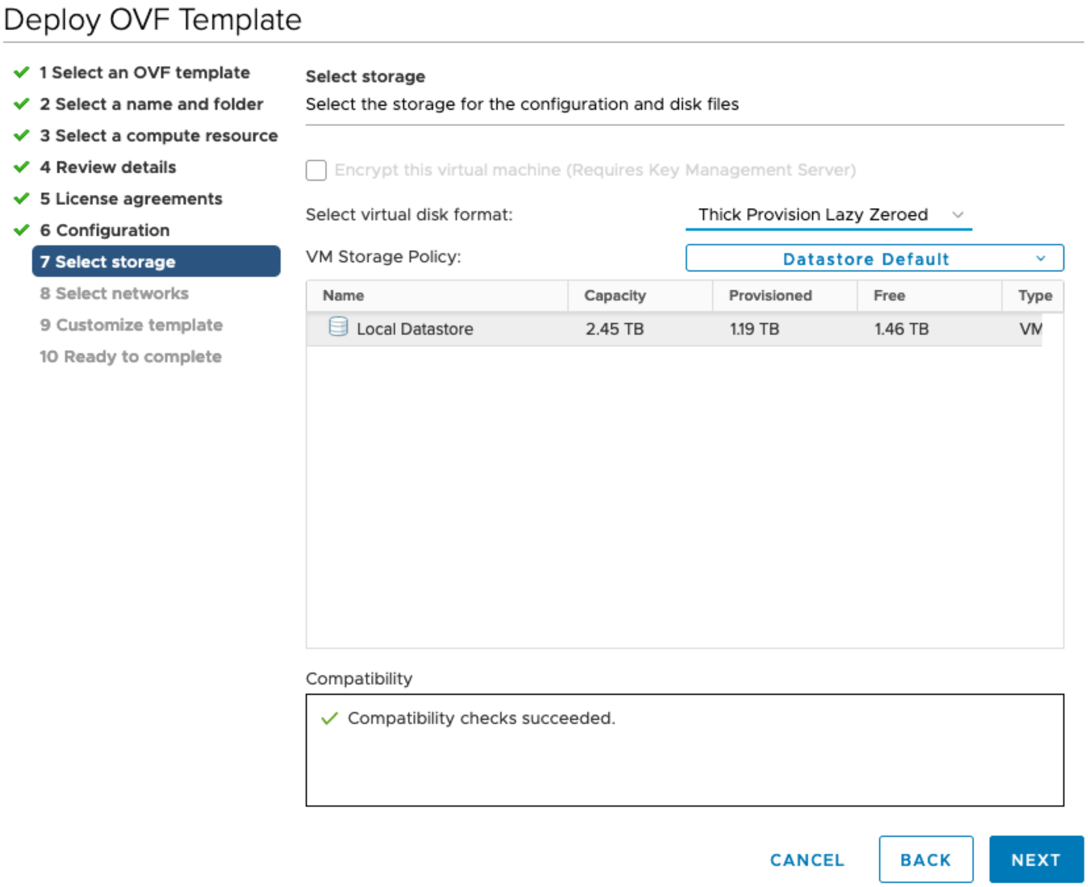
8 CPU; 32GB RAM; 1-3 NICs; 70GB Disk

Step 9 Click Next to go to 7 Select storage, as shown in the following figure.

a) In the Select virtual disk format field,

- For production environment, choose Thick provision lazy zeroed.
- For development environment, choose Thin provision.

b) From the Datastores table, choose the datastore you want to use and review its properties to ensure there is enough available storage.



Deploy OVF Template

- ✓ 1 Select an OVF template
- ✓ 2 Select a name and folder
- ✓ 3 Select a compute resource
- ✓ 4 Review details
- ✓ 5 License agreements
- ✓ 6 Configuration
- 7 Select storage
- 8 Select networks
- 9 Customize template
- 10 Ready to complete

Select storage

Select the storage for the configuration and disk files

□ Encrypt this virtual machine (Requires Key Management Server)

Select virtual disk format: Thick Provision Lazy Zeroed

VM Storage Policy: Datastore Default

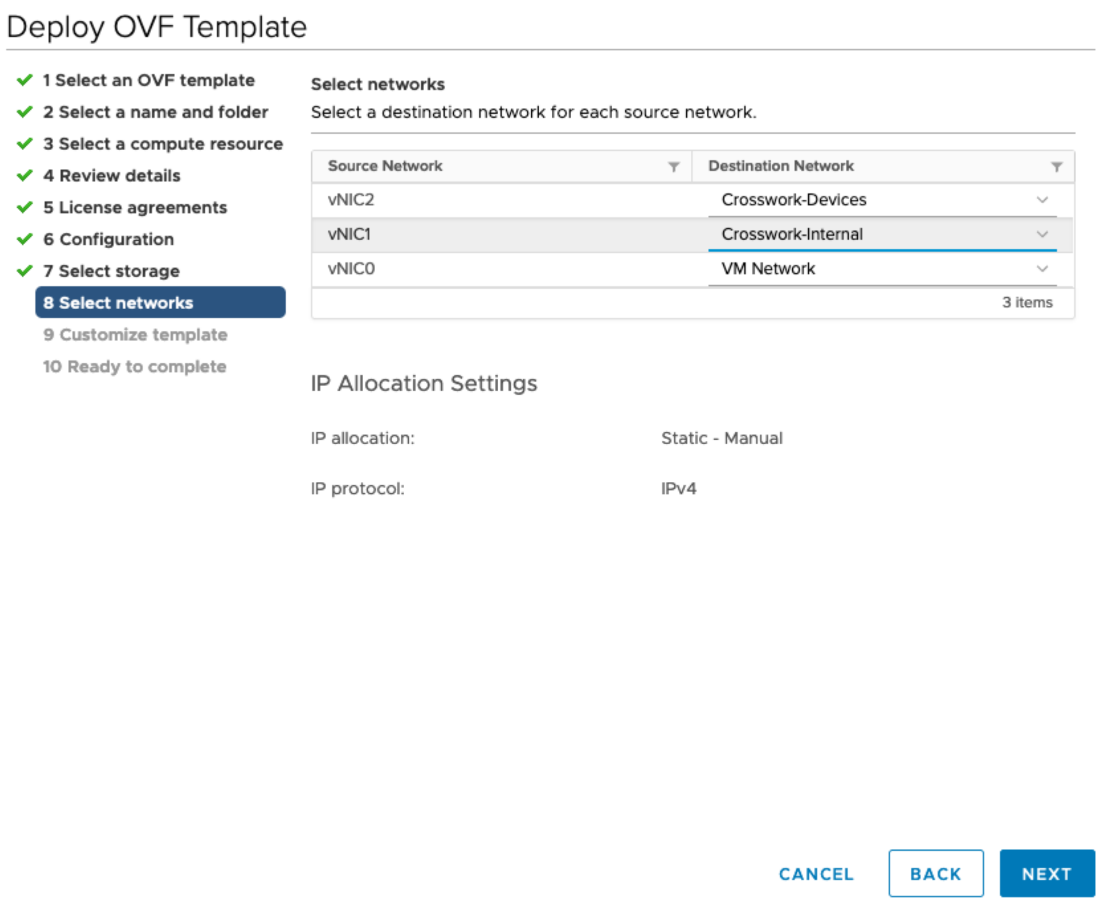
Name	Capacity	Provisioned	Free	Type
Local Datastore	2.45 TB	1.19 TB	1.46 TB	VM

Compatibility

✓ Compatibility checks succeeded.

Step 10 Click Next to go to 8 Select networks, as shown in the following figure. In the drop-down table at the top of the page, choose the appropriate destination network for each source network based on the number of vNICs you plan to use for vNIC0, vNIC1, and vNIC2.

Start with vNIC0 and select a destination network that will be used. Leave unused vNICs set to the default value.



Select networks

Select a destination network for each source network.

Source Network	Destination Network
vNIC2	Crosswork-Devices
vNIC1	Crosswork-Internal
vNIC0	VM Network

3 items

IP Allocation Settings

IP allocation:	Static - Manual
IP protocol:	IPv4

Step 11 Click Next to go to 9 Customize template, with the Host Information Settings already expanded.

> **Note** For larger systems it is likely that you will have more than one Cisco Crosswork Data Gateway VM. The Cisco Crosswork Data Gateway hostname should, therefore, be unique and created in a way that makes identifying a specific VM easy.

Enter the information for the parameters as described in Cisco Crosswork Data Gateway Deployment Parameters and Scenarios, on page 2.

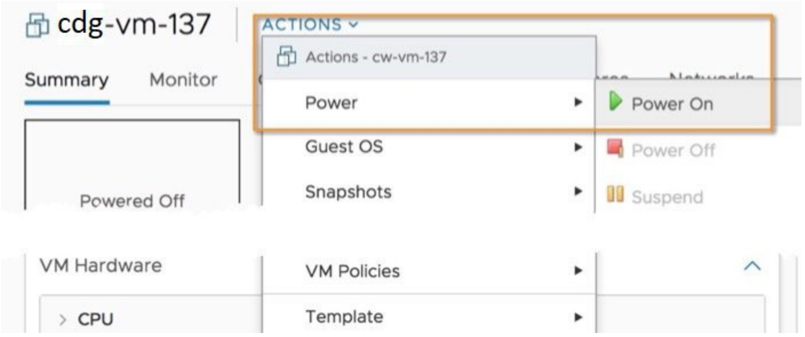
Step 12 Click Next to go to 10 Ready to complete. Review your settings and then click Finish if you are ready to begin deployment.

Step 13 Check deployment status.

a) Open the vCenter vSphere client.

b) In the Recent Tasks tab for the host VM, view the status for the Deploy OVF template and Import OVF package jobs.

Step 14 After the deployment status becomes 100%, power on the VM to complete the deployment process. Expand the host’s entry so you can click the VM and then choose Actions > Power > Power On, as shown in the following figure:



Wait for at least five minutes for the VM to come up and then login through vCenter or SSH.

Warning Changing the VM's network settings in vCenter may have significant unintended consequences, including but not limited to the loss of static routes and connectivity. Make any changes to these settings at your own risk. If you wish to change the IP address, destroy the current VM, create a new VM, and re-enroll the new one on the Crosswork Cloud.

What to do next

Login to Crosswork Data Gateway VM Via vCenter:

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

Access Cisco Crosswork Data Gateway VM Via SSH:

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.

1. From your work station with network access to the Cisco Crosswork Data Gateway management IP, run the following command:

   ssh <username>@<ManagementNetworkIP>

   where ManagementNetworkIP is the management network IP address in an IPv4 or IPv6 address format.

   For example,

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

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

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

If you are unable to access the Cisco Crosswork Data Gateway VM, there is an issue with your network configuration settings. From the console check the network settings. If they are incorrect, it is best to delete the Cisco Crosswork Data Gateway VM and re-install with the correct network settings.

Install Crosswork Data Gateway Via OVF Tool

You can modify mandatory/optional parameters in the command/script as per your requirement and run the OVF Tool. See Cisco Crosswork Data Gateway Deployment Parameters and Scenarios, on page 2 .

Below is a sample script if you are planning to run the OVF tool with a script:

```
#!/usr/bin/env bash

# robot.ova path

DG_OVA_PATH="<mention the orchestrator path>"

VM_NAME="dg-141"
DM="thin"
Deployment="cloud"

ActiveVnics="2"

Hostname="Hostname"
Vnic0IPv4Address="<Vnic0_ipv4_address>"
Vnic0IPv4Gateway="<Vnic0_ipv4_gateway>"
Vnic0IPv4Netmask="<Vnic0_ipv4_netmask>"
Vnic0IPv4Method="Static"
Vnic1IPv4Address="<Vnic1_ipv4_address>"
Vnic1IPv4Gateway="<Vnic1_ipv4_gateway>"
Vnic1IPv4Netmask="<Vnic1_ipv4_netmask>"
Vnic1IPv4Method="Static"

DNS="<DNS_ip_address>"
NTP="<NTP Server>"
Domain="cisco.com"


Description="Description for Cisco Crosswork Data Gatewayi : "dg-141""
Label="Label for Cisco Crosswork Data Gateway dg-141"

dg_adminPassword="<dg-admin_password>"
dg_operPassword="<dg-oper_password>"

EnrollmentURI="<enrollment_package_URI>"
EnrollmentPassphrase="<password>"

ProxyUsername="<username_for_proxy>"
ProxyPassphrase="<password_for_proxy>"

SyslogAddress="<syslog_server_address>"
SyslogPort=<syslog_server_port>
SyslogProtocol="<syslog_server_protocol>"
SyslogTLS=False
SyslogPeerName="<syslog_server_peer_name>"
SyslogCertChain="<syslog_server_root_certificate>"
SyslogCertChainPwd="<password>"

# Please replace this information according to your vcenter setup
VCENTER_LOGIN="<vCenter login details>"
VCENTER_PATH="<vCenter path>"
DS="<DS details>"

ovftool --acceptAllEulas --X:injectOvfEnv --skipManifestCheck --overwrite --noSSLVerify
--powerOffTarget --powerOn \
--datastore="$DS" --diskMode="$DM" \
--name=$VM_NAME \
--net:"vNIC0=VM Network" \
--net:"vNIC1=DPortGroupVC-1" \
--deploymentOption=$Deployment \
--prop:"EnrollmentURI=$EnrollmentURI" \
--prop:"EnrollmentPassphrase=$EnrollmentPassphrase" \
--prop:"Hostname=$Hostname" \
--prop:"Description=$Description" \
--prop:"Label=$Label" \
--prop:"ActiveVnics=$ActiveVnics" \
--prop:"Vnic0IPv4Address=$Vnic0IPv4Address" \
--prop:"Vnic0IPv4Gateway=$Vnic0IPv4Gateway" \
--prop:"Vnic0IPv4Netmask=$Vnic0IPv4Netmask" \
--prop:"Vnic0IPv4Method=$Vnic0IPv4Method" \
--prop:"Vnic1IPv4Address=$Vnic1IPv4Address" \
--prop:"Vnic1IPv4Gateway=$Vnic1IPv4Gateway" \
--prop:"Vnic1IPv4Netmask=$Vnic1IPv4Netmask" \
--prop:"Vnic1IPv4Method=$Vnic1IPv4Method" \
--prop:"DNS=$DNS" \
--prop:"NTP=$NTP" \
--prop:"dg-adminPassword=$dg_adminPassword" \
--prop:"dg-operPassword=$dg_operPassword" \
--prop:"Domain=$Domain" $DG_OVA_PATH "vi://$VCENTER_LOGIN/$VCENTER_PATH"
```

Step 1 Open a command prompt.

Step 2 Open the template file and edit it to match the settings you chose for the Cisco Crosswork Data Gateway.

Step 3 Navigate to the location where you installed the OVF Tool.

Step 4 Run the OVF Tool in one of the following ways:

a) Using the command

Execute the following command.

This command contains the location of the source OVF file and location of the vmx file that will be created as a result of executing the command:

```
ovftool <location_of_source_ovf_file> <location_of_vmx_file>
```

For example,

```
ovftool --acceptAllEulas --skipManifestCheck --X:injectOvfEnv -ds="datastore130-2"
 --deploymentOption="cloud" --diskMode="thin" --overwrite --powerOffTarget --powerOn
--noSSLVerify --allowExtraConfig --extraConfig:firmware=efi
--extraConfig:uefi.secureBoot.enabled=true --name="cdg147.cisco.com"
--prop:"Hostname=cdg147.cisco.com" --prop:"Description=CDG Base VM for Automation"
--net:"vNIC0=VM Network" --prop:"Vnic0IPv4Method=Static"
--prop:"Vnic0IPv4Address=<vNIC 0 IPv4 address>" --prop:"Vnic0IPv4Netmask=<vNIC0 IPv4 netmask>"
--prop:"Vnic0IPv4Gateway=<vNIC 0 IPv4 gateway>" --net:"vNIC1=DPG991"
--prop:"Vnic1IPv4Method=Static" --prop:"Vnic1IPv4Address=<vNIC1 IPv4 address>"
--prop:"Vnic1IPv4Netmask=<vNIC1 IPv4 netmask>" --prop:"Vnic1IPv4Gateway=<vNIC1 IPv4 gateway>"
--net:"vNIC2=DPG999" --prop:"dg-adminPassword=<password>"
--prop:"dg-operPassword=<password>" --prop:"DNS=<DNS address>"
--prop:"NTP=<NTP>"
--prop:"Domain=cisco.com" <image download URL> <username><password>'@<IP address>/DC/host/<IP
address>
```

b) Using the script

If you want to execute the script that you have created containing the command and arguments:

```
root@cxcloudctrl:/opt# ./cdgovfdeployVM197
```

What to do next

Login to Crosswork Data Gateway VM Via vCenter:

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

Access Cisco Crosswork Data Gateway VM Via SSH:

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.

1. From your work station with network access to the Cisco Crosswork Data Gateway management IP, run the following command:

   ssh <username>@<ManagementNetworkIP>

   where ManagementNetworkIP is the management network IP address in an IPv4 or IPv6 address format.

   For example,

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

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

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

If you are unable to access the Cisco Crosswork Data Gateway VM, there is an issue with your network configuration settings. From the console check the network settings. If they are incorrect, it is best to delete the Cisco Crosswork Data Gateway VM and re-install with the correct network settings.

Install Crosswork Data Gateway on Cisco CSP

Follow the steps to install Crosswork Data Gateway on Cisco CSP:

Step 1 Prepare Crosswork Data Gateway Service Image for upload to Cisco CSP:

a) Download and extract the Crosswork Data Gateway `qcow2` build from CCO to your local machine or a location on your local network that is accessible to your Cisco CSP.

   The build is a tarball of the `qcow2` and `config.txt` files.

b) Open the `config.txt` file and modify the parameters as per your installation requirements. Refer to the section Cisco Crosswork Data Gateway Deployment Parameters and Scenarios, on page 2.

   Note If you plan to install more than one Data Gateway VM, create a unique `config.txt` file for each Data Gateway VM.

Following parameters have pre-defined values:

- Deployment
    - Use "cloud".

Below is an example of how the `config.txt` file looks like:

```
ActiveVnics=
AuditdAddress=
AuditdPort=
Deployment=cloud
Description=
DGAppdataDisk=
DGCertChain=
DGCertChainPwd=
DGCertKey=
DNS=changeme
DNSSEC=False
DNSTLS=False
Domain=changeme
EnrollmentPassphrase=
EnrollmentURI=
Hostname=changeme
Label=
LLMNR=False
mDNS-False
NTP=changeme
NTPAuth=False
NTPKey=
NTPKeyFile=
NTPKeyFilePwd=
Profile=Standard
ProxyBypass=
ProxyCertChain=
ProxyCertChainPwd=
ProxyPassphrase=
ProxyURL=
ProxyUsername=
SyslogAddress=
SyslogCertChain=
SyslogCertChainPwd=
SyslogPeerName=
SyslogPort=514
SyslogProtocol=UDP
SyslogTLS=False
UseRemoteAuditd=False
UseRemoteSyslog=False
Vnic0IPv4Address=0.0.0.0
Vnic0IPv4Gateway=0.0.0.1
Vnic0IPv4Method=None
Vnic0IPv4Netmask=0.0.0.0
Vnic0IPv6Address=::0
Vnic0IPv6Gateway=::1
Vnic0IPv6Method=None
Vnic0IPv6Netmask=64
Vnic1IPv4Address=0.0.0.0
Vnic1IPv4Gateway=0.0.0.1
Vnic1IPv4Method=None
Vnic1IPv4Netmask=0.0.0.0
Vnic1IPv6Address=::0
Vnic1IPv6Gateway=::1
Vnic1IPv6Method=None
Vnic1IPv6Netmask=64
```

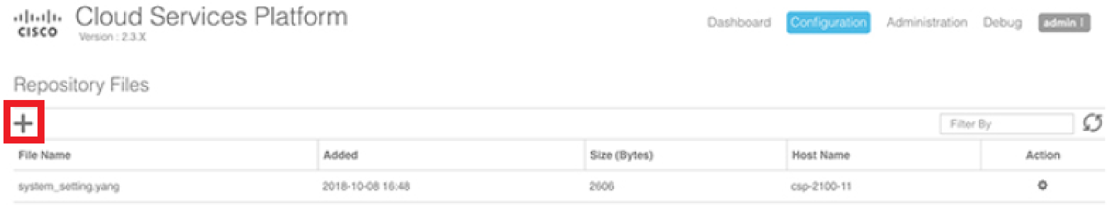
```
Vnic2IPv4Address=0.0.0.0
Vnic2IPv4Gateway=0.0.0.1
Vnic2IPv4Method=None
Vnic2IPv4Netmask=0.0.0.0
Vnic2IPv6Address=::0
Vnic2IPv6Gateway=::1
Vnic2IPv6Method=None
Vnic2IPv6Netmask=64
dg-adminPassword=changeme
dg-operPassword=changeme
```

Step 2 Upload Crosswork Data Gateway Service Image to Cisco CSP:

a) Log in to the Cisco CSP.

b) Go to Configuration > Repository.

c) On the Repository Files page, Click Crosswork Data Gateway button.

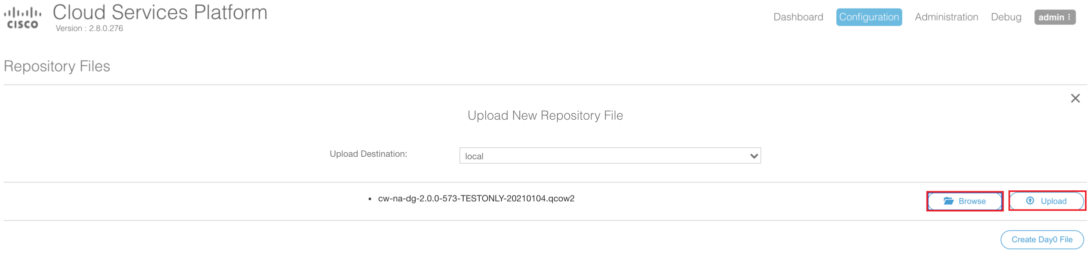


File Name	Added	Size (Bytes)	Host Name	Action
system_setting.yang	2018-10-08 16:48	2606	csp-2100-11	⚙

d) Select an Upload Destination.

e) Click Browse, navigate to the `qcow2` file, click Open and then Upload.

Repeat this step to upload `config.txt` file.



Upload Destination: local

- cw-na-dg-2.0.0-573-TESTONLY-20210104.qcow2

After the files are uploaded, file name and other relevant information is displayed in the Repository Files table.

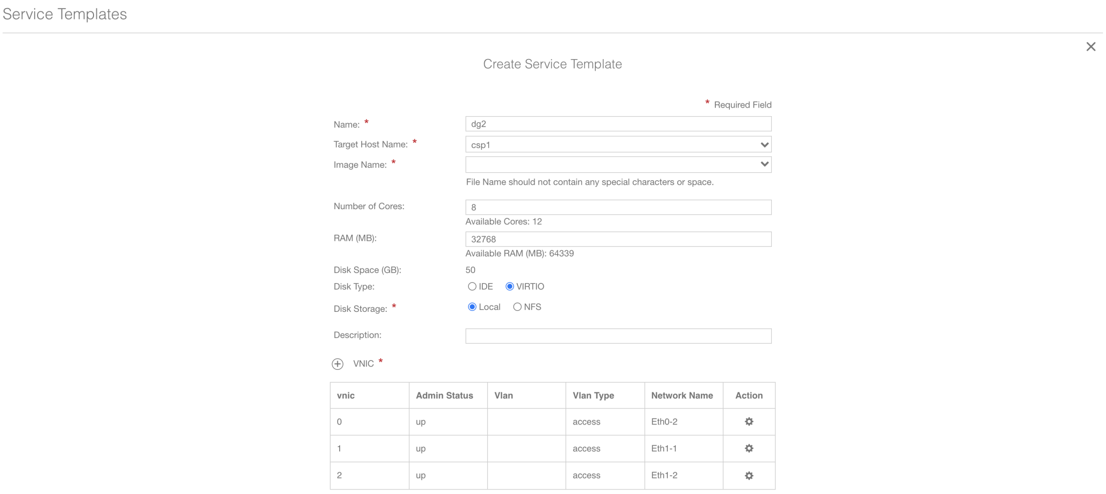
Step 3 Create Crosswork Data Gateway Service:

a) Go to Configuration > Services.

b) On the Service page, click ⊞ button.

c) Check Create Service option.

The Create Service Template page is displayed.



Service Templates

Create Service Template

* Required Field

Name: * dg2

Target Host Name: * csp1

Image Name: *

File Name should not contain any special characters or space.

Number of Cores: 8

Available Cores: 12

RAM (MB): 32768

Available RAM (MB): 64339

Disk Space (GB): 50

Disk Type: ○ IDE ● VIRTIO

Disk Storage: * ● Local ○ NFS

Description:

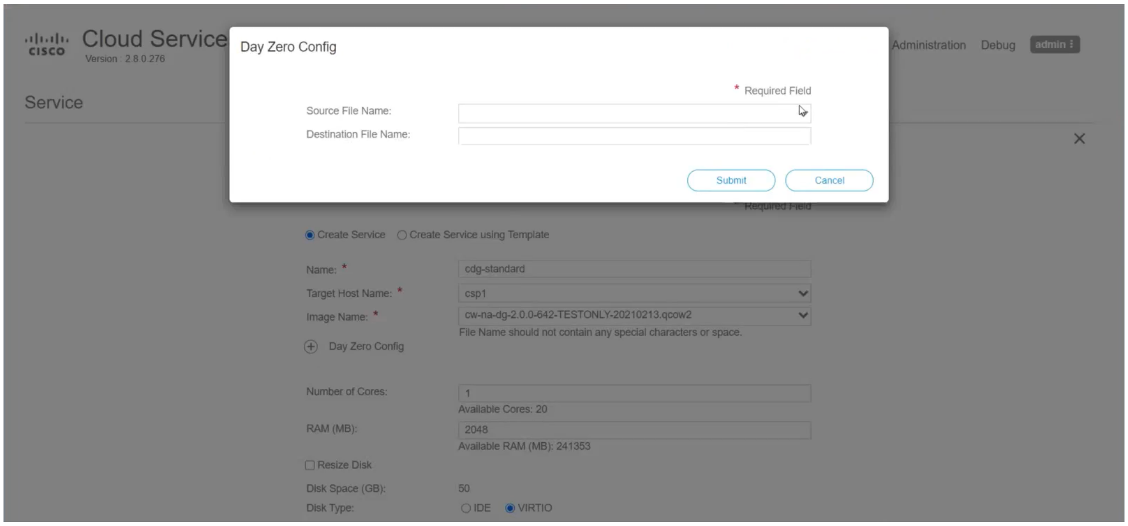
VNIC *

vnic	Admin Status	Vlan	Vlan Type	Network Name	Action
0	up		access	Eth0-2	⚙
1	up		access	Eth1-1	⚙
2	up		access	Eth1-2	⚙

d) Enter the values for the following fields:

Field	**Description**
Name	Name of the VM.
Target Host Name	Choose the target host on which you want to deploy the VM.
Image Name	Select the `qcow2` image.

e) Click Day Zero Config.



Day Zero Config

* Required Field

Source File Name:

Destination File Name:

● Create Service ○ Create Service using Template

Name: * cdg-standard

Target Host Name: * csp1

Image Name: * cw-na-dg-2.0.0-642-TESTONLY-20210213.qcow2

File Name should not contain any special characters or space.

Day Zero Config

Number of Cores: 1

Available Cores: 20

RAM (MB): 2048

Available RAM (MB): 241353

□ Resize Disk

Disk Space (GB): 50

Disk Type: ○ IDE ● VIRTIO

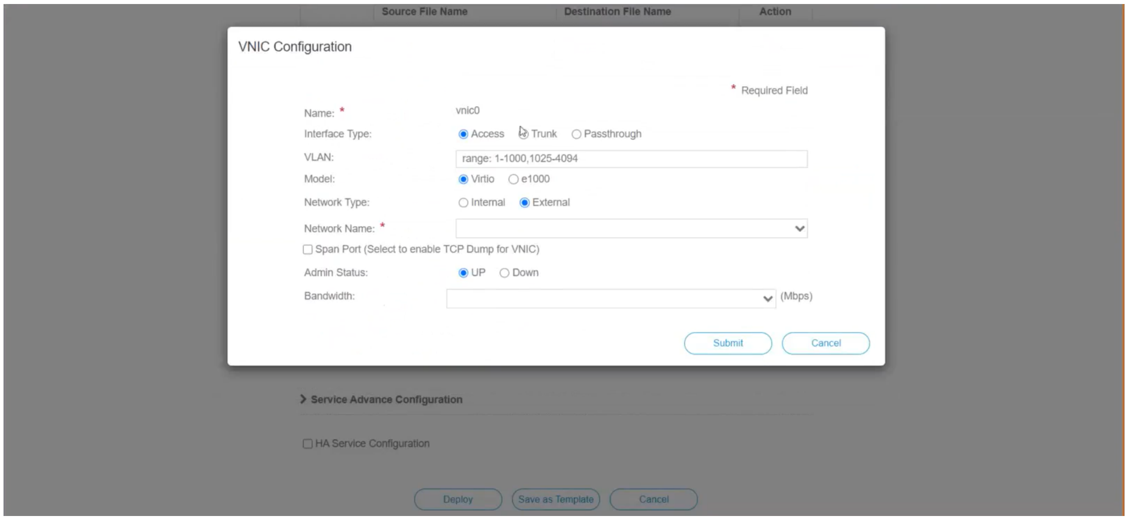
In the Day Zero Config dialog box, do the following:

1. From the Source File Name drop-down list, select the `config.txt` file that you modifed and uploaded earlier.
2. In the Destination File Name field, enter "config.txt".
3. Click Submit.

f) Enter the values for the following fields:

Field	Description
Number of Cores	8
RAM (MB)	32768

g) Click VNIC.



VNIC Configuration

* Required Field

Name: * vnic0

Interface Type: ● Access ○ Trunk ○ Passthrough

VLAN: range: 1-1000,1025-4094

Model: ● Virtio ○ e1000

Network Type: ○ Internal ● External

Network Name: *

□ Span Port (Select to enable TCP Dump for VNIC)

Admin Status: ● UP ○ Down

Bandwidth: (Mbps)

In the VNIC Configuration dialog box:

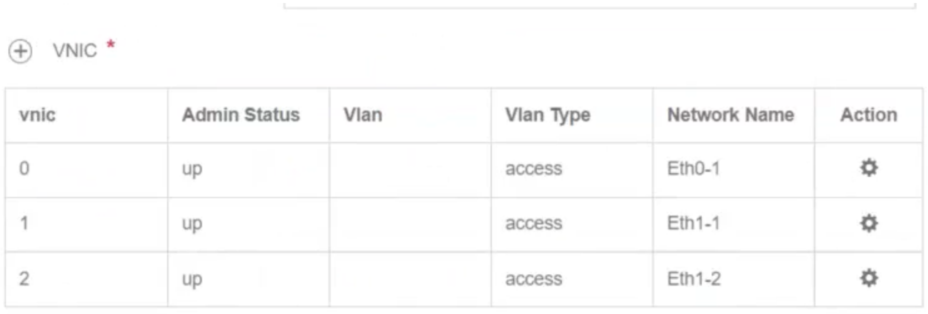
Note The VNIC Name is set by default.

1. Select the Interface Type as Access.
2. Select the Model as Virtio.
3. Select the Network Type as External.
4. Refer to the following table and select the Network Name:

For VNIC...	Select...
vnic0	Eth0-1
vnic1	Eth1-1
vnic2	Eth1-2

5. Select Admin Status as UP.
6. Click Submit.
7. Repeat Step g for VNIC1 and VNIC2 if you plan to have more than one VNIC in your network.

After you have added all three VNICs, the VNIC table will look like this:

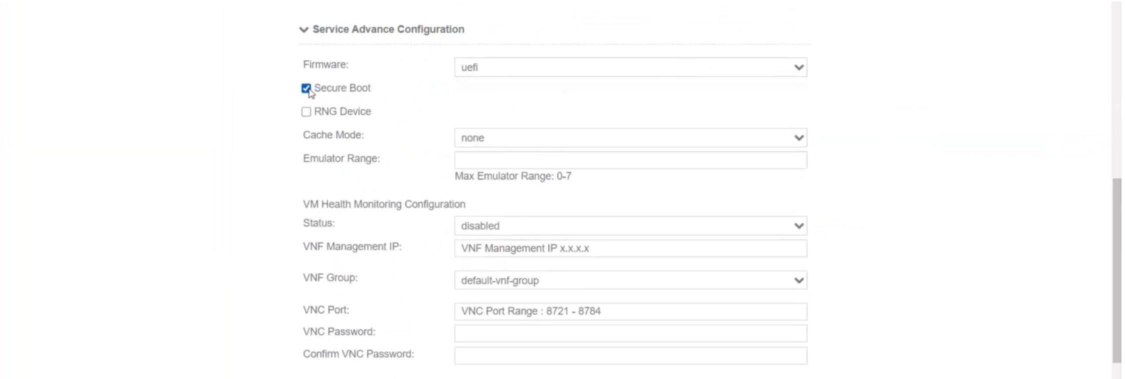


⊕ VNIC *

vnic	Admin Status	Vlan	Vlan Type	Network Name	Action
0	up		access	Eth0-1	⚙
1	up		access	Eth1-1	⚙
2	up		access	Eth1-2	⚙

h) Expand the Service Advance Configuration and for Firmware, select uefi from the drop-down.

Check the Secure Boot checkbox.



Service Advance Configuration

Firmware: uefi

☑ Secure Boot

□ RNG Device

Cache Mode: none

Emulator Range:

Max Emulator Range: 0-7

VM Health Monitoring Configuration

Status: disabled

VNF Management IP: VNF Management IP x.x.x.x

VNF Group: default-vnf-group

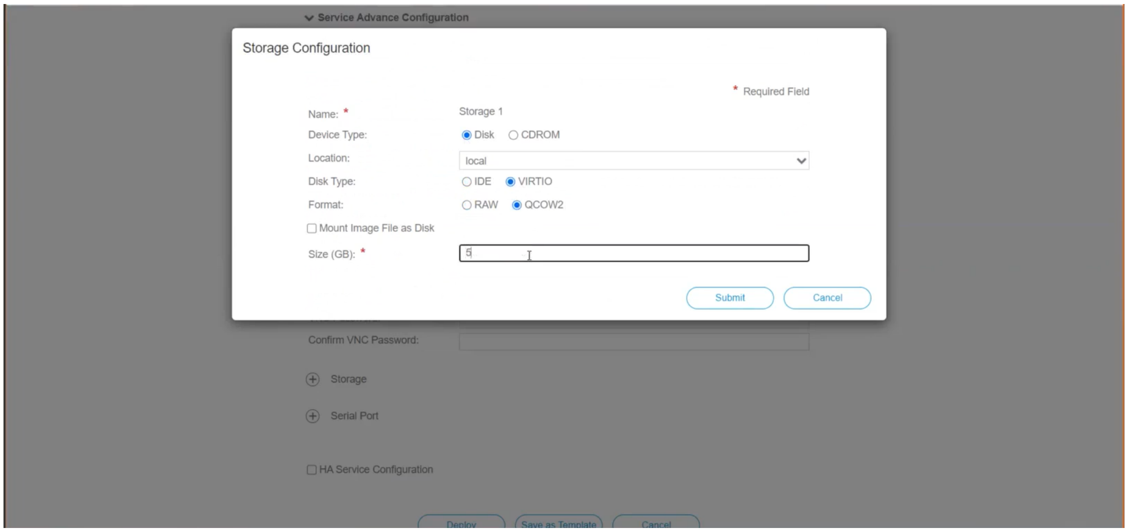
VNC Port: VNC Port Range : 8721 - 8784

VNC Password:

Confirm VNC Password:

i) Click Storage.

In the Storage Configuration dialog box, do the following:



Service Advance Configuration

Storage Configuration

* Required Field

Name: * Storage 1

Device Type: ● Disk ○ CDROM

Location: local

Disk Type: ○ IDE ● VIRTIO

Format: ○ RAW ● QCOW2

□ Mount Image File as Disk

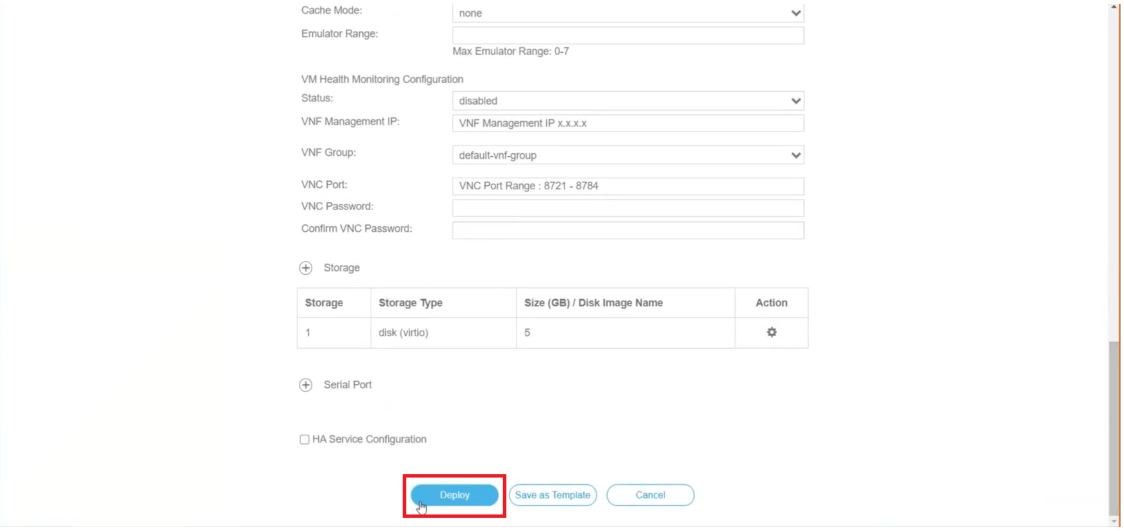
Size (GB): * 5

Field	Description
Name	Name of the storage. This is specified by default.

Field	Description
Device Type	Select Disk.
Location	Select local.
Disk Type	Select VIRTIO.
Format	Select QCOW2.
Mount image file as disk?	Leave this unchecked.
Size (GB)	Enter the disk size as 70GB.

When you are done with the storage configuration, click Submit.

j) Click Deploy.



Cache Mode: none
Emulator Range:
Max Emulator Range: 0-7

VM Health Monitoring Configuration
Status: disabled
VNF Management IP: VNF Management IP x.x.x.x
VNF Group: default-vnf-group
VNC Port: VNC Port Range : 8721 - 8784
VNC Password:
Confirm VNC Password:

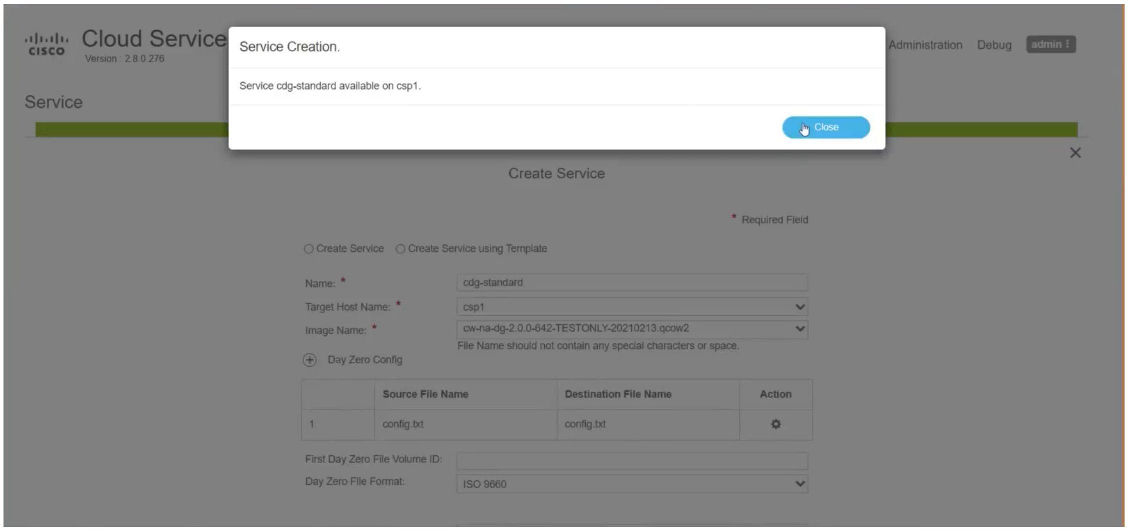
⊕ Storage

Storage	Storage Type	Size (GB) / Disk Image Name	Action
1	disk (virtio)	5	⚙

⊕ Serial Port

□ HA Service Configuration

You will see a similar message once the service has successfully deployed. Click Close.



Service Creation.

Service cdg-standard available on csp1.

Create Service

* Required Field

○ Create Service ○ Create Service using Template

Name: * cdg-standard
Target Host Name: * csp1
Image Name: * cw-na-dg-2.0.0-642-TESTONLY-20210213.qcow2
File Name should not contain any special characters or space.

⊕ Day Zero Config

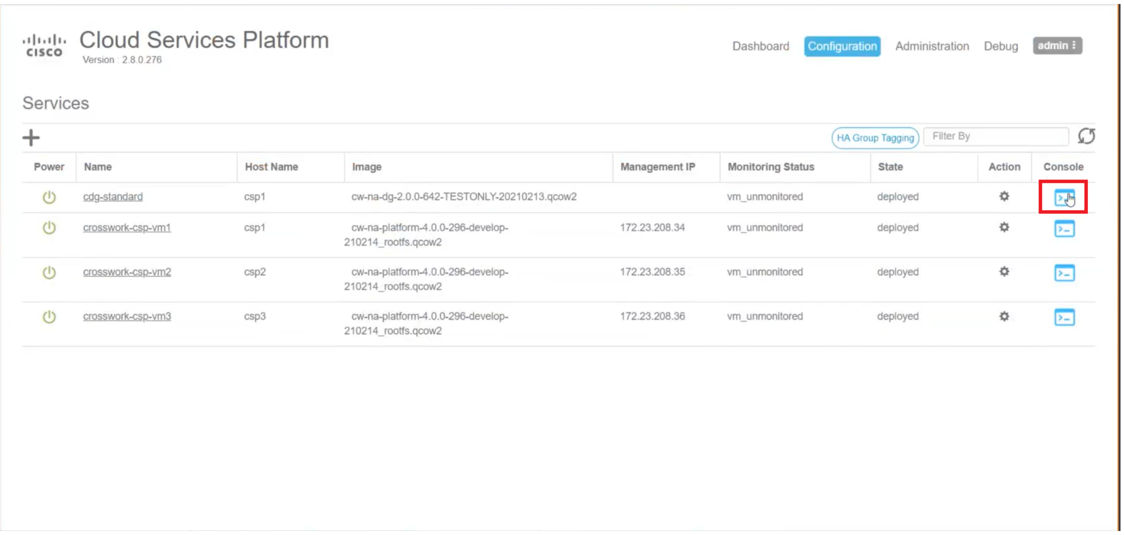
	Source File Name	Destination File Name	Action
1	config.txt	config.txt	⚙

First Day Zero File Volume ID:
Day Zero File Format: ISO 9660

Step 4 Deploy Crosswork Data Gateway service:

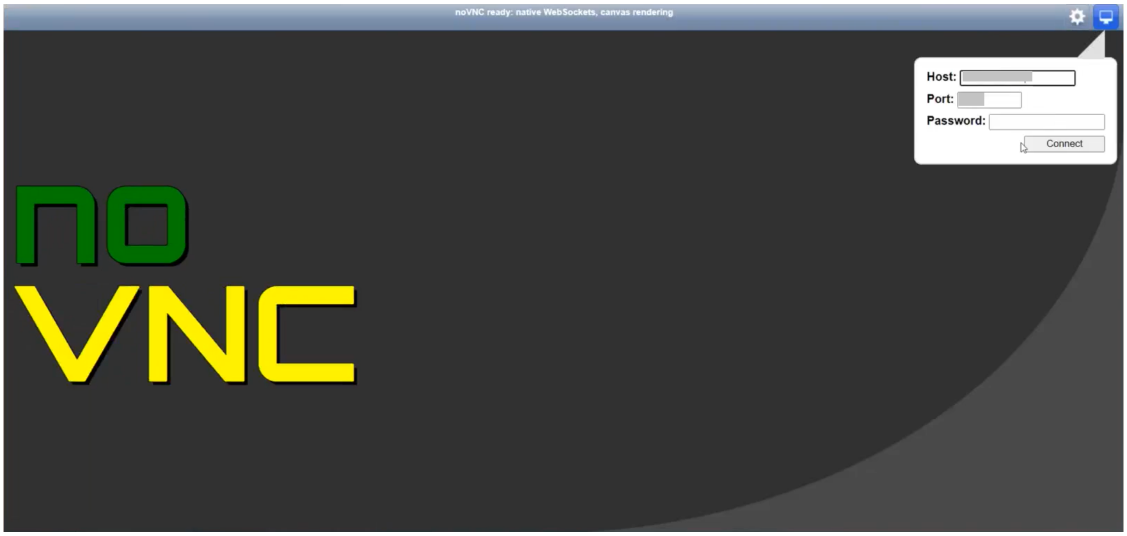
a) Go to Configuration > Services.

b) In the Services table, click the console icon under Console column for the Crossword Data Gateway service you created above.



Power	Name	Host Name	Image	Management IP	Monitoring Status	State	Action	Console
⏻	cdg-standard	csp1	cw-na-dg-2.0.0-642-TESTONLY-20210213.qcow2		vm_unmonitored	deployed	⚙	>_
⏻	crosswork-csp-vm1	csp1	cw-na-platform-4.0.0-296-develop-210214_rootfs.qcow2	172.23.208.34	vm_unmonitored	deployed	⚙	>_
⏻	crosswork-csp-vm2	csp2	cw-na-platform-4.0.0-296-develop-210214_rootfs.qcow2	172.23.208.35	vm_unmonitored	deployed	⚙	>_
⏻	crosswork-csp-vm3	csp3	cw-na-platform-4.0.0-296-develop-210214_rootfs.qcow2	172.23.208.36	vm_unmonitored	deployed	⚙	>_

c) The noVNC window opens. Click Connect option in the top right corner.

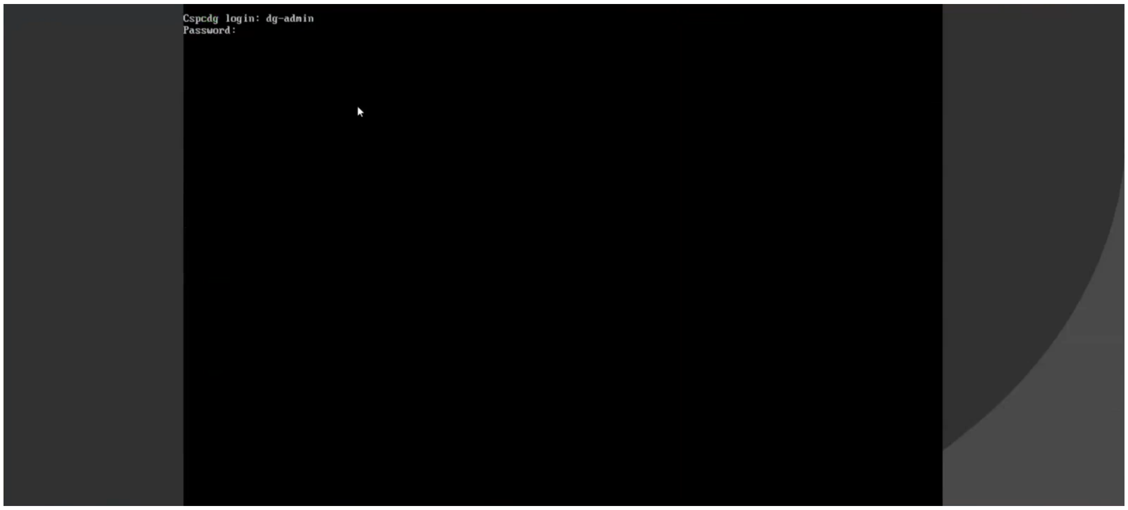

noVNC ready: native WebSockets, canvas rendering

Host: [redacted]

Port: [redacted]

Password:

d) Once the Crosswork Data Gateway service connects, login as the dg-admin or dg-oper user (as per the role assigned to you) and the corresponding password you had entered in the config.txt file.



```
Cspcdg login: dg-admin
Password:
```

The Crosswork Data Gateway console is available.

Generate Enrollment Package

Every Crosswork Data Gateway must be identified by means of an immutable identifier. This requires generation of an enrollment package. The enrollment package can be generated using any of the following methods:

- By supplying Auto Enrollment Package parameters during installation process (see Auto Enrollment Package under OVF deployment scenarios).
- By using the Export Enrollment Package option from the interactive menu (see Export Enrollment Package, on page 27)

The enrollment package is a JSON document created from the information obtained through the OVF template populated by the user during installation. It includes the all necessary information about Crosswork Data Gateway required for registering, such as Certificate, UUID of the Crosswork Data Gateway, and metadata like Crosswork Data Gateway name, creation time, version info, etc.

If you opted not to export the enrollment package during install, then you must export it before you can enroll the Crosswork Data Gateway with Crosswork Cloud. The steps to do so are described in Export Enrollment Package, on page 27.

Note The enrollment package is unique to each Crosswork Data Gateway.

A sample enrollment package JSON is shown below:

```
{
  "name": "dg116.cisco.com",
  "description": "CDG Base VM for Automation",
  "profile": {
    "cpu": 8,
    "memory": 31,
    "nics": 3
  },
  "interfaces": [
    {
      "name": "eth0",
      "mac": "00:50:56:9e:09:7a",
      "ipv4Address": "<ip_address>/24"
    },
    {
      "name": "eth1",
      "mac": "00:50:56:9e:67:c3",
      "ipv4Address": "<ip_address>/16"
    },
    {
      "name": "eth2",
      "mac": "00:50:56:9e:83:83",
      "ipv4Address": "<ip_address>/16"
    }
  ],
  "certChain": [
    "<cert_chain>"
  ],
  "version": "1.1.0 (branch dg110dev - build number 152)",
  "duuid": "d58fe482-fdca-468b-a7ad-dfbfa916e58b"
}
```

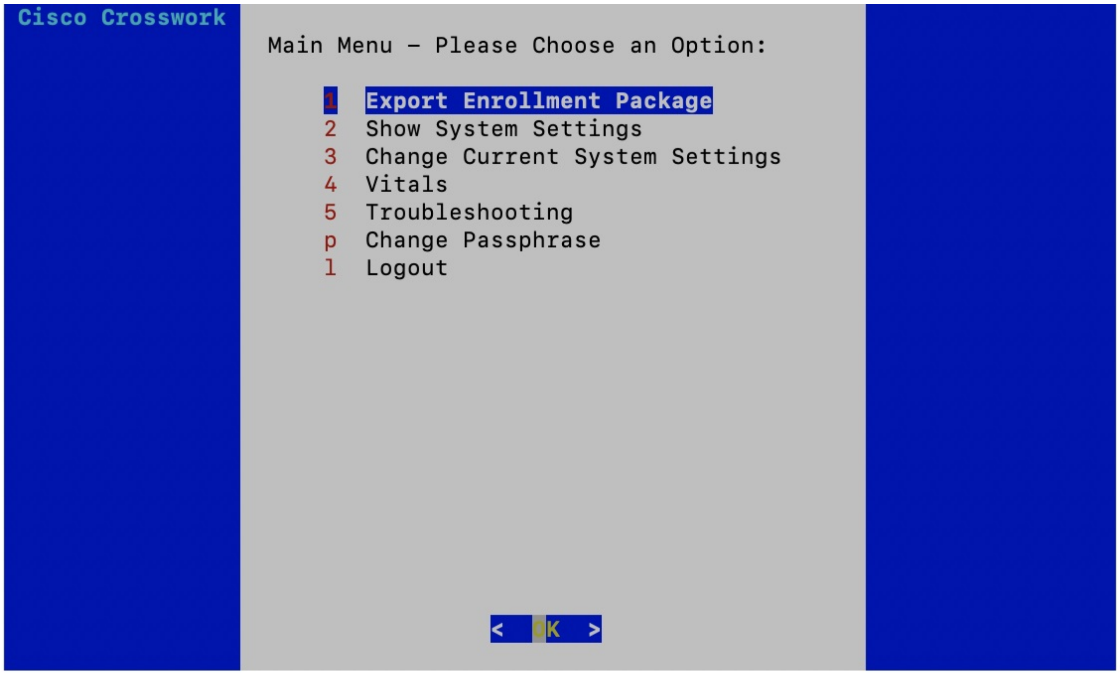
Export Enrollment Package

To enroll the Cisco Crosswork Data Gateway with Crosswork Cloud, you must have a copy of the enrollment package on your local computer.

Note This is needed only if you have not specified Auto Enrollment Package Transfer settings during installation. Otherwise, the file will be copied to the SCP URI destination you selected after the VM boots.

Step 1 Log in to the Cisco Crosswork Data Gateway.

Step 2 From the Main Menu, select 1 Export Enrollment Package 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 >

Step 3 Enter the SCP URI for exporting the enrollment package and click OK.

Note
- The host must run an SCP server. Ideally, you should export the enrollment package to the local computer you will use to access the Crosswork server.
- If you are not using the default port 22, you can specify the port as a part of the SCP command. For example, For example, to export the enrollment package as an admin user, placing the file in that user's home directory with port 4000, you can give the following command:

```
-P4000 admin@<ip_address>:/home/admin
```

Step 4 Enter the SCP passphrase (the SCP user password) and click OK.

Step 5 If you could not copy the enrollment package directly to your local computer, manually copy the enrollment package from the SCP server to your local computer.

Step 6 Proceed with enrolling the Cisco Crosswork Data Gateway with Crosswork Cloud. For procedure to enroll Cisco Crosswork Data Gateway with Crosswork Cloud applications, refer to the Section: Add Cisco Crosswork Data Gateway Information in Cisco Crosswork Cloud User Guide.

If you are enrolling Cisco Crosswork Data Gateway with Cisco Crosswork Trust Insights or Cisco Crosswork Flow Insights, also perform the following steps. These steps are optional and based on your network environment.

- Configure Control Proxy
- Verify the Crosswork Data Gateway Connectivity