Plan Your Deployment

This chapter contains the following topics:

Before You Begin

This section explains the setup options you need to make before installing Crosswork Network Controller solution on your preferred platform.

1. Determine the Applications You Need, on page 1

2. Identify the Resource Footprint, on page 3

3. Special Considerations, on page 5

After completing the planning in the above steps, follow the relevant installation workflow steps for your platform:

- **For VMware vCenter**: Install Cisco Crosswork Network Controller on VMware vCenter

- **For AWS EC2**: Install Cisco Crosswork Network Controller on AWS EC2

Starting with the Crosswork Network Controller version 4.1, Crosswork deployment is no longer supported for the Cisco CSP platform. For more information, see End-of-Life Announcement for the Cisco Cloud Services Platform Operating System.

Determine the Applications You Need

The first decision is to select the Crosswork applications that meet the needs of your production environment. This is a crucial step as each Crosswork application can impact the overall resources needed.

Note Crosswork Network Controller supports only "Large" deployment profile for customer deployments.

Crosswork Network Controller is available in the following packages (see Cisco Crosswork Network Controller Packages for details):

Table 1: Crosswork Network Controller packages

Package [1]	Contents	Crosswork Data Gateway Deployment [2]	Recommended number of cluster VMs [3]
Cisco Crosswork Network Controller Essentials	Cisco Crosswork Optimization Engine	**On-Premise Standard** (default): Collectors only.	When Essentials package is installed WITHOUT Element Management Functions: • **3 Hybrid nodes** When Essentials package is installed WITH Element Management Functions: • **3 Hybrid nodes + 1 Worker node**
	Cisco Crosswork Active Topology	**On-Premise Standard** (default): Collectors only.	
	Element Management Functions	**On-Premise Standard** (default): Collectors only.	
Cisco Crosswork Network Controller Advantage	Cisco Crosswork Service Health	**On-Premise Extended**: Collectors and offload services.	**3 Hybrid nodes + 2 Worker nodes**
Add-on Package [4]	Cisco Crosswork Change Automation	**On-Premise Extended**: Collectors and offload services.	**3 Hybrid nodes + 2 Worker nodes**
	Cisco Crosswork Health Insights	**On-Premise Extended**: Collectors and offload services.	
	Cisco Crosswork Zero Touch Provisioning	**On-Premise Standard** (default): Collectors only.	

[1] There are licensing implications for different packages, please consult your Cisco Account team to understand which packages and licenses are required for your use cases.

[2] The VM resource requirements for Crosswork Data Gateway are different for each type and cannot be modified. Therefore, if your requirements change, you must re-deploy the Crosswork Data Gateway to move from one type to another. For more information, see the *Redeploy a Crosswork Data Gateway VM* section in the *Cisco Crosswork Network Controller 5.0 Administration Guide*.

[3] The number of VMs mentioned is the recommended count. You can add more Worker nodes (maximum up to 2 worker nodes) as needed. If your requirements exceed the recommended count, please contact the Cisco Customer Experience team.

[4] The cluster resource estimation is under the assumption that you are using the add-on applications with the Crosswork Network Controller packages.

Ensure that you have sufficient worker nodes in your cluster. You can always check the load in your cluster and choose to add new worker nodes post installation. For more information, see the *Deploy New Cluster Nodes* section in the *Crosswork Network Controller 5.0 Administration Guide*.

Identify the Resource Footprint

Once you determine the Crosswork applications you want and the number of VMs you will need to deploy to host them, ensure that you have the resources needed for them. The resources required per VM such as CPU, Memory, and Storage vary based on the datacenter where your VMs will be hosted (VMware or AWS).

The tables in this topic explain the resource requirements per VM to deploy Crosswork Hybrid or Worker nodes, Crosswork Data Gateways, NSO, and SR-PCE (refer to the table relevant to your platform).

Note

- The resources listed for NSO are higher than for other NSO use cases due to the additional requirements Crosswork Network Controller places on NSO.

- The NSO footprint depends on the type of deployment, standalone or LSA.

- The SR-PCE count will depend on the number of head-ends that need to be managed

- The types of VM and the number of each type of VM should be decided based on the use cases and scale. Please consult with your Cisco Account team and Cisco Customer Experience team for assistance.

- The values in **Storage** column is the space needed for storing Crosswork files and does not consider any additional overhead that may be required (for example, RAID configuration).

- The storage required for each backup will vary based on the your cluster size, applications in the cluster, and the scale requirements.

- Upgrade of the cluster temporarily requires double the total disk space used by the cluster.

- The number of data gateways needed depends on the number of devices you have in your network and the level of redundancy you want (1:n up to 1:1). To determine the number of Crosswork Data Gateways needed, contact the Cisco Customer Experience team.

Crosswork Resource Footprint for VMware

Note

- Ensure that you have a docker-capable host to load the Crosswork installer tool.

Table 2: Crosswork Resource Footprint for VMware

Component	vCPU	Clock Freq (GHz)	Memory (RAM)	Network Interface Controller (NIC)	Storage (Boot disk + Data disk)
Crosswork Hybrid or Worker node	12 Minimum clock reservation: 18 GHz	>= 2.20	96 GB	10 Gbps	1 TB
CDG On-Premise Standard	12	>= 2.20	48 GB	10 Gbps	70 GB (50 GB + 20 GB)

Component	vCPU	Clock Freq (GHz)	Memory (RAM)	Network Interface Controller (NIC)	Storage (Boot disk + Data disk)
CDG On-Premise Extended	20	>= 2.20	112 GB	10 Gbps	570 GB (50 GB + 520 GB)
Cisco NSO	16	>= 2.20	128 GB	10 Gbps	1 TB
Cisco SR-PCE	8	>= 2.20	24 GB	10 Gbps	70 GB
Basic SCP Server (for storing backups)	-	-	-	-	At least 25 GB (recommended)

Crosswork Resource Footprint for AWS EC2

> **Note** In case of AWS EC2, the additional storage server may be in the AWS cloud or your local environment (must be reachable from the AWS cloud).

Table 3: Crosswork Resource Footprint for AWS EC2

Component	vCPU	Memory (RAM)	Network Interface Controller (NIC)	Storage (Boot disk + Data Disk)
Crosswork Hybrid or Worker node	12 Minimum clock reservation: 18 GHz	96 GB	10 Gbps	1 TB
CDG On-Premise Standard	12	64 GB	10 Gbps	70 GB (50 GB + 20GB)
CDG On-Premise Extended	24	128 GB	10 Gbps	570 GB (50 GB + 520 GB)
Cisco NSO	16	128 GB	10 Gbps	1 TB
Cisco SR-PCE	8	24 GB	10 Gbps	70 GB
Basic SCP Server (for storing backups)	-	-	-	At least 25 GB (recommended)

Additional Resource Requirements:

- Storage requirements vary based on factors such as the number of devices being supported and the type of deployment selected. However, 1 TB disk space should work for most deployments.

- Due to their performance, solid state drives (SSD) are preferred over traditional hard disk drives (HDD).

- If you are using HDD, the minimum speed should be over 15, 000 RPM.

• The VM data store(s) need to have disk access latency < 10 ms or > 5000 IOPS.

Special Considerations

In addition to the above instructions, there may be certain setup options that you need to consider before you begin the installation.

- **Are you going to use self-signed certificates?** – if yes, you need to make the certificates available. For more information on the type of certificates supported and how to manage them, see the *Manage Certificates* section in the *Crosswork Network Controller 5.0 Administration Guide*.

- **Do you plan to integrate Crosswork with external authentication servers?**– Integration with TACACS+ or other external authentication servers will require you to have credentials created for the Crosswork user accounts and roles.

- **Do you want to use a URL of an optional Management network proxy server?**– If your environment requires an HTTP or HTTPS proxy to access the URLs on the public Internet, you must configure a proxy server for Crosswork Data Gateway to connect to Cisco Crosswork.

- **In Crosswork Data Gateway, do you want to configure a Syslog server to collect the syslog?**– if yes, then provide the host name or IPv4 or IPv6 address of an external syslog server.

- **In Crosswork Data Gateway, do you want to configure an Auditd Server to collect the event logs?**– if yes, then provide the host name or IPv4 or IPv6 address of an external auditd server.

- **Do you plan to enable the automatic execution of linked playbooks?** – If yes, you must enable Playbook Job Scheduling and disable Credential Prompting for playbook execution in the Network Automation settings window. For more information, see the *Enable Automatic Playbook Execution* topic in the *Crosswork Change Automation and Health Insights 5.0 User Guide*.