

Cisco Secure Network Analytics

System Configuration Guide 7.5.3



Table of Contents

Introduction	14
Overview	14
Audience	14
Installation Requirements	15
Hardware	15
Virtual Edition (VE) Appliances	15
Quick Reference Overview	16
Before You Begin	21
Terminology	21
Abbreviations	21
Configuration Details	22
Downloading Software	22
Password Requirements	22
Licensing	23
TLS Versions	24
Third Party Applications	24
Browsers	24
Host Name	24
Domain Name	24
NTP Server	24
IPv6 Support	24
Time Zone	26
Planning Your System Configuration	27
System Configuration Requirements	27
Secure Network Analytics with Data Store	27
Secure Network Analytics without Data Store	28
Secure Network Analytics Hybrid Deployment	28
Appliance Configuration Requirements	30

Connecting to Your Hardware (Physical) Appliances	32
CIMC Access	32
Connecting to Your Virtual Edition Appliances	32
1. Configuring Your Environment Using First Time Setup	34
Preparation	34
Appliance Configuration Overview	34
Appliance Console (SystemConfig) Requirements	35
Managed Appliances	35
Manager Failover	36
Secure Network Analytics Domain	36
Best Practices	36
1. Configure the Appliances in Order	37
2. Configure your Appliances	39
Configuring a Manager	39
1. Log in to the Manager	39
2A. Select Your Network Mode and Enter Your Network and Server Information (IPv4 Only)	41
2B. Select Your Network Mode and Enter Your Network and Server Information (IPv6 and Dual Stack Only)	43
3. Enter Your Domain Name and Select Your Domain Type	47
4. Change Your Passwords and Reboot Your Appliance	48
5. Select the HTTP/2 Settings	50
Configuring a Data Node	52
1. Log in to the Data Node	52
2. Select Your Network Mode and Enter Your Network, Server, and Physical Port Information	54
3. Change Your Passwords	59
4. Select the HTTP/2 Settings	60
5. Connect to the Manager and Reboot Your Appliance	61
Configuring a Flow Collector with Data Store	64
1. Log in to the Flow Collector	64

2. Select Your Network Mode and Enter Your Network and Server Information	65
3. Select Your Data Store Deployment Option	68
4. Select Your Flow Collector Telemetry Types	70
5. Change Your Passwords	74
6. Select the HTTP/2 Settings	75
7. Connect to the Manager and Reboot Your Appliance	76
Configuring a Flow Collector without Data Store	80
1. Log in to the Flow Collector	80
2. Select Your Network Mode and Enter Your Network and Server Information	81
3. Select Your Data Store Deployment Option	84
4. Select Your Flow Collector Telemetry Types	86
5. Change Your Passwords	88
6. Select the HTTP/2 Settings	89
7. Connect to the Manager and Reboot Your Appliance	90
Configuring a Flow Sensor or UDP Director	94
1. Log in to the Flow Sensor or UDP Director	94
2. Select Your Network Mode and Enter Your Network and Server Information	95
3. Change Your Passwords	98
4. Select the HTTP/2 Settings	100
5. Connect to the Manager and Reboot Your Appliance	101
3. Confirm the Appliance Status	105
2. Defining a Manager Failover Relationship	106
Data Store	106
Configuring Failover	106
Primary and Secondary Roles	107
3. Configuring Site Redundancy	108
Redundant Site Requirements	108
Adding Certificates to Trust Stores	109
Trust Store Requirements	109
Certificate Chain	109

Uploading Certificates to the Trust Store	109
1. Download the Appliance Identity Certificates	109
2. Add Certificates to the Manager Trust Stores	110
Open Site Redundancy Configuration	111
Configuring a Redundant Site	111
Disabling a Redundant Site	112
Troubleshooting	112
4. Installing v7.5.3 Patches	113
5. Initializing the Data Store	114
6. Installing the Desktop Client	115
Install the Desktop Client Using Windows	116
Install the Desktop Client Using macOS	118
7. Verifying Communications	120
1. Review the Flow Collection Trend	120
2. Verify the Data Store Database Status	120
3. Run Reports in Report Builder	121
8. Finishing Appliance Configurations	122
Changing the Flow Settings in a Flow Collector	123
Configuring UDP Directors for High Availability (Hardware Only)	124
Configuring Forwarding Rules	124
Configuring High Availability	125
Primary Node and Secondary Node	125
Requirements	126
1. Configure the Primary UDP Director High Availability	126
2. Configure the Secondary UDP Director High Availability	128
Configuring the Flow Sensor	129
1. Configure the Application ID and Payload	129
2. Configure the Flow Sensor to Identify Applications (optional)	133
3. Restart the Appliance	134
BIOS Settings for 40 Gbps or 100 Gbps interfaces	134

9. Configuring Telemetry	136
Network Visibility Module	136
Firewall Logs	136
Zeek Logs	136
Updating Telemetry Settings	136
Cisco Telemetry Broker	137
10. Licensing Secure Network Analytics	138
Evaluation Mode	138
11. Managing Secure Network Analytics	139
Configuring Host Groups	139
Creating and Managing Policies	139
Building Flow Searches	139
Running Reports in Report Builder	139
Managing User Permissions	139
Investigating Behavior (Alarms, Security Events, etc.)	139
Responding to Threats	140
Packet Capture	140
User Preferences	140
Theme	140
Language	141
Analytics	142
Apps	143
Authentication/Authorization	144
Enabling SSO Only in the Appliance Console	145
Enabling SSO Only in User Management	145
Domains	146
Data Store Domains and Non-Data Store Domains	146
Adding and Configuring Domains	147
1. Add a Domain	147
Creating a Data Store Domain by Importing an Existing Non-Data Store Domain	148

Configuration (Optional)	
2. Configure Domain Settings	149
Synchronizing Data Store and Non-Data Store Domains	151
Before You Begin	152
Synchronized Properties	152
Recommended Synchronization Frequency	152
Synchronizing Domains Procedure	152
Removing a Domain Synchronization Target Domain	153
Deleting a Domain	155
1. Remove Flow Collectors from Central Management	155
2. Delete a Domain	155
Deleting a Desktop Client Domain	157
Integrations and Additional Configurations	158
Passwords	159
Resetting Passwords to Default Settings	159
Resetting the Admin Password on Your Appliance	159
Resetting Sysadmin Passwords to Default	160
Changing Passwords	160
Changing the Sysadmin Password	160
Changing the Admin Password on the Manager	160
Changing the Admin Password on All Other Appliances	161
Changing the Data Store Database Passwords	161
Changing the Flow Collector Database Password (Non-Data Store Domains)	162
SSL/TLS Appliance Identity and Additional SSL/TLS Client Identities	163
TLS Versions	163
Appliance Identity	163
Client Identity	163
Reviewing Certificates	164
Changing the Host Name, Network Domain Name, or IP Address	164
Reviewing Trust Store Certificates	165

HTTP/2 Settings	166
Enabling/Disabling HTTP/2	166
Enabling HTTP/2	166
Disabling HTTP/2	168
Threat Feed	171
Licensing	171
Enabling	171
Reviewing Alarms and Security Events	171
Central Management (Managing your Appliances)	173
Central Management and Appliance Administration Interface	173
Opening Central Management	174
Opening Appliance Admin	174
Opening Appliance Admin through Central Management	174
Opening Appliance Admin through Direct Login	174
Editing the Appliance Configuration	175
Viewing Appliance Statistics	176
Removing an Appliance from Central Management	176
Removing Data Store Appliances from Central Management	177
Adding an Appliance to Central Management	177
Creating an Appliance Configuration Backup	179
Enabling/Disabling SSH	179
Enabling/Disabling SSH from the Web UI/Central Management	179
Access the SSH Configuration	179
Enable SSH	180
Disable SSH	180
Enable/Disable SSH from the Appliance Console (SystemConfig)	180
Enabling/Disabling Sysadmin User	180
Access the Sysadmin User Configuration	180
Enable Sysadmin User	181
Disable Sysadmin User	181

Creating a Database Backup (Non-Data Store Domains)	182
1. Trim the Flow Collector Database	182
1. Review your Database Storage Statistics	182
2. Trim the Interface Details	183
3. Trim Flow Details and CI Event Data	184
2. Back Up to Remote File System	184
Restoring a Database Backup (Non-Data Store Domains)	187
Data Store Database	188
Data Store Tab	188
Opening the Data Store Tab	188
Viewing the Data Store Database Status	188
Starting the Database	189
Stopping the Database	189
Starting a Data Node	190
Stopping a Data Node	190
Reviewing Last Action Results	190
Viewing Database Retention	190
Opening the Data Store - Database Retention Tab	191
Database Fullness Chart	191
Per Telemetry Contribution Chart	191
Daily Storage	191
Oldest Data in Data Store	192
Changing the Flow Interface Data Storage	192
Monitoring the Data Node Update Status	193
Opening the Data Store - Database Update Status Tab	193
Monitoring the Database Update Status	193
Updating the Data Store Database Certificates	194
Opening the Data Store - Database Security Tab	194
1. Check Data Store Initialization	195
2. Update Certificates	195

3. Review Central Management	196
4. Review Trust Stores	197
Configuring Inter-Data Node Encryption	197
Requirements	197
Security Association (SA)	197
1. Open the Data Store - Database Security Tab	198
2. Enable Inter-Data Node Encryption	198
Disabling Inter-Data Node Encryption	199
Creating a Data Store Backup	200
1. Estimate Backup Host Storage Requirements	200
2. Prepare a Backup Host	202
3. Ensure Connectivity for SSH Backup	203
4. Initialize the Backup Directory on the Backup Host	203
5. Configure the Remote Host	204
1. Log in to Your Appliance Console	204
2. Configure Your Data Store Backup	204
3. Copy the SSH Public Key to the Backup Server	206
4. Initialize the Remote Backup Location	210
6. Perform a Dry Run of Your Backup and Estimate Backup Size	210
7. Back Up the Data Store Database	213
Managing Your Data Store Backups	215
Check Backups	215
List Backups	218
Remove Backups	220
Repair Backups	224
Collect Garbage	227
Remove Known Host	230
Restoring a Data Store Backup	233
Data Store Maintenance	234
Enabling Data Compression in the Data Store	234

Adding a Data Store Domain	235
Adding a Secondary Manager or Flow Collectors after the Data Store is Initialized	235
Adding Data Nodes to the Data Store	235
Requirements	235
Before you Begin	235
Procedures	236
1. Create a Data Store Backup	236
2. Configure the Data Node and Add it to Central Management	236
3. Add Data Nodes to the Data Store	236
4. Rebalance Data in the Data Store	237
Replacing a Data Node (Hardware Only)	238
1. Prepare the New (Spare) Data Node	238
2. Create a Data Store Backup	239
3. Contact Cisco Support	239
Adding Data Store to a Non-Data Store Deployment	240
Adding Data Store	240
Adding New Flow Collectors to a Data Store	241
Adding a Data Store to a Non-Data Store Deployment and Transitioning Your Flow Collectors	242
Preparation	243
Backing up Configuration Files	243
Flow Collector Transition Requirements	243
Initiating a Flow Collector Transition to Data Store	243
1. Review Your Data Store Domains	244
2. Check Your Appliance Status	244
3. Transition Your Flow Collector	245
4. Verify Communications	247
Running Flow Searches	248
Removing a Transitioning Flow Collector From your Central Manager Inventory	248
Transitioning Flow Collectors Behavior	249

Synchronizing Data Store and Non-Data Store Domains	249
Synchronized Properties	249
Recommended Synchronization Frequency	250
Synchronizing Domains Procedure	250
Completing your Flow Collector Transition	251
Completing your Data Store Flow Collector Transition	252
Requirements	252
Completing a Flow Collector Transition to Data Store	252
Post Completion Notes	253
Troubleshooting	255
Analytics Jobs are Lagging	255
The secondary Manager has been promoted to primary Manager	255
An appliance went down due to degradation	255
Appliance Status: Config Channel Down	255
Appliance Status: Data Store Not Initialized	256
Appliance Status: Data Store Not Configured	256
Opening the Appliance Administration Interface	256
Replacing the Appliance Identity	256
Removing Data Store Appliances from Central Management	257
Changing the Host Name, Network Domain Name, or IP Address	257
Changing the Network Mode of an Appliance	258
1. Remove Your Appliances from Inventory	259
2. Change the Network Mode of Your Appliances	259
3. Add Your Appliances Back to Central Management	260
Changing the Network Mode of Managers in a Failover Configuration	260
Creating a Diagnostic Pack	260
Opening Domain Properties	261
Deleting a Desktop Client Domain	261
System Configuration Overview	261
Changing the Trusted Hosts	262

Configuring the Interfaces and Exporters Cleaner	262
Enable the Cleaner	263
Review the Flow Collector interface_age parameter	263
Configuring the Maximum Transmission Unit (MTU)	264
Resetting Factory Defaults	264
Enabling/Disabling Admin Users	265
Editing Your Appliance Configuration in the Appliance Console (SystemConfig) ...	265
Logging In to the Appliance Console (SystemConfig)	265
Changing the Network IP Mode	266
Data Store Deployment Troubleshooting	268
Hardware Deployment Troubleshooting	268
Virtual Appliance Deployment Troubleshooting	268
First Time Setup and Data Nodes Virtual Edition	268
Data Store Troubleshooting	268
Vertica Analytics Platform does not automatically restart after a Data Node loses power and reboots	268
Data Store Does Not Start After Power Failure	268
Patches and Software Updates	269
Contacting Support	270
Change History	271

Introduction

Overview

Use this guide to configure the following Cisco Secure Network Analytics (formerly Stealthwatch) hardware and Virtual Edition appliances to one managed system in v7.5.3:

- Cisco Secure Network Analytics Manager (formerly Stealthwatch Management Console)
- Cisco Secure Network Analytics Data Node
- Cisco Secure Network Analytics Flow Collector
- Cisco Secure Network Analytics Flow Sensor
- Cisco Secure Network Analytics UDP Director

For more information about Secure Network Analytics, refer to the following online resources:

- **Overview:**
<https://www.cisco.com/c/en/us/products/security/stealthwatch/index.html>
- **Appliances:**
<https://www.cisco.com/c/en/us/products/security/stealthwatch/datasheet-listing.html>
- **Release Notes:** For details, refer to the [Release Notes](#).

Audience

The intended audience for this guide includes network administrators and other personnel who are responsible for installing and configuring Secure Network Analytics products.

If you prefer to work with a professional installer, please contact your local Cisco Partner or [Cisco Support](#).

Installation Requirements

Before you configure Secure Network Analytics into a managed system using this guide, install your hardware and virtual appliances using the following guides:

Hardware

- **Hardware Installation:** Install your appliance hardware (physical appliances) using the [Secure Network Analytics x2xx Series Hardware Installation Guide](#) or the [Secure Network Analytics x3xx Series Hardware Installation Guide](#) before you start this configuration.
- **Specifications:** [Hardware specifications](#) are available on Cisco.com.
- **Supported Platforms:** To view the supported hardware platforms for each system version, refer to the [Hardware and Software Version Support Matrix](#) on Cisco.com.

Virtual Edition (VE) Appliances

- **Virtual Edition Installation:** Install your virtual appliances using the [Secure Network Analytics Virtual Edition Installation Guide](#) before you start this configuration.

Quick Reference Overview

For a successful installation, follow these procedures in order. For detailed instructions, click the procedure link.



Before You Begin and Planning Your System Configuration

Make sure you have all required information to configure your appliances and deploy Secure Network Analytics with a Data Store or without a Data Store.



1. Configuring Your Environment Using First Time Setup

- **Log In:** Log in to each appliance through the console as sysadmin (password: lan1cope).
- **Required Appliances:** Manager and Flow Collector are required for all deployments. For deployments with a Data Store, you also need to configure Data Nodes (with inter-Data Node communications).
- Configure your appliances in order. Check the Central Management inventory and confirm each appliance status is **Connected** (or **Data Store Not Initialized**) before you start configuring the next appliance in your cluster.

1. Primary Manager (Central Management)
2. Data Nodes
3. Flow Collector 5000 Series Database
4. Flow Collector 5000 Series Engine
5. All Other Flow Collectors
6. UDP Directors
7. Flow Sensors
8. Secondary Manager



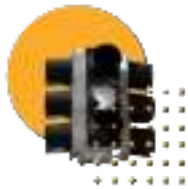
2. Defining a Manager Failover Relationship

- This procedure is required if you've configured a primary Manager and a secondary Manager.
- Use Failover to establish a failover pair between two Managers so that one of them serves as a backup console to the other.
- Follow the instructions in the [Secure Network Analytics Failover Configuration Guide](#).



3. Configuring Site Redundancy

- This procedure is optional and requires you to have a Data Store.
- Use site redundancy to establish near-redundancy across clusters in two Cisco Secure Network Analytics sites that contain separate deployments with similar appliances.



4. Installing v7.5.3 Patches

- Download the latest **v7.5.3 patches** from your Cisco Smart Account on Cisco Software Central at <https://software.cisco.com>.
- Follow the instructions in the patch readme file to install each patch.



5. Initializing the Data Store

Required for Data Store deployments only.

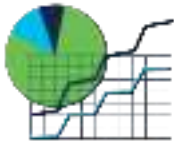
1. Log in to your Manager appliance console (SystemConfig) as sysadmin.
2. Select **Data Store > SSH**.
3. Select **Data Store > Initialization**.



6. Installing the Desktop Client

Required for Non-Data Store deployments only.

- Desktop Client requires a 64-bit operating system. It cannot run on a 32-bit operating system or Linux.
- Log in to your Manager. Click the [Download Desktop Client](#) icon.



7. Verifying Communications

- Log in to your Manager. Review the Flow Collection Trend.
- Review the Data Store database status to confirm it is Up. (Configure > Global > Central Management > Data Store tab)
- Run reports in Report Builder to confirm flows are received at the Flow Collector and Data Store. (Report > Report Builder > Flow Collection Trend by Flow Collector Report, Flow Database Ingest Trend Report)



8. Finishing Appliance Configurations

- Flow Sensor Application ID and Payload (required for all Flow Sensors)
- UDP Director High Availability
- Other optional appliance configurations



9. Configuring Telemetry

Required for Data Store deployments with additional telemetry types enabled.

- **NVM Flows:** Follow the instructions in the [Network Visibility Module \(NVM\) Configuration Guide](#)
- **Firewall Logs:** Follow the instructions in the [Security Analytics and Logging: Firewall Event Integration Guide](#) and install the app on your Manager.
- **Zeek Logs:** Follow the instructions in the [Zeek Configuration Guide](#).



10. Licensing Secure Network Analytics

- Register your product instance in your Cisco Smart Account at <https://software.cisco.com> before the 90-day evaluation period expires.
- Follow the instructions in the [Secure Network Analytics Smart Software Licensing Guide](#).



11. Managing Secure Network Analytics

Log in to your Manager and select:

- **Host Groups:** **Configure > Detection > Host Group Management.**
- **Policies:** **Configure > Detection > Policy Management.**
- **Flow Searches:** **Investigate > Flow Search.**
- **Reports:** **Dashboards > Report Builder.**
- **User Management:** **Configure > Global > User Management.**
- **Instructions:** Select the  (**Help**) icon > **Help** from any page. Also, refer to Managing Your Environment, Investigating Behavior, and Responding to Threats.



Review the guide for additional configurations, maintenance, and troubleshooting, including:

- [Analytics](#)
- [Apps](#)
- [Authentication/Authorization](#)
- [Domains](#)
- [Passwords](#)
- [SSL/TLS Appliance Identity and Additional SSL/TLS Client Identities](#)
- [Threat Feed](#)
- [User Preferences](#)
- [Central Management \(Managing your Appliances\)](#)
- [Data Store Database](#)
- [Data Store Maintenance](#)
- [Adding a Data Store to a Non-Data Store Deployment and Transitioning Your Flow Collectors](#)
- [Troubleshooting](#)

Before You Begin

Before you begin the configuration process, review this guide to understand the process as well as the preparation, time, and resources you'll need to plan for the configuration.

Terminology

This guide uses the term “**appliance**” for any Secure Network Analytics product, including virtual products such as the Flow Sensor Virtual Edition (VE).

A “**cluster**” is your group of Secure Network Analytics appliances that are managed by the Manager.

Abbreviations

The following abbreviations may appear in this guide:

Abbreviations	Definition
DNS	Domain Name System (Service or Server)
dvPort	Distributed Virtual Port
ESX	Enterprise Server X
GB	Gigabyte
IDS	Intrusion Detection System
IPS	Intrusion Prevention System
ISO	International Standards Organization
IT	Information Technology
KVM	Kernel-based Virtual Machine
MTU	Maximum Transmission Unit
NTP	Network Time Protocol
TB	Terabyte

Abbreviations	Definition
UUID	Universally Unique Identifier
VDS	vNetwork Distributed Switch
VE	Virtual Edition
VLAN	Virtual Local Area Network
VM	Virtual Machine

Configuration Details

The Secure Network Analytics system configuration includes the following:

- **Requirements:** You can configure Secure Network Analytics with a Data Store, without a Data Store, or as a hybrid deployment (both Data store and Non-Data Store domains). Refer to [Planning Your System Configuration](#) to review the appliance configuration and domain requirements.
- **Configuration Order:** Make sure you configure the appliances following the instructions in this guide and using the specified order.
- **Certificates:** Appliances are installed with a unique, self-signed appliance identity certificate.
- **Central Management:** You can manage your appliances from the primary Manager/Central Manager.

Downloading Software

Use Cisco Software Central to download virtual appliance (VE) installation files, patches, and software update files. Log in to your Cisco Smart Account at <https://software.cisco.com> or contact your administrator.

Password Requirements

During the system configuration, you will replace the default passwords and create new passwords for the following:

User	Default Password
admin	lan411cope

sysadmin	lan1cope
 Only one terminal user is supported. You will not be allowed to add additional terminal users.	
dbadmin	You will assign the password when you initialize the Data Store.
readonlyuser	You will assign the password when you initialize the Data Store.
CIMC admin	For remote access to your hardware appliances, log in to the CIMC. If you haven't already configured the CIMC, follow the instructions in the Cisco UCS C-Series Integrated Management Controller GUI Configuration Guide. The default password is password. Make sure you change it when you first log in.

Licensing

For licensing Secure Network Analytics, you will use your Smart Account to register your product instance, manage licenses, run reports, and configure notifications. Log in to your Cisco Smart Account at <https://software.cisco.com> or contact your administrator.

When you use Secure Network Analytics in Evaluation mode, you can use selected features for 90 days. To use Secure Network Analytics with maximum default functionality, and to add licenses and features to your account, register your product instance for Smart Software Licensing. Refer to **10. Licensing Secure Network Analytics** for more information.



Make sure you register your product instance before the 90-day evaluation period expires. When the evaluation period expires, flow collection will stop. To start flow collection again, register your product instance.

TLS Versions

TLS versions 1.2 and 1.3 are supported by default when you install Secure Network Analytics v7.5.0 or later. You can choose the configuration for your appliances as follows:

- TLS 1.2 and 1.3 (default)
- TLS 1.3 only (not supported for Data Store)

To change the configuration, follow the instructions in the [SSL/TLS Certificates for Managed Appliances Guide](#).

Third Party Applications

Secure Network Analytics does not support installing third party applications on appliances.

Browsers

Secure Network Analytics supports the latest version of Chrome, Firefox, and Edge.

Host Name

A unique host name is required for each appliance. We cannot configure an appliance with the same host name as another appliance. Also, make sure each appliance host name meets the Internet standard requirements for Internet hosts.

Domain Name

A fully qualified domain name is required for each appliance. We cannot install an appliance with an empty domain.

NTP Server

- **Configuration:** At least 1 NTP server is required for each appliance.
- **Problematic NTP:** Remove the 130.126.24.53 NTP server if it is in your list of servers. This server is known to be problematic and it is no longer supported in our default list of NTP servers.

IPv6 Support

IPv6 and Dual Stack is supported on Managers and Flow Collectors in v7.5.0 and later. The only supported network mode for Data Nodes is IPv4 only. When configuring a UDP Director, your options are IPv4 and Dual Stack. If you select the Dual Stack option, UDP will only forward over IPv4. You can, however use IPv6 for management. For information on IPv6 forwarding for UDP directors, refer to the [Cisco Telemetry Broker User Guide](#). For

information on changing the network mode of your appliance, refer to the [System Configuration Guide](#).

 IPv6 is not supported on the Desktop Client.

Time Zone

All Secure Network Analytics appliances use Coordinated Universal Time (UTC).

- **Virtual Host Server:** Make sure your virtual host server is set to the correct time.



Make sure the time setting on the virtual host server (where you will be installing the virtual appliances) is set to the correct time. Otherwise, the appliances may not be able to boot up.

Planning Your System Configuration

Before you start the configuration, review the instructions so you understand the planning, time, and requirements for configuring your appliances in First Time Setup and configuring them into one managed system in the appliance console (SystemConfig).

System Configuration Requirements

Consult with your network architect and administrator to confirm the details of your v7.5.3 Secure Network Analytics deployment. Refer to each section for configuration requirements:

- [Secure Network Analytics with Data Store](#)
- [Secure Network Analytics without Data Store](#)
- [Secure Network Analytics Hybrid Deployment](#)

Secure Network Analytics with Data Store

In Secure Network Analytics with a Data Store, the Flow Collector sends its telemetry to the Data Store Data Nodes for storage.

- **Number of Data Nodes:** The Data Store can include one Data Node (Single Data Node deployment), or it can include three or more Data Nodes (Multi-Data Node deployment). A Data Store with only two Data Nodes is not supported.
- **Hardware or Virtual:** Make sure your Data Nodes are the same type: all hardware or all Virtual Edition.
- **Size:** Make sure your Data Nodes Virtual Edition use the same profile size so they have the same RAM, CPU, and disk space. Refer to the [Virtual Appliance Installation Guide](#) for details.
- **Telemetry Ingest:** In addition to NetFlow, you can configure telemetry ingest for NVM flows (Network Visibility Module), firewall logs, and Zeek logs.

For a successful configuration, note the following:

1. In the appliance console (SystemConfig), configure your appliances for a Data Store configuration. Make sure you configure the following appliances:
 - **Manager:** Refer to [Configuring a Manager](#)
 - **Flow Collector:** Refer to [Configuring a Flow Collector with Data Store](#)
 - **Data Nodes:** Refer to [Configuring a Data Node](#)

2. In [First Time Setup](#), make sure you [create a Data Store domain](#) for your Secure Network Analytics appliances.
3. In make sure you [create a Data Store domain](#) for your Secure Network Analytics appliances.
4. To enable telemetry ingest for NVM flows, firewall logs, and Zeek logs, make sure you complete the additional configuration instructions in [9. Configuring Telemetry](#).

Secure Network Analytics without Data Store

In Secure Network Analytics without a Data Store, the Flow Collector stores its telemetry locally on the Flow Collector or on the Flow Collector database (5000 Series only).

For a successful configuration, note the following:

1. In the appliance console (SystemConfig), make sure you configure the following appliances:
 - **Manager:** Refer to [Configuring a Manager](#)
 - **Flow Collector:** Refer to [Configuring a Flow Collector without Data Store](#)
2. In [First Time Setup](#), make sure you create a Non-Data Store domain for your Secure Network Analytics appliances.

After you finish configuring your managed system, you can add a Data Store to your deployment in the future (for instructions, refer to [Adding Data Store to a Non-Data Store Deployment](#)).

You can also transition your existing Flow Collectors to use the Data Store database without losing pre-transition data or visibility. Doing so allows you to take advantage of features only available in Data Store. For more information, refer to [Adding a Data Store to a Non-Data Store Deployment and Transitioning Your Flow Collectors](#)

Secure Network Analytics Hybrid Deployment

In Secure Network Analytics with a hybrid configuration, you can configure specific Flow Collectors to send telemetry to the Data Store Data Nodes for storage, and you can configure other Flow Collectors to store telemetry locally on the Flow Collector or the Flow Collector database (5000 Series only).

For a successful configuration, configure your appliances and domains in the following order:

1. In the appliance console (SystemConfig), configure your appliances without Data Store. Make sure you configure the following appliances:
 - **Manager:** Refer to [Configuring a Manager](#)
 - **Flow Collector:** Refer to [Configuring a Flow Collector without Data Store](#)
2. In [First Time Setup](#), make sure you create a Non-Data Store domain for your Secure Network Analytics appliances.
3. Complete all procedures through [8. Finishing Appliance Configurations](#) to finish your initial system configuration with a Non-Data Store domain.
4. Follow the instructions in [Adding Data Store to a Non-Data Store Deployment](#). You will create a Data Store domain and add Flow Collectors and Data Nodes to it.

Appliance Configuration Requirements

You need the following information to configure each appliance in First Time Setup. You will also use this information to configure your appliances into a managed system with the appliance console (SystemConfig).

Configuration Requirement	Details	Appliance
IP Address	Assign a routable IP address to the <code>eth0</code> management port.	
Netmask		
Gateway		
Host Name	A unique host name is required for each appliance. We cannot configure an appliance with the same host name as another appliance. Also, make sure each appliance host name meets the Internet standard requirements for Internet hosts.	
Domain Name	A fully qualified domain name is required for each appliance. We cannot install an appliance with an empty domain.	
DNS Servers	Internal DNS server for name resolution	
NTP Servers	Internal Time server for synchronization between servers. At least 1 NTP server is required for each appliance. Remove the 130.126.24.53 NTP server if it is in your list of servers. This server is known to be problematic and it is no longer supported in our default list of NTP servers.	
Mail Relay Server	SMTP Mail server to send alerts and notifications	
Flow Collector	Required for Flow Collectors only.	

Export Port	NetFlow Default: 2055	
Configure the interface or port channel as an access port on the dedicated VLAN meant for inter-Data Node communication.	Required for Data Nodes only. • Hardware eth2 or bond of eth2 and eth3. Creating an LACP <code>eth2/eth3</code> bonded port channel for up to 20G throughput enables faster communication between and among Data Nodes, and quicker Data Node addition or replacement to the Data Store. Note that LACP port bonding is the only bonding option available for hardware Data Nodes. • Virtual eth1	
Non-routable IP Address within a private LAN or VLAN (for inter-Data Node communication)	Required for Data Nodes only. IP Address: You can use the provided IP address or enter a value that meets the following requirements for inter-Data Node communications. • Non-routable IP Address from the 169.254.42.0/24 CIDR block, between 169.254.42.2 and 169.254.42.254 • First Three Octets: 169.254.42 • Subnet: /24 • Sequential: For ease of maintenance, select sequential IP addresses (such as 169.254.42.10, 169.254.42.11, and 169.254.42.12). Netmask: The Netmask is hard coded to 255.255.255.0 and cannot be modified.	

eth0 Hardware Connection Port	Required for Secure Network Analytics with Data Store hardware appliances only: • Manager 2210 • Flow Collector 4210 • Data Nodes eth0 Hardware Connection Port Options: • SFP+: SFP+: 10G SFP+/DAC fiber port for eth0. • BASE-T: 100Mbps/1GbE/10GbE BASE-T copper port for eth0. BASE-T is the default.	
-------------------------------	--	--

Connecting to Your Hardware (Physical) Appliances

Connect to your appliance with Cisco Integrated Management Controller (CIMC), a keyboard and monitor, or serial cable or serial console. For instructions, refer to the [x2xx Series Hardware Installation Guide](#) or the [Secure Network Analytics x3xx Series Hardware Installation Guide](#).

CIMC Access

For remote access, log in to the CIMC. If you haven't already configured the CIMC, follow the instructions in the [Cisco UCS C-Series Integrated Management Controller GUI Configuration Guide](#).

The default password is **password**. Make sure you change it when you first log in.

Connecting to Your Virtual Edition Appliances

1. Connect to your Hypervisor host (virtual machine host).
2. In the Hypervisor host, locate your virtual machine.
3. Confirm the virtual machine is powered on.

If the virtual machine does not power on, and you receive an error message about insufficient available memory, do one of the following:

- **Resources:** Increase the available resources on the system where the appliance is installed. Refer to **Resource Requirements** in the [Virtual Edition Appliance Installation Guide](#) for details.
- **VMware Environment:** Increase the memory reservation limit for the appliance and its resource pool.

Review Resource Requirements to allocate sufficient resources. This step is critical for system performance.



If you choose to deploy Cisco Secure Network Analytics appliances without the required resources, you assume the responsibility to closely monitor your appliance resource utilization and increase resources as needed to ensure proper health and function of the deployment.

4. Access the virtual machine console. Allow the virtual appliance to finish booting up.



Depending on the speed of your VM host, it may take approximately 30 minutes for all services to boot up.

1. Configuring Your Environment Using First Time Setup

When you log in to the appliance for the first time, you will use the First Time Setup tool to configure each appliance so it is managed by your Manager.

Preparation

Before you start the configuration, review the instructions so you understand the appliance configuration order, best practices, and additional requirements.

Use the following instructions to configure the environment for each appliance.



Review **Planning Your System Configuration** before you start these configuration procedures.

Appliance Configuration Overview

Appliance Instructions	Required for Data Store	Notes
Configuring a Manager	yes	A Manager is required for deployments with Data Store and without Data Store.
Configuring a Data Node	yes	You can deploy 1 Data Node (Single Data Node deployment) or 3 or more Data Nodes (Multi-Data Node deployment). Deploying only 2 Data Nodes is not supported. Make sure your Data Nodes are all hardware or all Virtual Edition. Also, make sure your Data Nodes Virtual Edition use the same profile size so they have the same RAM, CPU, and disk space. Refer to the Virtual Appliance Installation Guide for details.

Configuring a Flow Collector for Data Store	yes	The Flow Collector sends its telemetry to the Data Store Data Nodes for storage. You will also confirm telemetry types to ingest.
Configuring a Flow Collector without Data Store		The Flow Collector stores its telemetry locally on the Flow Collector or on the Flow Collector database (5000 Series only).
Configuring a Flow Sensor or UDP Director		Flow Sensors and UDP Directors are optional. To install Cisco Telemetry Broker instead of the UDP Director, finish the instructions in this guide to finish your system configuration. Then, follow the instructions in the Cisco Telemetry Broker Virtual Appliance Deployment and Configuration Guide.

Appliance Console (SystemConfig) Requirements

- Confirm your firewalls and ACLs (Access Control List) will allow access.
- Gather the host name for the appliance and IP addresses for the following:
 - appliance
 - subnet mask
 - default and broadcast gateways
 - NTP and DNS servers
 - Manager IP address for Central Management

For details, refer to [Appliance Configuration Requirements](#).

Managed Appliances

As part of the First Time Setup process, you will configure your appliance to be managed by your primary Manager.

When your appliances are managed by your Manager, you can use Central Management to edit appliance configurations, update software, reboot, shut down, and more.

Manager Failover

If you have more than one Manager, you can set up a Manager failover pair so that one of them serves as backup console to the other.

- Use the appliance console (SystemConfig) to configure each individual Manager.
- Plan which Manager will be primary and secondary.
- Define the Manager failover relationship after you configure both Managers and all other appliances with the appliance console (SystemConfig). Refer to [2. Defining a Manager Failover Relationship](#) for details.

Secure Network Analytics Domain

When you configure your Manager, you will create a Data Store domain or Non-Data Store domain for your Secure Network Analytics appliances. When you configure your other appliances in First Time Setup, you will add them to the domain you created. Refer to [Planning Your System Configuration](#) for details.

After you finish your system configuration with your first domain, you can add domains to your configuration (refer to [Domains](#)). If you configure Secure Network Analytics with a Non-Data Store domain, you can add a Data Store to your deployment after you finish the system configuration. Follow the instructions in [Adding Data Store to a Non-Data Store Deployment](#)).

Best Practices

To configure your system successfully, make sure you follow the instructions in this guide. Make sure you review the following:

- **One at a Time:** Configure one appliance at a time. Confirm the appliance is **Connected** (or **Data Store Not Initialized**) before you start configuring the next appliance in your cluster.
- **Order:** Follow the [appliance configuration order](#).
- **Multiple Central Managers:** Unless you are using multiple clusters, you can not configure more than one Central Manager in your system. However, each appliance can be managed by only one primary Manager/Central Manager.
- **Access:** You need administrator privileges to access Central Management.

1. Configure the Appliances in Order

Configure your appliances in the following order, and note the details for each appliance:

Order	Appliance	Details
1.	Configuring a Manager	Your primary Manager is your Central Manager. Make sure the Manager is shown as Connected before you start configuring the next appliance in the system. When you configure your Manager, you will create a Secure Network Analytics domain with a Data Store (Data Store domain) or without a Data Store (Non-Data Store domain).
2.	Configuring a Data Node	Required for Data Store deployments. Make sure the Data Node appliance status is Data Store Not Initialized before you configure the next appliance in your cluster.
3.	Flow Collector 5000 Series Database	Make sure the database appliance status is Connected before you start the engine configuration. Database and Engine Pair: If you have more than one database and engine pair, configure each pair one at a time. For example, configure pair1 (database1 and engine1) before you configure pair2 (database2 and engine2). In each pair, confirm the database is shown as Connected before you start the engine configuration. Also, when you configure unique host names, name each database and engine pair so you can identify them in Central

		Management. After you've completed the system configuration, you can review the appliance identity certificates in the trust stores for each pair. Refer to Reviewing Trust Store Certificates for details.
4.	Flow Collector 5000 Series Engine	Make sure the Flow Collector 5000 series database is shown Connected before you start the engine configuration.
5.	Configuring a Flow Collector with Data Store	Flow Collectors with Data Store: Make sure the appliance status is Data Store Not Initialized before you configure the next appliance in your cluster. Flow Collectors without Data Store: Make sure the appliance status is Connected before you configure the next appliance in your cluster.
6.	Configuring a Flow Sensor or UDP Director	Make sure the UDP Director appliance status is Connected before you configure the next appliance in your cluster. If you are installing Cisco Telemetry Broker instead of the UDP Director, finish the Secure Network Analytics system configuration. Then, follow the instructions in the Cisco Telemetry Broker Virtual Appliance Deployment and Configuration Guide.
7.	Configuring a Flow Sensor or UDP Director	Make sure your Flow Sensor appliance status is Connected before you start the Flow Sensor configuration.
8.	Configuring a Manager	Make sure the primary Manager appliance status is shown as Connected

		before you start the secondary Manager configuration. The secondary Manager selects itself as Central Manager. Configure Failover after all appliances are configured using the appliance console (SystemConfig). Refer to 2. Defining a Manager Failover Relationship for details.
--	--	--

 Your system might not have all the appliances shown here.

2. Configure your Appliances

Configure your appliances using the instructions below. After configuring each appliance, confirm that your appliance is shown on the Inventory tab of your Central Manager by following the instructions in **3. Confirm the Appliance Status**.

Configuring a Manager

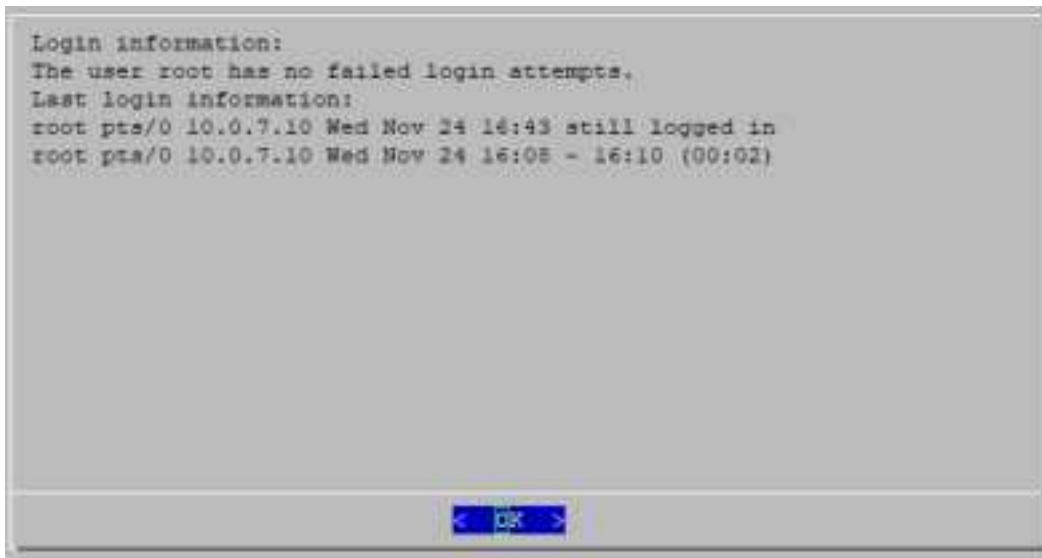
Follow the steps below to configure a Manager.

1. Log in to the Manager

1. Log in to the Manager through the console.

- **Login:** sysadmin
- **Default Password:** lan1cope
- You will change the default password when you configure the system.

2. Review the failed login attempts information. Select **OK** to continue.



3. Review the First Time Setup introduction. Select **OK** to continue.



2A. Select Your Network Mode and Enter Your Network and Server Information (IPv4 Only)

1. **Network IP Mode:** Choose one of the following, and then select **OK** to continue:

- **IPv4:** Use only IPv4.
- **IPv6:** Use only IPv6. Skip to **2B. Select Your Network Mode and Enter Your Network and Server Information (IPv6 and Dual Stack Only)** for more information.
- **Dual Stack:** Use IPv4 and IPv6. Skip to **2B. Select Your Network Mode and Enter Your Network and Server Information (IPv6 and Dual Stack Only)** for more information.



2. Enter the management interface **Host Name**, **Domain**, **IP Address** (eth0), **Netmask**, and **Gateway**, and then select **OK** to continue.



A unique host name is required for each appliance. We cannot configure an appliance with the same host name as another appliance. Also, make sure each appliance host name meets the Internet standard requirements for Internet hosts.

First Time Setup: 0% complete

Enter your network information:

Host Name: smc-
Domain:
IPv4 Address: 10.
IPv4 Netmask: 255.
IPv4 Gateway: 10.

< OK > < Back > < Cancel >

3. Confirm your settings. Select **Yes** to continue.

First Time Setup: 0% complete

Host Name: smc
Domain:
FQDN: smc-
IPv4 Address: 10.
IPv4 Netmask: 255.
IPv4 Gateway: 10.

Are these the correct settings?

< Yes > < No >

2B. Select Your Network Mode and Enter Your Network and Server Information (IPv6 and Dual Stack Only)



SLAAC Patch Installation: In order to access the SLAAC options for IPv6, you will first have to ensure that patch **ROLLUP20240222-01.swu** (or the latest, most recent patch) has been installed on this appliance before proceeding with this procedure. Follow the patch readme instructions to install patch **ROLLUP20240222-01.swu**. There is a separate patch readme for each appliance posted to [Patch Readmes](#).

4. **Network IP Mode:** Choose one of the following, and then select **OK** to continue:
- **IPv6:** Use only IPv6.
 - **Dual Stack:** Use IPv4 and IPv6.



5. Choose an IPv6 address type, and then select **OK** to continue.

- **Static IPv6:** Configuring a static IPv6 address ensures that each device is manually assigned a unique IPv6 address. This method is often used for servers or network infrastructure devices where a constant address is necessary.
- **SLAAC (EUI-64):** EUI-64 is the name of the method to generate the 64 bit interface Identifier, which is used for auto-generated addresses.
- **SLAAC (Opaque):** Configuring an IPv6 address using this method serves as an alternative to generating Interface Identifiers based on hardware addresses such as IEEE LAN Media Access Control (MAC) addresses. In doing so, the benefits of stable addresses can be achieved without sacrificing the security and privacy of users.



6. One of the following options will apply depending on which IPv6 address type you select:

- If you select Static IPv6, enter the management interface **Host Name**, **Domain**, **IPv6 Address** (eth0), **IPv6 Prefix Length**, and **IPv6 Gateway**, and then select **OK** to continue.
- If you select SLAAC (EUI-64) or SLAAC (Opaque) then enter the management interface **Host Name** and **Domain**. The other IPv6 fields will be auto-configured. Select **OK** to continue.



A unique host name is required for each appliance. We cannot configure an appliance with the same host name as another appliance. Also, make sure each appliance host name meets the Internet standard requirements for Internet hosts.

First Time Setup: 7% complete

Enter your network information:

Host Name:

Domain:

IPv6 Address:

IPv6 Prefix Length:

IPv6 Gateway:

< OK > < Back > < Cancel >

7. Confirm your settings. Select **Yes** to continue.

First Time Setup: 0% complete

Host Name:

Domain:

FQDN:

IPv6 Address: Auto-Configured SLAAC (EUI-64)

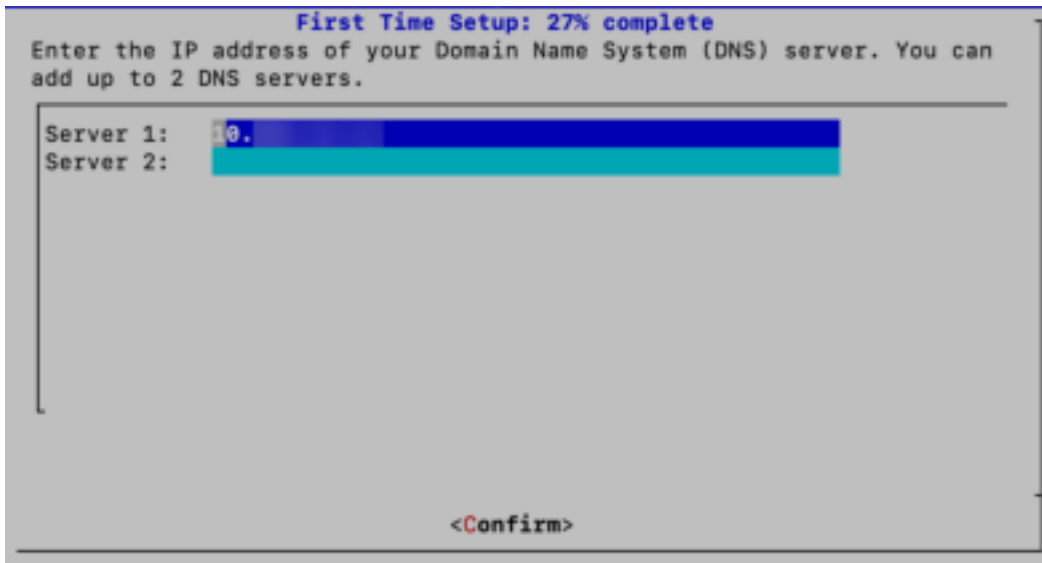
IPv6 Prefix Length: 64

IPv6 Gateway: Auto-Configured SLAAC (EUI-64)

Are these the correct settings?

< Yes > < No >

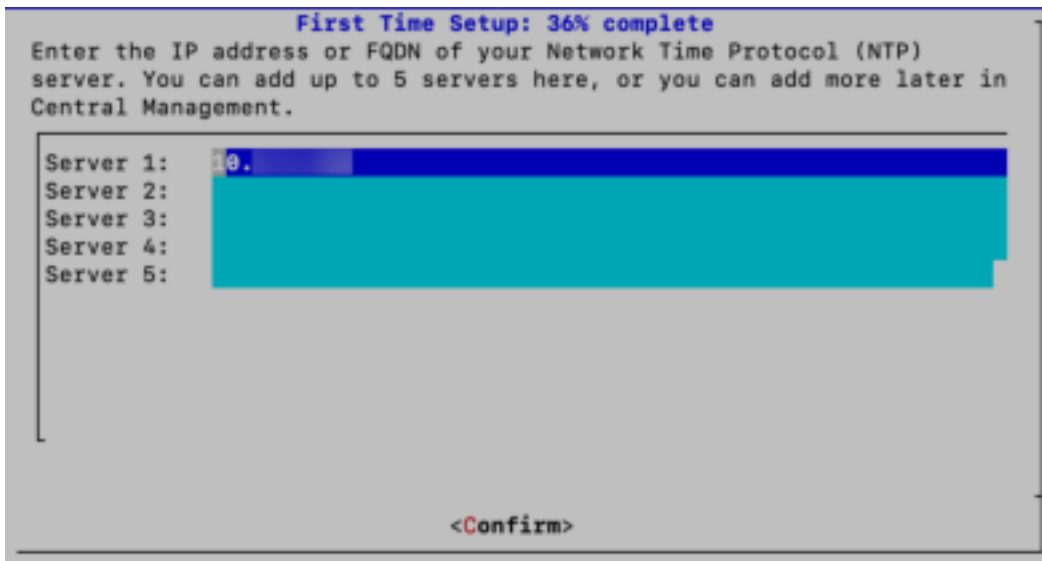
8. **DNS Settings:** Enter your domain server IP address. Select **Confirm** to continue.



The screenshot shows a terminal window titled "First Time Setup: 27% complete". The text inside reads: "Enter the IP address of your Domain Name System (DNS) server. You can add up to 2 DNS servers." Below this, there are two input fields labeled "Server 1:" and "Server 2:". The "Server 1:" field contains the text "10." followed by a blue cursor bar. The "Server 2:" field is empty. At the bottom of the screen, there is a red prompt "<Confirm>".

9. **NTP Settings:** Enter the IP address or FQDN of your NTP servers. Select **Confirm** to continue.

Multiple NTP Servers: We recommend setting up multiple NTP servers for redundancy and accuracy.



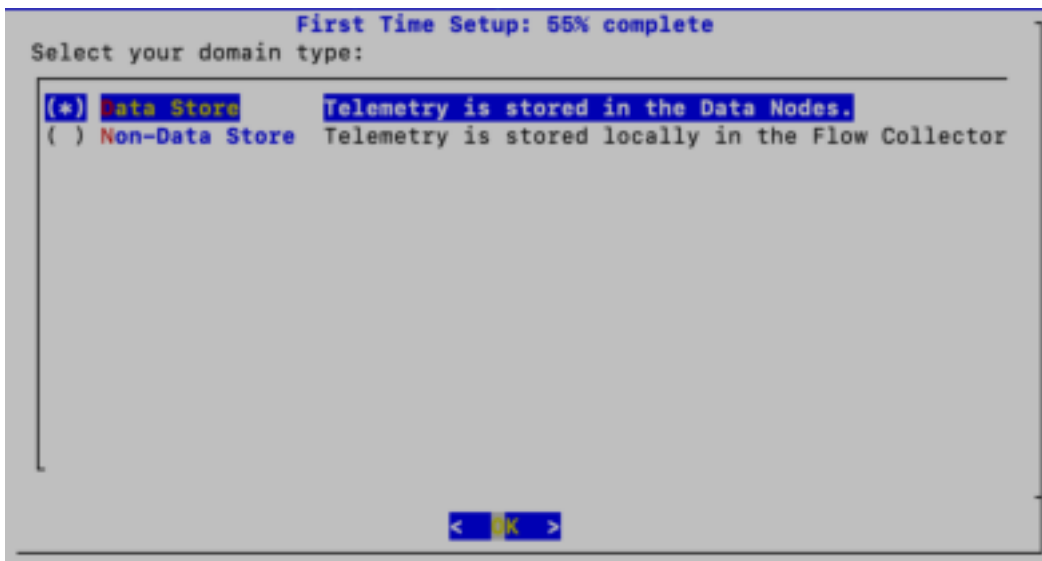
The screenshot shows a terminal window titled "First Time Setup: 36% complete". The text inside reads: "Enter the IP address or FQDN of your Network Time Protocol (NTP) server. You can add up to 5 servers here, or you can add more later in Central Management." Below this, there are five input fields labeled "Server 1:", "Server 2:", "Server 3:", "Server 4:", and "Server 5:". The "Server 1:" field contains the text "10." followed by a blue cursor bar. The other four fields are empty. At the bottom of the screen, there is a red prompt "<Confirm>".

3. Enter Your Domain Name and Select Your Domain Type

1. Enter a name for your Secure Network Analytics domain. You can change this name later in Central Management. Select **OK** to continue.



2. Choose your domain type. For this example, we are selecting a Data Store. Select **OK** to continue.



3. Confirm your domain type settings are correct. Select **Yes** to continue.



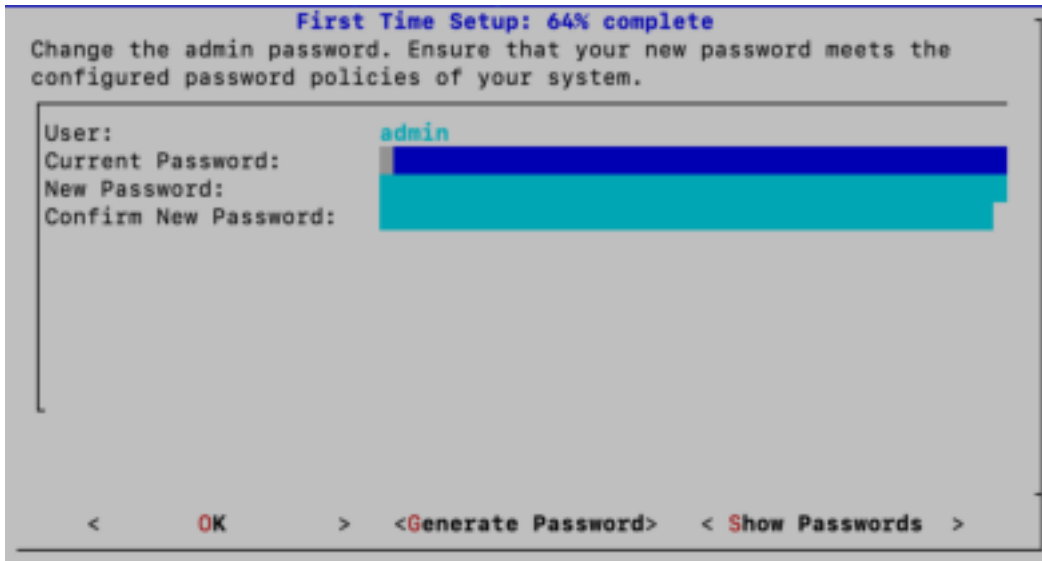
4. Change Your Passwords and Reboot Your Appliance

1. Change your **admin** password by entering your current and new admin passwords. To create a system generated password, click **Generate Password**. Select **OK** to continue.

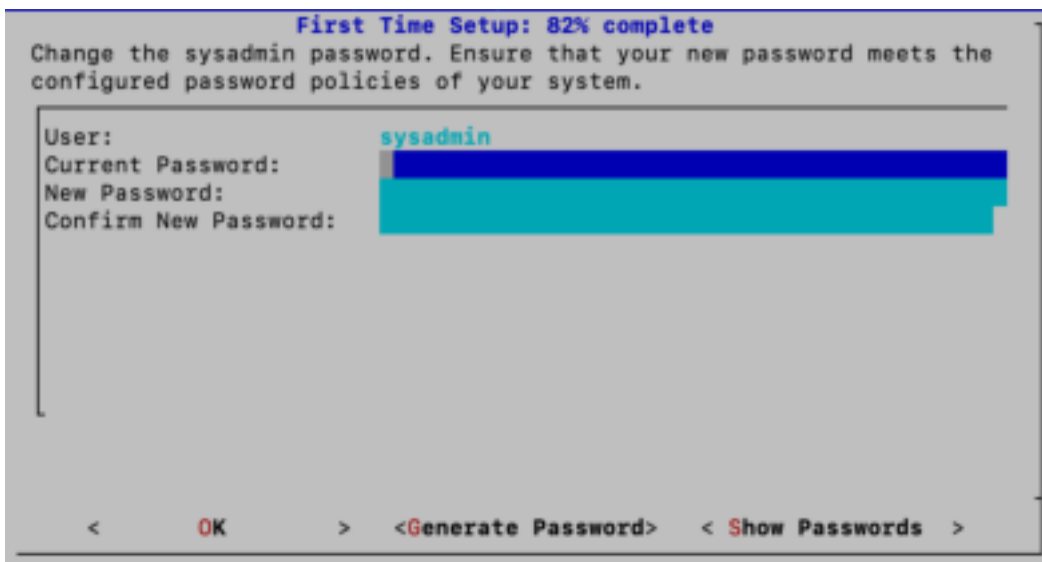
Use the following criteria:

- **Length:** 16 to 256 characters
- **Change:** Make sure the new password is different from the default password by at least 4 characters.

User	Default Password
admin	lan411cope
sysadmin	lan1cope



2. Change your **sysadmin** password by entering your current and new sysadmin passwords. To create a system generated password, click **Generate Password**. Select **OK** to continue.



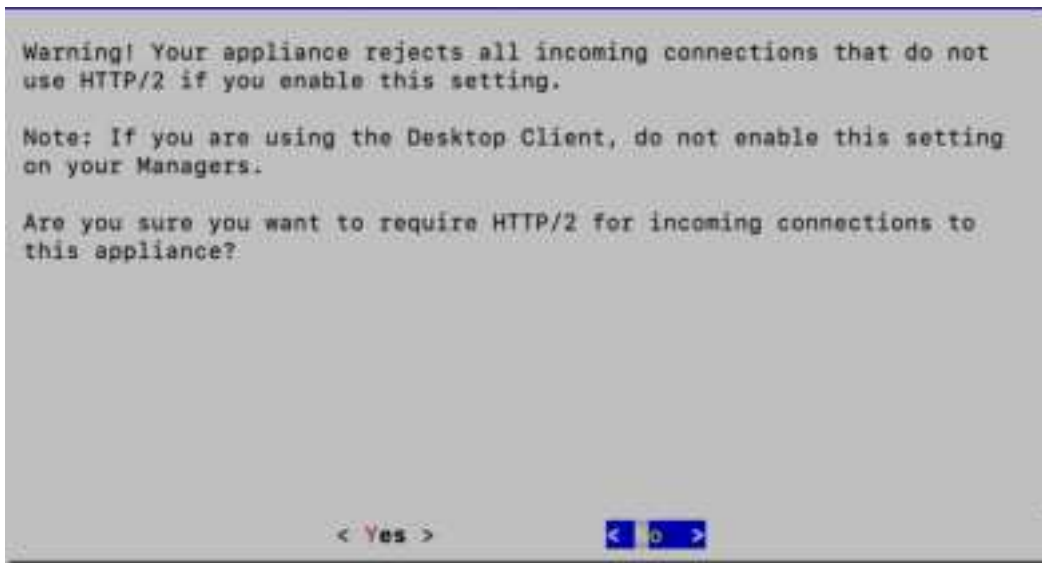
3. Your password changes will be saved and the system will initialize Central Management. If successful, you will see the following message. Select **OK** to continue.

5. Select the HTTP/2 Settings

1. Select the HTTP/2 settings for incoming connections.

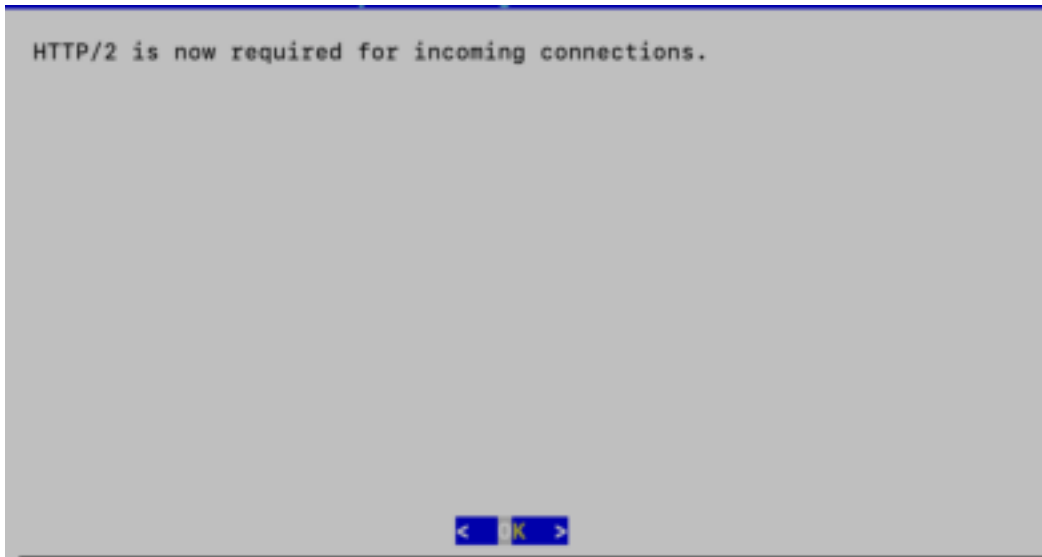
- **Yes:** Enables the HTTP/2 setting. When enabled, your appliance rejects any incoming connections that do not use HTTP/2.
- **No:** Disables the HTTP/2 setting. When disabled, your appliance accepts all incoming connections.

 HTTP/2 setting is disabled by default.



Do not enable this setting if you are using the Desktop Client or Firepower Management Center.

2. Select **OK**.

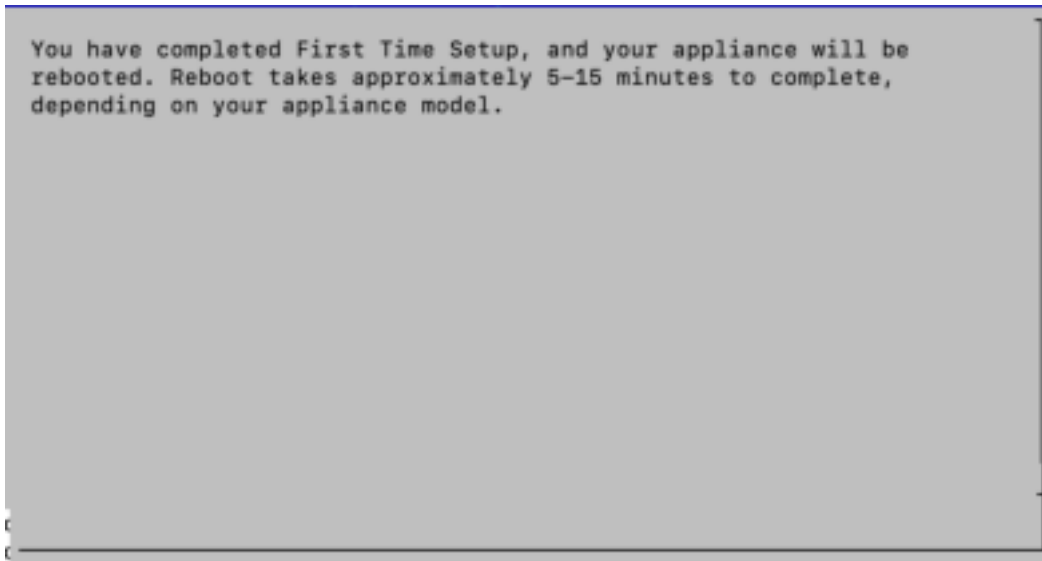


Avoid using keyboard interrupts during the "Initializing Central Management..." phase of the First Time Setup on the Manager.

⚠ Interrupting this process causes registration failures in subsequent attempts until a factory reset is performed. Ensure that the registration completes uninterrupted for successful setup.



3. A message appears notifying you that you have completed First Time Setup and your appliance will be rebooted in approximately 5-15 minutes.



Make sure the primary Manager appliance status is shown as Connected before you start configuring the next appliance in your cluster using the [configuration order and details](#).

If you've configured all Managers in First Time Setup, return to **Appliance Configuration Overview** and configure your Flow Collectors and other appliances.

Configuring a Data Node

You can deploy 1 Data Node (Single Data Node deployment) or 3 or more Data Nodes (Multi-Data Node deployment). Deploying only 2 Data Nodes is not supported.



A Data Node is only required if you are configuring a Data Store. If you are not configuring a Data Store, your next step is to configure a Flow Collector without a Data Store.

1. Log in to the Data Node

1. Log in to a Data Node through the console.
 - **Login:** sysadmin
 - **Default Password:** lan1cope
 - You will change the default password when you configure the system.
2. Review the failed login attempts information. Select **OK** to continue.



3. Review the First Time Setup introduction. Select **OK** to continue.



2. Select Your Network Mode and Enter Your Network, Server, and Physical Port Information

1. **Network IP Mode:** Choose one of the following, and then select **OK** to continue:

- **IPv4:** Use only IPv4.
- **Dual Stack:** Use IPv4 and IPv6.



2. Enter the management interface **Host Name**, **Domain**, **IP Address** (eth0), **Netmask**, and **Gateway**, and then select **OK** to continue.



A unique host name is required for each appliance. We cannot configure an appliance with the same host name as another appliance. Also, make sure each appliance host name meets the Internet standard requirements for Internet hosts.

First Time Setup: 8% complete

Enter your network information:

Host Name: sdbn-

Domain:

IPv4 Address: 10.

IPv4 Netmask: 255.

IPv4 Gateway: 10.

< OK > < Back > < Cancel >

3. Confirm your settings. Select **Yes** to continue.

First Time Setup: 8% complete

Host Name: sdbn-

Domain:

FQDN: sdbn-

IPv4 Address: 10.

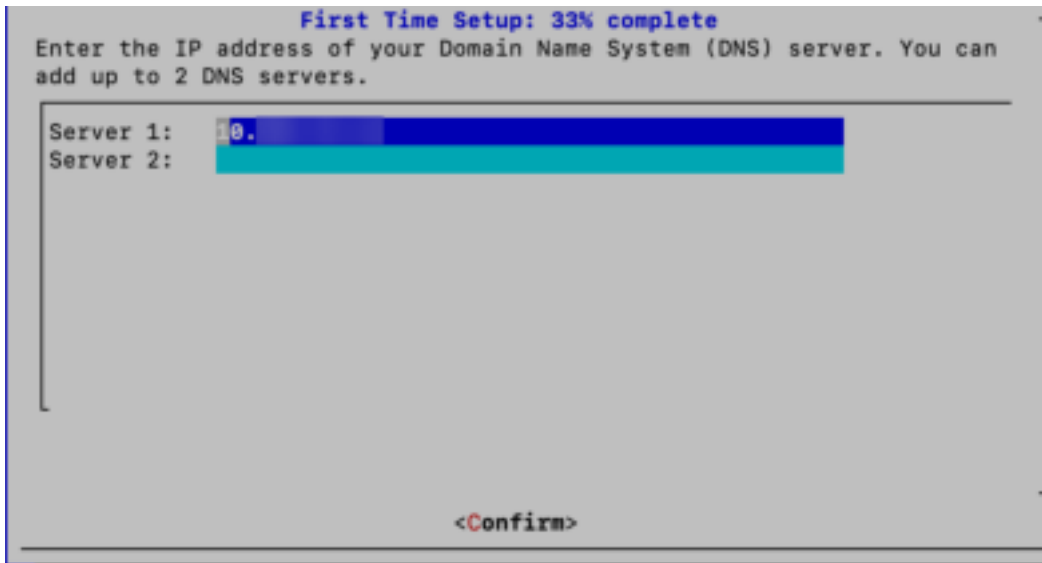
IPv4 Netmask: 255.

IPv4 Gateway: 10.

Are these the correct settings?

< Yes > < No >

4. **DNS Settings:** Enter your domain server IP address. Select **Confirm** to continue.



First Time Setup: 33% complete

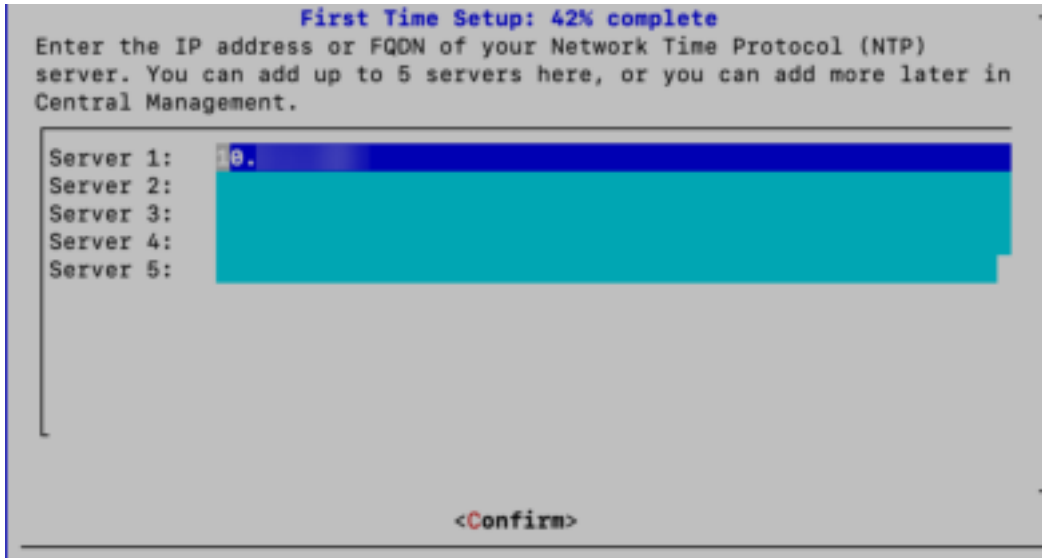
Enter the IP address of your Domain Name System (DNS) server. You can add up to 2 DNS servers.

Server 1: 10. [redacted]
Server 2: [redacted]

<Confirm>

5. **NTP Settings:** Enter the IP address or FQDN of your NTP servers. Select **Confirm** to continue.

Multiple NTP Servers: We recommend setting up multiple NTP servers for redundancy and accuracy.



First Time Setup: 42% complete

Enter the IP address or FQDN of your Network Time Protocol (NTP) server. You can add up to 5 servers here, or you can add more later in Central Management.

Server 1: 10. [redacted]
Server 2: [redacted]
Server 3: [redacted]
Server 4: [redacted]
Server 5: [redacted]

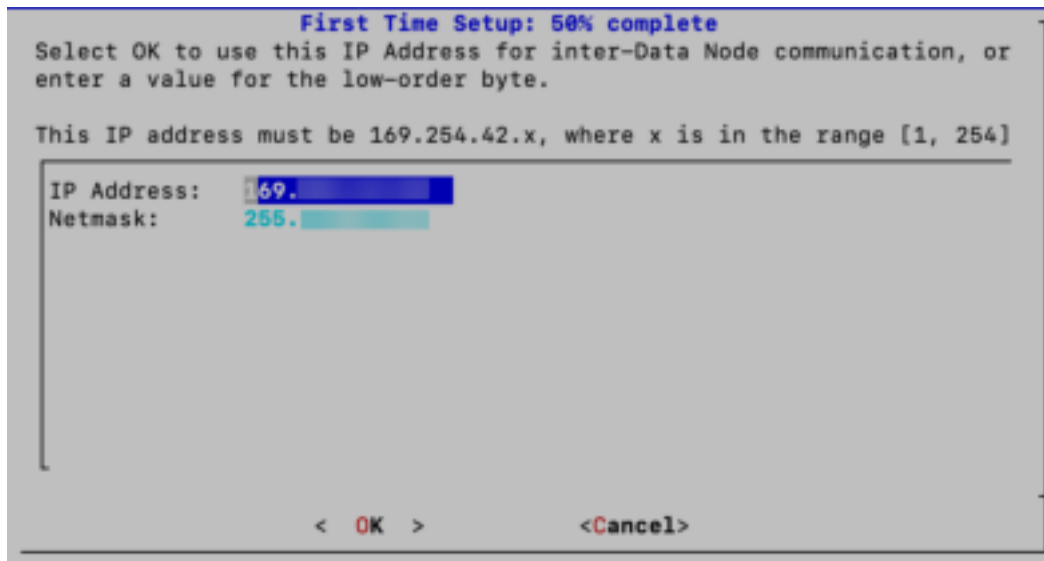
<Confirm>

6. Configure the physical port (eth2) or port channel (eth2 and eth3) for inter-Data Node communications.

 For hardware Data Nodes, configuring an `eth2` port for 10G throughput is sufficient for normal inter-Data Node communication. Creating an LACP `eth2/eth3` bonded port channel for up to 20G throughput enables faster communication between and among Data Nodes, and quicker Data Node addition or replacement to the Data Store, as each new Data Node receives traffic from adjacent Data Nodes to populate its data. Note that LACP port bonding is the only bonding option available for hardware Data Nodes.

Enter the following:

Field	Requirements
IP Address	Use the provided IP address or enter a value that meets the following requirements for the eth2 and eth3 interface for inter-Data Node communications. • Non-routable IP Address from the 169.254.42.0/24 CIDR block, between 169.254.42.2 and 169.254.42.254. • First Three Octets: 169.254.42 • Subnet: /24 • Sequential: For ease of maintenance, select sequential IP addresses (such as 169.254.42.10, 169.254.42.11, and 169.254.42.12).
Netmask	255.255.255.0



7. Select **OK** to continue.
8. Confirm your changes are correct. Select **OK** to continue.



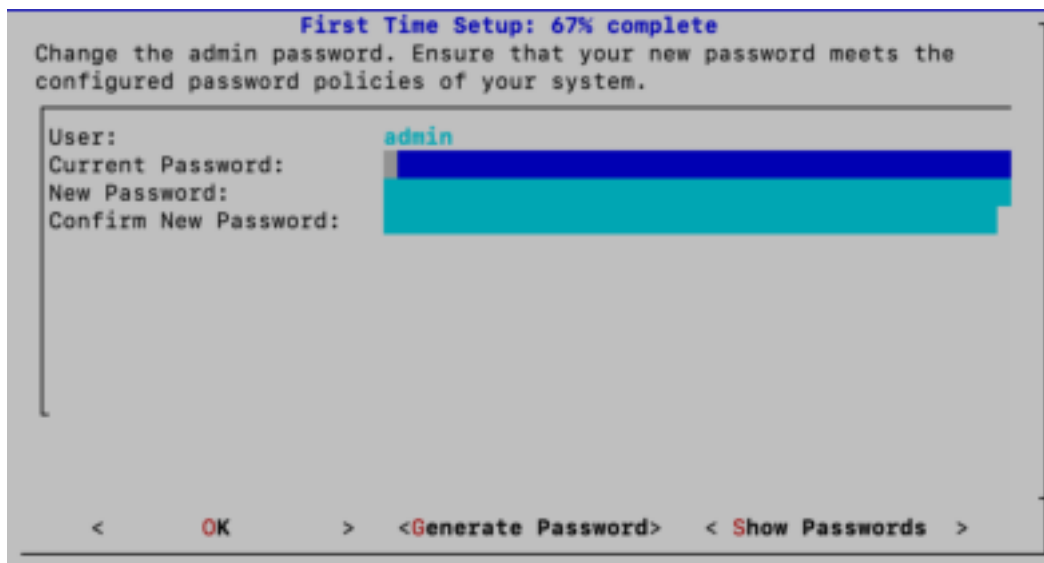
3. Change Your Passwords

1. Change your **admin** password by entering your current and new admin passwords. To create a system generated password, click **Generate Password**. Select **OK** to continue.

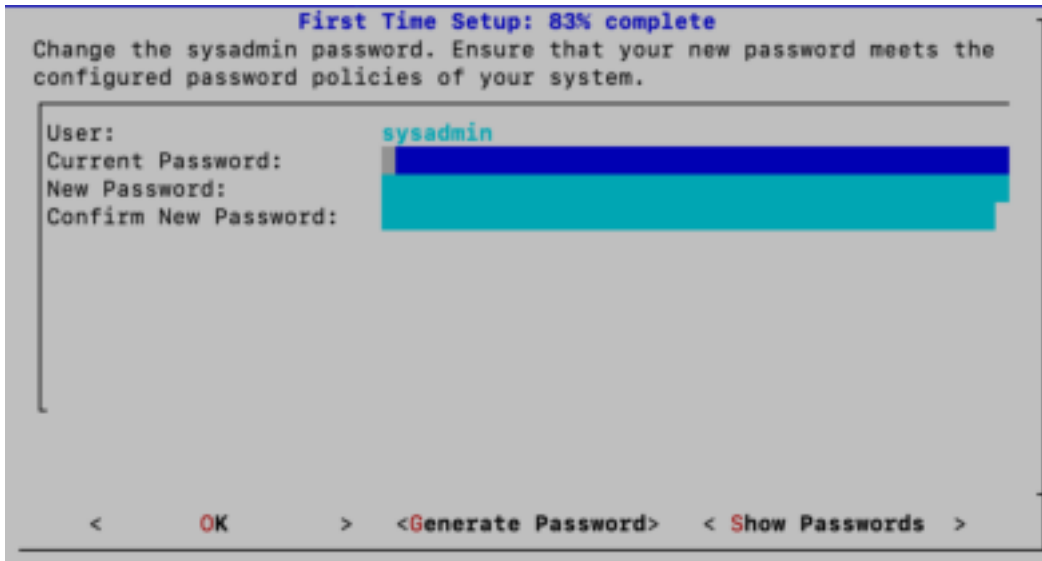
Use the following criteria:

- **Length:** 16 to 256 characters
- **Change:** Make sure the new password is different from the default password by at least 4 characters.

User	Default Password
admin	lan411cope
sysadmin	lan1cope



2. Change your **sysadmin** password by entering your current and new sysadmin passwords. To create a system generated password, click **Generate Password**. Select **OK** to continue.

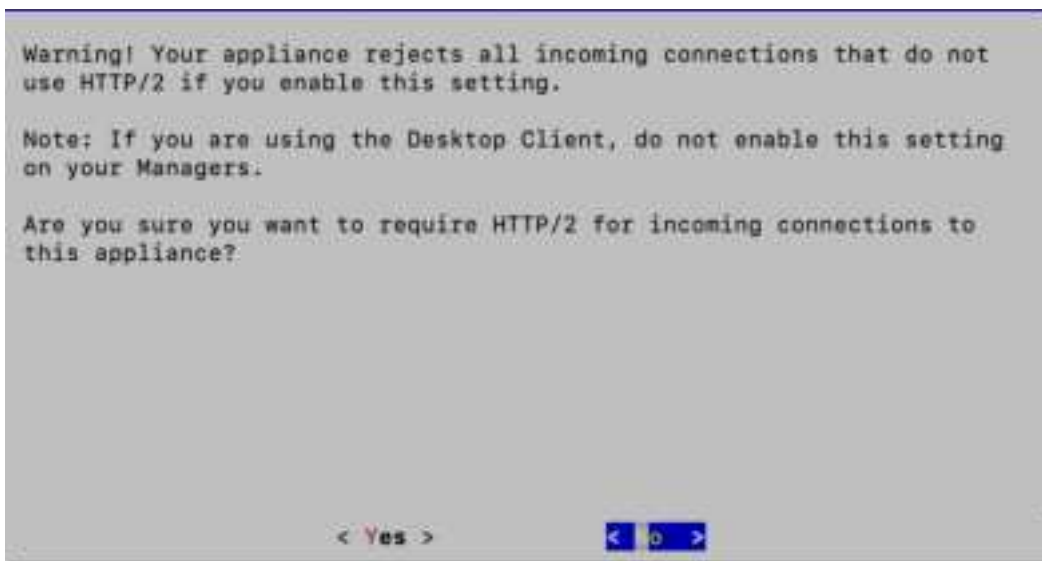


4. Select the HTTP/2 Settings

1. Select the HTTP/2 settings for incoming connections.

- **Yes:** Enables the HTTP/2 setting. When enabled, your appliance rejects any incoming connections that do not use HTTP/2.
- **No:** Disables the HTTP/2 setting. When disabled, your appliance accepts all incoming connections.

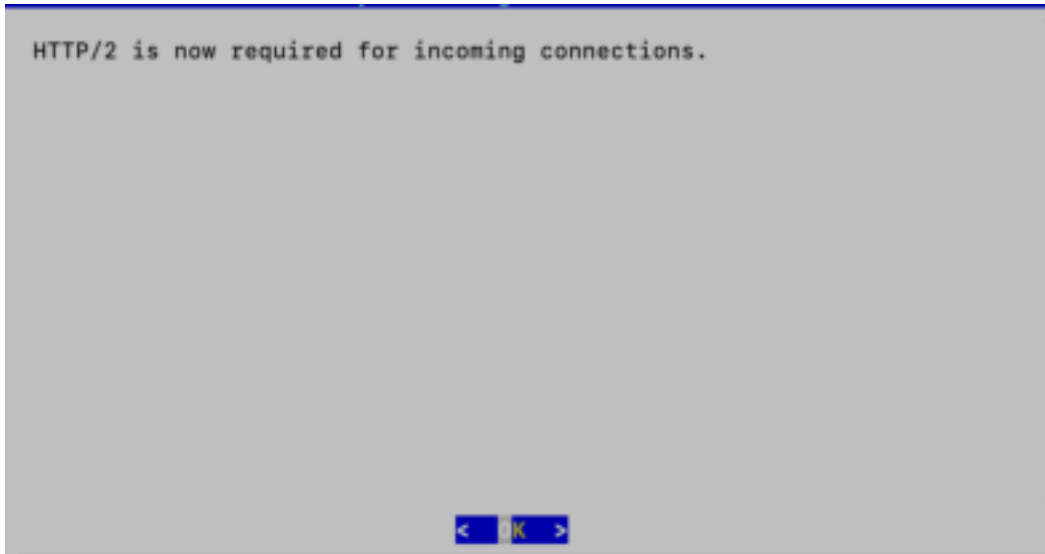
i HTTP/2 setting is disabled by default.





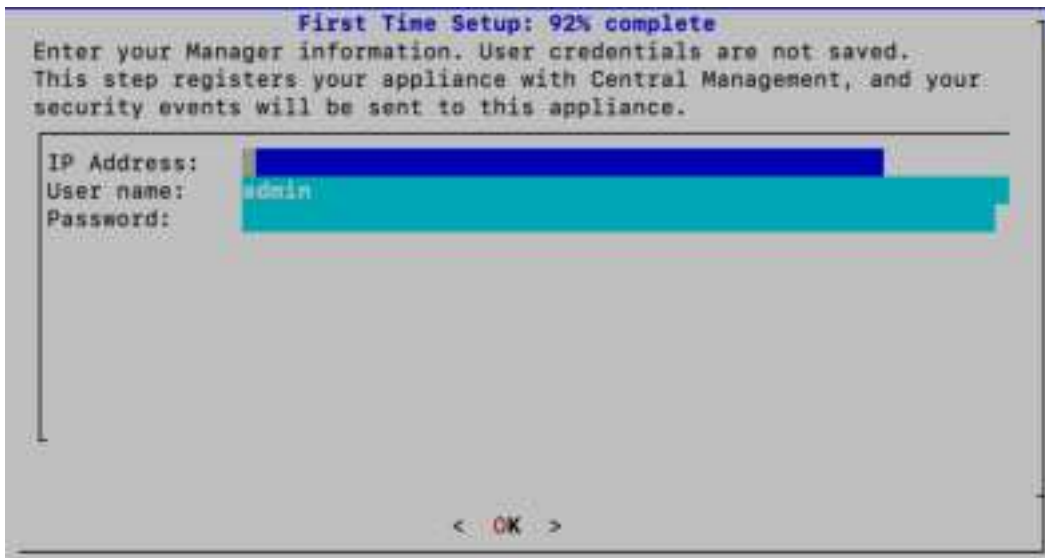
Do not enable this setting if you are using the Desktop Client or Firepower Management Center.

2. Select **OK**.



5. Connect to the Manager and Reboot Your Appliance

1. Enter your Manager information to register your appliance with Central Management. User credentials are not saved. Select **OK** to continue.



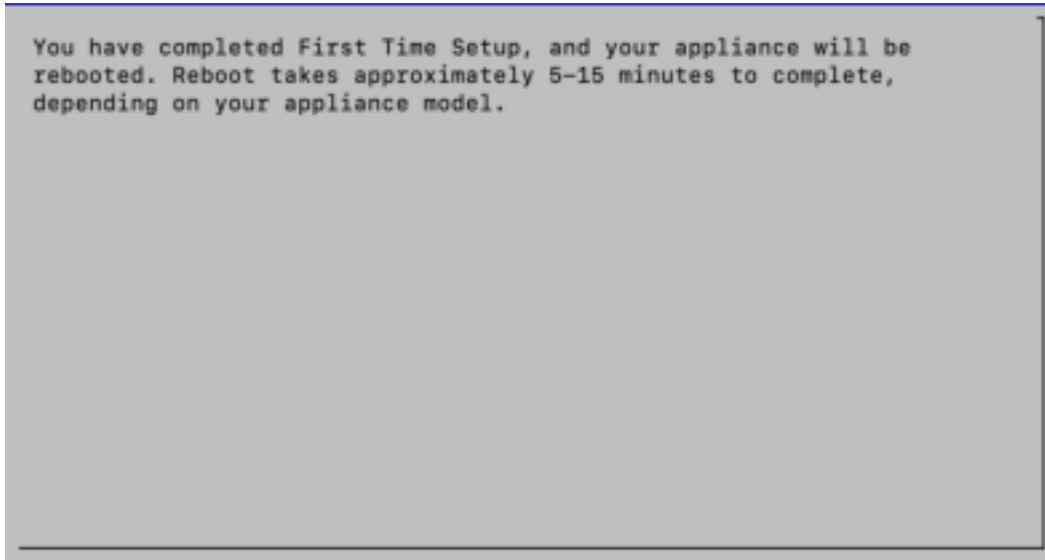
2. Review your Manager identify certificate. Select **Yes** to trust the certificate and move to the next step.



3. A success message appears when you have successfully registered your appliance with Central Management. Select **OK** to continue.



4. A message appears notifying you that you have completed First Time Setup and your appliance will be rebooted in approximately 5-15 minutes.



5. Repeat all the steps in [Configuring a Data Node](#) for the next Data Node in your system.

If you've configured all Data Nodes in First Time Setup, go to the next section and configure your Flow Collectors with Data Store or return to [Appliance Configuration Overview](#) and configure your other appliances.

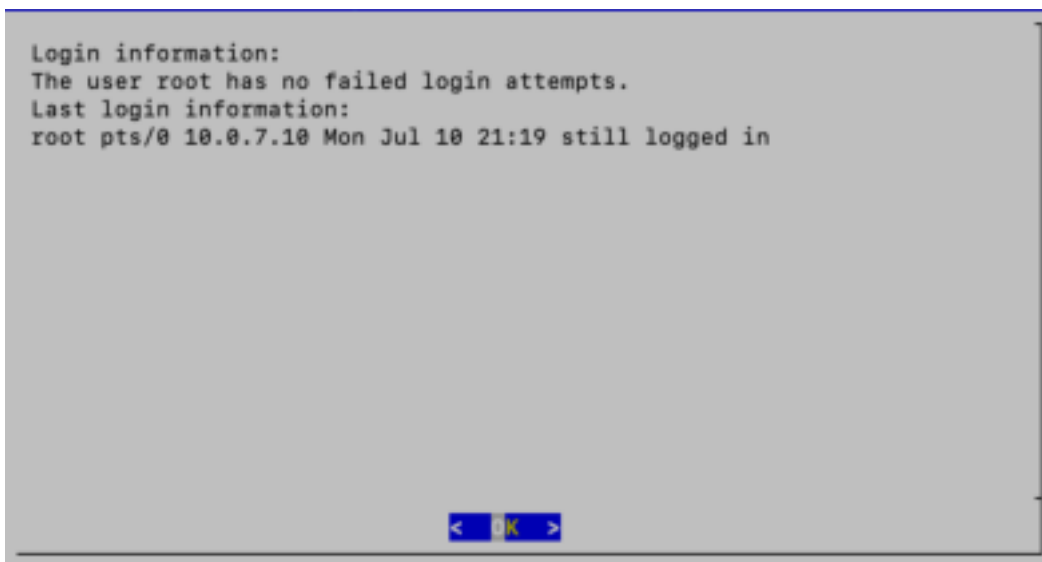
Configuring a Flow Collector with Data Store

If you configure your Flow Collector for use with the Data Store, the Flow Collector sends its telemetry to the Data Store Data Nodes for storage. You will also confirm telemetry types to ingest.

i Starting in v7.4.2, you can transition Non-Data Store Flow Collectors to Data Store Flow Collectors. Refer to [Adding a Data Store to a Non-Data Store Deployment and Transitioning Your Flow Collectors](#) for more information.

1. Log in to the Flow Collector

1. Log in to the Flow Collector through the console.
 - **Login:** sysadmin
 - **Default Password:** lan1cope
 - You will change the default password when you configure the system.
2. Review the failed login attempts information. Select **OK** to continue.



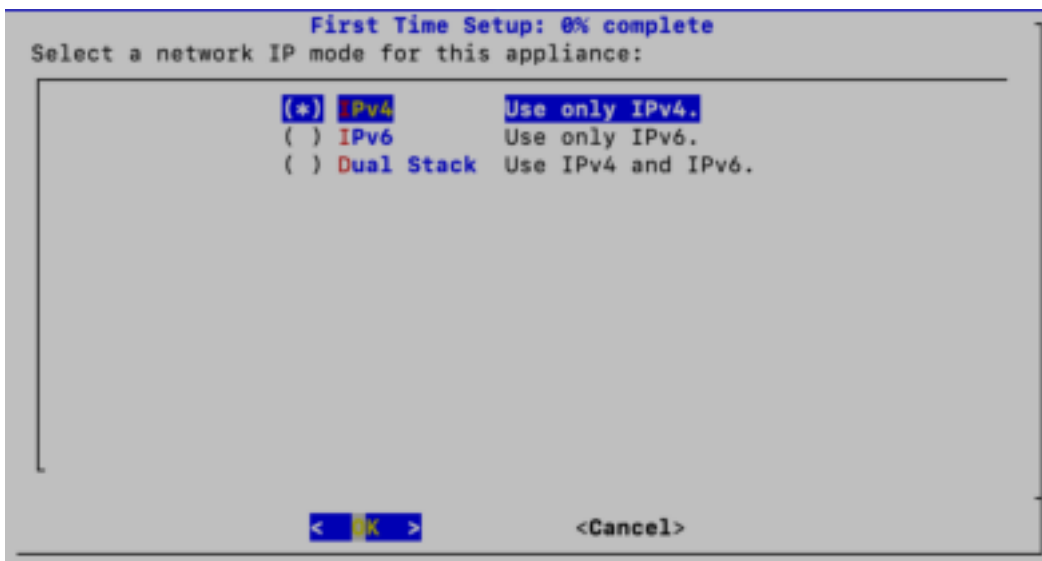
3. Review the First Time Setup Introduction. Select **OK** to continue.



2. Select Your Network Mode and Enter Your Network and Server Information

1. **Network IP Mode:** Choose one of the following, and then select **OK** to continue:

- **IPv4:** Use only IPv4.
- **IPv6:** Use only IPv6.
- **Dual Stack:** Use IPv4 and IPv6.





SLAAC Patch Installation: In order to access the SLAAC options for IPv6, you will first have to ensure that patch **ROLLUP20240222-01.swu** (or the latest, most recent patch) has been installed on this appliance before proceeding with this procedure. Follow the patch readme instructions to install patch **ROLLUP20240222-01.swu**. There is a separate patch readme for each appliance posted to [Patch Readmes](#). For detailed information on configuring SLAAC options, refer to the IPv6 configuration instructions shown in [Configuring a Manager](#).

2. Enter the management interface **Host Name**, **Domain**, **IP Address** (eth0), **Netmask**, and **Gateway**, and then select **OK** to continue.



A unique host name is required for each appliance. We cannot configure an appliance with the same host name as another appliance. Also, make sure each appliance host name meets the Internet standard requirements for Internet hosts.

Flow Collector 5000 Series Database and Engine Pair: Name each database and engine pair with unique host names that will help you identify the pair in Central Management. For example, database1 and engine1, database2 and engine2.

First Time Setup: 0% complete

Enter your network information:

Host Name: flow-

Domain:

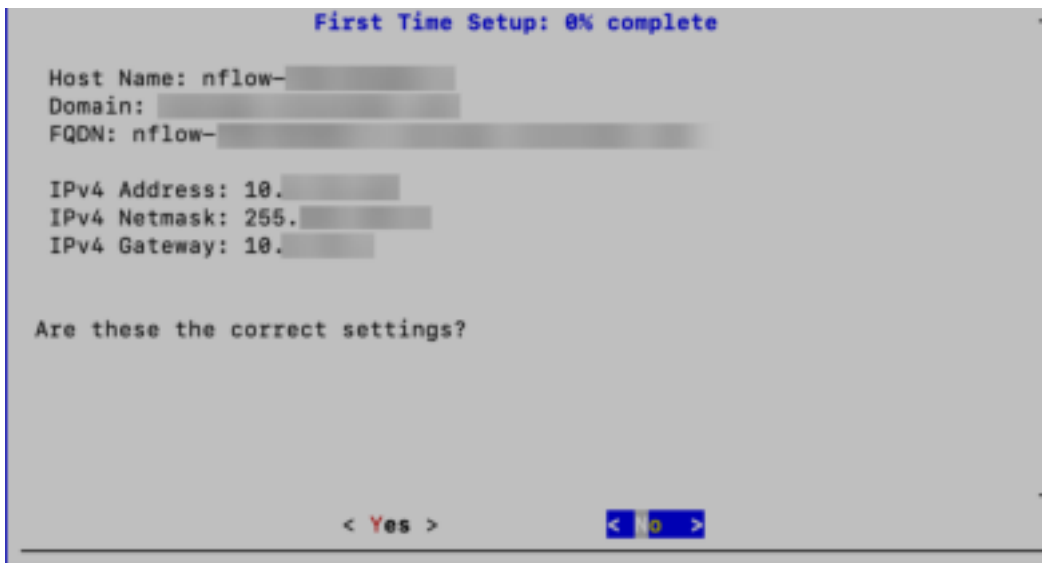
IPv4 Address: 10.

IPv4 Netmask: 255.

IPv4 Gateway: 10.

< OK > < Back > <Cancel>

3. Confirm your settings. Select **Yes** to continue.



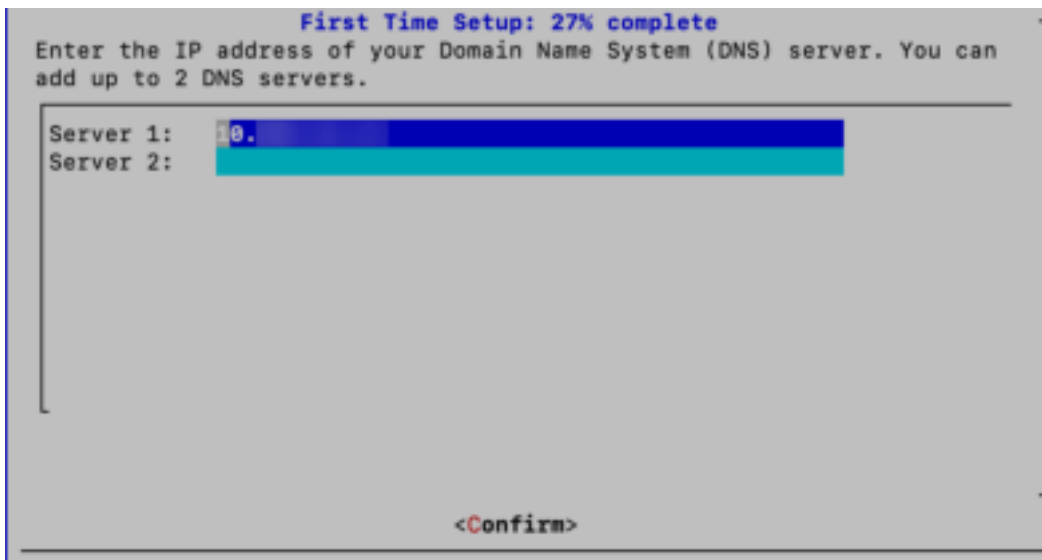
First Time Setup: 0% complete

Host Name: nflow-
Domain:
FQDN: nflow-
IPv4 Address: 10.
IPv4 Netmask: 255.
IPv4 Gateway: 10.

Are these the correct settings?

< Yes >

4. **DNS Settings:** Enter your domain server IP address. Select **Confirm** to continue.



First Time Setup: 27% complete

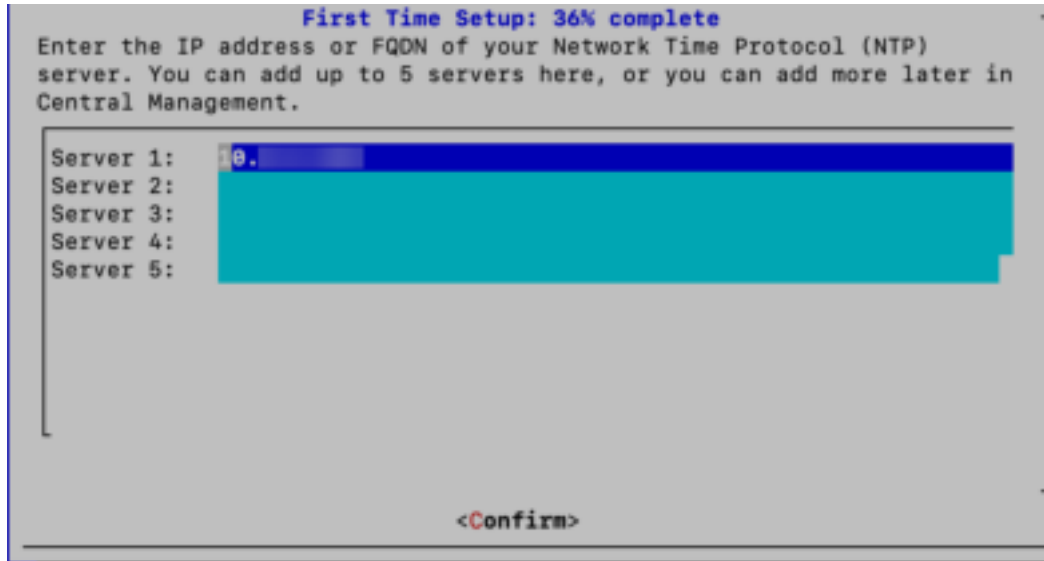
Enter the IP address of your Domain Name System (DNS) server. You can add up to 2 DNS servers.

Server 1: 10.
Server 2:

<Confirm>

5. **NTP Settings:** Enter the IP address or FQDN of your NTP servers. Select **Confirm** to continue.

Multiple NTP Servers: We recommend setting up multiple NTP servers for redundancy and accuracy.



First Time Setup: 36% complete

Enter the IP address or FQDN of your Network Time Protocol (NTP) server. You can add up to 5 servers here, or you can add more later in Central Management.

Server 1: 10. [redacted]
Server 2: [redacted]
Server 3: [redacted]
Server 4: [redacted]
Server 5: [redacted]

<Confirm>

3. Select Your Data Store Deployment Option

1. Do you want to deploy this Flow Collector as part of a Data Store? Select **Yes**.

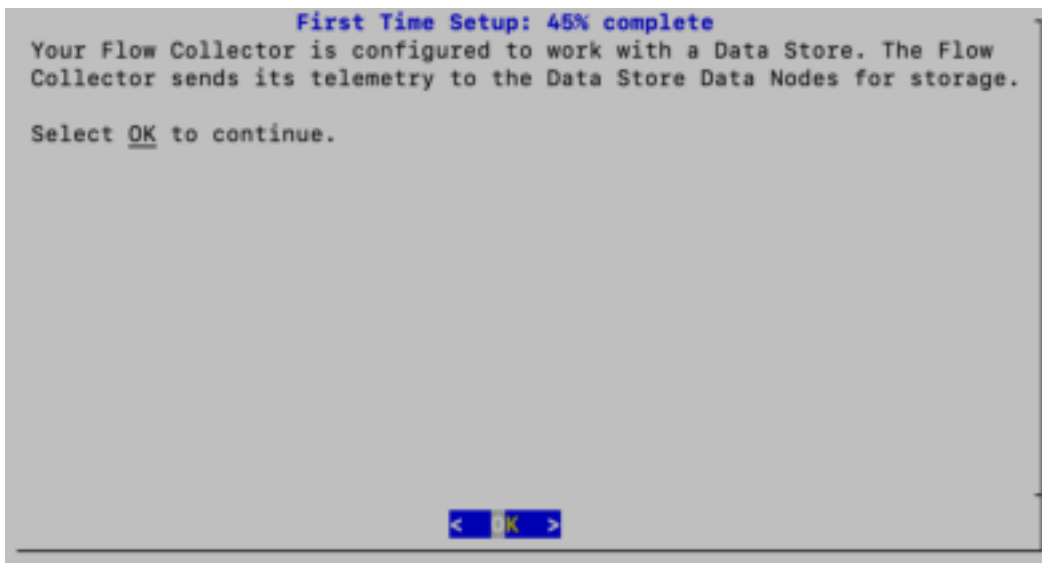
After you choose to configure your Flow Collector for use with Data Store, you cannot change this configuration. Select Yes only if you plan to deploy a Data Store to your network.

! If you need to deploy Secure Network Analytics without a Data Store, do not follow the instructions in this section. Follow the instructions in [Configuring a Flow Collector without Data Store](#).

If you select the wrong choice, deploy a new virtual appliance or RFD your appliance.



2. Review the message below. Select **OK** to continue.



4. Select Your Flow Collector Telemetry Types

1. Select which telemetry types to ingest.

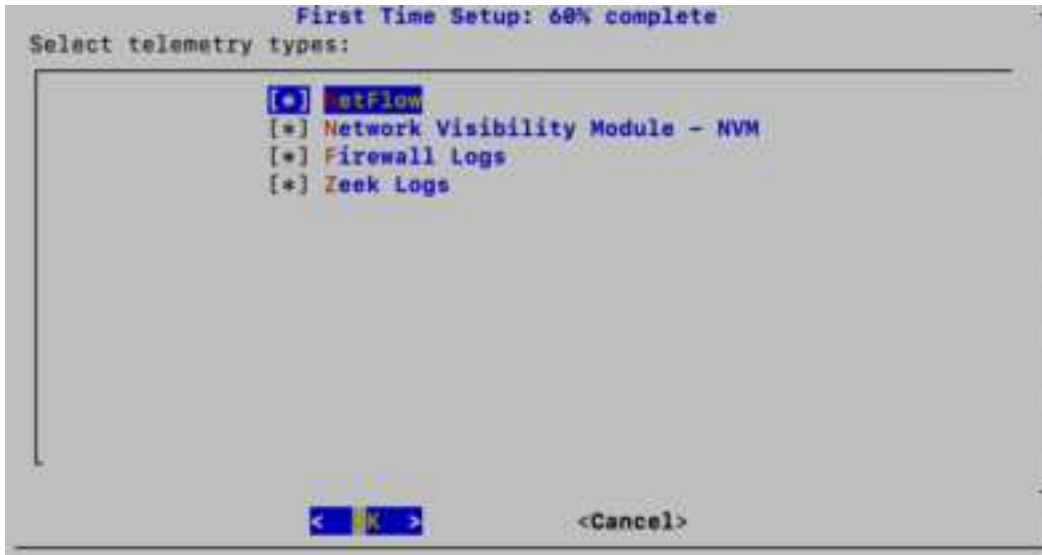
- **Default:** All telemetry types are selected by default. The asterisk (*) indicates the selected telemetries.
- **Deselecting:** To deselect a telemetry, select the telemetry type and click it (or press the space key on your keyboard).

More Information:

- **Network Visibility Module - NVM:** If you select Network Visibility Module - NVM, the Flow Collector will ingest and store NVM flows. Refer to the [Cisco Secure Network Analytics Network Visibility Module \(NVM\) Configuration Guide](#) for more information.
- **Firewall Logs:** If you select Firewall Logs, the Flow Collector will ingest and store firewall event logs for Cisco Security Analytics and Logging (On Premises). Refer to the [Security Analytics and Logging: Firewall Event Integration Guide](#) for more information.
- **Zeek Logs:** When you select Zeek, Zeek telemetry will be included with Secure Network Analytics if you've set up Data Store and enabled Analytics. Refer to the [Zeek Configuration Guide](#).



If you configure the Flow Collector to have NetFlow disabled, updating configuration options, such as altering Exporters, Host Groups, Security Events, Host Reports, etc., will have no effect.



2. Enter the UDP port for the selected telemetry types. Select **OK**.



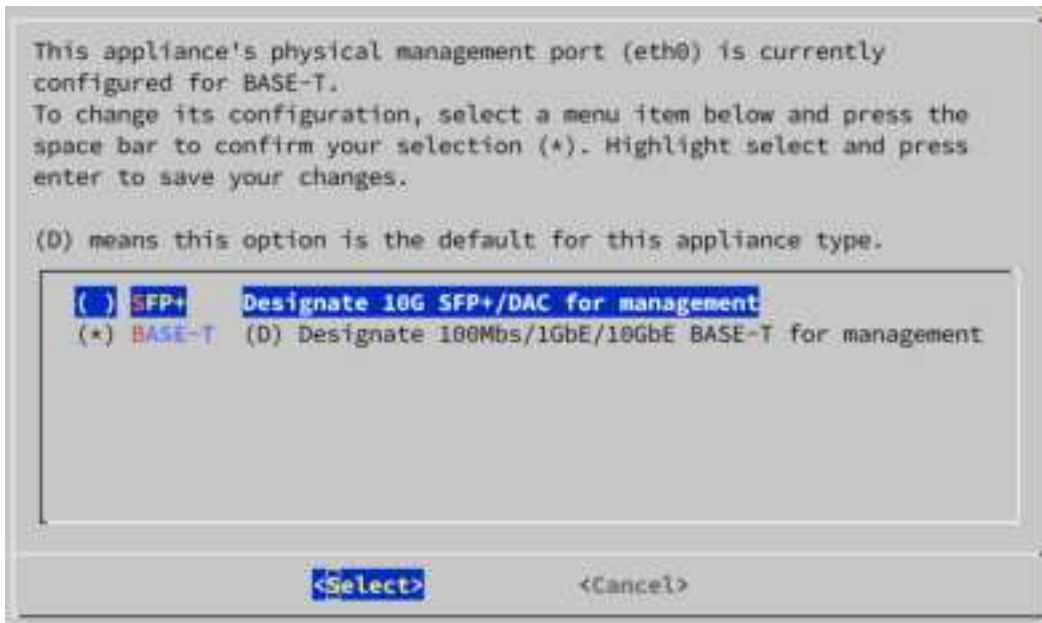
Make sure your telemetry ports are unique. If you configure duplicate telemetry ports, the ports will be reset to their internal defaults to avoid loss of flow data. For example, if NetFlow and NVM are exported to the same telemetry port, each device exporting NVM data will create an exporter on the Flow Collector and exhaust the exporter resources in the Flow Collector engine, resulting in loss of flow data.

3. Confirm your settings. Select **Yes** to continue.



4. **Port Order Configuration for eth0 (Flow Collector 4210 Hardware Only):** Choose one of the following:

- **SFP+:** Configure your appliance to use a 10G SFP+/DAC fiber port for eth0.
- **BASE-T:** Configure your appliance to use a 100Mbps/1GbE/10GbE BASE-T copper port for eth0. BASE-T is the default.



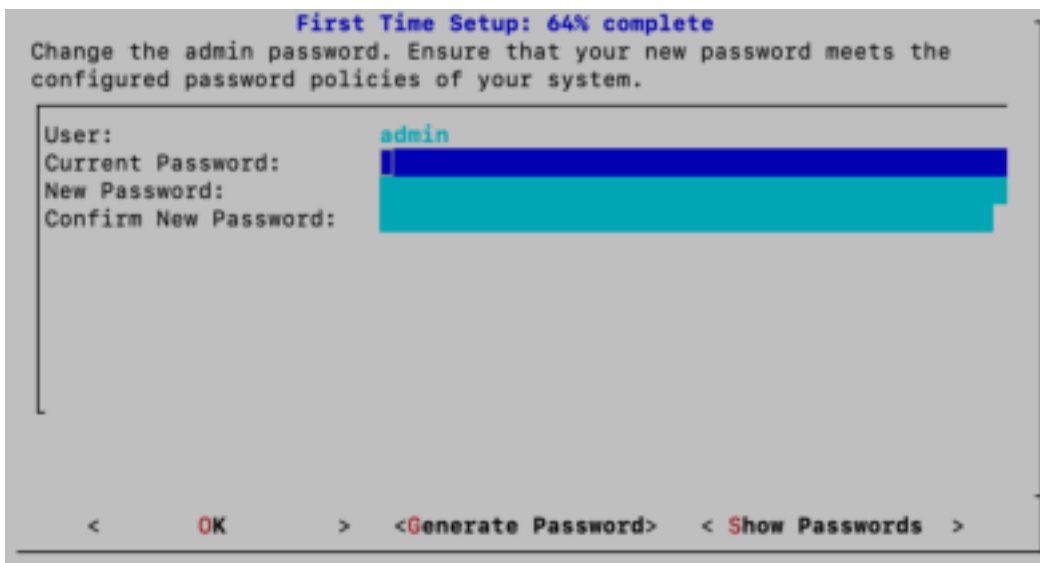
5. Change Your Passwords

1. Change your **admin** password by entering your current and new admin passwords. To create a system generated password, click **Generate Password**. Select **OK** to continue.

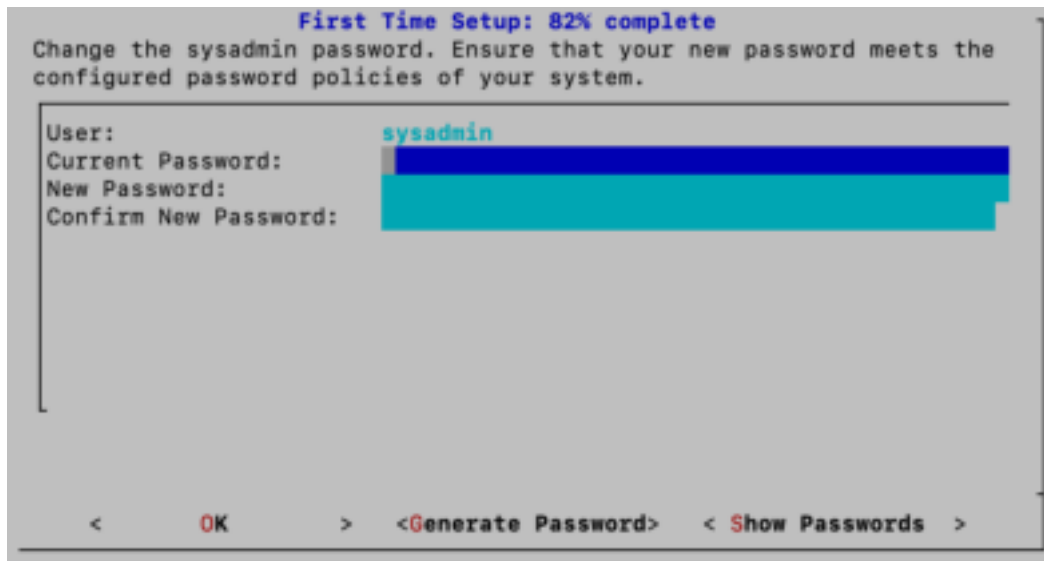
Use the following criteria:

- **Length:** 16 to 256 characters
- **Change:** Make sure the new password is different from the default password by at least 4 characters.

User	Default Password
admin	lan411cope
sysadmin	lan1cope



2. Change your **sysadmin** password by entering your current and new sysadmin passwords. To create a system generated password, click **Generate Password**. Select **OK** to continue.

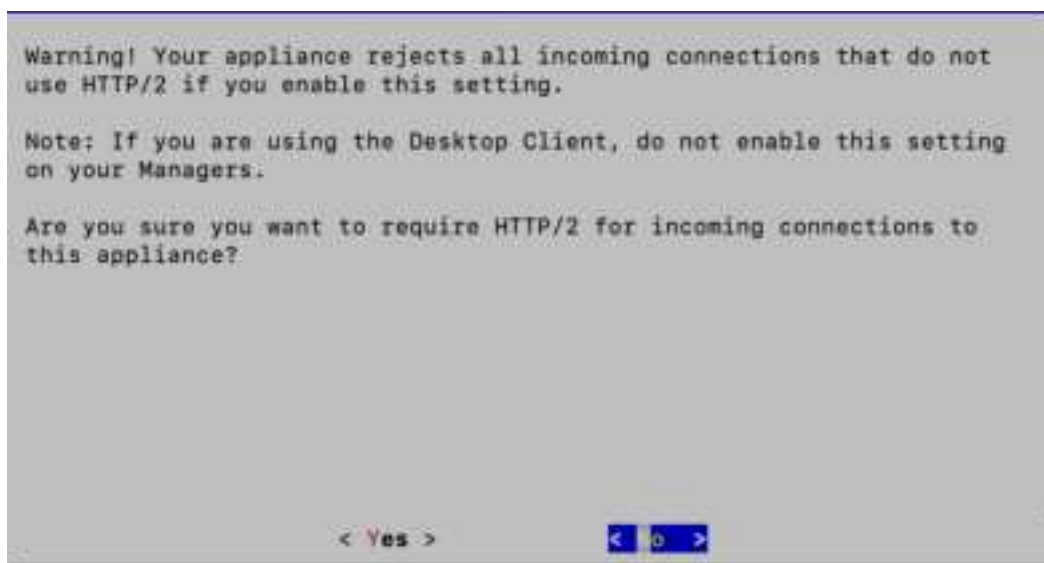


6. Select the HTTP/2 Settings

1. Select the HTTP/2 settings for incoming connections.

- **Yes:** Enables the HTTP/2 setting. When enabled, your appliance rejects any incoming connections that do not use HTTP/2.
- **No:** Disables the HTTP/2 setting. When disabled, your appliance accepts all incoming connections.

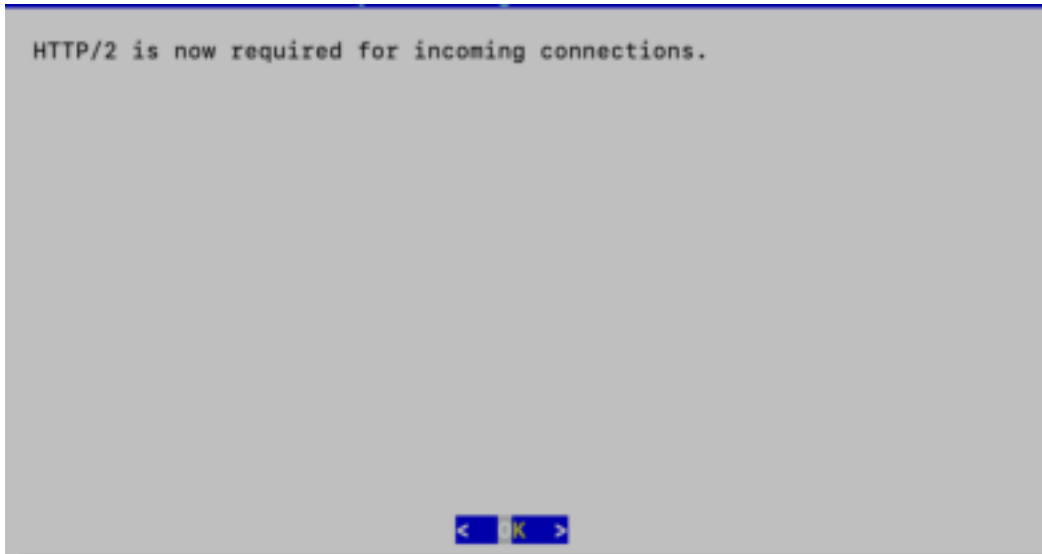
i HTTP/2 setting is disabled by default.





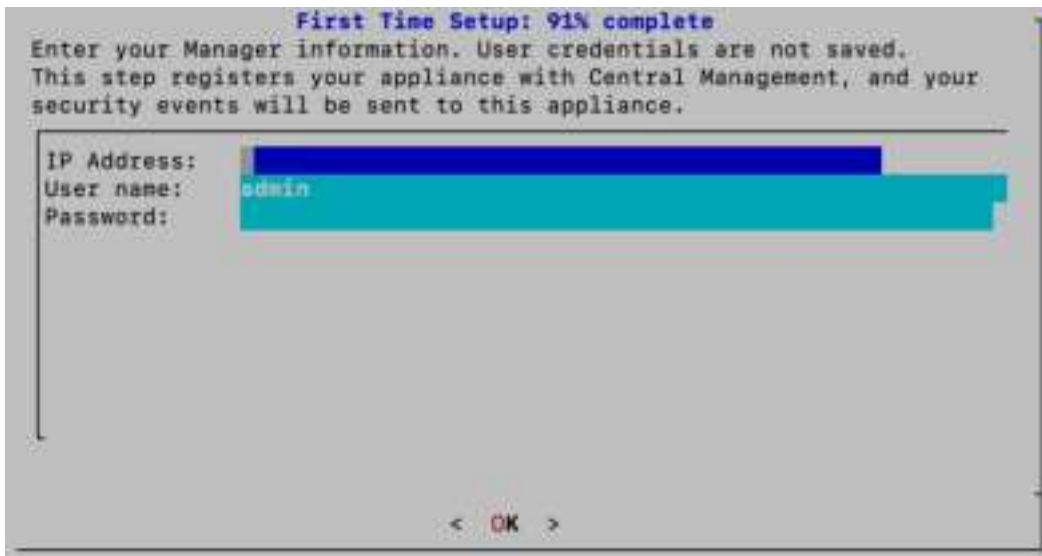
Do not enable this setting if you are using the Desktop Client or Firepower Management Center.

2. Select **OK**.



7. Connect to the Manager and Reboot Your Appliance

1. Enter your Manager information to register your appliance with Central Management. User credentials are not saved. Select **OK** to continue.



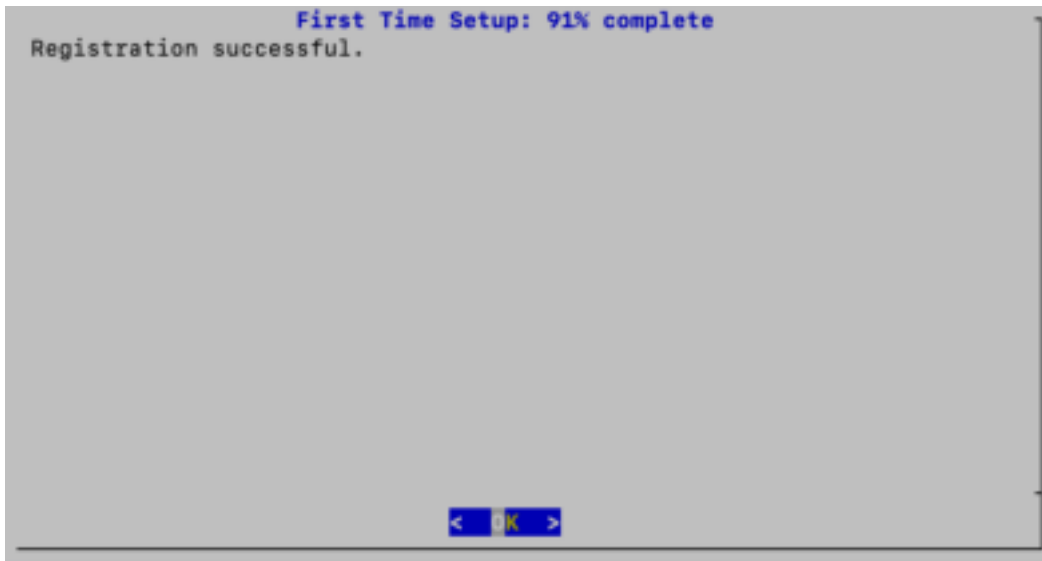
2. Review your Manager identify certificate. Select **Yes** to trust the certificate and move to the next step.



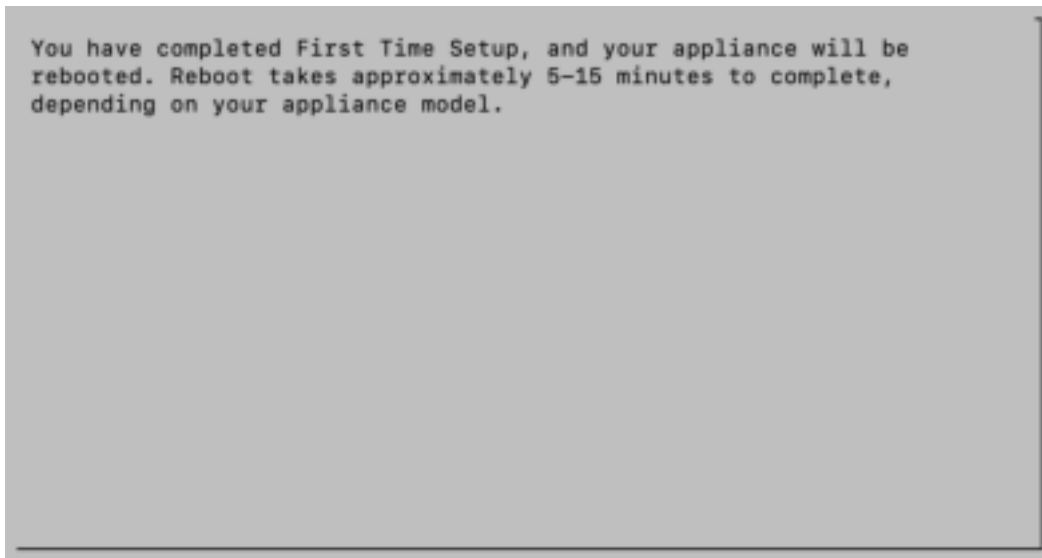
3. Select the Data Store domain you want to use for your Flow Collector. Select **OK** to continue.



4. A success message appears when you have successfully registered your appliance with Central Management. Select **OK** to continue.



5. A message appears notifying you that you have completed First Time Setup and your appliance will be rebooted in approximately 5-15 minutes.



6. Repeat all the steps in [Configuring a Flow Collector with Data Store](#) for the next Flow Collector in your system.

If you've configured all Flow Collectors for Data Store in First Time Setup, return to [Appliance Configuration Overview](#) to configure your other appliances.

Configuring a Flow Collector without Data Store

If you configure your Flow Collector for use without a Data Store, the Flow Collector stores its telemetry locally on the Flow Collector or on the Flow Collector database (5000 Series only).

i Before configuring your Flow Collector without Data Store, ensure that you have first configured a Manager without Data Store. Failure to do so will result in an inability to register your Flow Collector with the Manager.

1. Log in to the Flow Collector

1. Log in to the Flow Collector through the console.
 - **Login:** sysadmin
 - **Default Password:** lan1cope
 - You will change the default password when you configure the system.
2. Review the failed login attempts information. Select **OK** to continue.

A screenshot of a terminal window with a light gray background. The text displayed is as follows:

```
Login information:  
The user root has no failed login attempts.  
Last login information:  
root pts/0 10.0.7.10 Tue Jul 11 16:16 still logged in
```

At the bottom center of the terminal window, there is a small blue rectangular button with white text that reads "< OK >".

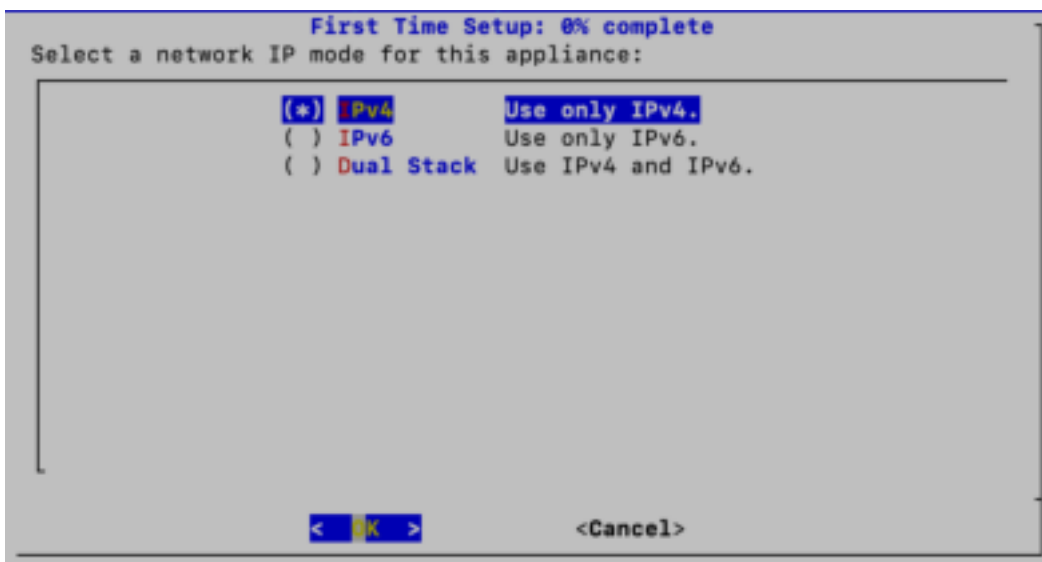
3. Review the First Time Setup introduction. Select **OK** to continue.



2. Select Your Network Mode and Enter Your Network and Server Information

1. **Network IP Mode:** Choose one of the following, and then select **OK** to continue:

- **IPv4:** Use only IPv4.
- **IPv6:** Use only IPv6.
- **Dual Stack:** Use IPv4 and IPv6.





SLAAC Patch Installation: In order to access the SLAAC options for IPv6, you will first have to ensure that patch **ROLLUP20240222-01.swu** (or the latest, most recent patch) has been installed on this appliance before proceeding with this procedure. Follow the patch readme instructions to install patch **ROLLUP20240222-01.swu**. There is a separate patch readme for each appliance posted to [Patch Readmes](#). For detailed information on configuring SLAAC options, refer to the IPv6 configuration instructions shown in [Configuring a Manager](#).

2. Enter the management interface **Host Name**, **Domain**, **IP Address** (eth0), **Netmask**, and **Gateway**, and then select **OK** to continue.



A unique host name is required for each appliance. We cannot configure an appliance with the same host name as another appliance. Also, make sure each appliance host name meets the Internet standard requirements for Internet hosts.

Flow Collector 5000 Series Database and Engine Pair: Name each database and engine pair with unique host names that will help you identify the pair in Central Management. For example, database1 and engine1, database2 and engine2.

First Time Setup: 0% complete

Enter your network information:

Host Name: flow-

Domain:

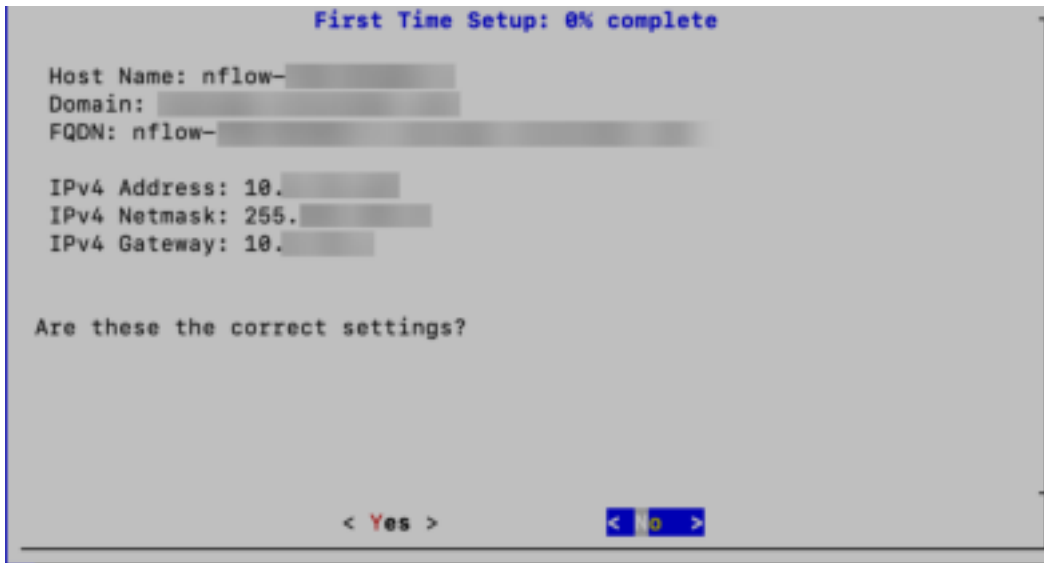
IPv4 Address: 10.

IPv4 Netmask: 255.

IPv4 Gateway: 10.

< OK > < Back > <Cancel>

3. Confirm your settings. Select **Yes** to continue.



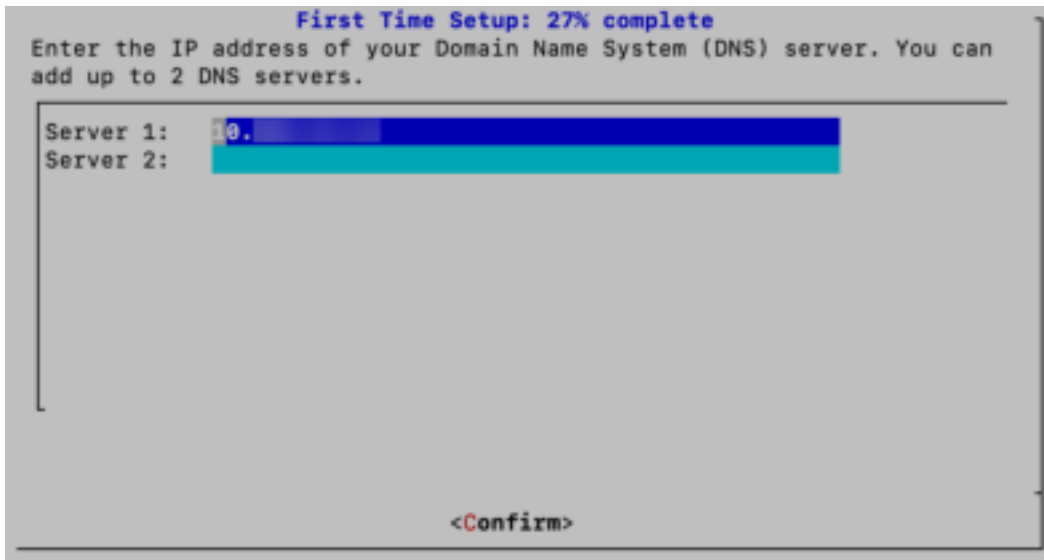
First Time Setup: 0% complete

Host Name: nflow-
Domain:
FQDN: nflow-
IPv4 Address: 10.
IPv4 Netmask: 255.
IPv4 Gateway: 10.

Are these the correct settings?

< Yes >

4. **DNS Settings:** Enter your domain server IP address. Select **Confirm** to continue.



First Time Setup: 27% complete

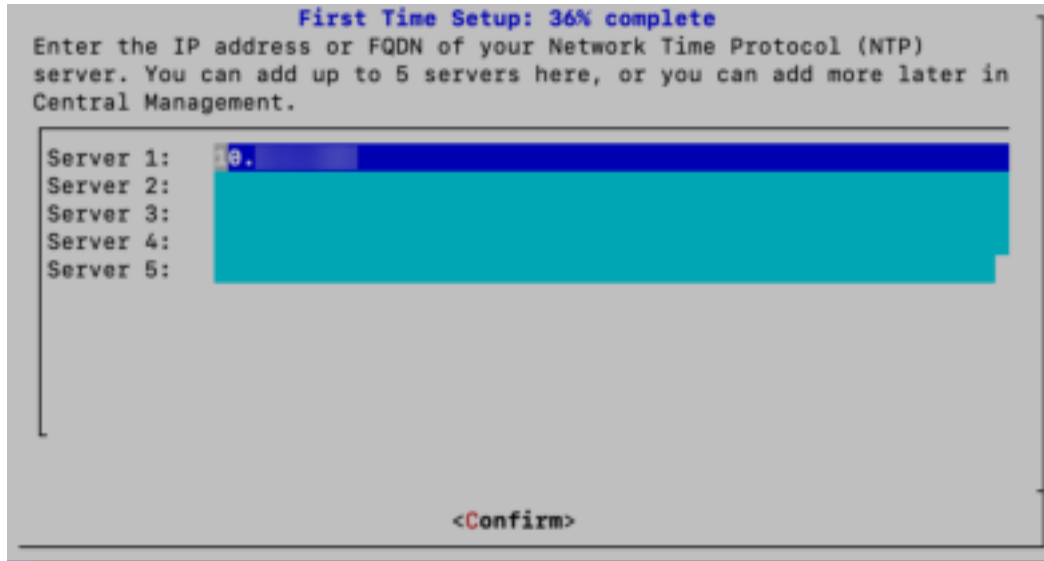
Enter the IP address of your Domain Name System (DNS) server. You can add up to 2 DNS servers.

Server 1: 10.
Server 2:

<Confirm>

5. **NTP Settings:** Enter the IP address or FQDN of your NTP servers. Select **Confirm** to continue.

Multiple NTP Servers: We recommend setting up multiple NTP servers for redundancy and accuracy.



3. Select Your Data Store Deployment Option

1. Do you want to deploy this Flow Collector as part of a Data Store? Select **No**.



Make sure you select **No**. If you need to deploy Secure Network Analytics with a Data Store, do not follow the instructions in this section. Follow the instructions in [Configuring a Flow Collector with Data Store](#).

If you select the wrong choice, deploy a new virtual appliance or RFD your virtual appliance.



2. Review the message stating that your Flow Collector will not work with a Data Store. Select **OK** to continue.



4. Select Your Flow Collector Telemetry Types

1. Select which telemetry types to ingest.

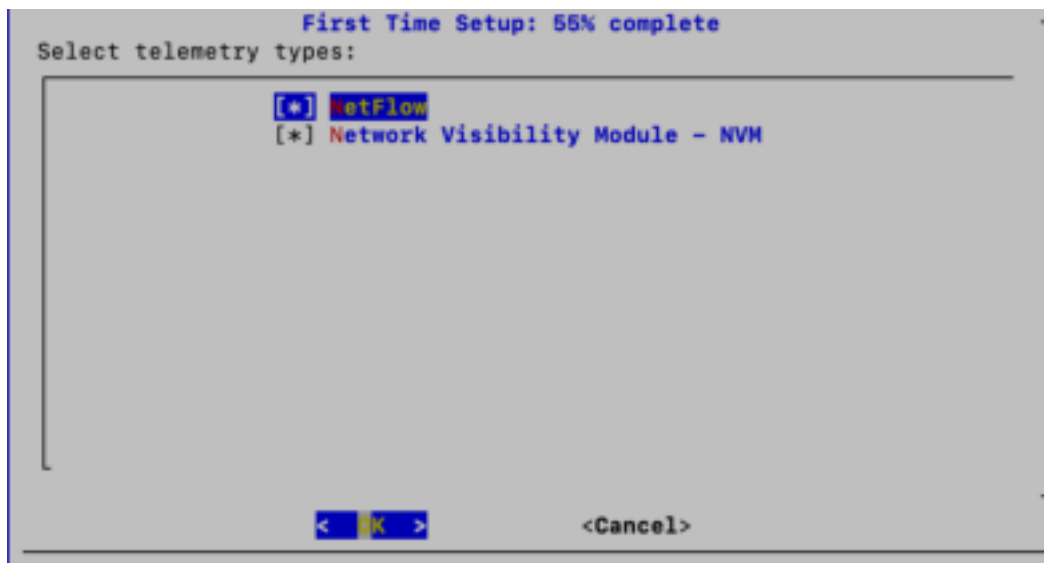
- **Default:** All telemetry types are selected by default. The asterisk (*) indicates the selected telemetries.
- **Deselecting:** To deselect a telemetry, select the telemetry type and click it (or press the space key on your keyboard).

More Information:

- **Network Visibility Module - NVM:** If you select Network Visibility Module - NVM, the Flow Collector will ingest and store NVM flows. Refer to the [Cisco Secure Network Analytics Network Visibility Module \(NVM\) Configuration Guide](#) for more information.



If you configure the Flow Collector to have NetFlow disabled, updating configuration options, such as altering Exporters, Host Groups, Security Events, Host Reports, etc., will have no effect.



2. Enter the UDP port for the selected telemetry types. Select **OK**.

First Time Setup: 55% complete

Enter UDP port for telemetry types below:

NetFlow	2055
Network Visibility Module - NVM	2030

< OK > <Previous> < Cancel >



Make sure your telemetry ports are unique. If you configure duplicate telemetry ports, the ports will be reset to their internal defaults to avoid loss of flow data. For example, if NetFlow and NVM are exported to the same telemetry port, each device exporting NVM data will create an exporter on the Flow Collector and exhaust the exporter resources in the Flow Collector engine, resulting in loss of flow data.

3. Confirm your settings. Select **Yes** to continue.

First Time Setup: 55% complete

Are you sure you want to use these telemetry settings?

After installation completes, you can update the telemetry settings using the Flow Collector Advanced Settings page.

NetFlow: Enabled, Port: 2055
Network Visibility Module - NVM: Enabled, Port: 2030

< Yes > < No >

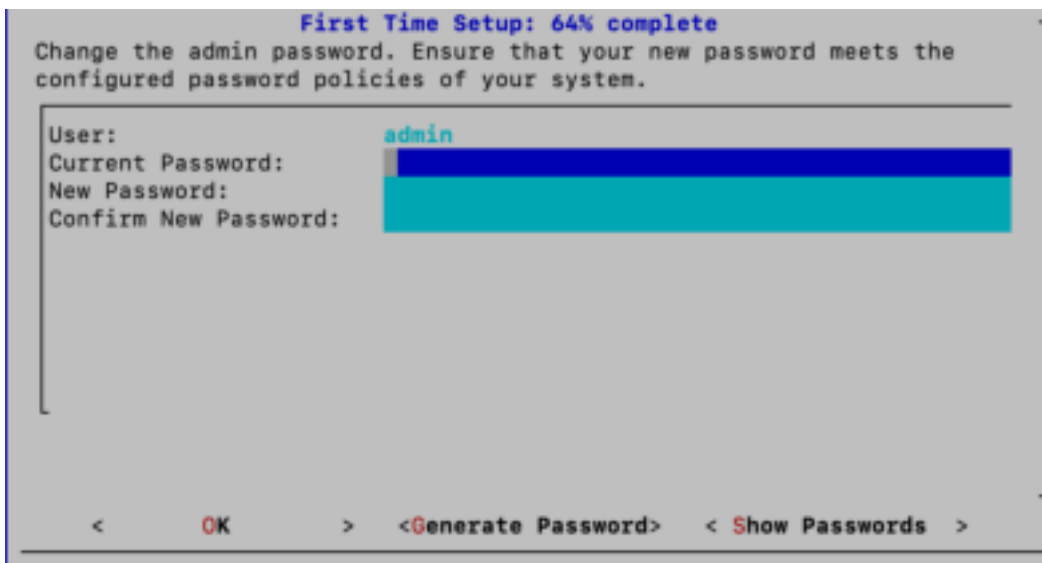
5. Change Your Passwords

1. Change your **admin** password by entering your current and new admin passwords. To create a system generated password, click **Generate Password**. Select **OK** to continue.

Use the following criteria:

- **Length:** 16 to 256 characters
- **Change:** Make sure the new password is different from the default password by at least 4 characters.

User	Default Password
admin	lan411cope
sysadmin	lan1cope



2. Change your **sysadmin** password by entering your current and new sysadmin passwords. To create a system generated password, click **Generate Password**. Select **OK** to continue.

First Time Setup: 82% complete

Change the sysadmin password. Ensure that your new password meets the configured password policies of your system.

User: sysadmin

Current Password: [REDACTED]

New Password: [REDACTED]

Confirm New Password: [REDACTED]

< OK > <Generate Password> < Show Passwords >

6. Select the HTTP/2 Settings

1. Select the HTTP/2 settings for incoming connections.

- **Yes:** Enables the HTTP/2 setting. When enabled, your appliance rejects any incoming connections that do not use HTTP/2.
- **No:** Disables the HTTP/2 setting. When disabled, your appliance accepts all incoming connections.

i HTTP/2 setting is disabled by default.

Warning! Your appliance rejects all incoming connections that do not use HTTP/2 if you enable this setting.

Note: If you are using the Desktop Client, do not enable this setting on your Managers.

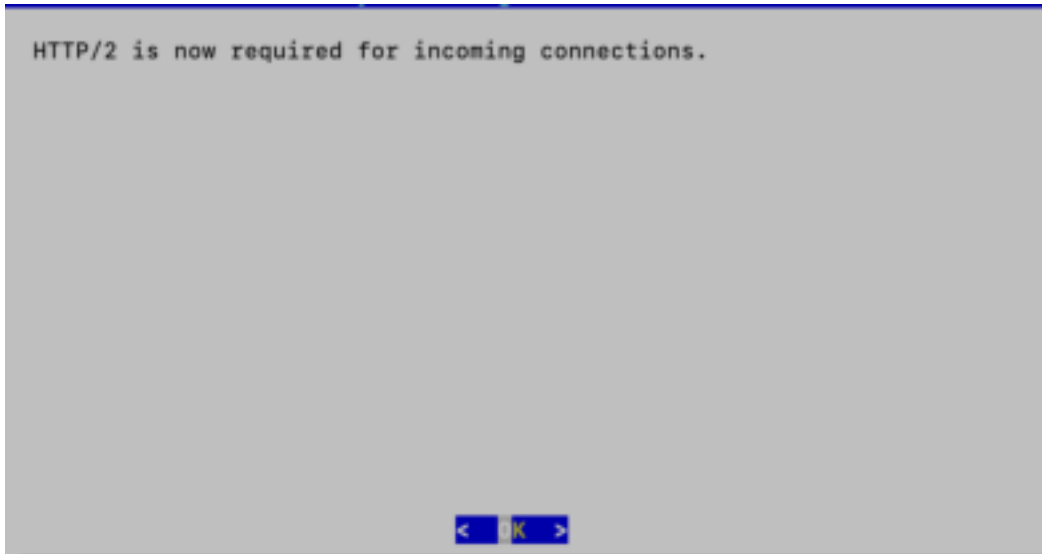
Are you sure you want to require HTTP/2 for incoming connections to this appliance?

< Yes > [No]



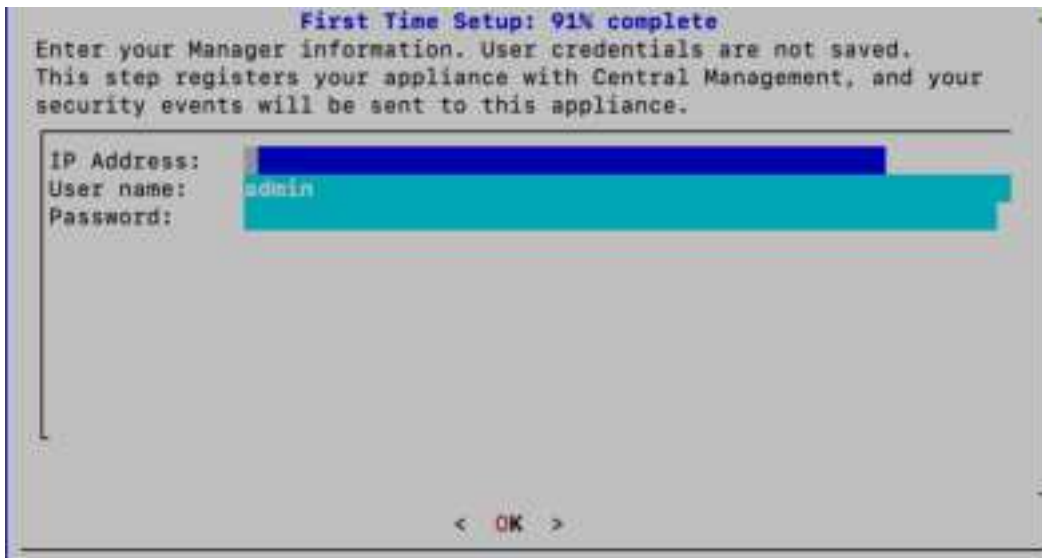
Do not enable this setting if you are using the Desktop Client or Firepower Management Center.

2. Select **OK**.



7. Connect to the Manager and Reboot Your Appliance

1. Enter your Manager information to register your appliance with Central Management. User credentials are not saved. Select **OK** to continue.



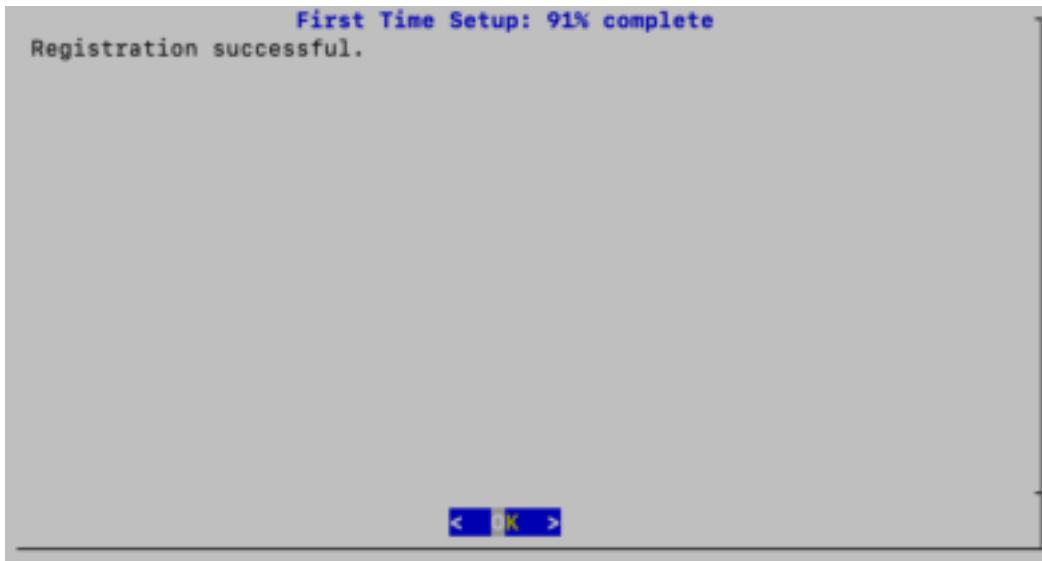
2. Review your Manager identify certificate. Select **Yes** to trust the certificate and move to the next step.



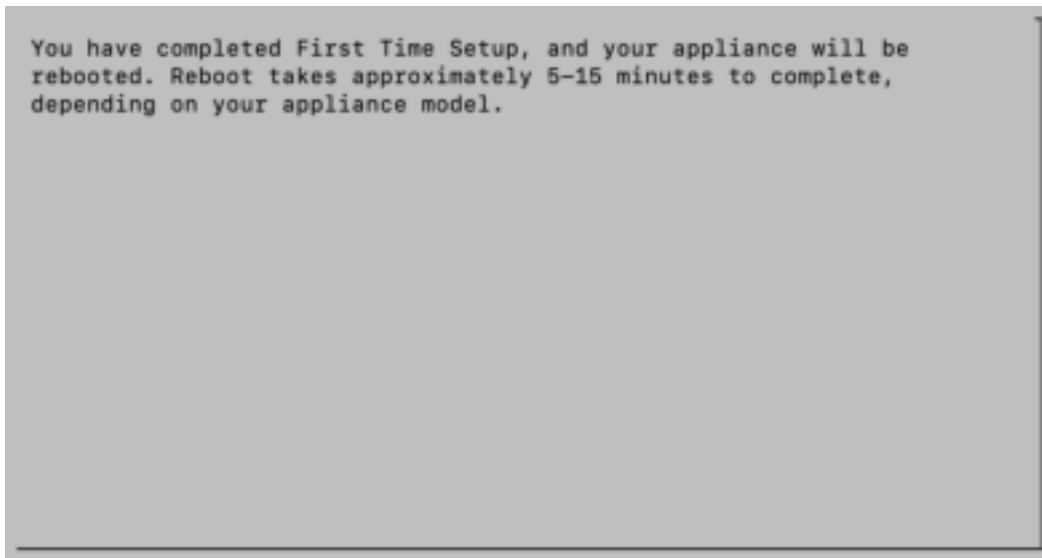
3. Select the Non-Data Store domain you want to use for your Flow Collector. Select **OK** to continue.



4. A success message appears when you have successfully registered your appliance with Central Management. Select **OK** to continue.



5. A message appears notifying you that you have completed First Time Setup and your appliance will be rebooted in approximately 5-15 minutes.



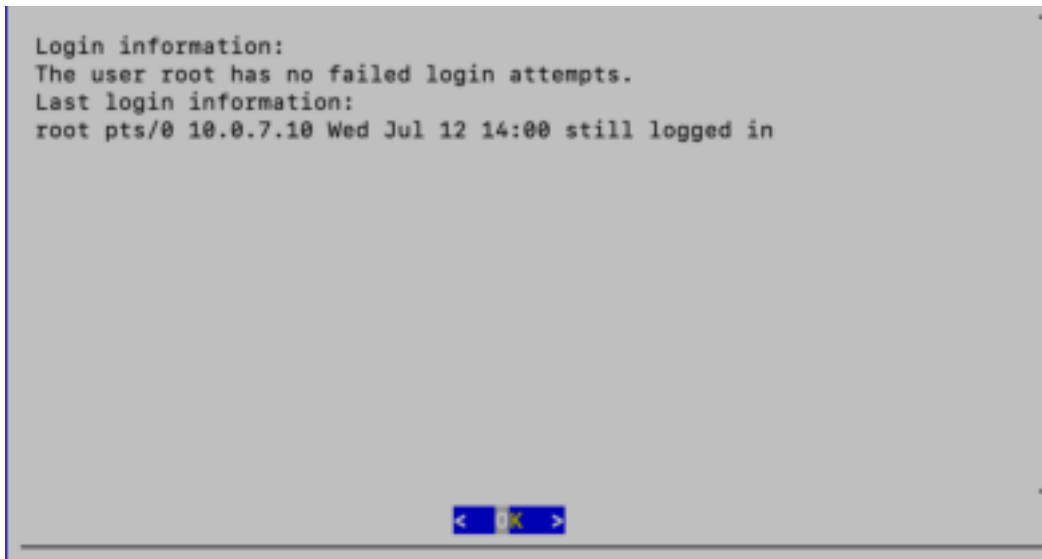
6. Repeat all steps in **Configuring a Flow Collector without Data Store** for the next Flow Collector in your system.
 - If you've configured all Flow Collectors without Data Store in First Time Setup, go to the next section (**Configuring a Flow Sensor or UDP Director**) or return to **Appliance Configuration Overview** to configure other appliances.
 - If you've configured all appliances in First Time Setup, go to **2. Defining a Manager Failover Relationship**.

Configuring a Flow Sensor or UDP Director

Follow the steps below to configure a Flow Sensor or UDP Director.

1. Log in to the Flow Sensor or UDP Director

1. Log in to a Flow Sensor or UDP Director through the console.
 - **Login:** sysadmin
 - **Default Password:** lan1cope
 - You will change the default password when you configure the system.
2. Review the failed login attempts information. Select **OK** to continue.



3. Review the First Time Setup introduction. Select **OK** to continue.



2. Select Your Network Mode and Enter Your Network and Server Information

1. **Network IP Mode:** Choose one of the following, and then select **OK** to continue:
 - **IPv4:** Use only IPv4.
 - **IPv6:** Use only IPv6 (not available for UDP Directors).
 - **Dual Stack:** Use IPv4 and IPv6.



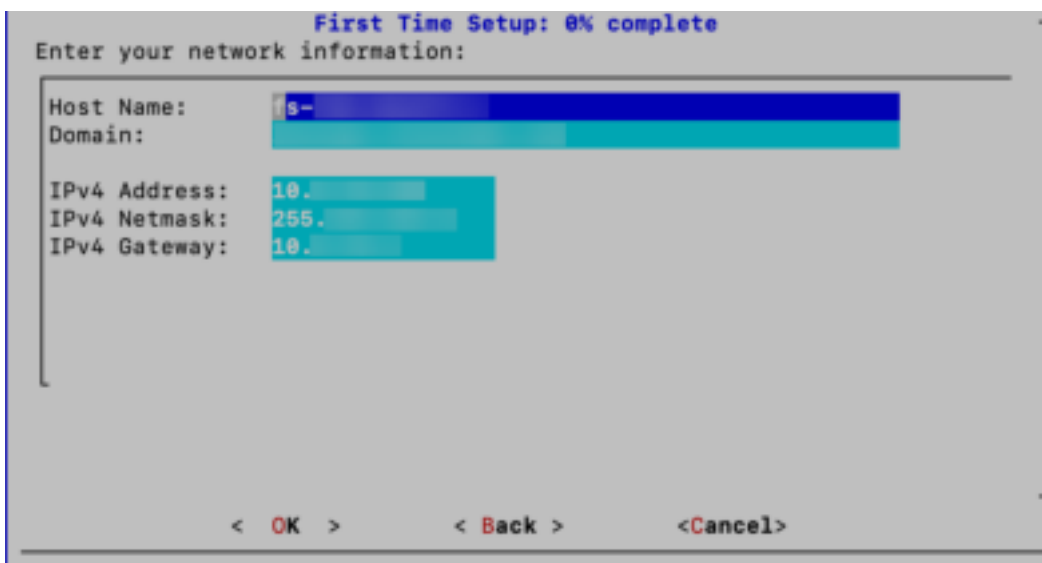
When configuring a UDP Director, your options are IPv4 and Dual Stack. If you select the Dual Stack option, UDP will only forward over IPv4. You can, however use IPv6 for management. For information on IPv6 forwarding for UDP directors, refer to the [Cisco Telemetry Broker User Guide](#).



2. Enter the management interface **Host Name**, **Domain**, **IP Address** (eth0), **Netmask**, and **Gateway**, and then select **OK** to continue.

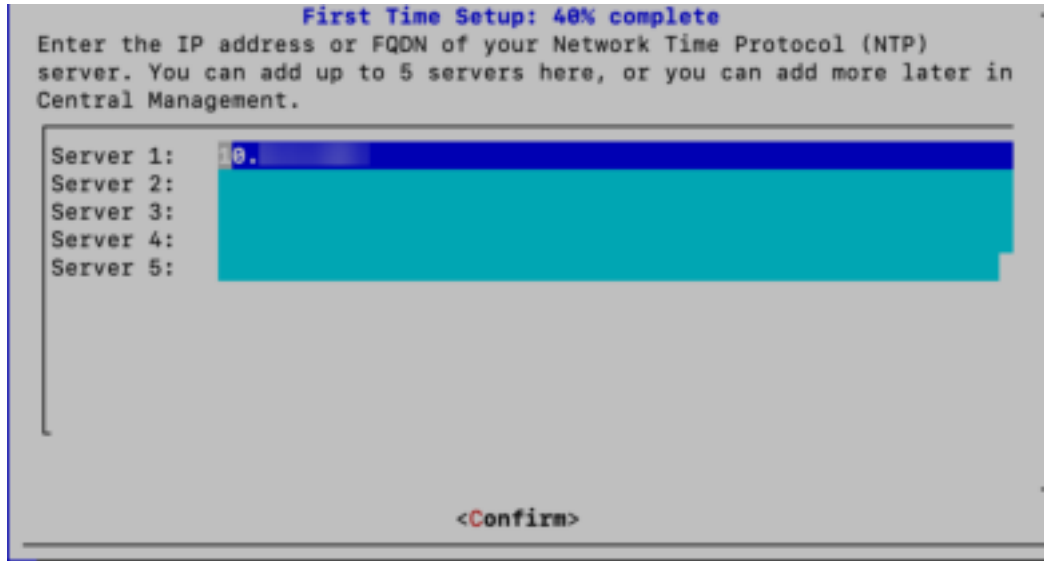


A unique host name is required for each appliance. We cannot configure an appliance with the same host name as another appliance. Also, make sure each appliance host name meets the Internet standard requirements for Internet hosts.



5. **NTP Settings:** Enter the IP address or FQDN of your NTP servers. Select **Confirm** to continue.

Multiple NTP Servers: We recommend setting up multiple NTP servers for redundancy and accuracy.



3. Change Your Passwords

1. Change your admin password by entering your current and new admin passwords. To create a system generated password, click **Generate Password**. Select **OK** to continue.

Use the following criteria:

- **Length:** 16 to 256 characters
- **Change:** Make sure the new password is different from the default password by at least 4 characters.

User	Default Password
admin	lan411cope
sysadmin	lan1cope

First Time Setup: 60% complete

Change the admin password. Ensure that your new password meets the configured password policies of your system.

User: admin

Current Password: [REDACTED]

New Password: [REDACTED]

Confirm New Password: [REDACTED]

< OK > <Generate Password> < Show Passwords >

2. Change your sysadmin password by entering your current and new sysadmin passwords. To create a system generated password, click **Generate Password**. Select **OK** to continue.

First Time Setup: 80% complete

Change the sysadmin password. Ensure that your new password meets the configured password policies of your system.

User: sysadmin

Current Password: [REDACTED]

New Password: [REDACTED]

Confirm New Password: [REDACTED]

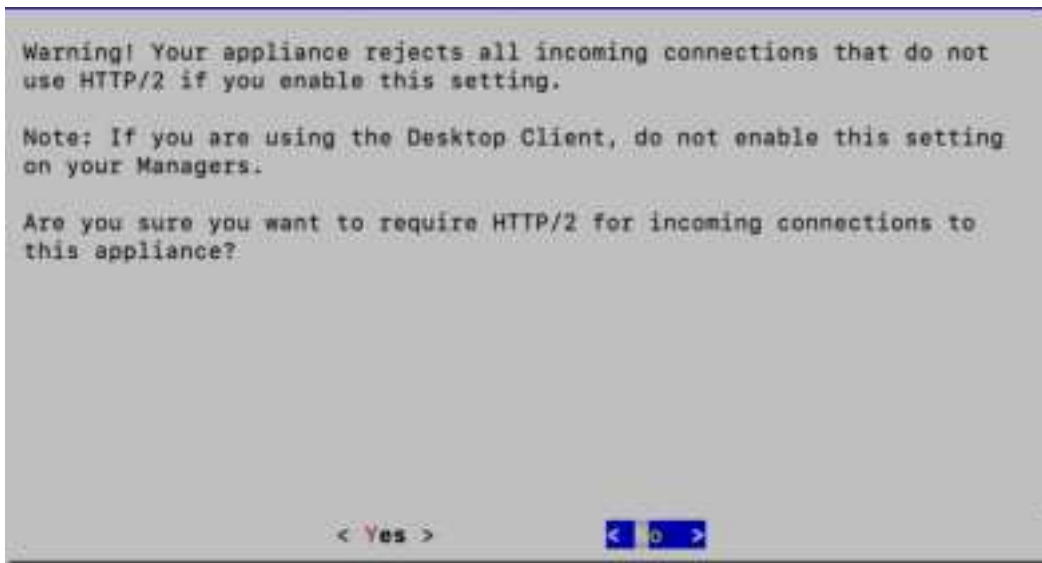
< OK > <Generate Password> < Show Passwords >

4. Select the HTTP/2 Settings

1. Select the HTTP/2 settings for incoming connections.

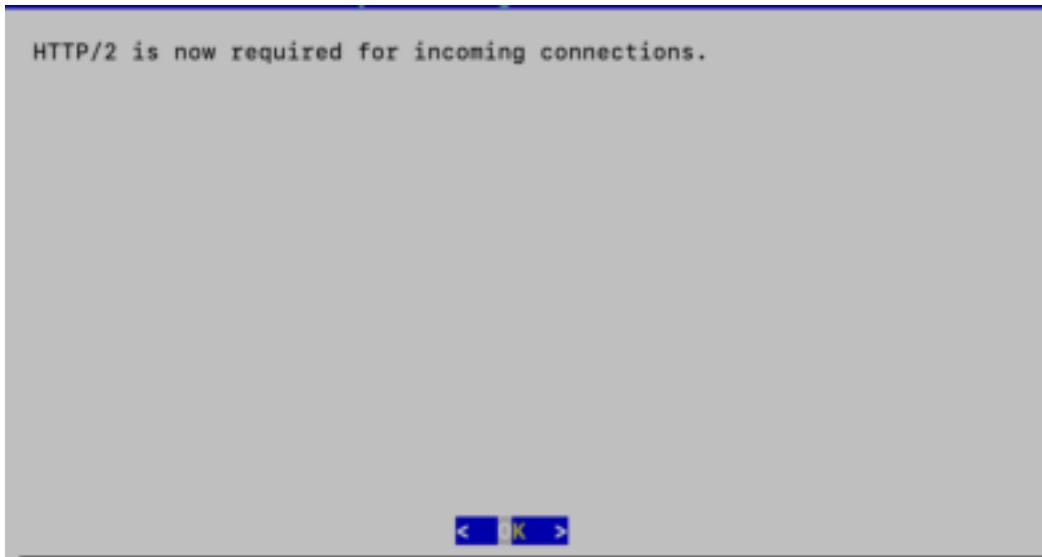
- **Yes:** Enables the HTTP/2 setting. When enabled, your appliance rejects any incoming connections that do not use HTTP/2.
- **No:** Disables the HTTP/2 setting. When disabled, your appliance accepts all incoming connections.

 HTTP/2 setting is disabled by default.



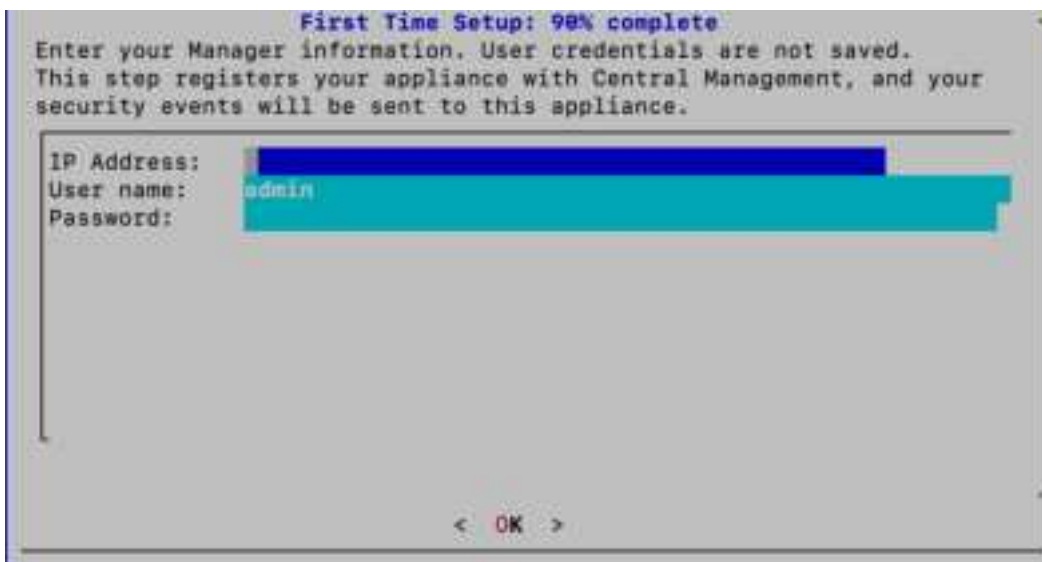
Do not enable this setting if you are using the Desktop Client or Firepower Management Center.

2. Select **OK**.



5. Connect to the Manager and Reboot Your Appliance

1. Enter your Manager information to register your appliance with Central Management. User credentials are not saved. Select **OK** to continue.



2. Review your Manager identify certificate. Select **Yes** to trust the certificate and move to the next step.



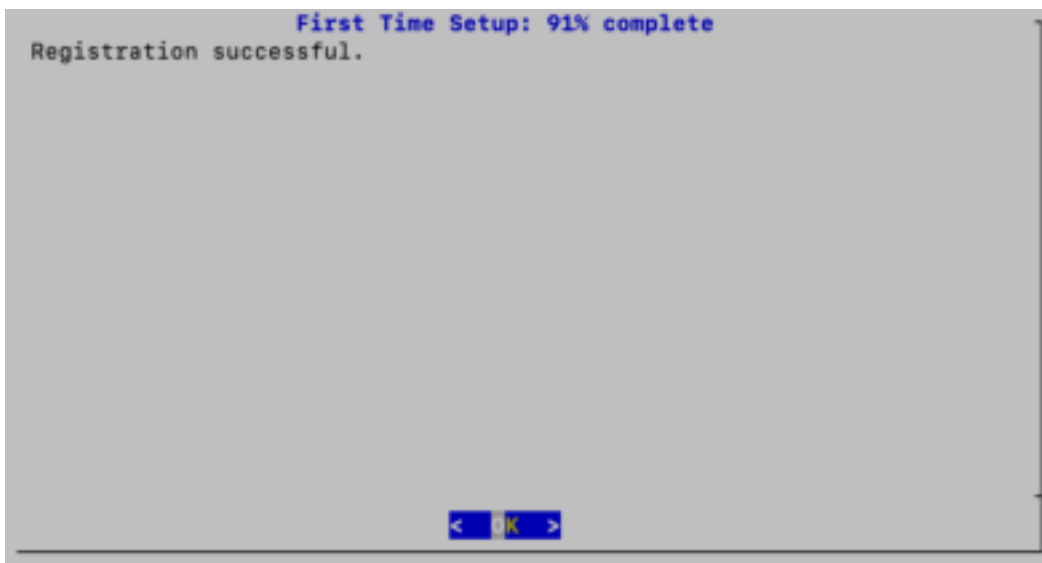
3. Select the domain you want to use for your Flow Sensor. Select **OK** to continue.



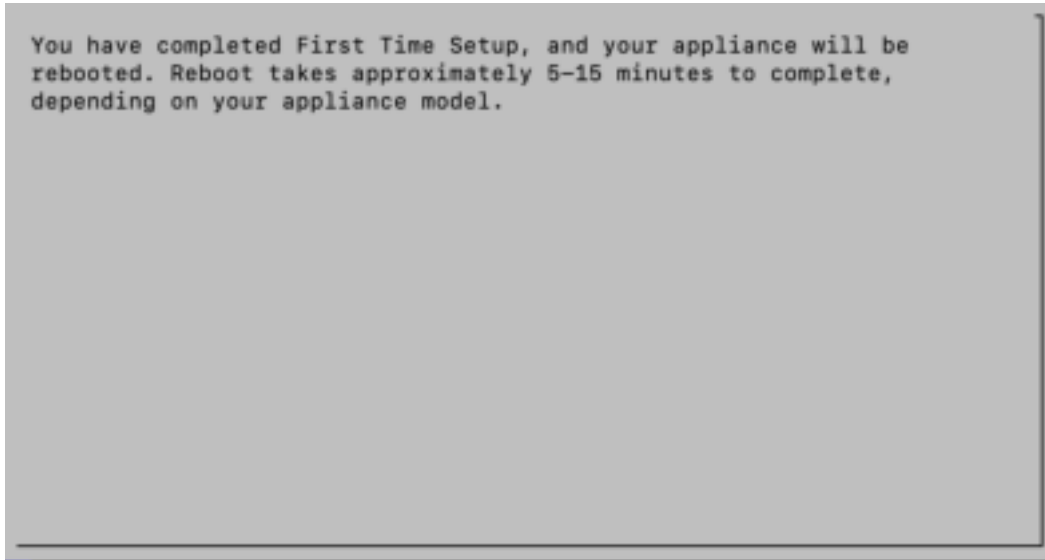
This step only applies to Flow Sensor configurations. It does not apply to UDP Director configurations.



4. A success message appears when you have successfully registered your appliance with Central Management. Select **OK** to continue.



5. A message appears notifying you that you have completed First Time Setup and your appliance will be rebooted in approximately 5-15 minutes.



6. Repeat all steps in [Configuring a Flow Sensor or UDP Director](#) to configure the next Flow Sensor or UDP Director in your system.

If you've configured all appliances in First Time Setup, go to [2. Defining a Manager Failover Relationship](#).

3. Confirm the Appliance Status

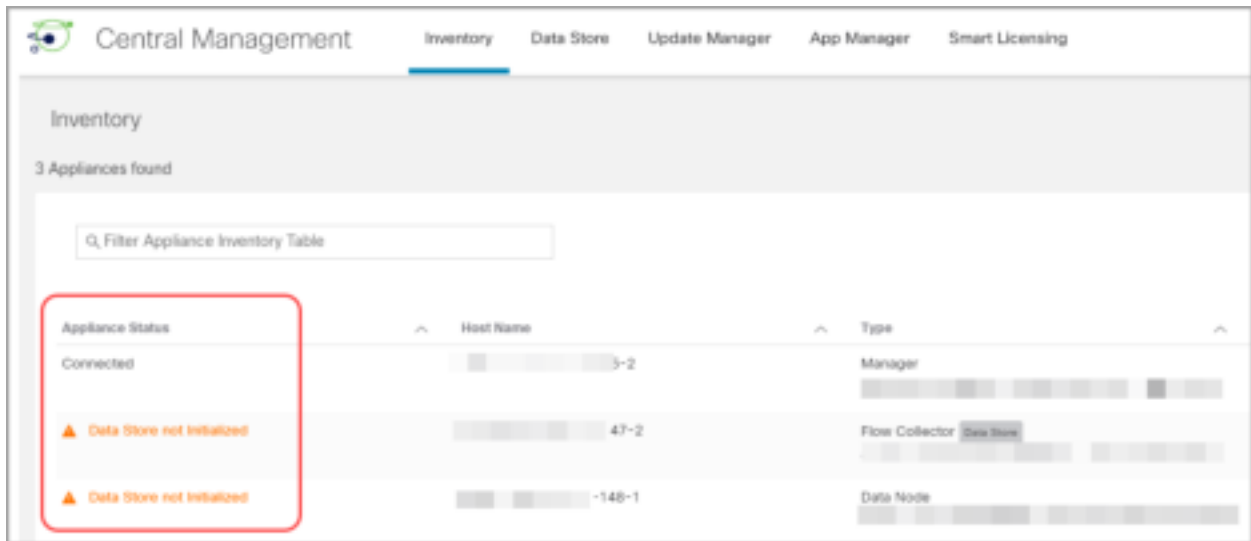
After you configure an appliance in First Time Setup, confirm the appliance status in Central Management.

1. Open the Central Management inventory as follows:

- Log in to your primary Manager.
- Select **Configure > Global > Central Management**.

2. Review the appliances on the Inventory tab.

- Confirm the appliance is shown in the inventory.
- **Appliance Status:** Make sure the primary Manager and each appliance is shown as **Connected** before you start configuring the next appliance in your cluster.
- **Data Store Not Initialized:** For Flow Collectors and Data Nodes in a Data Store domain, confirm the appliance status is **Data Store Not Initialized**. They will be shown as Connected after you complete the initialization in a later procedure.
- **Type:** If a Flow Collector has a Data Store tag, it is configured to send flows to your Data Store database.



Appliance Status	Host Name	Type
Connected	3-2	Manager
⚠ Data Store not Initialized	47-2	Flow Collector Data Store
⚠ Data Store not Initialized	-148-1	Data Node



Make sure the primary Manager and each appliance is shown as Connected (or Data Store Not Initialized) before you start configuring the next appliance in your cluster using the [configuration order and details](#).

2. Defining a Manager Failover Relationship

Use Failover Configuration to establish a failover pair between two Managers so that one of them serves as a backup console to the other. If you have Secure Network Analytics with a Data Store deployment, it is important to configure Failover before you initialize the Data Store.

If you do not have a secondary Manager, go to [3. Configuring Site Redundancy](#).

For a successful Failover configuration and operation, review the requirements and follow the instructions in the [Secure Network Analytics Failover Configuration Guide](#).



If your primary Manager goes offline, please note that the Managers do not swap roles automatically. Make sure you change the Manager roles in the order shown in the [Secure Network Analytics Failover Configuration Guide](#).

Data Store

If you've deployed Secure Network Analytics with a Data Store, make sure you configure Failover before you initialize the Data Store. If you configure Failover after you've initialized the Data Store, follow the instructions in the [Secure Network Analytics Failover Configuration Guide](#) to configure the secondary Manager for secure communication with the Data Store.

Configuring Failover

To configure your Managers as a failover pair, follow the instructions in the [Secure Network Analytics Failover Configuration Guide](#).

The guide includes details that are critical for a successful configuration, including:

- **Certificates:** To set up trust between appliances so they can communicate, make sure you save the correct certificates to the required appliance Trust Stores.
- **Backup Files:** Back up the appliances before you start the failover configuration.
- **Configuration Order:** You will configure the secondary Manager for failover before you configure the primary Manager.
- **Changing Roles:** If your primary Manager goes offline, make sure you change the Manager roles in the order shown in the guide. The order is critical, and they do not swap roles automatically.
- **Troubleshooting:** Refer to the [Secure Network Analytics Failover Configuration Guide](#) for solutions.



For a successful configuration and operation, follow the instructions in the [Secure Network Analytics Failover Configuration Guide](#).

Primary and Secondary Roles

As part of the configuration, you will assign a primary Manager and a secondary Manager. When you save the configuration, the following occurs:

- **Primary Manager:** The primary Manager pushes its domain configuration, user settings, and policies to the secondary Manager. Use the primary Manager to manage your appliances, change appliance configurations, change passwords, define alarms, apply policies, and more.
- **Secondary Manager:** The secondary Manager deletes its configuration, so it can synchronize with the primary Manager configuration and settings. Also, the secondary Manager changes to read-only for all users, which means that you will not have access to sections of the secondary Manager and you cannot retrieve files from the secondary Manager.

3. Configuring Site Redundancy



If you do not have a Data Store configured or you do not want to create a redundant site, go to [5. Initializing the Data Store](#).

Site Redundancy allows you to establish near-redundancy across clusters in two Cisco Secure Network Analytics sites that contain separate deployments with similar appliances. Site Redundancy enables you to maintain your domain and Analytics configuration in your primary site and manually synchronize it with the redundant site. It also provides high availability protection in the event a data center loses power. With site redundancy, you will be able to log into either of the redundant clusters and see nearly the same data.



This feature is only available to Admin and Configuration Manager roles.

Site Redundancy configuration synchronization includes the following:

Data Store domain specific configuration as well as alert configuration (if enabled).

Domain configuration includes:

- Host Group Management
- Policy Management
- Applications
- Exporter SNMP profiles (not including passwords)
- Alarm Severity
- Services
- Domain AS Numbers

Analytics configuration includes the following:

- Priorities
- Country Watchlist
- Alert Expiration

Redundant Site Requirements

Review the following requirements before you begin your redundant site configuration.

- Create redundant Data Store domains in both your primary and redundant site using identical names. Make sure that both sites have the same number of Data Store domains and that the Data Store domain names are identical in both sites. For more information on domains, refer to [Domains](#).



Only Data Store domains are synchronized for site redundancy. Non-Data Store domains are not synchronized.

- Ensure that the Secure Network Analytics software version is the same at both sites.
- Add your redundant Manager certificates to the primary Manager Trust Store. See [Adding Certificates to Trust Stores](#) for more information.
- Add your primary Manager certificates to the redundant Manager Trust Store. See [Adding Certificates to Trust Stores](#) for more information.

Once you have completed the requirements, you can proceed to the [Configuring a Redundant Site](#) procedure.

Adding Certificates to Trust Stores

Use the following instructions to save the required appliance identity certificates and chains to the Trust Stores.

Trust Store Requirements

The instructions will guide you through the following requirements:

- Adding the redundant Manager certificates to the primary Manager Trust Store.
- Adding the primary Manager certificates to the redundant Manager Trust Store.

Certificate Chain

If your appliance identity certificate includes a certificate chain, make sure you add the certificate chain (root and intermediate) to the Trust Stores.

Uploading Certificates to the Trust Store

Upload each file individually.

1. Download the Appliance Identity Certificates

Use the following instructions to download and save your appliance identity certificates. The steps vary based on the browser you are using.

If your certificates are already saved, you can skip this procedure. Go to **2. Add Certificates to the Manager Trust Stores**.



You can also click the lock/security icon in your browser. Follow the on-screen prompts to download your certificates. The steps vary based on the browser you are using.

1. In the browser address bar, replace the path after the IP address with the following: **/secrets/v1/server-identity**

For example: `https://<IPaddress>/secrets/v1/server-identity`

2. Follow the on-screen prompts to save the certificate.

Open: To view the file, select a text file format.

Troubleshooting: If you do not see the prompt to download the certificate, check your Downloads folder in case it was downloaded automatically, or try a different browser.

3. Repeat steps 1 and 2 on each Manager.

2. Add Certificates to the Manager Trust Stores

Use the following instructions to save your redundant Manager appliance identity certificate and chain (if applicable) to the primary Manager Trust Store.

1. Log in to your Manager.
2. Select **Configure > Global > Central Management**.
3. Confirm the Appliance Status is shown as Connected.
4. Click the **Actions** menu for the Manager.
5. Select **Edit Appliance Configuration**.
6. On the **Central Management Inventory > General** tab, locate the **Trust Store** section.
7. Click **Add New**.



Make sure you upload each appliance identity certificate and chain (root and intermediate) certificate individually.

8. In the **Friendly Name** field, enter a name for the certificate.
9. Click **Choose File**. Select the certificate.
10. Click **Add Certificate**. Confirm the certificate is shown in the Trust Store list.
11. Repeat steps 6 through 9 to add any other required certificates to the Trust Store.

- If you are logged in to the redundant Manager, add the primary Manager certificates.

- If you are logged in to the primary Manager, add the redundant Manager certificates.
12. Click **Apply Settings**. Follow the on-screen prompts.
 13. **Connected:** On the Central Management Inventory page, confirm the Appliance Status returns to Connected.
 14. Repeat steps 1 through 13 on the other Manager.

Open Site Redundancy Configuration

Use the following instructions to open Site Redundancy Configuration.

1. Log in to your Manager as admin or configuration manager.
2. From the main menu, choose **Configure > Global > Manager**.
3. Click the **Site Redundancy Configuration** tab.

Configuring a Redundant Site

Follow these steps to configure a redundant site.

1. Select the **Enable Configuration** check box.
2. Enter the Fully Qualified Domain Name (FQDN) or IP address for the Manager at your redundant site in the **Name of Manager at Redundant Site** field. Note that the Manager name must match the Common Name or Subject Alternative Name in the Manager identity certificate.
3. Click **Save** to save your changes.
4. Click **Synchronize** to synchronize your primary site with your remote site. This will synchronize your domain configuration and analytics configuration between the two sites.

 This process should not be repeated on the redundant site.

5. Follow the on-screen prompts to confirm that you want to synchronize your changes. Click **Synchronize** to continue.

You will see the "in progress" ellipsis icon indicating the synchronization is in progress. When it is complete you will see a success or failure banner.

 When you perform a synchronization, the Redundant Site Flow Collector Engine configuration is overwritten in the process. It is not recommended to synchronize more than once per hour.

Disabling a Redundant Site

Perform the following steps to disable your redundant site.

1. To disable a redundant site, de-select the **Enable Configuration** check box.
2. Click **Save** to save your changes.



This will disable the redundant site and it will disable the Synchronize button.

3. (optional) Removing the site certificates of a disabled redundant site can add an additional layer of protection to your Secure Network Analytics system. If you want to remove the site certificates that you added during the [Configuring a Redundant Site](#) procedure, you can do so by performing the following steps.
 1. Log in to your Manager.
 2. Select **Configure > Global > Central Management**.
 3. Confirm the Appliance Status is shown as Connected.
 4. Click the **Actions** menu for the Manager.
 5. Select **Edit Appliance Configuration**.
 6. On the **Central Management Inventory > General** tab, locate the **Trust Store** section.
 7. Under the **Actions** column, click **Delete** for each of the certificates you want to remove.

Troubleshooting

In the event that you encounter an issue with your site redundancy configuration, ensure the following:

- Verify your certificates are in the correct Trust Stores. Refer to [Adding Certificates to Trust Stores](#) for more information.
- The Secure Network Analytics software version needs to be the same at both sites.
- The number and names of your Data Store domains at both sites needs to match.

To review the log file for errors, navigate to `/lancope/var/smc/log/smc-configuration.log`

4. Installing v7.5.3 Patches

Install the latest v7.5.3 patches on your appliances.

1. Download the latest **v7.5.3 patches** from your Cisco Smart Account on Cisco Software Central at <https://software.cisco.com>.
2. Follow the instructions in the patch readme file to install each patch.
3. After you have updated your appliances with the latest patches, go to the next procedure in this guide:
 - **Data Store Domains:** Follow the instructions in [5. Initializing the Data Store](#).
 - **Non-Data Store Domains:** Follow the instructions in [6. Installing the Desktop Client](#).

5. Initializing the Data Store

Use System Configuration to initialize your Data Store. You will enable SSH temporarily as part of this procedure.



Before you start this procedure, add all appliances to your Central Management inventory. Flow Collectors are not required to initialize a Data Store, however you will need to have at least one Data Node and one Manager in your Central Management inventory before you begin the initialization process.

1. Log in to your Manager appliance console (SystemConfig) as sysadmin.
2. From the main menu, select **Data Store**.
3. Select **SSH**. Follow the on-screen prompts to enable SSH.
4. Select **Initialization** from the Data Store menu.
5. Follow the on-screen prompts to initialize the Data Store.

When you exit the Data Store menu, the system restores your previous SSH settings.

6. Go to the next procedure: [7. Verifying Communications](#).

6. Installing the Desktop Client



Starting with v7.4.0, the SMC has been renamed to Manager. The SMC is referred to as Manager within this section.



If your Secure Network Analytics system is deployed with only Data Store Flow Collectors, you will not use the Desktop Client. For a hybrid Data Store/Non-Data Store system, the Desktop Client will only work with Non-Data Store domains.

The following information applies to installing and using the Desktop Client:

- You can locally install different versions of Desktop Client.
- The Desktop Client includes Stealthwatch terminology such as Stealthwatch Management Console and SMC (Manager).
- If you want to access multiple versions of Desktop Client, you will need a different executable file for each Manager.
- If you are using both a primary and a secondary Manager, you will need to log off one Manager before you can log in to the other Manager.
- You can have different versions of Desktop Client open simultaneously.
- When you update to a later version of Secure Network Analytics, you will need to install the new version of Desktop Client.
- Use the Web App to monitor and configure your Secure Network Analytics installation if you deploy a Data Store. The Desktop Client is incompatible with a Data Store.

Instructions for installing the Desktop Client vary depending on whether you're using Windows or macOS:

- [Install the Desktop Client Using Windows](#)
- [Install the Desktop Client Using macOS](#)

You will also change memory size differently, depending on whether you're using Windows or macOS:

- [Change the Memory Size From Windows Explorer](#)
- [Change the Memory Size From Finder](#)

Install the Desktop Client Using Windows

 You must have sufficient rights to install Desktop Client.

 Desktop Client requires a 64-bit operating system. It cannot run on a 32-bit operating system or Linux.

1. Log in to your Manager.
2. Click the  icon at the bottom right of the dashboard.
3. Click the .exe file to begin the installation process.
4. Follow the steps in the wizard to install the Desktop Client.
5. On your desktop, click the Desktop Client icon .
6. In the **SMC Server Name** field, enter the Manager server name or IP address (IPv4 or IPv6).
7. Follow the on-screen prompts to open the Desktop Client and trust the appliance identity certificate.
8. Enter the Manager user name and password.

Change the Memory Size From Windows Explorer

 You can change how much Random Access Memory (RAM) to allocate on your client computer to run the Desktop Client interface.

Consider a larger memory allocation if you work with many open documents or large data sets (such as flow queries with over 100k records).

1. In Windows Explorer, go to your home directory.
2. Open these folders: AppData > Roaming > Stealthwatch.

You may need to search "Stealthwatch" if the folder is hidden.
3. In the Stealthwatch directory, open the folder that contains the desired Stealthwatch version.
4. Open the **application.vmoptions** file using an appropriate editing application to begin editing. (This file is created after you open the Desktop Client for the first time.)

Minimum Memory Size (Xms): We recommend that you allocate no less than 512 MB. This number is listed in the third line of the file.

For editors that display the content in one continuous line, refer to the number highlighted in the image below to see which number represents the minimum memory size.

```
# Enter one VM parameter per line# Use -Xms to specify the initial Java heap size and Use -Xmx to specify the maximum heap size-Xms512m -Xmx2048m
```

Maximum Memory (Xmx): You can allocate up to half the size of your computer's RAM for the maximum memory size. This number is listed in the fourth line of the file.

For editors that display the content in one continuous line, refer to the number highlighted in the image below to see which number represents the maximum memory size.

```
# Enter one VM parameter per line# Use -Xms to specify the initial Java heap size and Use -Xmx to specify the maximum heap size-Xms512m -Xmx2048m
```

Use whole numbers. For example, enter Xmx512m, not Xmx0.5m.



If you notice that the Desktop Client appears to "hang" frequently, try increasing the memory size.



If you receive an error message involving Java, try selecting a lower memory allocation.

Install the Desktop Client Using macOS

- You must have sufficient rights to install Desktop Client.
- Desktop Client requires a 64-bit operating system. It cannot run on a 32-bit operating system or Linux.

Use the following instructions to install the Desktop Client using macOS:

1. Log in to your Manager.
2. Click the [Download Desktop Client](#) icon at the bottom right of the dashboard.
3. Click the .dmg file to begin the installation process.

An icon and folder are displayed on your monitor, as shown below.



4. Drag the Desktop Client icon () into the Application folder.

The icon is added to the Launchpad.

5. On your desktop, click the Desktop Client icon .
6. In the **SMC Server Name** field, enter the Manager server name or IP address (IPv4 or IPv6).
7. Follow the on-screen prompts to open the Desktop Client and trust the appliance identity certificate.
8. Enter the Manager user name and password.

Change the Memory Size From Finder

-  You can change how much Random Access Memory (RAM) to allocate on your client computer to run the Desktop Client interface.

Consider a larger memory allocation if you work with many open documents or large data sets (such as flow queries with over 100k records).

1. In Finder, go to your home directory.
2. Open the Stealthwatch folder.

3. In the Stealthwatch directory, open the folder that contains the desired Stealthwatch version.
4. Open the application.vmoptions file using an appropriate editing application to begin editing. (This file is created after you open the Desktop Client for the first time.)

Minimum Memory Size (Xms): We recommend that you allocate no less than 512 MB. This number is listed in the third line of the file.

For editors that display the content in one continuous line, refer to the number highlighted in the image below to see which number represents the minimum memory size.

```
# Enter one VM parameter per line# Use -Xms to specify the initial Java heap size and Use -Xmx to specify the maximum heap size: -Xms512m -Xmx2048m
```

Maximum Memory Size (Xmx): You can allocate up to half the size of your computer's RAM for the maximum memory size. This number is listed in the fourth line of the file.

For editors that display the content in one continuous line, refer to the number highlighted in the image below to see which number represents the maximum memory size.

```
# Enter one VM parameter per line# Use -Xms to specify the initial Java heap size and Use -Xmx to specify the maximum heap size: -Xms512m -Xmx2048m
```

Use whole numbers. For example, enter Xmx512m, not Xmx0.5m.

 If you notice that the Desktop Client appears to "hang" frequently, try increasing the memory size.

 If you receive an error message involving Java, try selecting a lower memory allocation.

7. Verifying Communications

1. Review the Flow Collection Trend

1. Log in to your primary Manager.

Failover Configuration: Log in to your primary Manager and secondary Manager.

2. Review the Flow Collection Trend.



2. Verify the Data Store Database Status



If you did not deploy Secure Network Analytics with a Data Store, go to **3. Run Reports in Report Builder**.

1. In your primary Manager dashboard, select **Configure > Global > Central Management**.
2. Click the **Data Store** tab.
3. Confirm the Data Store database status is shown as Up.

If the database status is Down, click the *** (**Ellipsis**) icon in the Actions column for the database. Select **Start**.

4. Confirm the status for all Data Nodes is shown as Up.

If a Data Node status is Down, click the **⋮** (**Ellipsis**) icon in the Actions column for the Data Node. Select **Start**.

 For more information about the Data Store tab, refer to [Data Store Database](#).

3. Run Reports in Report Builder

1. Return to your Security Insight Dashboard.
2. Select the **Report** menu.
3. Select **Report Builder**.
4. Click **Create New Report**.
5. Click the **Flow Collection Trend by Flow Collector** template.
6. Select the parameters as needed. Click **Run**.
7. Review the report to confirm your Flow Collectors are receiving flows.
8. If you have a Flow Collector database (5000 Series only) or a Data Store, return to the Report Builder dashboard and repeat steps 4 through 7 to run the **Flow Database Ingest Trend Report**. Confirm the database or Data Store are receiving flows.

 For more information about Report Builder, refer to the information in the Help.

8. Finishing Appliance Configurations

Make sure you finish any required configurations for your appliances.

Appliance	Required Configurations	Optional Configurations
Data Node	none	Data Compression Flow Interface Statistics
Flow Collectors	none	Change NetFlow to sFlow
UDP Directors	none	High Availability (available on hardware only)
Flow Sensors	Application ID and Payload	Identifying Applications

Changing the Flow Settings in a Flow Collector



The following steps require a reboot of your Flow Collector to apply these changes.

Follow the steps below to change the flow settings in a Flow Collector.

1. Log in to the Flow Collector.
2. Click **Support > Advanced Settings**.
3. In the **engine_startup_mode** field, enter one of the following values:
 - Default value from the model file - 0
 - NetFlow - 1
 - sFlow - 2



If the engine_startup_mode field does not appear in the Advanced Settings list, you can add it at the bottom of the page by using the Add New Option and Option Value fields.

4. Click **Apply** and then click **OK**.
5. Reboot your Flow Collector to apply your changes.
6. Log in to your Manager.
7. Select **Configure > System > Flow Collectors**.
8. Enter one of the following numeric values in the Monitor Port field (these are industry standard default port numbers for NetFlow and sFlow. If your exporters are configured to use a non-standard port, you must use that port number instead).
 - 2055 - NetFlow
 - 6343 - sFlow
9. Click **Save** to save your changes.

Once the mode switch (NetFlow to sFlow or sFlow to NetFlow) completes, the following items that are based on flows from the previous mode are cleared:

- Caches: host cache, flow cache, security event cache
- Saved baseline files

You can confirm the mode switch by checking the flow trend graph on the dashboard to see if flows are being processed under the new mode.

Configuring UDP Directors for High Availability (Hardware Only)

Use the following instructions to configure your UDP Directors as a High Availability pair.



High Availability is only available on UDP Director hardware appliances. High Availability is not available on virtual appliances.

- **Forwarding Rules:** Configure at least one forwarding rule if you're planning to set up High Availability. Refer to [Configuring Forwarding Rules](#)
- **High Availability:** If you have more than one UDP Director, you can set up a High Availability pair. Configure at least one forwarding rule if you're planning to set up High Availability (refer to [Configuring High Availability](#)).

Configuring Forwarding Rules

SSL is used to send messages from the UDP Director to the Manager.

1. Log in to the Manager.
2. Select **Configure > Global > UDP Director**.
3. Click the **Actions** menu for the appliance. Select **Configure Forwarding Rules**.
4. Click **Add New Rule**.
5. **Description:** Enter a brief description that identifies the rule.
6. **Source IP Address:Port:** Type the IP address of the device that sends data to the UDP Director and the input port number (where the data will be sent).
 - **Format:** Use the syntax [IP address]:[Port Number].
 - **Range:** You can use Classless Inter-Domain Routing (CIDR) notation to enter a range of IP addresses.
 - **All:** You can type "All" to accept data from any source IP address on this port.
 - **Combinations:** You can add Source IP Address:Port combinations within a rule by adding them to a new line.

Examples:

- 10.11.16.38:5322
- 192.168.0.0/16:9000
- All:2055

7. **Destination IP Address:** Enter the IP address of the device receiving data from the UDP Director.
8. **Destination Port Number:** Enter the port number for the receiving device.
9. Click **Save**.
10. **Optional:** To sync your changes, click Sync.
11. Repeat the procedure to add forwarding rules as needed.
12. To set up a High Availability pair, go to **Configuring High Availability**.



High Availability is only available on UDP Director hardware appliances. High Availability is not available on virtual appliances.

Configuring High Availability

If you have more than one UDP Director, use the Appliance Admin interface to configure high availability.



High Availability is only available on UDP Director hardware appliances. High Availability is not available on virtual appliances.

The UDP Director High Availability (HA) allows a user to configure settings for redundant UDP Directors. Both nodes are fully redundant, however only one node is online at a time.



If you have high availability configured on your UDP Directors and update Secure Network Analytics to version 7.4.0 or later, reconfigure high availability after the update using the instructions below.
For more information about updating Secure Network Analytics, refer to the [Update Guide](#).

Primary Node and Secondary Node

The online node is known as the Primary in the pair, while the offline node is the Secondary. If the Primary node in the pair should fail, the Secondary node takes over and becomes the Primary.

Requirements

- **Forwarding Rules:** Configure at least one forwarding rule for the UDP Director in the High Availability system.
- **Save the Rules Configuration File:** If the UDP Director has already been configured with rules, export (save the rules configuration file) the UDP Director rules. Then, import the file to the second UDP Director to ensure that the rules for each match.
- **Order:** Configure the Primary UDP Director and then repeat the configuration on the Secondary one.
- **New or Established:** If the both UDP Directors are new, make sure you follow the procedures for each in this guide. However, if the secondary is already configured as an appliance on the Secure Network Analytics system, log in to the secondary UDP Director and configure its High Availability components as described here.

1. Configure the Primary UDP Director High Availability

1. Log in to the primary UDP Director.
2. Click **Configuration > High Availability**.
3. Check the **Enable High Availability Service** check box for the High Availability Settings.

☐ Enable High Availability Service

High Availability Settings

Node ID	☐ 1 ☐ 2
Virtual IP Address	
Subnet Mask	
Shared Secret	1234567890123456789012345678901234
Sync Ring #1(eth2) Unicast IP Address	
Sync Ring #1(eth2) Subnet Mask	
Sync Ring #2(eth3) Unicast IP Address	
Sync Ring #2(eth3) Subnet Mask	
Paired Node Host Name	
Paired Node Sync Ring #1(eth2) IP Address	
Paired Node Sync Ring #2(eth3) IP Address	

4. Select your **Node ID**. If this is a primary UDP Director, select 1. If this a secondary UDP Director, select 2.
5. In the **Virtual IP Address** field, enter an unused IP address that is on the same subnet as the eth0 interface. Set the **Subnet Mask** value to the value of the subnet mask used on the eth0 interface.

i Make sure the Virtual IP Address is the same on both nodes.

6. In the **Shared Secret** field, type a string for both UDP Directors. (This will be encrypted for secure transfer.)
7. In the fields for **Sync Ring #1 (eth2) Unicast IP Address**, enter the IP address and the subnet mask. (A Unicast IP Address identifies a single network destination.)
8. In the fields for **Sync Ring #2 (eth3) Unicast IP Address**, enter the IP address and the subnet mask.

Each of the IP addresses--eth0, eth02, eth03--must be on its own separate unicast subnet.

9. In the **Paired Node Host Name** field, enter the host name for the secondary UDP Director.
10. In the **Paired Node Sync Ring #1(eth2) IP Address** field, enter the Eth2 IP address for the secondary UDP Director.
11. In the **Paired Node Sync Ring #1(eth3) IP Address** field, enter the Eth3 IP address for the secondary UDP Director.
12. After reviewing the setting, click **Apply** to set the configuration.
13. Continue to the next section to configure the second UDP Director of the cluster.

2. Configure the Secondary UDP Director High Availability



If you selected Node ID 2 in [step 4](#) above, complete the steps below for the primary UDP Director.

To configure the secondary UDP Director complete the following steps:

1. Log in to the secondary UDP Director.
2. Click **Configuration > High Availability**.
3. Enter the host name for the secondary UDP Director into the **Paired Node Host Name** field.
4. Configure all of the parameters on this screen (including any Advanced Parameters that you may have changed on the first appliance) exactly as you did on the first appliance with exactly same values for every field except for the following:
 - **Sync Ring #1(eth2) Unicast IP Address:** Enter a different IP address from what you configured in this field on the primary, but it must be in the same subnet as the Sync Ring 1 Unicast address given on the primary.
 - **Sync Ring #2(eth3) Unicast IP Address:** Enter a different IP address from what you configured in this field on the primary, but it must be in the same subnet as the Sync Ring 2 Unicast address given on the primary.
 - **Paired Node Host Name:** Enter the host name for the primary UDP Director in this field.
 - **Paired Node Sync Ring #1(eth2) IP Address:** Enter the Eth2 IP address for the primary UDP Director in this field.
 - **Paired Node Sync Ring #1(eth3) IP Address:** Enter the Eth3 IP address for the primary UDP Director in this field.

5. Click **Apply** to save your changes and to start the clustering services on this appliance.
6. Click **Promote** to designate the primary appliance.

Configuring the Flow Sensor

1. Configure the Application ID and Payload

The configuration of a Flow Sensor requires an additional step of configuring the application ID and payload.

1. Log in to the Flow Sensor Appliance Admin interface.
2. Click **Configuration > Advanced Settings**.

The Advanced Settings page opens.

3. Select the proper settings for your network:

Item	Description
Export Packet Payload	Allows you to specify whether the Flow Sensor includes the first 26 bytes of binary payload data in the data that it sends to the collector.
Export Applications Identification	Allows you to specify whether the Flow Sensor attempts to identify applications before sending data to the collector. In addition, this setting must be enabled for the following settings to take affect: Include IPv6 – Allows you to specify whether or not the Flow Sensor analyzes both IPv4 and IPv6 packets. When this setting is disabled, the Flow Sensor analyzes only IPv4 packets. Export HTTPS Header Data – Allows you to specify whether the Flow Sensor includes header data from HTTPS flows in the data that it sends to the collector. The data includes the SSL common name and SSL organization name. This setting requires that the Flow Type is set to IPFIX. The maximum is 256 bytes. Export HTTP Header Data – Allows you to specify whether or not the Flow Sensor includes header data from HTTP flows in the data

Item	Description
	that it sends to the collector. When this setting is selected, a secondary field allows you to specify the maximum length of the HTTP path (in bytes) that the Flow Sensor includes as part of the flow data. This setting requires that the Flow Type is set to IPFIX.
Enable VXLAN Decapsulation	Allows you to specify whether the Flow Sensor uses Virtual Extensible Local Area Network (VXLAN) decapsulation capabilities. Without VXLAN decapsulation, the Flow Sensor simply detects VXLAN encapsulated traffic as flows between two Virtual Tunnel Endpoints (VTEPs). Decapsulation allows for much richer content by being able to analyze the tunneled traffic and thus gain greater insight into the traffic patterns in the network.  The Flow Sensor will only decapsulate VXLAN traffic which was originally sent to the standard VXLAN port (4789).
Enable GENEVE Decapsulation	Allows you to specify whether the Flow Sensor uses Generic Network Virtualization Encapsulation (GENEVE) decapsulation for traffic received on its monitoring ports.
Enable ERSPAN Decapsulation	Allows you to specify whether to Flow Sensor uses Encapsulated Remote Switching Port Analyzer (ERSPAN) decapsulation capabilities to detect the ERSPAN header in packets, and then decapsulate the header and process the inner packet contents. You are required to assign the monitoring interface an IP address to allow termination of the ERSPAN tunnel on the Flow Sensor. ERSPAN decapsulation is not supported on the FS 4210.
Enable X-Forwarded-For Processing	Allows you to specify whether the Flow Sensor uses X-Forwarded-For (XFF) processing to identify the originating IP address of a client connecting to a web server through an HTTP proxy or a load balancer.  ETA and X-Forwarded-For Processing cannot be configured together.

Item	Description
Enable ETA Processing	Allows you to specify whether the Flow Sensor uses ETA processing to generate and transmit IDP and SPLT fields to your Manager. i Enabling ETA increases NetFlow bandwidth usage, especially when using v9. We recommend using IPFIX for the Flow Export Format. i ETA and X-Forwarded-For Processing cannot be configured together. i ETA cannot be enabled on Dell or PowerEdge Flow Sensor models.
Enable Load Balancing	Allows you to specify whether the Flow Sensor 4000 series can distribute flow data to more than one Flow Collector. Use this option if the flow data from the Flow Sensor exceeds the capacity of one Flow Collector.
Monitoring Interface Selection	Allows you to specify the following: - Flow Sensor 4240 – 2 x 40G or 4 x 10G (SFP) interfaces - Flow Sensor 4300 – 2 x 40G/100G or 4 x 10G (SFP) interfaces You must be using multiple Flow Collectors and have Load Balancing enabled for this setting to work properly. Go to the Flow Sensor and Load Balancer Integration Guide for more information. This option is only available on the Flow Sensor 4240 and Flow Sensor 4300. The default setting is 2 x 40G.
Cache Mode	Allows you to select one of the following settings: Use single, shared, cache for all monitoring ports –

Item	Description
	• Use when asymmetric routing is present. • Single state table for application and latency calculations. • Uses less memory. • Lower overall pps processing rates. • Results in one NetFlow event created across multiple interfaces. • Use only when the Flow Sensor has only two ports and is connected by a TAP Use independent caches for each monitoring port – • Allows deduplication of packets across each Flow Sensor interface. • Uses more memory. • Higher overall pps processing rates. • Each interface maintains its own latency and application database. • Results in a unique NetFlow record for each interface that sees a given packet.
IP Mode	You can change the IP mode (IPv4 or IPv6) for your Flow Sensor in one of two ways: • Logging into your Flow Sensor, removing the old IP address, and adding the new IP address. • Remove the Flow Sensor from Central Management, then add it back to Central Management and provide the new Flow Collector IP address. Updating the IP Mode by logging in to the Flow Sensor Follow these steps to update the IP mode by logging into the Flow Sensor. 1. Log in to your Flow Sensor. 2. Navigate to Configuration > NetFlow Collectors.

Item	Description
	3. Add the new IP address in the IP Address field under the Add New Collector banner. 4. Add the port number in the Port field. 5. Click Add to add the new address. 6. Select the Delete check box next to the IP address you want to remove. 7. Click Apply to save your changes. Updating the IP Mode by Removing and Re-Adding the Flow Sensor to Central Management 1. Log in to your Manager and select Configure > Global > Central Management. 2. Click the three dots next to the Flow Sensor under Actions, and then select Remove This Appliance. 3. Log in to your Flow Sensor appliance console (SytemConfig). 4. Select Recovery > Add Appliance. 5. Follow the steps to add your Flow Sensor back to Central Management.

4. Click **Apply** to save your settings.

2. Configure the Flow Sensor to Identify Applications (optional)

If you want the Flow Sensor to identify applications, configure the following settings:

1. Log in to the Flow Sensor Appliance Admin interface.
2. Click **Configuration > Advanced Settings**
3. Check the **Export Application Identification** check box. By default, this option is not selected.
4. If you have more than 1 monitoring NIC, select one of the following options in the **Cache Mode** section:

- **Use single, shared, cache for all monitoring ports:** typically used for systems that monitor flows using the TAP method.
- **Use independent caches for each monitoring port:** typically used to experience better performance and for systems that monitor flows using the SPAN method.

3. Restart the Appliance

1. Select **Operations > Restart Appliance**.
2. Confirm the appliance status is Connected in Central Management.

BIOS Settings for 40 Gbps or 100 Gbps interfaces

In order to get optimal performance for 40Gbps or 100Gbps interfaces, you will need to make a BIOS change to set the Workload Profile to "NIC Latency Sensitive". Follow the steps below to change your BIOS settings.

1. Enter BIOS by entering **F2** on the virtual console of the FS4300 at the Cisco bootstrap splash screen.



2. Use your keyboard to navigate to the BIOS setting for Workload Profile by selecting **Advanced > AMD CBS > Workload Tuning > Workload Profile**.
3. Select the **NIC Latency Sensitive** option.



4. Save your changes by navigating to **Save & Exit**.



9. Configuring Telemetry

If you've deployed Secure Network Analytics with a Data Store, your Flow Collectors can ingest multiple types of telemetry simultaneously. You can configure your Flow Collectors during [First Time Setup](#) or, if it is an existing Flow Collector, you can update the telemetry ingest settings using [Flow Collector Advanced Settings](#).



Make sure your telemetry ports are unique. If you configure duplicate telemetry ports, the ports will be reset to their internal defaults to avoid loss of flow data. For example, if NetFlow and NVM are exported to the same telemetry port, each device exporting NVM data will create an exporter on the Flow Collector and exhaust the exporter resources in the Flow Collector engine, resulting in loss of flow data.

Network Visibility Module

If you select and configure Network Visibility Module (NVM), the Flow Collector will ingest and store NVM flows. Follow the instructions in the [Cisco Secure Network Analytics Network Visibility Module \(NVM\) Configuration Guide](#) to complete the configuration requirements.

Firewall Logs

If you select and configure firewall logs, the Flow Collector will ingest and store firewall event logs for Cisco Security Analytics and Logging (On Premises). Follow the instructions in the [Security Analytics and Logging: Firewall Event Integration Guide](#) to complete the configuration requirements.

Zeek Logs

Zeek telemetry is available for Data Store with Analytics enabled. Follow the instructions in the [Cisco Secure Network Analytics Zeek Configuration Guide](#) to complete the configuration requirements for Zeek telemetry.

Updating Telemetry Settings

If you have an existing Flow Collector ingesting NetFlow or any other telemetry, you can update your telemetry ingest settings using Flow Collector Advanced Settings. To access Advanced Settings:

1. Log in to your Flow Collector (formerly known as Appliance Administration, Admin, interface).

2. Select **Support > Advanced Settings**.



Each telemetry type has two settings. For more information on configuring

telemetry using Advanced Settings, follow the instructions in the Help. Select  **(Help) icon > Help**.

Cisco Telemetry Broker

Instead of using the UDP Director to send NetFlow to your Flow Collector, you now have the option to use Cisco Telemetry Broker to ingest network telemetry from many inputs, transform the telemetry format, and forward that telemetry to one or multiple destinations. To install Cisco Telemetry Broker, follow the instructions in the [Cisco Telemetry Broker Virtual Appliance Deployment and Configuration Guide](#).

10. Licensing Secure Network Analytics

Use Cisco Smart Software Licensing to license your Secure Network Analytics appliances and features. For more information, refer to Smart Licensing on cisco.com.

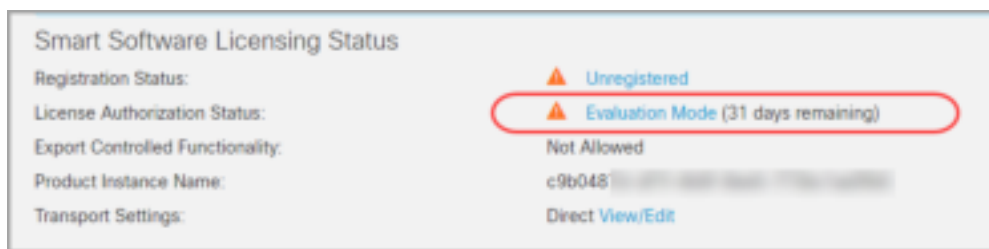
- **Online:** To use Smart Licensing and Secure Network Analytics online, please refer to the [Secure Network Analytics Smart Software Licensing Guide](#). You need Internet access for this configuration.
- **Offline:** To discuss your licensing options for closed/airgap networks, contact [Cisco Support](#).
- **Cisco Smart Account:** To set up a Cisco Smart Account, register at <https://software.cisco.com> or contact your administrator.

Evaluation Mode

When you use Secure Network Analytics in Evaluation mode, you can use selected features for 90 days. To use Secure Network Analytics with maximum default functionality, and to add licenses and features to your account, register your product instance for Smart Software Licensing.



Make sure you register your product instance before the 90-day evaluation period expires. When the evaluation period expires, flow collection will stop. To start flow collection again, register your product instance.



- **Admin User:** To review Smart Licensing status and usage details in your Manager, log in as the admin user.
- **Days Remaining:** To review the days remaining in Evaluation Mode, log in to the Manager as the admin user. Go to **Central Management > Smart Licensing**. Review the **License Authorization Status**.
- **Product Instance:** The Product Instance Name is the identifier we use for your Secure Network Analytics product instance, which includes your Manager and managed appliances.

11. Managing Secure Network Analytics

After you have finished configuring your appliances, the Help provides instructions for managing your environment, investigating behavior, responding to threats, and more.

 To review the instructions, select the  (**Help**) icon > **Help** from any page.

Configuring Host Groups

1. Log in to your Manager.
2. Select **Configure** > **Detection** > **Host Group Management**.

Creating and Managing Policies

1. Log in to your Manager.
2. Select **Configure** > **Detection** > **Policy Management**.

Building Flow Searches

1. Log in to your Manager.
2. Select **Investigate** > **Flow Search**.

Running Reports in Report Builder

1. Log in to your Manager.
2. Select **Report** > **Report Builder**.

Managing User Permissions

1. Log in to your Manager.
2. Select **Configure** > **Global** > **User Management**.

Investigating Behavior (Alarms, Security Events, etc.)

For information about investigating alarms, events, hosts, and more, review the information in Help.

1. Log in to your Manager.
2. Click the  (**Help**) icon.
3. Select **Help**.

4. At the top of the page, select the **Help** menu.
5. Select **Investigating Behavior**.

Responding to Threats

For policy information, review the information in Help.

1. Log in to your Manager.
2. Click the  (**Help**) icon.
3. Select **Help**.
4. At the top of the page, select the **Help** menu.
5. Select **Responding to Threats**.

Packet Capture

For packet capture information, review the information in Help.

1. Log in to your Manager.
2. Click the  (**Help**) icon.
3. From the top menu, choose **Resources > System Management > Appliance Administration > Support > Packet Capture**.

User Preferences

For the user preferences, review the information in Help.

1. Log in to your Manager.
2. Click the  (**Help**) icon.
3. From the top menu, choose **Resources > System Navigation**.

Theme

You can choose the theme for the Manager display so it is light, dark, or uses your system display settings (Auto).

- Before you log in, click the  (**Theme**) icon on the Login page and choose a theme from the drop-down menu.
- After you log in, from the toolbar, choose the  (**User**) icon > **Theme > [theme name]**.

Language

You can choose a language in which to read the online text in the Manager.

- Before you log in, click the  (**Global View**) icon on the Login page and choose a language from the drop-down menu.
- After you log in, from the toolbar, choose the  (**User**) icon > **Language** > **[language name]**.

Analytics

Secure Network Analytics uses dynamic entity modeling to track the state of your network. In the context of Secure Network Analytics, an entity is something that can be tracked over time, such as a host or endpoint on your network. Dynamic entity modeling gathers information about entities based on the traffic they transmit and activities they perform on your network. For more information, refer to the [Analytics: Detections, Alerts, and Observations Guide](#).

To install appliances, follow the instructions in the [Virtual Edition Appliance Installation Guide](#), the [x2xx Series Hardware Appliance Installation Guide](#), or the [x3xx Series Hardware Appliance Installation Guide](#).

Apps

Secure Network Analytics apps are optional independently releasable features that enhance and extend the capabilities of Secure Network Analytics.

The release schedule for Secure Network Analytics apps is independent from the normal Secure Network Analytics upgrade process. Consequently, we can update Secure Network Analytics apps as needed without having to link them with a core Secure Network Analytics release. Occasionally, an app that is designed to correspond with a new release of Secure Network Analytics may not be immediately available for installation. You may need to wait a few weeks for the newest version of the app.

For the latest Secure Network Analytics apps information, availability, and compatibility, refer to the following:

- [Secure Network Analytics Apps Version Compatibility Matrix](#)
- [Secure Network Analytics Apps Release Notes](#)

Authentication/Authorization

For details about each authentication or authorization configuration with Secure Network Analytics, refer to the following instructions.

Name	Instructions
LDAP	Follow the instructions in the Help. 1. Log in to your Manager. 2. Select Configure > Global > User Management. 3. Click the Configure Authentication and Authorization link. 4. Select the  (Help) icon > Help.
Security Assertion Markup Language Single Sign-On (SAML SSO)	Follow the instructions in the Help. 1. Log in to your Manager. 2. Select Configure > Global > User Management. 3. Click the Configure Authentication and Authorization link. 4. Select the  (Help) icon > Help. You can prevent a local login by enabling the SSO Only option. Use one of the following methods to enable SSO Only. • Appliance Console (SystemConfig) • User Management  You will need to configure SSO in User Management before you can complete either of these procedures. Refer to the Help for instructions.

	Enabling SSO Only in the Appliance Console 1. Log in to your appliance console (SystemConfig). 2. Select Advanced > SSO Only. 3. Enable SSO Only. Enabling SSO Only in User Management 1. Log into your Manager. 2. Select Configure > Global > User Management. 3. Click the Authentication and Authorization tab. 4. Click the ellipsis *** under the Actions menu for your SSO service and select Enable SSO Only.
TACACS+ Configuration Guide	Refer to the TACACS+ Configuration Guide .

Domains

A domain is a grouping of hosts and other devices that you want to monitor and manage. Flow Collectors exist within domains, and you can have multiple domains within one Secure Network Analytics system. Domains are completely independent of other domains, and every domain contains the Host Group tree. For information about which host groups exist in the Host Group tree, see [Managing and Configuring Host Groups](#) in the Help.

This section includes the following topics:

A domain is a grouping of hosts and other devices that you want to monitor and manage. Flow Collectors exist within domains, and you can have multiple domains within one Secure Network Analytics system. Domains are completely independent of other domains, and every domain contains the Host Group tree. For information about which host groups exist in the Host Group tree, see [Managing and Configuring Host Groups](#) in the Help.

- [Data Store Domains and Non-Data Store Domains](#)
- [Adding and Configuring Domains](#)
- [Synchronizing Data Store and Non-Data Store Domains](#)
- [Deleting a Domain](#)

Data Store Domains and Non-Data Store Domains

When you configure your Manager in the [appliance console \(SystemConfig\)](#) and set up your system, you will create a Secure Network Analytics domain with a Data Store (Data Store domain) or without a Data Store (Non-Data Store domain).

- **Data Store Domain:** The Flow Collector sends its telemetry to the Data Store Data Nodes for storage.
- **Non-Data Store Domain:** The Flow Collector stores its telemetry locally on the Flow Collector or on the Flow Collector database (5000 Series only).
- **Hybrid Configuration:** In Secure Network Analytics with a hybrid configuration, you can configure a Data Store domain and Non-Data Store domain. When you configure your Flow Collectors, you can choose which domain they will use, which determines where they send data.



If you are adding a Data Store domain to a Non-Data Store deployment, review the instructions in [Adding Data Store to a Non-Data Store Deployment](#).

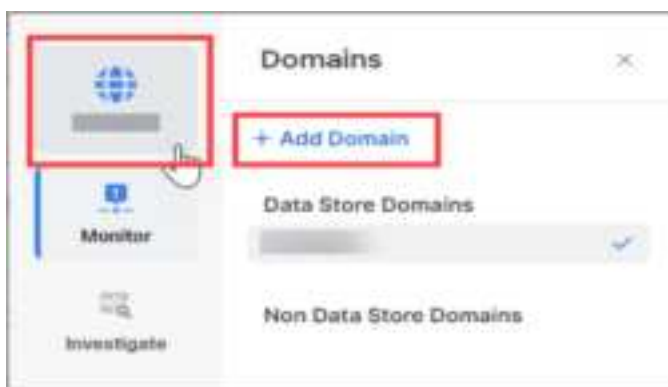
Adding and Configuring Domains

Use the following instructions to add a domain and define the domain settings. You can also import a Non-Data Store configuration into a new Data Store domain.

- **Role Permissions:** You need Admin or Configuration Manager roles to configure domains. Power Analysts can only view the domains.
- **Data Store Domains:** If you are adding a Data Store domain to a Non-Data Store deployment, review the instructions in [Adding Data Store to a Non-Data Store Deployment](#) before you start this procedure.

1. Add a Domain

1. From the main menu, choose **[Current domain name] > Add Domain**.



2. Configure the following fields:

- **Domain Name:** The name to be assigned to the domain. This name is shown on the Host Group tree.
- **Select Method:** Select one of the methods described in the table below to designate which host group structure you want to use for the domain you are adding.

If you select this method...	Then...
Default	Secure Network Analytics creates the domain with the default host group structure but without any Flow Collectors.
Import from File	Secure Network Analytics creates the domain and uses the appropriate configuration, based on the specific domain content

If you select this method...	Then...
	you exported (host group, domain, or both). For information on exporting XML files containing the domain configuration, refer to the Export Settings section. • XML files containing the domain configuration are not backwards compatible. These files are only compatible within the same system version number (for example, from Flow Collector v7.0 to Manager v7.0). • You can also import the entire host group configuration using the Host Group Management page. • If you need to import interface groups in the Network Devices branch of the Host Group tree from another domain, use this option. You must first export the groupings as an XML file to your local drive. • None of the Flow Collectors contained in the XML file is imported.



If you add a Flow Collector to an existing domain, that domain's specific configuration (policy, alarm severity, services, exporter SNMP, etc.) is applied to this Flow Collector.

3. Check the **Configure as a Data Store Domain** check box if you are adding a Data Store domain.



Do not turn on Analytics if you have created more than one Data Store domain as this will cause Analytics to have sub-optimal performance.

4. Click **Add** to save your configuration.

Creating a Data Store Domain by Importing an Existing Non-Data Store Domain Configuration (Optional)

If you are currently on a Non-Data Store domain and you want to add a Data Store domain to your Secure Network Analytics system for a future expansion into Data Store, you can do so by importing a Non-Data Store configuration into a new Data Store domain.

When you import an existing domain, you won't have to re-configure items such as alarms, host groups, and so on. Importing from an existing domain is like creating a new domain but with an existing configuration.

If the domain is newly created, then you will have to re-configure your Secure Network Analytics settings.

Follow the steps below to add a new Data Store domain and import all of its configuration from your Non-Data Store domain.

1. Use the **Add a Domain** drop-down menu to select your Non-Data Store domain.
2. Select **Configure > System > Domain Properties** from the top menu.
3. Make sure the **Export All configuration** radio button is selected. Refer to [2. Configure Domain Settings](#) to view a list of the data that is exported.
4. Click **Export** to download the XML file.
5. In the upper left corner of any page, at the left end of the main menu, choose **[Current domain name] > Add Domain**.
6. Enter a name for your new domain in the **Domain Name** field.
7. Click the Select Method drop-down menu and select the **Import from File** option.
8. Select the XML file you downloaded in [step 4](#).
9. Click the **Configure as a Data Store** domain check box to select it.
10. Click **Add** to add your new domain.

2. Configure Domain Settings

1. Complete the following settings for the domain you are adding.

Setting	Description
Domain Name	Name for the domain you are currently in.
Archive Hour	Allows you to set the time at which each Flow Collector in the domain clears all counts. You can enter whole numbers between 0 and 23, where 0 is midnight in your local time zone. The local time zone is indicated to the right of the Archive hour field. At the defined time, the Flow Collector resets all index counts to 0. In addition, the Flow Collector saves the log files and

	Web files that it has gathered during the preceding 24 hours and then begins a new day of data collection.
Internal Autonomous System (AS) Number	Click inside the Internal AS Numbers field and type your AS numbers. Separate multiple entries with commas or by pressing Enter after each entry to place each one on a separate line. You can assign internal autonomous system (AS) numbers only to domains that contain Flow Collectors When Secure Network Analytics encounters traffic containing these numbers in flow data, it categorizes the traffic as "origin" traffic on the Autonomous System Traffic document. Origin traffic signifies traffic from or within your network as opposed to traffic from an external network that is passing through your network (transit traffic). For information about the Autonomous System Traffic document, see the "Autonomous System Traffic" topic in the Desktop Client help.

2. Configure your Export Settings

The Export page on the Domain Properties dialog allows you to export specific domain content. You may want to use the content as a template for any additional domains you add in the future.

Refer to the following table for information about the available settings.

If you select this check box...	Secure Network Analytics exports this data...
Export All configurations*	All of the data listed in "Export the Domain configuration" below. In addition, a list of your flow collectors as well as your exporters and their interfaces are also exported.
Export the Host Group configuration*	The entire host group definition structure, including the host group names and IP address ranges. This output does not include policies.
Export the Domain	Archive hour setting from the Domain Properties dialog.

If you select this check box...	Secure Network Analytics exports this data...
configuration*	• All Service definitions. For information about services, see the "Services" topic in the Desktop Client help. • All Alarm Configuration settings. For information about configuring alarms, see the "About Alarm Severities" topic in the Desktop Client help. • The entire host group structure, including the host group names and IP address ranges. Refer to the Managing and Configuring Host Groups topic in the Secure Network Analytics Help for more information. • All policies. Refer to the Managing Core Policies topic in the Secure Network Analytics Help for more information. Mitigation alarm actions are only exported when they have been manually changed from the defaults (set to <i>Not inherited</i>).
* You can use any of the XML files resulting from these commands to replace the host group configuration. For more information, see the "How to Replace the Host Group Configuration" topic in the Desktop Client help.	

3. Click **Export**.

Secure Network Analytics saves the corresponding settings in an XML file that is downloaded to your Downloads folder.



Exporting a domain is not the same thing as backing up a configuration. To back up an appliance configuration, refer to [Creating an Appliance Configuration Backup](#)

Synchronizing Data Store and Non-Data Store Domains

If you are in the process of transitioning a Non-Data Store Flow Collector to a Data Store Flow Collector, you may want to keep your configurations and tuning synchronized between your Non-Data Store domain and your Data Store domain. This section describes the process for synchronizing your Non-Data Store domain with its associated Data Store domain.

Before You Begin

Ensure that you have already created a Data Store domain that you will be synchronizing with your Non-Data Store domain. If you have already followed the process outlined in [Adding a Data Store to a Non-Data Store Deployment and Transitioning Your Flow Collectors](#), your Data Store domain should already be created. Refer to [Adding and Configuring Domains](#) for instructions on adding a domain.

 You need administrator access for this procedure.

Synchronized Properties

The following properties will be synchronized between domains:

- Data Store domain specific configuration as well as alert configuration (if enabled). Domain configuration includes:
 - Host Group Management
 - Alarm Severity
 - Policy Management
 - Services, Applications
 - Exporter SNMP profiles (not including passwords)
 - Domain AS Numbers.

Recommended Synchronization Frequency

While you can synchronize your domains as often as you like, we recommend that you limit your synchronizations to only after you perform a group of changes or once a day or week. This is because the synchronization process requires the use of resources that take away from daily processing.

Synchronizing Domains Procedure

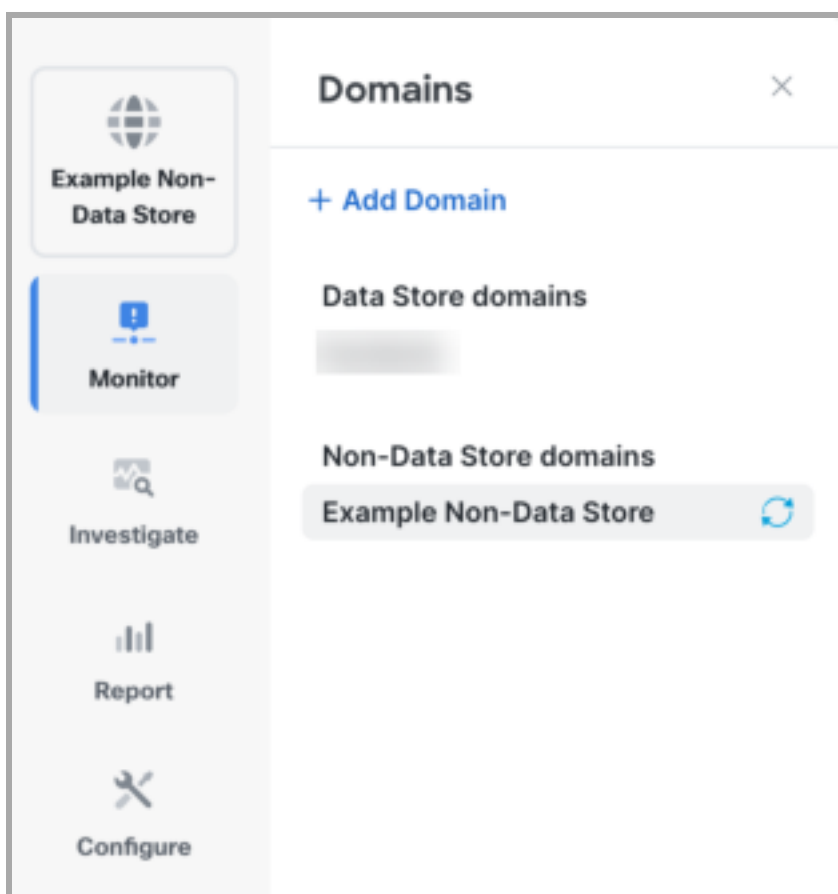
Follow these steps to synchronize your Non-Data Store domain (Source) with your Data Store domain (Target).

1. From the menu bar, choose the Non-Data Store domain that you want to synchronize with your Data Store domain.
2. From the main menu, choose **Configure > System > Domain Properties**.
3. Click **Edit**.

4. Choose the Data Store domain that you want to synchronize this domain with in the **Target Domain to Synchronize** drop-down menu.

i You can only synchronize your target Data Store domain with one source Non-Data Store domain. If you attempt to synchronize your target Data Store domain with more than one source Non-Data Store domain, you will receive an error.

5. Click **Save** to save your changes. A Synchronize button appears next to the Non-Data Store domain that you selected to synchronize with your Data Store domain.



Removing a Domain Synchronization Target Domain

Follow the steps below to remove a target domain.

1. From the menu bar, choose the Non-Data Store domain that you want to synchronize with your Data Store domain.
2. From the main menu, choose **Configure > Domain Properties**.
3. Click **Edit**.

-
4. Click **Clear Target Domain**.
 5. Click **Save** to save your changes.

Deleting a Domain

Before you delete a domain, review these instructions to make sure you understand the requirements.



When you delete a domain, you will lose access to all data that has been collected for that domain. Make sure you only delete a domain if you no longer need access to the collected data in it.

1. Remove Flow Collectors from Central Management

If your domain includes Flow Collectors, remove them from Central Management before you delete the domain. You can add the Flow Collectors to another domain, but the procedure includes resetting them to their factory defaults (RFD). For instructions, refer to the following:

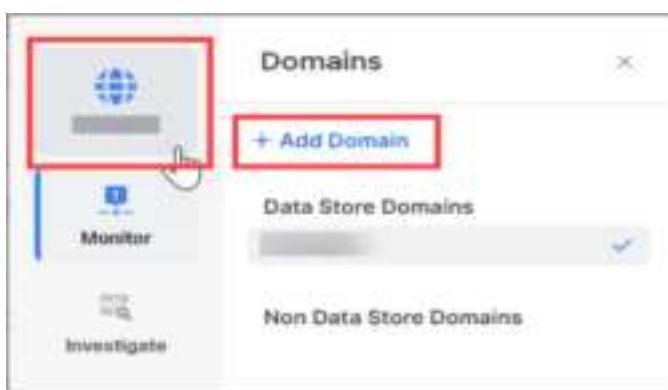
1. [Removing an Appliance from Central Management](#)
2. [Resetting Factory Defaults](#)
3. [Adding an Appliance to Central Management](#)



If you remove Flow Collectors from Central Management and delete the domain, you will lose the associated Flow Collector data.

2. Delete a Domain

1. If you first need to access the domain, choose the **[Current domain name]** from the drop-down menu.



2. From the main menu, choose **Configure > System > Domain Properties**.
3. Click **Delete Domain**.



When you delete a domain, you will lose access to all data that has been collected for that domain. Make sure you only delete a domain if you no longer need access to the collected data in it.

Deleting a Desktop Client Domain

If you are using the Desktop Client in Secure Network Analytics without a Data Store, you can also delete domains from the Desktop Client.

Use caution when deciding which Desktop Client domains you want to delete as you will lose access to all data which has been collected for the domain you are deleting.



Workaround: If you accidentally delete all of your domains in the Desktop Client and lock yourself out of the Manager Web App, create a new Non-Data Store domain in the Desktop Client. This will allow you to regain access into the Manager Web App. For information on creating a domain refer to the Add a Domain topic in the Desktop Client help.

Integrations and Additional Configurations

We have the following additional integrations and configurations available at

<https://www.cisco.com/c/en/us/support/security/stealthwatch/products-installation-and-configuration-guides-list.html>. There may be more integrations than the list shown here.

- Cisco Security Analytics and Logging (On Premises)
- Cisco XDR Integration Guide
- Configuring Cisco's ASA for NSEL Export to Stealthwatch
- Customer Success Metrics Configuration Guide
- Enabling Multiple NetFlow Exporters
- Network Visibility Module (NVM) Configuration Guide
- Flow Sensor and Load Balancer Configuration Guide
- ISE and ISE-PIC Configuration Guide
- Secure Network Analytics
- SSL/TLS Certificates Guide for Managed Appliances
- TACACS+ Configuration Guide
- Zeek Configuration Guide

Passwords

You can change passwords as follows:

- [Resetting Passwords to Default Settings](#)
- [Changing Passwords](#)
- [Changing the Data Store Database Passwords](#)
- [Changing the Flow Collector Database Password \(Non-Data Store Domains\)](#)

Resetting Passwords to Default Settings

There are a two ways to reset your passwords to their default settings.

- **Admin Password:** Use [Resetting the Admin Password on Your Appliance](#)
- **Admin and Sysadmin Passwords:** Use [Resetting Sysadmin Passwords to Default](#).



After you reset your appliance passwords to the default, make sure you change them. This step is critical for security. Refer to [Changing Passwords](#) for instructions.

Resetting the Admin Password on Your Appliance

Use the following instructions to reset your **admin** password to the default setting. Then, change the appliance password for maximum security. This process works on all appliances.

- **Requirements:** You need the appliance sysadmin password to complete these instructions.
 - **Other Users:** These instructions reset the admin user to the default password. The individual user passwords will not be changed.
 - **Other Appliances:** These instructions do not reset the admin password on other Secure Network Analytics appliances (Flow Collector, Flow Sensor, or UDP Director).
1. Log in to the Manager appliance console (SystemConfig) as sysadmin.
 2. Select **Security > Web Admin Password**.
 3. Click **OK**.



This will reset admin password to the default value.

4. Exit the appliance console.
5. Go to **Changing Passwords** to change the admin password from the default. This step is critical for security.

Resetting Sysadmin Passwords to Default

 Contact Cisco Support for assistance with this process.

Changing Passwords

Use the following instructions to change your passwords from the [default password](#) or a previous password. Make sure you use the following criteria:

- **Length:** 16 to 256 characters
- **Change:** Make sure the new password is different from the previous password by at least 4 characters.

User	Default Password
admin	lan411cope
sysadmin	lan1cope

Changing the Sysadmin Password

1. Log in to the appliance console as sysadmin.
2. Select **Security**.
3. Select **Password**.
4. Follow the on-screen prompts to change the sysadmin password.
5. Exit System Configuration.

Changing the Admin Password on the Manager

1. Log in to the Manager as admin.
 - **URL:** https://<IPAddress>
 - **Login:** admin
 - **Default Password:** lan411cope

2. Select **Configure > Global > User Management**.
3. Locate the **admin** user in the list.
4. Click the **Actions** menu, then choose **Change Password**.
5. Follow the on-screen prompts to change the admin password. Use the following criteria:
 - **Length:** 16 to 256 characters
 - **Change:** Make sure the new password is different from the default password by at least 4 characters.

Changing the Admin Password on All Other Appliances

Use the following instructions to change the admin user password on a Data Node, Flow Collector, Flow Sensor, or UDP Director.

1. Log in to the Appliance Administration interface as admin.
 - **URL:** https://<IPAddress>
 - **Login:** admin
 - **Default Password:** lan411cope
2. Select **Manage Users > Change Password**.
3. Enter the current password and new password.
4. Click **Apply**. Follow the on-screen prompts to change the password.
5. To change the admin password on another appliance, repeat steps 1 through 4.

Changing the Data Store Database Passwords

Use System Configuration to change your Data Store database passwords (dbadmin and readonlyuser). You need to enable SSH temporarily as part of this procedure.

1. Log in to your Manager appliance console (SystemConfig) as sysadmin.
2. From the main menu, choose **Data Store**.
3. Select **SSH**. Follow the on-screen prompts to enable SSH.
4. Select **Passwords** from the Data Store menu.
5. Follow the on-screen prompts to change the passwords.



Password policy for the Data Store database complies with the Manager password policy. For more information about Manager password policy, refer to the “Password Policy” topic in the Help.

Your previous SSH settings are restored when you exit the Data Store menu.

Changing the Flow Collector Database Password (Non-Data Store Domains)

Use the Database tab on the Central Management page to update your Flow Collector database password for all Flow Collector databases in a Non-Data Store domain.



Make sure you change the default password. When a new Flow Collector is added to Central Management, the database password automatically updates to match the current password.

1. Open Central Management.
2. Click the Database tab.
3. To generate a random password, click **Generate Password**, or enter your password in the **Password** and **Confirm Password** fields.
4. Check the **Show Password** check box to view your chosen password.
5. Click **Apply Settings** to save your changes.



When you change a database password, only Non-Data Store Flow Collectors and Transition Flow Collectors will receive the new password.

SSL/TLS Appliance Identity and Additional SSL/TLS Client Identities

Use SSL/TLS Appliance Identity and Additional SSL/TLS Client Identities to manage your Secure Socket Layer (SSL) and Transport Layer Security (TLS) Certificates for the selected appliance. Follow the instructions in the [SSL/TLS Certificates for Managed Appliances Guide](#) for all certificate-related changes.



Your certificates are critical for your system's security. Improperly modifying your certificates can stop Secure Network Analytics appliance communications and cause data loss. Follow the instructions in the [SSL/TLS Certificates for Managed Appliances Guide](#) for all certificate-related changes.

TLS Versions

TLS versions 1.2 and 1.3 are supported by default when you install Secure Network Analytics v7.5.0 or later. You can choose the configuration for your appliances as follows:

- TLS 1.2 and 1.3 (default)
- TLS 1.3 only (not supported for Data Store)

To change the configuration, follow the instructions in the [SSL/TLS Certificates for Managed Appliances Guide](#).

Appliance Identity

Each Secure Network Analytics version 7.x appliance is installed with a unique, self-signed appliance identity certificate. To replace the appliance identity certificate, follow the instructions in the [SSL/TLS Certificates for Managed Appliances Guide](#).

The appliance uses the SSL certificate to verify its identity to other appliances. For example, when a Manager generates a flow query and communicates to a Flow Collector, the Manager is authenticated by presenting its server identity certificate. The Flow Collector checks if this presented server identity certificate is a trusted certificate.

Client Identity

The client identity is used for communication between external services. For details, follow the instructions in the [SSL/TLS Certificates for Managed Appliances Guide](#).

Reviewing Certificates

Use the following instructions to review the appliance identity certificate or client certificates for the selected appliance. You can review details such as the friendly name, issued information, and expiration date.



Make sure you replace your appliance identity certificates before they expire. To generate new certificates or add custom appliance identity certificates, follow the instructions in the [SSL/TLS Certificates for Managed Appliances Guide](#).

1. Open [Central Management](#).
2. Click the *** (**Ellipsis**) icon for the appliance.
3. Select **Edit Appliance Configuration**.
4. Select the **Appliance** tab.
5. **To review the appliance identity certificate**, go to the SSL/TLS Appliance Identity section.

To review the client identity certificates, go to the Additional SSL/TLS Client Identities section.

6. **Expiration Date:** Review the **Valid To** column.



Your certificates are critical for your system's security. Improperly modifying your certificates can stop Secure Network Analytics appliance communications and cause data loss. Follow the instructions in the [SSL/TLS Certificates for Managed Appliances Guide](#) for all certificate-related changes.

Changing the Host Name, Network Domain Name, or IP Address

To change the appliance host name, network domain name, or IP address after you've installed and configured your appliances, follow the instructions in the [SSL/TLS Certificates for Managed Appliances Guide](#).

As part of the procedure, you will remove the appliance from Central Management temporarily. You will be given the option to regenerate your appliance identity certificate and in some cases, you can skip the regeneration altogether.



If you are using custom certificates, save your certificates before you change your network settings in case you accidentally overwrite them. To replace



appliance identity certificates, follow the instructions in the [SSL/TLS Certificates for Managed Appliances Guide](#).

Reviewing Trust Store Certificates

When you add a certificate to an appliance trust store, you are allowing communication with that identity, whether it is another Secure Network Analytics appliance or an external service.

- **Instructions:** Follow the instructions in the [SSL/TLS Certificates for Managed Appliances Guide](#) for all trust store changes.
- **Upload Individual Files:** If your file includes more than one certificate, upload each certificate individually to the trust store.



For requirements and instructions, refer to the [SSL/TLS Certificates for Managed Appliances Guide](#).

Use the following instructions to review the certificates saved to the selected appliance Trust Store.

1. Open [Central Management](#).
2. Click the **Actions** menu for the appliance.
3. Select **Edit Appliance Configuration**.
4. Select the **General** tab.
5. Review the **Trust Store** list.

HTTP/2 Settings

HTTP/2 is an upgraded version of the HTTP protocol that improves web speed and security. It includes features like multiplexing, header compression, and better encryption, making it more efficient than HTTP/1.1. Enabling HTTP/2 ensures faster and safer communication between servers and clients, such as web browsers or apps. Secure Network Analytics v7.5.3 supports HTTP/2 protocol for incoming connections to the appliances.

If you enable this setting, your appliance rejects all incoming connections that do not use HTTP/2. Therefore, do not enable this setting on your Managers if you use the Desktop Client or Firepower Management Center, as they use HTTP/1.1 for communication.



If you remove an appliance from a cluster with HTTP/2 enabled, it will revert to its default state with HTTP/1.1 enabled. When you add the appliance back to the cluster, you'll need to manually re-enable HTTP/2.



You need to configure HTTP/2 settings separately for both Manager and other appliances.

Enabling/Disabling HTTP/2



The HTTP/2 requirement is not enabled by default.



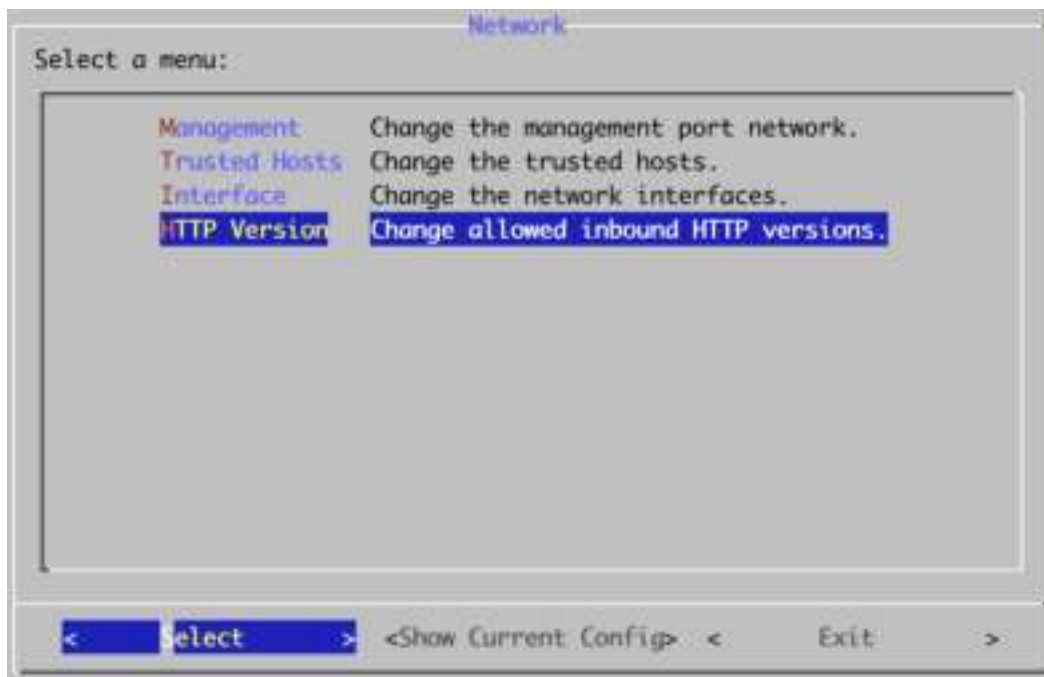
Do not enable this setting on your Manager if you are using the Desktop Client or Firepower Management Center.

Enabling HTTP/2

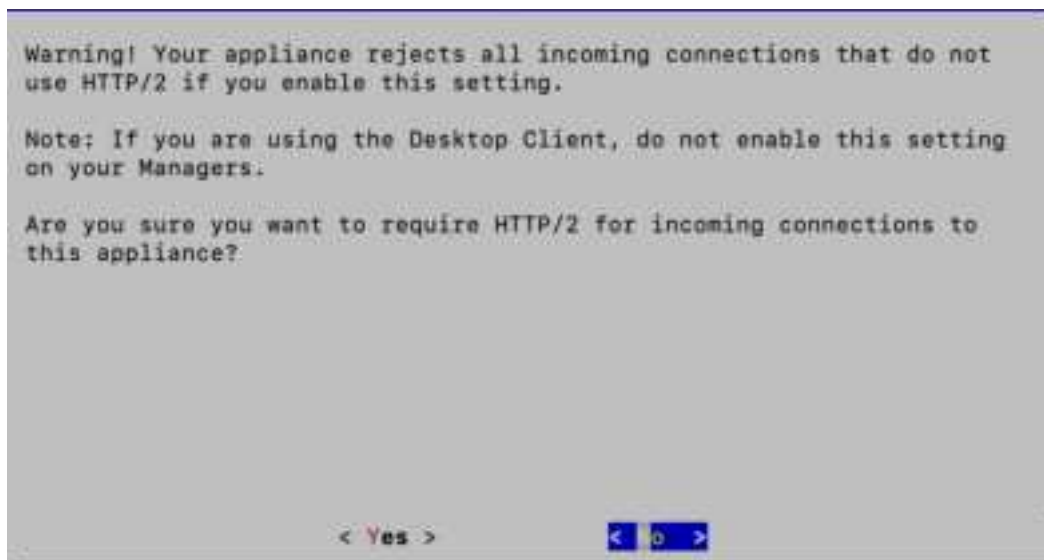
Use the following instructions to enable the HTTP/2 requirement for incoming connections.

1. Log in to the appliance console as **sysadmin**.
2. Select **Network**.

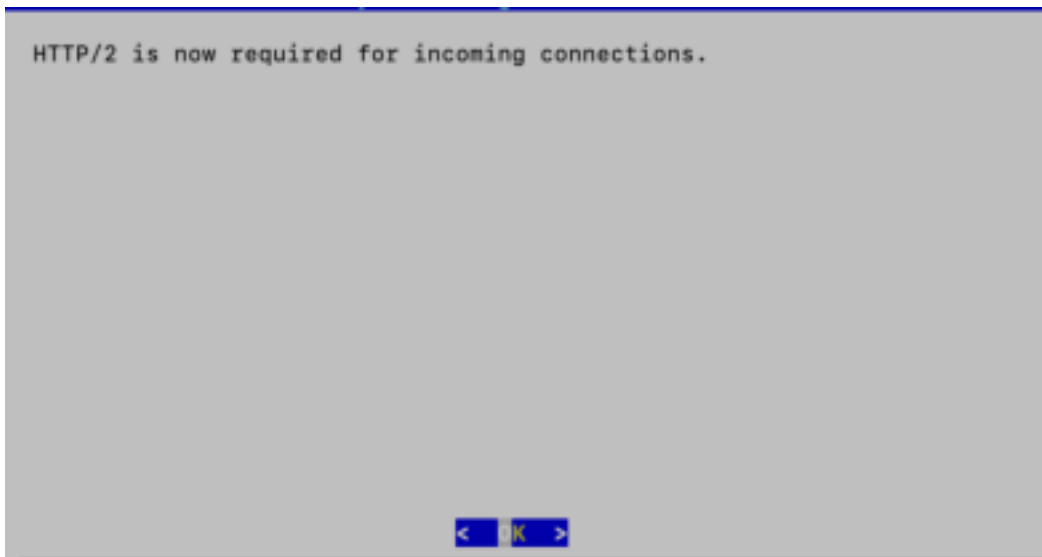
3. Select **HTTP Version**.



4. Select **Yes**.



5. Select **OK**.



The following page appears if you have not made any changes:

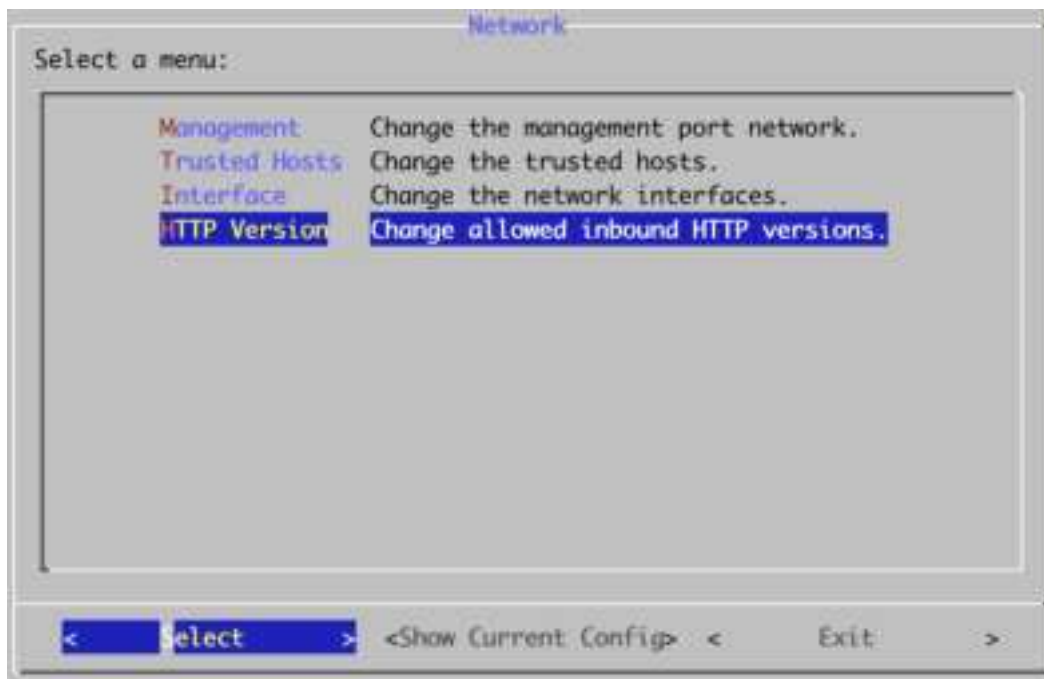


Disabling HTTP/2

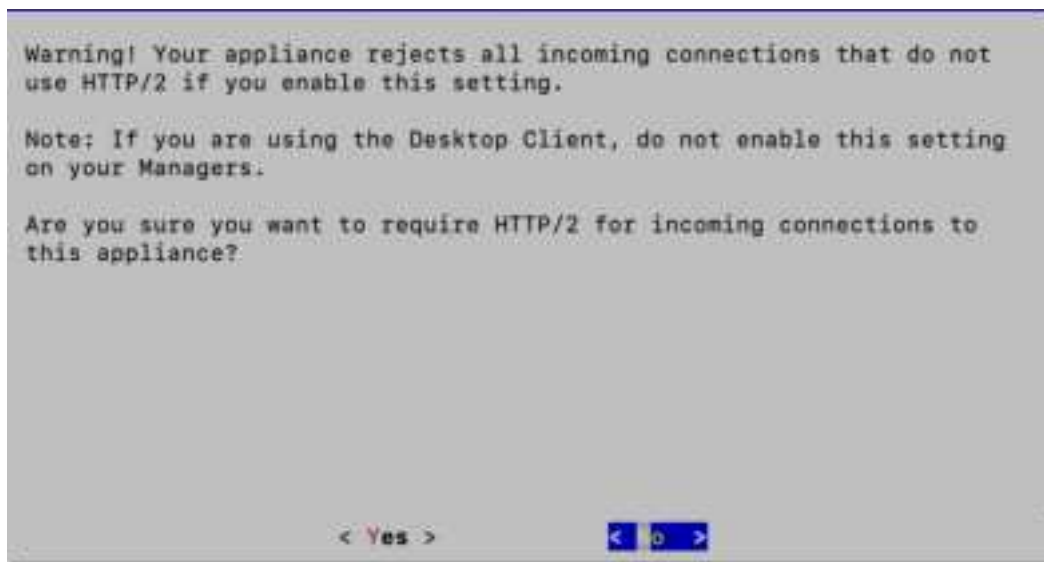
Use the following instructions to disable the HTTP/2 requirement for incoming connections.

1. Log in to the appliance console as sysadmin.
2. Select **Network**.

3. Select **HTTP Version**.



4. Select **No**.



5. Select **OK**.



The following page appears if you have not made any changes:



Threat Feed

The Cisco Secure Network Analytics Threat Feed (formerly Stealthwatch Threat Intelligence Feed) provides data from the global Threat Feed about threats to your network. The feed updates frequently and includes IP addresses, port number, protocols, host names, and URLs known to be used for malicious activity. The following host groups are included in the feed: command-and-control servers, bogons, and Tors.

Licensing

Add the Threat Feed License to your Cisco Smart Account. For instructions, refer to the [Secure Network Analytics Smart Software Licensing Guide](#).

Enabling

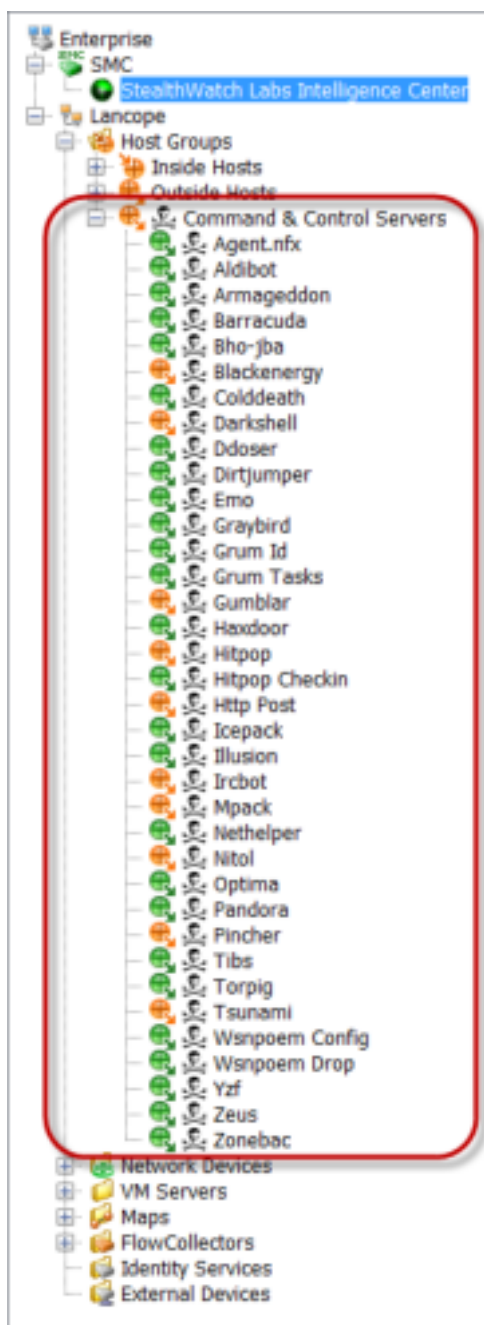
To enable the feed in Central Management, follow the instructions in the help. Please note that you will configure the DNS server and firewall as part of the instructions. Also, if you have a failover configuration, you need to enable Threat Feed on your primary Manager and secondary Manager.

1. Log in to your primary Manager.
2. Select **Configure > Global > Central Management**.
3. Click the  **(Help) icon**. Select **Help**.
4. Select **Appliance Configuration > Threat Feed**.

Reviewing Alarms and Security Events

When the Threat Feed is enabled, the Stealthwatch Labs Intelligence Center icon is shown in the Desktop Client Enterprise tree with an alarms status, and threats are displayed in their respective host group branches. For more information, refer to the [Desktop Client User Guide](#) or the Help.

Help: To access the Help, right-click the Stealthwatch **Labs Intelligence Center** branch and select **Configuration > SLIC Threat Feed Configuration**. Click **Help**.



Central Management (Managing your Appliances)

Use Central Management to manage your appliances from your primary Manager. We've included an overview of Central Management here, and details for each section are available in Help.

- **About Central Management:** When your appliances are managed by Central Management, you can review their status and manage the following: edit appliance configuration, update software, reboot, shut down, and more.
- **Help:** To open the Help, click the  (**Help**) icon. Select **Help**.

This section covers the following topics:

- [Central Management and Appliance Administration Interface](#)
- [Opening Central Management](#)
- [Opening Appliance Admin](#)
- [Editing the Appliance Configuration](#)
- [Viewing Appliance Statistics](#)
- [Removing an Appliance from Central Management](#)
- [Adding an Appliance to Central Management](#)
- [Creating an Appliance Configuration Backup](#)
- [Enabling/Disabling SSH](#)

Central Management and Appliance Administration Interface

When an appliance is managed by Central Management, you will access functions for your appliance in Central Management and the Appliance Administration interface (Appliance Admin) as follows:

Central Management	Appliance Admin Interface
Edit appliance configuration	View system statistics
Review license status (overview)	
Back up configuration files	Back up database files

View audit logs	Create diagnostics packs
Reboot	Network Host and IP Lookup
Shut down	Packet Capture
Update software	Clearing the DNS Cache
	Appliance-specific configurations



If you configure a Flow Collector for Data Store compatibility, the Appliance Administration interface (Appliance Admin) hides certain functionality. Use Central Management to configure the Flow Collector and other related tasks.

Opening Central Management

1. Log in to your primary Manager.
2. Select **Configure > Global > Central Management**.

Opening Appliance Admin

You can access the Appliance Admin interface through Central Management or by logging in to the appliance directly.

Opening Appliance Admin through Central Management

1. On the [Central Management](#) Inventory page, choose the **Actions** menu for the appliance.
2. Select **View Appliance Statistics**.
3. Log in to the Appliance Administration interface.

Opening Appliance Admin through Direct Login

1. In your browser address bar, type the appliance IP address as follows:

https://<IPAddress>

- **Manager:** add **/Manager/index.html** after the IP address.
- **For example:** **https://1.1.1.1/Manager/index.html**

2. Press Enter.

Editing the Appliance Configuration

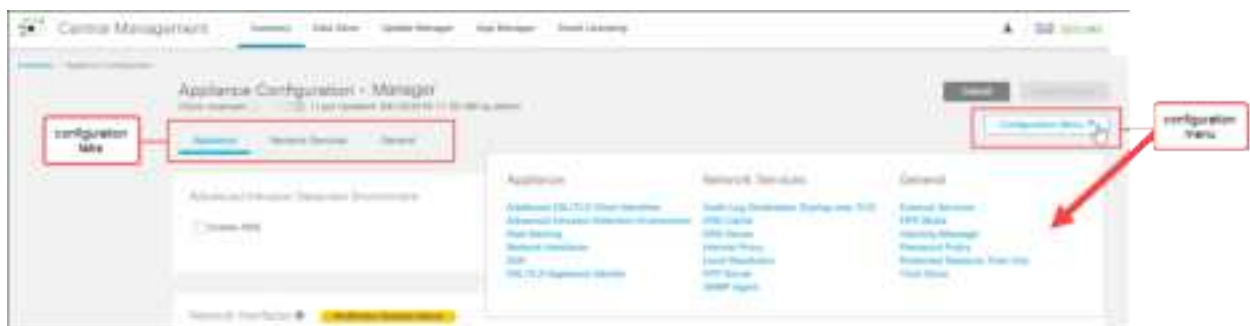
1. On the [Central Management](#) Inventory page, choose the **Actions** menu for the appliance.
2. Select **Edit Appliance Configuration**.



3. Click the **Configuration** menu. Select an item from the list.

or

Click each tab to review each configuration category.



4. Make changes to each configuration section as needed. You can edit more than one configuration category on each configuration tab.

i For instructions, click the  (**User**) icon .

5. Click **Apply Settings**. Follow the on-screen prompts to save your configuration changes.

Some changes require a system reboot. If you prefer to wait, you can revert your changes and edit your configuration settings and reboot later.



The appliance reboots automatically. Do not force the appliance to reboot while configuration changes are pending. To confirm the appliance status is **Connected**, review Central Management > Inventory.

6. **Connected:** On the Inventory page, make sure the appliance finishes the configuration changes and the Appliance Status returns to **Connected**.

Viewing Appliance Statistics

Hover: For more information about each appliance status, hover your pointer over the status.

To see system statistics, services, disk usage, and docker services, log in to the Appliance Admin interface:

1. On the [Central Management](#) Inventory page, choose the **Actions** menu for the appliance.
2. Select **View Appliance Statistics**.
3. Log in to the Appliance Administration interface.

Removing an Appliance from Central Management

Use the following instructions to remove an appliance from Central Management.

1. On the [Central Management](#) Inventory page, choose the **Actions** menu for the appliance.
2. Select **Remove This Appliance**.
 - **Data Store Appliances:** Go to [Removing Data Store Appliances from Central Management](#) for additional requirements.
 - **Flow Collectors:** If you removed a Flow Collector from Central Management, it is also removed from the domain. You need to reset the factory defaults (RFD) if you plan to add it to a different domain. Go to [Adding an Appliance to Central Management](#) and [Removing an Appliance from Central Management](#) for instructions.
 - **Config Channel Down:** If you're removing the appliance because the configuration channel is down, go to the [Config Channel Down](#) procedure in Troubleshooting for additional instructions.

- **Troubleshooting:** If you log in to the Appliance Admin interface and the appliance is not removed from Central Management, go to the [Config Channel Down](#) procedure in Troubleshooting to remove it using System Configuration.
- **Central Management:** To add the appliance to a different Manager, use the appliance console (SystemConfig).



If your appliance has custom certificates, save your certificates in case you accidentally overwrite them. For instructions, refer to the [SSL/TLS Certificates for Managed Appliances Guide](#).

Removing Data Store Appliances from Central Management

If you remove Data Store appliances from Central Management (Manager, Flow Collector, Data Node), it does not remove them from all necessary configuration files. The following files need to be manually cleaned up.

- **Managers and Flow Collectors:** For Managers and Flow Collectors removed from Central Management, you will need to remove the IP addresses of these devices from the `/lancope/var/services/data-store/config-datastore-inventory-snapshot` directory before attempting to re-add them to Central Management.
- **Data Nodes:** If you are attempting to remove/re-add a Data Node appliance entirely, contact Cisco Support for assistance with the removal Data Nodes as that process is more complicated.

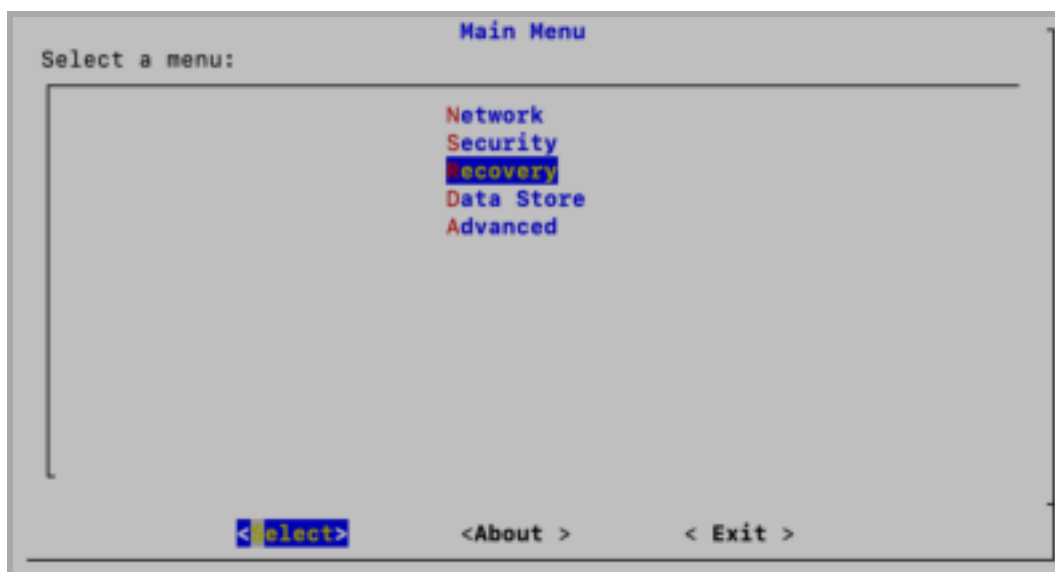
Adding an Appliance to Central Management

Use the appliance console (SystemConfig) to add an appliance to Central Management. It is important to review the following:

- **Custom Certificates:** If your appliance has custom certificates, save your certificates in case you accidentally overwrite them. For instructions, refer to the [SSL/TLS Certificates for Managed Appliances Guide](#).
- **Manager Administration Credentials:** You need the Manager, user ID and password to add an appliance to Central Management.
- **RFD:** If you reset the factory defaults on an appliance, make sure you complete the First Time Setup process. For instructions, refer to [1. Configuring Your Environment Using First Time Setup](#).
- **New Installations:** If this is a new installation, make sure you complete the First Time Setup process. For instructions, refer to [1. Configuring Your Environment](#)

Using First Time Setup.

1. Log in to the appliance console (SystemConfig).



2. Select **Recovery**.
3. Select **Add Appliance**.



If you don't see the Add Appliance menu in the screen above, you will need to first remove your appliance before you can re-add it.

4. Follow the on-screen prompts to enter the Manager administration credentials and finish the configuration. Depending on the type of appliance, you may need to enter

additional information.

Creating an Appliance Configuration Backup

Use Central Management to back up an appliance configuration.



Before you back up an appliance, make sure you follow the instructions in the Help. To back up a Data Store, refer to [Creating a Data Store Backup](#). To back up a Flow Collector database, refer to [Creating a Database Backup \(Non-Data Store Domains\)](#).

1. Open Central Management.
2. Click the ***** (Ellipsis)** icon for the appliance.
3. Select **Support**.
4. Select the **Configuration Files** tab.
5. Select the **? (Help)** icon. Follow the instructions in the Help.

To restore an appliance configuration backup, follow the instructions in the Help.

Enabling/Disabling SSH

Use this section to control the ability to access the appliance using SSH (secure shell). You can enable/disable SSH from the web UI/Central Management or from the appliance console (System Config).

Default: disabled

Enabling/Disabling SSH from the Web UI/Central Management



When SSH is enabled, the system's risk of compromise increases. It is important to enable SSH only when you need it. When you are finished using SSH, disable it.

Access the SSH Configuration

Use the following instructions to open SSH for a selected appliance.

1. Open [Central Management](#).
2. Click the **Actions** menu for the appliance.
3. Select **Edit Appliance Configuration**.
4. Select the **Appliance** tab.

Enable SSH

1. Locate the SSH section.
2. To allow SSH access on the appliance, check the **Enable SSH** check box.
3. Click **Apply Settings**.
4. Follow the on-screen prompts.

Disable SSH

1. To remove SSH access on the appliance, click the **Enable SSH** check box to clear it.
2. Click **Apply Settings**.
3. Follow the on-screen prompts.

Enable/Disable SSH from the Appliance Console (SystemConfig)

1. Log in to your appliance console (SystemConfig)
2. Select **Advanced > SSH**.
3. Select the option to enable or disable SSH, then click **OK**.



Any change you make to SSH in the appliance console (SystemConfig) will not sync to Central Management. Be sure to undo your SSH change when finished to ensure it is in sync with Central Management. If you do not undo your change, any subsequent configuration changes in Central Management will reset the SystemConfig SSH state to the current Manager configuration state.

Enabling/Disabling Sysadmin User

Use this section to control the ability to access the appliance using the sysadmin user. The sysadmin user is required to access the Appliance Console (SystemConfig) utility.

Default: enabled

Access the Sysadmin User Configuration

Use the following instructions to access the Sysadmin User for a selected appliance.

1. From the main menu, select **Configure > Global > Central Management**.
2. From the Inventory tab, click the *** (**Ellipsis**) icon for the appliance.
3. Select **Edit Appliance Configuration**.
4. Select the **Appliance** tab.

Enable Sysadmin User

1. Locate the Sysadmin User section.
2. To allow sysadmin user access on the appliance, check the **Sysadmin User** check box.
3. Click **Apply Settings**.
4. Follow the on-screen prompts.

Disable Sysadmin User

1. To remove sysadmin user access on the appliance, click the **Sysadmin User** check box to clear it.
2. Click **Apply Settings**.
3. Follow the on-screen prompts.

Creating a Database Backup (Non-Data Store Domains)

Use the following instructions to back up your Manager and Flow Collector databases. To back up the Data Store, refer to [Creating a Data Store Backup](#).



Without a backup, you will not be able to recover your files if a problem occurs during the update process. Make sure you follow the instructions and complete all procedures for the database backup. Also note that this procedure only applies to Non-Data Store Flow Collectors. For assistance, contact [Cisco Support](#).

This process involves completing the following procedures:

1. [Trim the Flow Collector Database](#)
2. [Back Up to Remote File System](#)

1. Trim the Flow Collector Database

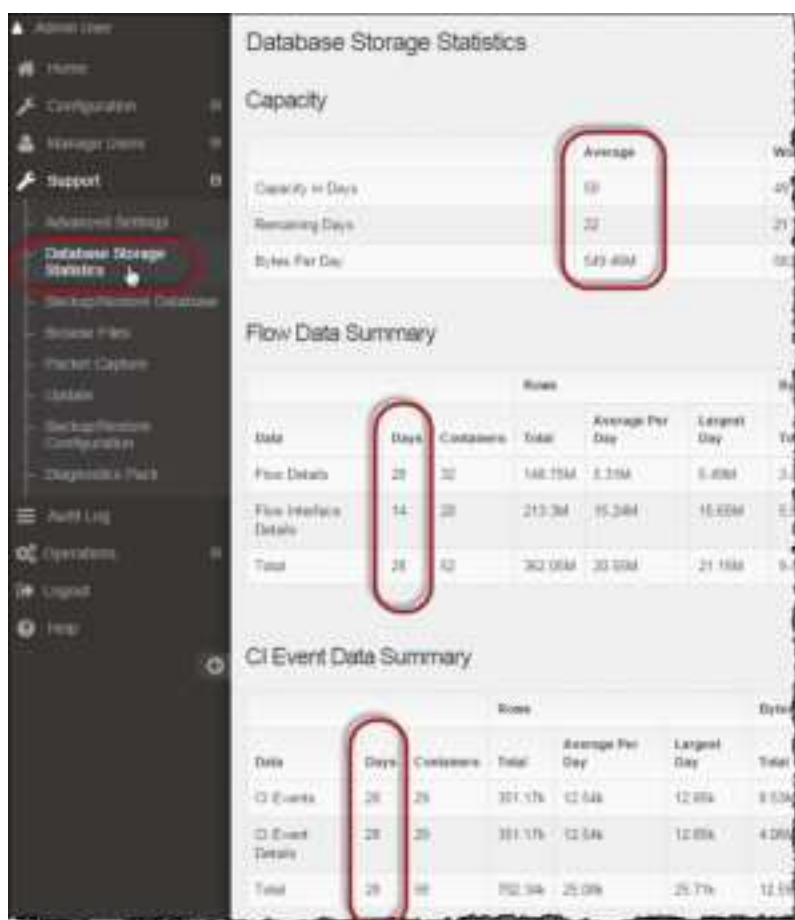
The Flow Collector database backup can take multiple days to finish and will slow your network speed if the database is large. Before you back up your databases, we recommend trimming the Flow Collector database. This will free the available disk space for storing flows and reduce the amount of time it takes to back up the database.

The Flow Collector stores the maximum number of days based on the disk space and the amount of data collected per day. When the maximum (75% of the /lancope/var partition) is hit, the database will start to delete the oldest data first to allow new data to come in.

1. Review your Database Storage Statistics

Use the following instructions to check your database storage.

1. Log in to the Flow Collector Appliance Admin interface.
2. Select **Support > Database Storage Statistics**.
3. Review the days stored in Capacity, Flow Data Summary, and CI Event Data Summary (or Security Event Data Summary).



2. Trim the Interface Details

The Flow Interface Data is the data related to the interfaces of exporters. Secure Network Analytics saves flow interface data and flow data.

The Flow Interface default setting causes the system to push out the flow data, so it can keep all the interface statistics it can. This function uses the Desktop Client as a main tool which does not apply to Data Store systems. A node may be needed to indicate that the trimming procedure only applies to Non-Data Store systems.



Backing up this data takes time. If you don't need all of it, shorten the storage limit (for example: 7 days). Any data older than the limit will be lost.

Use the following instructions to purge the database of the interface statistics data older than the limit you set, so you can free up the available disk space for storing flows.

1. Log in to Desktop Client as the admin user.
2. Locate the Flow Collector in the Enterprise Tree. Click the plus (+) sign to expand the container.
3. Right-click the Flow Collector. Select **Configuration > Properties**.
4. In the Flow Collector Properties dialog box, click **Advanced**.
5. Select the **Store flow interface data**.
6. Shorten the storage limit. For example, if you set the limit to **Up to 7 days**, anything older than 7 days will be lost.
7. Click **OK**.
8. Wait 5 minutes to proceed to the next steps.

3. Trim Flow Details and CI Event Data

To reduce the size of the Flow Details and CI Event/Details in the Flow Collector database, contact [Cisco Support](#). This step is optional, and the trimming process takes only a few minutes to complete, but the process requires guidance.

When you trim the NetFlow, you will specify the number of days to keep Flow Details & CI Event/Details in the Flow Collector database. Two things will occur with this configuration:

- The database is trimmed down to the number of days you enter.
- The database starts rolling the older data out based on the oldest day but without trying to save as much as possible.

2. Back Up to Remote File System

To back up a database to a remote file system, complete the following steps:

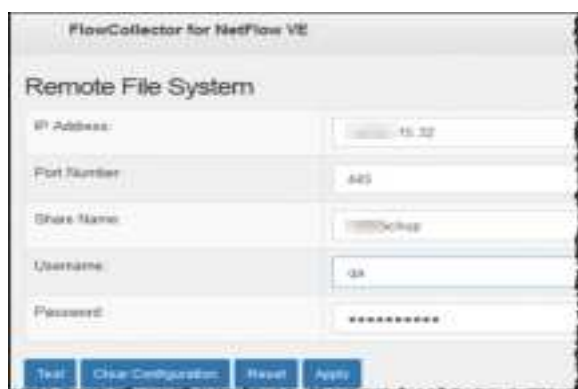
- **Space:** Make sure the remote file system has enough space to store the database backup.
 - **Time:** After you back up the database once, subsequent backups will be quicker because the process backs up only what has changed since the last backup. This process backs up approximately 0.5 GB to 2 GB of data per minute.
1. Return to the Appliance Admin interface (but do not close the Desktop Client).
 2. Determine how much space you will need on the remote file system to store the database backup as follows:

- Click **Home**.
- Locate the **Disk Usage** section.
- Review the **Used (byte)** column for the **/lancope/var** file system. You will need at least this much space plus 15% more on the remote file system to store the database backup.



Item	Used	Size (byte)	Used (byte)	Available (byte)
/	17%	4,800	1,000	2,800
/lancope/var	88%	27,000	24,487	11,790

3. Click **Configuration > Remote File System**.



FlowCollector for NetFlow VE

Remote File System

IP Address: 10.10.10.10

Port Number: 445

Share Name: \\10.10.10.10\share

Username: qa

Password: *****

Test Clear Configuration Reset Apply

4. Complete the fields using the settings for the remote file system where you want to store the backup files.

The file share uses the CIFS (Common Internet File System) protocol, also known as SMB (Server Message Block).

5. Click **Apply** to place the settings in the configuration file.

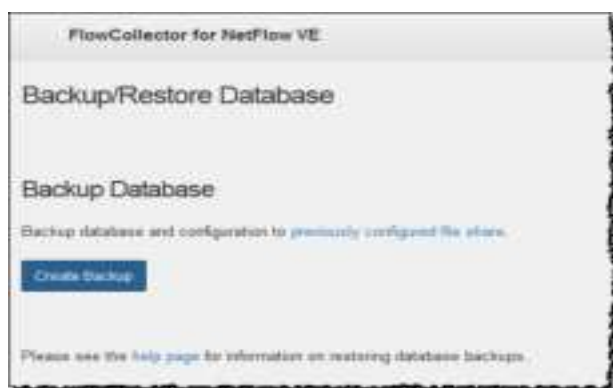
If the Apply button is not enabled after you enter the password, click once in a blank area on the Remote File System page to enable it.

6. Click **Test** to verify that the appliance and the remote file system can communicate with each other.

You should see the following message at the bottom of the Remote File System page when the test is complete.

File sharing appears to be properly configured.

7. Click **Support > Backup/Restore Database**. The Backup Database page opens as shown in the following example.



8. Click **Create Backup**. This process may take a long time.
 - After the backup process starts, you can mouse away from the page without interrupting the process. However, if you click **Cancel** while the backup is in progress, you may not be able to resume the backup without restarting the appliance.
 - Follow the on-screen prompts until the backup is completed.
 - To view details of the backup process, click **View Log**.
9. Click **Close** to close the progress window.

Restoring a Database Backup (Non-Data Store Domains)



Contact [Cisco Support](#) for assistance with planning and implementing these tasks.

Data Store Database

If you've configured Secure Network Analytics with a Data Store, you can access the Data Store tab in Central Management.



To add Data Store to your configuration, refer to [Adding a Data Store to a Non-Data Store Deployment and Transitioning Your Flow Collectors](#) and [Adding Data Store to a Non-Data Store Deployment](#).

Data Store Tab

Use the Data Store tab in Central Management to:

- **Status:** View the status of your database or any Data Node. For details, refer to [Viewing the Data Store Database Status](#).
- **Start or Stop:** You can also start or stop the database or any Data Node. For details, refer to [Viewing the Data Store Database Status](#).
- **Storage Usage:** View the current storage usage statistics for your database. You can also modify retention status for flow interface data. For details, refer to [Viewing Database Retention](#).
- **Update Status:** View the status of all Data Nodes during updates. For details, refer to [Monitoring the Data Node Update Status](#).
- **Update Self-Signed Data Store Identity Certificates:** Update the validity period of the self-signed Data Store database identity certificates. For details, refer to [Updating the Data Store Database Certificates](#).
- **Configure Inter-Data Node Encryption:** Configure inter-Data Node encryption to secure communication between Data Nodes within the Data Store. For details, refer to [Configuring Inter-Data Node Encryption](#).

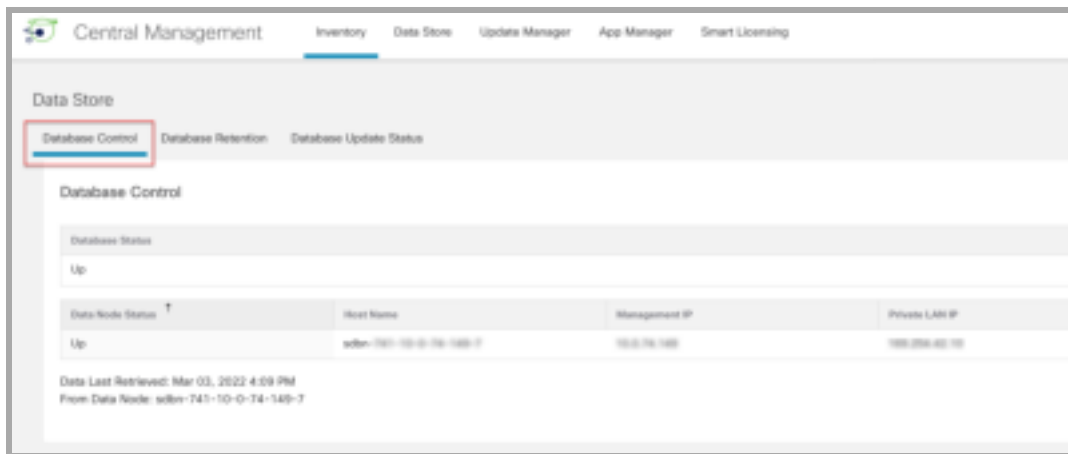
Opening the Data Store Tab

1. Log in to your Manager.
2. Select **Configure > Global > Central Management**.
3. Click the **Data Store** tab.

Viewing the Data Store Database Status

The Database Control page opens when you choose the Data Store tab in Central Management. This tab displays the status of the database and each Data Node.

- **Sorting:** The Data Nodes on this tab are sorted by their Private LAN IPs by default. You can re-sort the Data Nodes by clicking the column header by which you want to sort.
- **Status:** Under normal conditions, your database and all Data Nodes will show a status of **Up**. Your database may be Up but the status of one of your Data Nodes could be Down. After recovering a failed Data Node, you may see your database showing as Up but your newly recovered Data Node will be in a "recovering" state.
- **Actions Menu:** Make sure you use the Actions menu to start or stop your database (or a Data Node).



Make sure you use the Actions menu to start or stop your database (or a Data Node).

Starting the Database

1. Ensure that the Database Control tab is selected.
2. Click the *** (**Ellipsis**) icon in the Actions column for the database.
3. Select **Start**.
4. Confirm the database status is shown as Up.

Stopping the Database

1. Ensure that the Database Control tab is selected.
2. Click the *** (**Ellipsis**) icon in the Actions column for the database.
3. Select **Stop**.
4. Confirm the database status is shown as Down.

Starting a Data Node

Follow the steps below to start a Data Node.

1. Ensure that the Database Control tab is selected.
2. Find the Data Node you want to start. Click the *** (**Ellipsis**) icon in the Actions column.
3. Select **Start** to start the Data Node.
4. Confirm the Data Node status is shown as Up.

Stopping a Data Node

Follow the steps below to stop a Data Node.

1. Ensure that the Database Control tab is selected.
2. Find the Data Node you want to stop. Click the *** (**Ellipsis**) icon in the Actions column.
3. Select **Stop** to stop the Data Node.
4. Confirm the Data Node status is shown as Down.

Reviewing Last Action Results

Only one action may be in progress at any time regardless of the number of users. When an action is in progress, no other actions can be taken. Once an action has completed, the completion status will be displayed for all users in a banner at the top of the screen.

Follow the steps below to review last action results.

1. Ensure that the Database Control tab is selected.
2. Click the **Last Action Results** link at the bottom of the screen. The Action Results banner will remain on screen until you dismiss it.

Viewing Database Retention

The Database Retention tab answers questions such as:

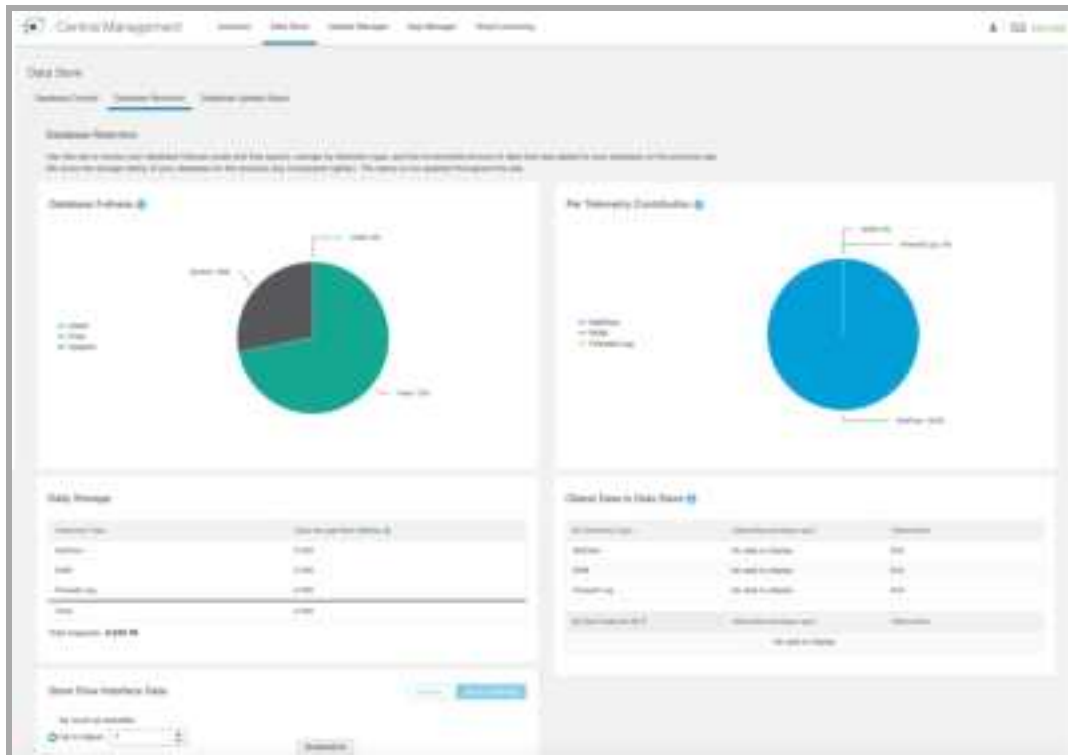
- How full is my database?
- How much is each telemetry type (NetFlow, NVM, firewall log, or Zeek) contributing to this fullness?
- How much data was newly stored in my database yesterday?
- What is the total capacity of my database?



All of the charts as well as the Data Storage Statistics section on this page are updated once per day.

Opening the Data Store – Database Retention Tab

1. Select **Configure > Global > Central Management**.
2. Click the **Data Store** tab.
3. Click the **Database Retention** tab.



Database Fullness Chart

The Database Fullness chart displays the amount of used and free space that exists in your Data Store database.

Per Telemetry Contribution Chart

The Per Telemetry Contribution chart displays a breakdown of the data that exists in your Data Store database.

Daily Storage

The Daily Storage section displays the incremental amount of data that was added to your database on the previous day. By monitoring your daily storage rate, you can evaluate

how quickly your database is filling as well as how much each telemetry type is contributing to your daily storage accumulation.

Oldest Data in Data Store

This table shows the date and number of days since the oldest record was written to the Data Store. This data is updated once per day.

Data stored locally in a Flow Collector (or Flow Collector database) is not included in this table. If you are transitioning a Non-Data Store Flow Collector to a Data Store Flow Collector and have a data retention policy, you can use this table to understand how much new data is in your Data Store and to know when it is an ideal time to complete your transition.

Changing the Flow Interface Data Storage

Flow interface statistics provide a more detailed view of flow statistics. They are useful for troubleshooting and investigating recent flow data by providing multiple vantage points in the network for a given flow. For example, if a flow is observed on multiple exporters or multiple interfaces of the same exporter, the details are stored in flow interface statistics.

The Data Store retains data for as long as possible, and the amount of retention time is determined by your system's ingest rate. Once the Data Store reaches full capacity, it starts deleting the oldest data automatically.

Flow interface statistics consume storage at a higher rate, potentially reducing the time you can retain other important data (such as flow statistics).



Changing the flow interface data storage period here only impacts the NetFlow portion of the data that is occupying space in your system. The default is 7 days. You can increase or decrease the retention days as needed.

1. In the Store Flow Interface Data section, choose **As much as possible** or **Up to days** (click the up or down arrows to change the number of days).
2. Click **Apply Settings**.
 - When you change the retention to a longer period, wait for the difference of time to expire before the data being stored corresponds exactly to the retention settings. Until that time, the data is displayed using the most reduced (coarsest) resolution available. For example, if you change the retention from 3 days to 10 days, then you need to wait 7 days before the data being stored corresponds exactly to the retention settings.

- Your data may be deleted sooner than the retention period you select, due to critical trimming of data according to disk usage. If you choose to store data as long as possible, when the Data Store reaches full capacity, the system starts deleting the oldest data.

Monitoring the Data Node Update Status

After initiating an update of your Data Nodes from your Central Management Update Manager, use the Database Update Status tab to monitor the progress of the database services update on each Data Node.

Opening the Data Store – Database Update Status Tab

1. Select **Configure > Global > Central Management**.
2. Choose the **Data Store** tab.
3. Choose the **Database Update Status** tab.

Monitoring the Database Update Status

Each Data Node progresses through a series of states during an update. Click the Data Store Update Workflow link to see a visual representation of the update process (shown below).



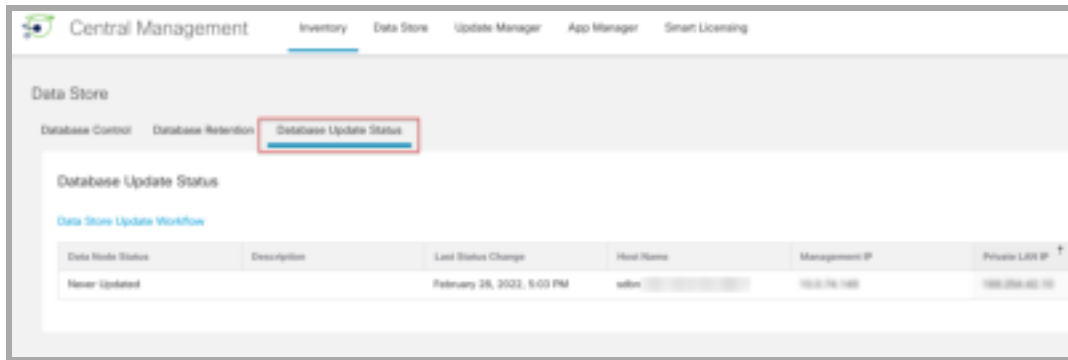
For a successful update, follow the update order and instructions in the [Cisco Secure Network Analytics System Update Guide](#).



Some of the state transitions shown in the image below happen very quickly during the update process so you may not see them occur during a screen refresh.

The Database Update Status tab shows the current update status for your Data Nodes. After you start a software update (upgrade or patch) in Update Manager, use this Database Update tab to monitor the status of each Data Node to confirm it completes the update. To see visual representation of the update workflow, click **View Diagram**.

After the update is completed, go to the Database Control tab to confirm your database status is Up. For more information, refer to the [Update Guide](#).



The following image shows the Data Store update workflow.



Updating the Data Store Database Certificates

The Data Store database has a unique, self-signed identity certificate that is created when the Data Store is initialized. You can update the Data Store database with a new self-signed identity certificate with a revised validity period using the **Database Security** tab.

Opening the Data Store – Database Security Tab

1. Select **Configure > Global > Central Management**.
2. Choose the **Data Store** tab.
3. Choose the **Database Security** tab.

The overall steps to update and verify the self-signed Data Store database identity certificates are as follows:

1. Check Data Store Initialization

2. Update Certificates

3. Review Central Management

4. Review Trust Stores

1. Check Data Store Initialization

1. Log in to your primary Manager.
2. Select **Configure > Global > Central Management**.
3. Choose the **Data Store** tab.
4. Confirm the Data Store database status is shown as Up.

If the database status is Down, click the *** (**Ellipsis**) icon in the Actions column for the database. Select **Start**.

5. Confirm the status for all Data Nodes is shown as Up.

If a Data Node status is Down, click the *** (**Ellipsis**) icon in the Actions column for the Data Node. Select **Start**.



If the Data Store is not initialized, you receive a warning message at the top of the **Database Security** page and you cannot update the self-signed Data Store database identity certificate.

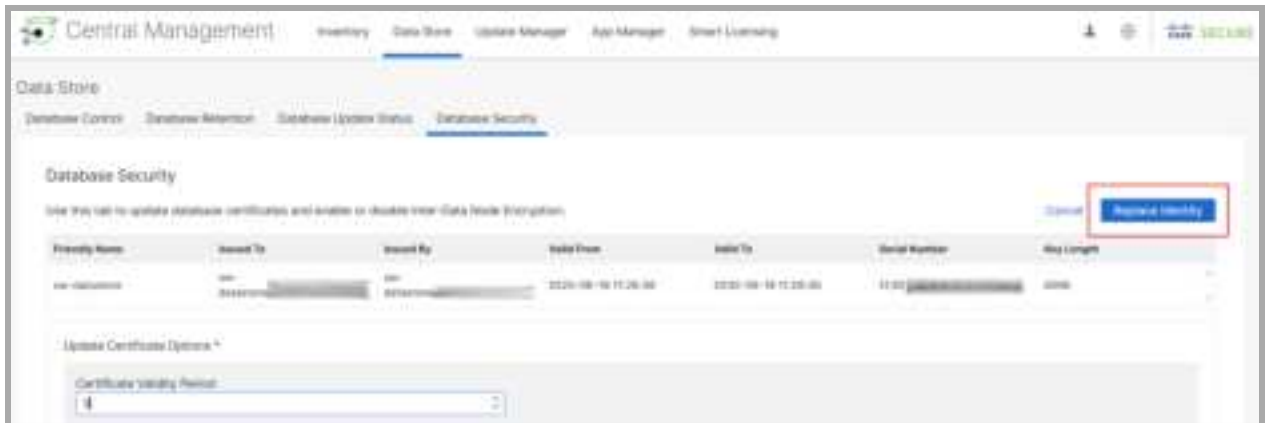
2. Update Certificates

1. Verify that all Data Store appliances (Managers, Flow Collectors, and Data Nodes) are shown as **Connected** in the Central Management Inventory.
2. From **Central Management > Data Store**, choose the **Database Security** tab.
3. Click **Update Identity**.



4. Enter a certificate validity period between 1 and 5 years. Click **Replace Identity**.

The self-signed Data Store database identity certificate is updated.

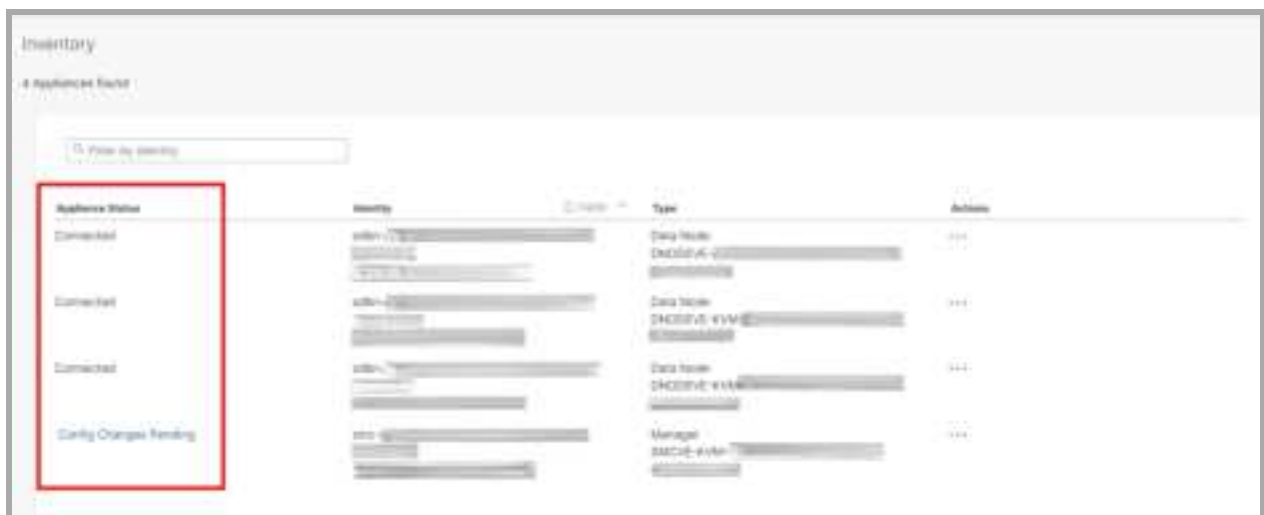


5. Review the updated validity period of the self-signed Data Store database identity certificate.
6. Confirm the status of all appliances are Up and Connected after successful certificate validity period update.

3. Review Central Management

1. Go to **Central Management > Inventory**.
2. Review the **Appliance Status** column.

Confirm the status of the appliance that interacts with the Data Store database is shown as **Connected**. If the status is shown as **Config Channel Down** or **Config Changes Pending**, wait a few minutes until it returns to **Connected**.



4. Review Trust Stores

1. In the **Central Management** inventory, click the *** (**Ellipsis**) icon for the appliance that interacts with the Data Store database.
2. Choose **Edit Appliance Configuration**.
3. Choose the **General** tab.
4. Review the Trust Store list to ensure the updated certificate is shown.

Configuring Inter-Data Node Encryption

Inter-Data Node Encryption secures communication between Data Nodes within the Data Store by encrypting the traffic. It uses Internet Protocol Security (IPSec) protocols to secure communication, which enhances overall data security.



If you enable Inter-Data Node Encryption, Data Store performance may be decreased.



If any Data Nodes exist in the Central Management inventory that are not part of the Data Store, Inter-Data Node Encryption cannot be enabled. You must first remove those Data Nodes which are not part of the Data Store from Central Management, enable Inter-Data Node Encryption, and then add those Data Nodes back to the Central Management.

Requirements

Before you enable Inter-Data Node Encryption, ensure that all Data Node appliance identity certificates have been replaced with compliant certificates.

To configure Secure Network Analytics for the Department of Defense Information Network (DoDIN), Common Criteria (CC) compliance, or Federal Information Processing Standards (FIPS) compliance and to create compliant certificates, follow the instructions in the DoDIN Military Unique Deployment Guide, or the Common Criteria Administrative Guide.

For detailed instructions on how to replace appliance identity certificates with compliant certificates, refer to the [SSL/TLS Certificates for Managed Appliances Guide](#).



Data Node Port Bonding is not supported with Inter-Data Node Encryption.

Security Association (SA)

Each SA has its own lifetime setting. The SA lifetime defines how long an IPSec Security Association can be used before new encryption keys must be created—a process called

re-keying.



The system attempts to re-key SAs before their lifetimes expire to ensure continuous protection and prevent interruption.

When a child SA lifetime expires, only the keys protecting your data are refreshed (re-keyed). When the parent SA lifetime expires, the entire secure connection is renegotiated. This separation helps maintain both security and efficient network performance.

For example, if you set the **Security Association Lifetime** to 8 hours and the **Child Security Association Lifetime** to 1 hour, the keys protecting your data is refreshed every hour, while the main connection is fully renegotiated every 8 hours.

1. Open the Data Store – Database Security Tab

1. Select **Configure > Global > Central Management**.
2. Choose the **Data Store** tab.
3. Choose the **Database Security** tab.

2. Enable Inter-Data Node Encryption

1. From **Central Management > Data Store**, choose the **Database Security** tab.
2. Under the **Encryption Prerequisites** section, check the **I have replaced all Data Node appliance identity certificates with compliant certificates** check box.
3. To enable encryption, click the **Inter-Data Node Encryption** switch to slide it to the **On** position.

Inter-Data Node Encryption is disabled by default.



When you enable Inter-Data Node Encryption, the appliance stops the Data Store database if it is running, sets up encryption, and then restarts the database. There will be no data loss during this process. Any incoming data is queued and saved when the database restarts.



4. (Optional) Configure the following encryption parameters:
 - **Security Association Lifetime (hours):** Specify how long (in hours) a security association should remain valid.
 - **Child Security Association Lifetime (hours):** Specify how long (in hours) a child security association should remain valid. Ensure this duration is always less than the Security Association Lifetime.
For more information about Security Association, refer to [Security Association \(SA\)](#).
5. (Optional) To enable compliance with Commercial National Security Algorithm (CNSA) standards, click the **Enable CNSA Compliant Cryptography** switch to slide it to the **On** position.
6. Click **Save** to apply your changes.

Disabling Inter-Data Node Encryption

1. From **Central Management > Data Store**, choose the **Database Security** tab.
2. To disable encryption, click the **Inter-Data Node Encryption** switch to slide it to the **Off** position.

Creating a Data Store Backup



Contact Cisco Professional Services for assistance with planning and implementing these tasks.

To backup your Data Store, complete the following procedures:

1. Estimate Backup Host Storage Requirements

2. **Prepare a Backup Host** with twice the storage capacity of the backup size. Install Python v3.7 and rsync v3.0.5 on the backup host



Use a Linux-based host separate from your Secure Network Analytics appliances.

3. **Ensure Connectivity for SSH Backup** Make sure all Data Nodes can reach the backup host using SSH access.

4. Initialize the Backup Directory on the Backup Host

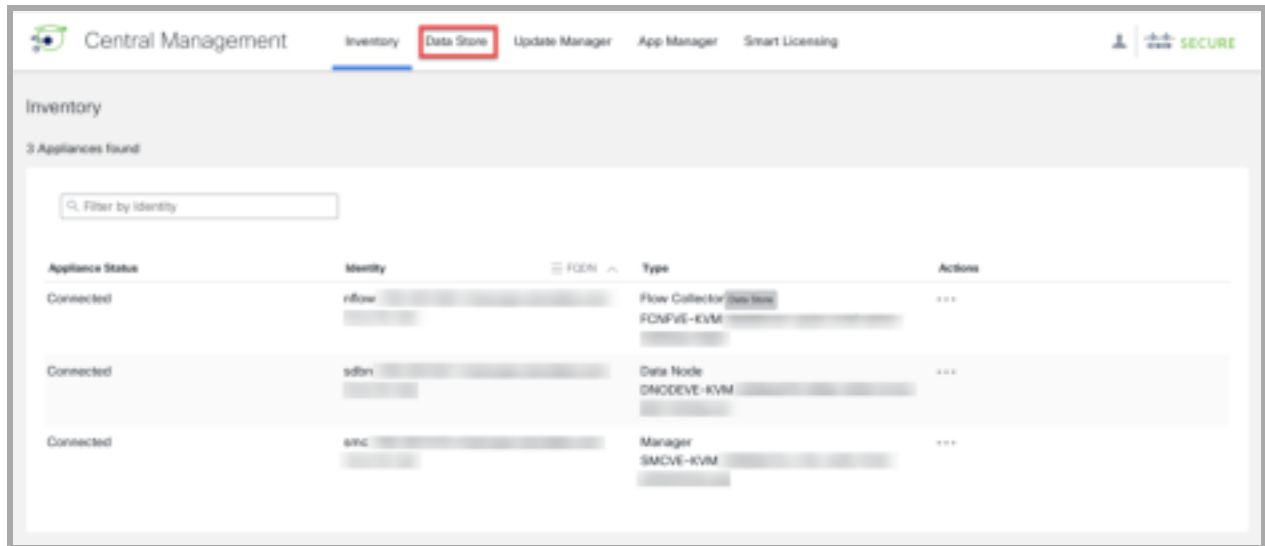
5. Configure the Remote Host

6. Perform a Dry Run of Your Backup and Estimate Backup Size

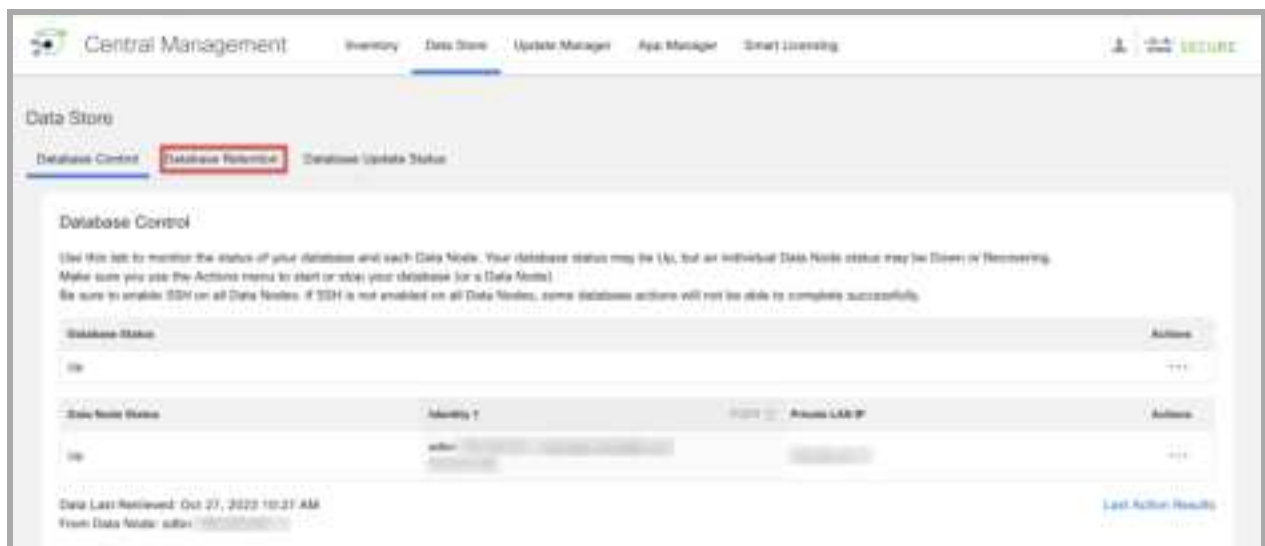
7. Back Up the Data Store Database

1. Estimate Backup Host Storage Requirements

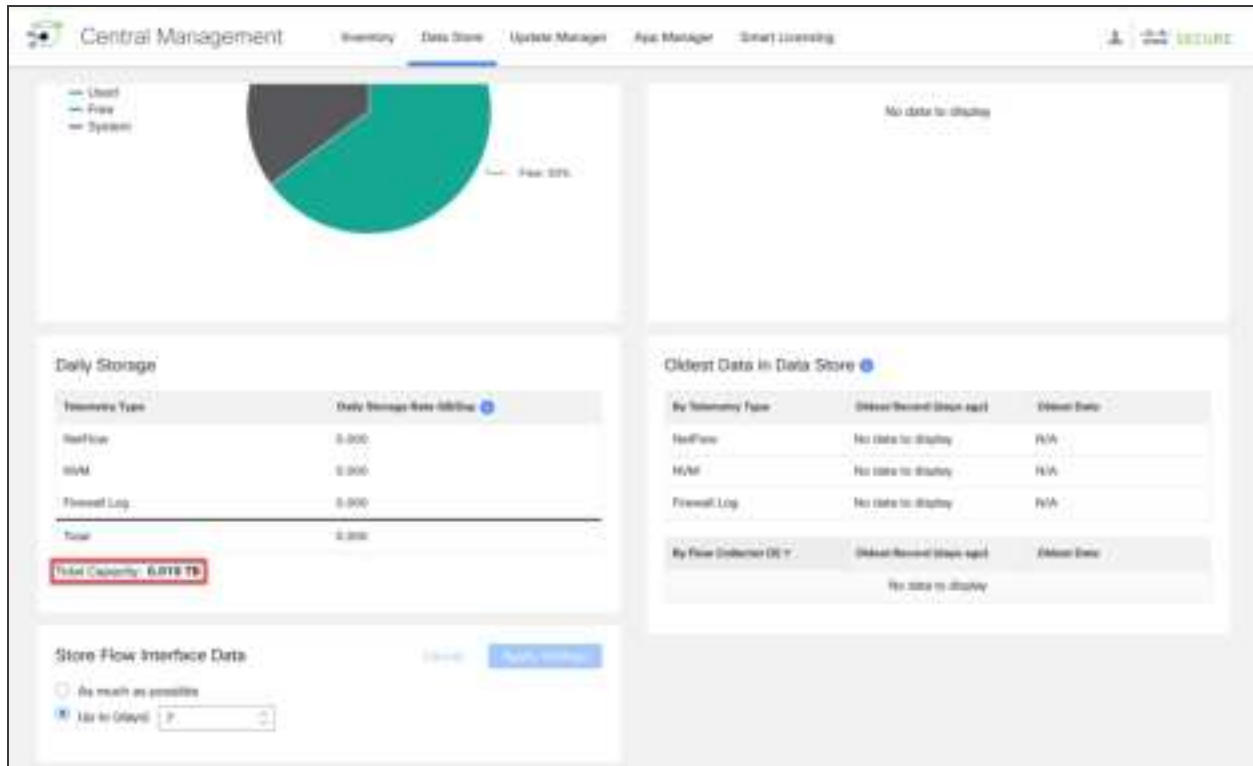
1. Log in to your primary Manager.
2. Select **Configure > Global > Central Management**.
3. Click the **Data Store** tab.



- Click the **Database Retention** tab.



- Scroll down to the **Daily Storage Table** and make note of the **Total Capacity** information. This is a snapshot of your total storage capacity. The storage capacity shown will allow two complete copies of the database.



2. Prepare a Backup Host

- Based on the storage requirements you estimated in **1. Estimate Backup Host Storage Requirements**, identify a host running Linux on your network to store the backup, or deploy a host running Linux with the necessary storage requirements.

i Use a Linux-based host separate from your Secure Network Analytics appliances.

- Log into the backup host console as `root`.
- From the command prompt, enter `python3 --version` and press Enter to see what version of Python you have installed. You have the following options:
 - If Python 3.7 or later is installed, go to [step 6](#).
 - Otherwise, install Python 3.7, beginning with step 4.
- Enter `sudo apt-get update` and press Enter to download updated versions of packages, including Python. Enter your password when prompted.
- Enter `sudo apt-get install python 3.7` and press Enter to install Python 3.7 (modify the command to install a different version).

6. From the command prompt, enter `rsync --version` and press Enter to see what version of rsync you have installed. You have the following options:
 - If rsync 3.0.5 or later is installed, continue to [step 9](#).
 - Otherwise, install rsync 3.0.5. Continue to step 7.
7. Enter `sudo apt-get update` and press Enter to download updated versions of packages, including rsync. Enter your password when prompted.
8. Enter `sudo apt-get install rsync` and press Enter to install rsync.
9. From the command prompt, enter `getent passwd | grep dbadmin` and press Enter to determine if a dbadmin user account exists on this host. You have the following options:
 - If a dbadmin user account exists, the backup host is ready. Continue to [3. Ensure Connectivity for SSH Backup](#).
 - Otherwise, create a dbadmin user account on this host. Continue to [step 10](#).
10. From the command prompt, enter `adduser dbadmin` and press Enter to create a dbadmin user account.
11. Enter `passwd dbadmin` and press Enter to assign a password to dbadmin.
12. Enter a **New password** and press Enter to set the dbadmin password. Confirm the password when prompted.

3. Ensure Connectivity for SSH Backup

Open port 22/TCP between the backup host and each Data Node for SSH, and port 50000/TCP between the backup host and each Data Node for rsync.



Since backups with a very large long-running database could take a very long time (hours or maybe even days in a few instances), you may want to run your backup from a console instead of ssh. This is because ssh sessions can terminate or hang up, which would interrupt the backup in progress.

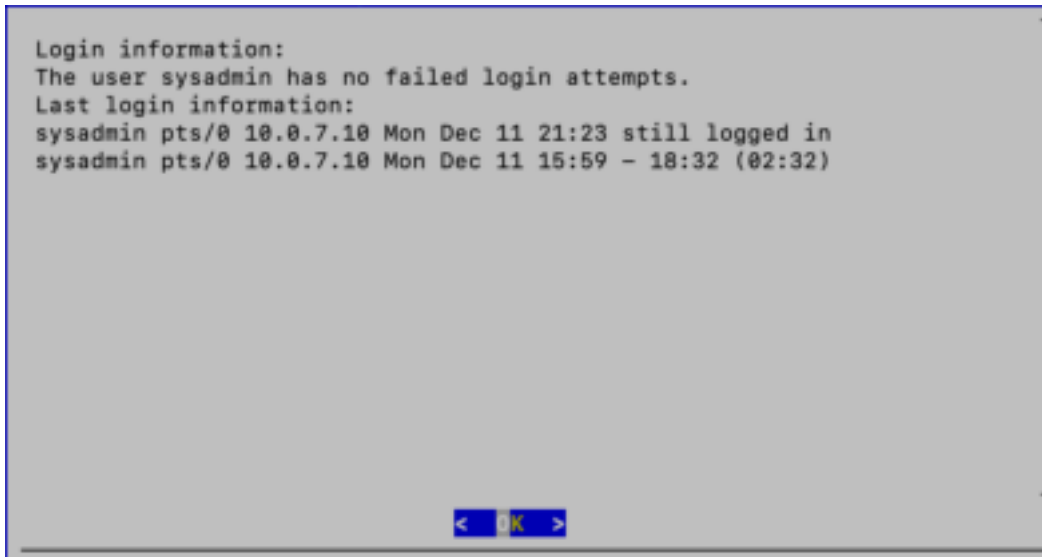
4. Initialize the Backup Directory on the Backup Host

1. Enter `ssh dbadmin@[backup-host]` where [backup host] is the hostname or IP address of your backup server.
2. Enter `cd /home/dbadmin` and press Enter to change directories.
3. Enter `mkdir backups` and press Enter to create the backups directory.
4. Enter `exit` and press Enter.

5. Configure the Remote Host

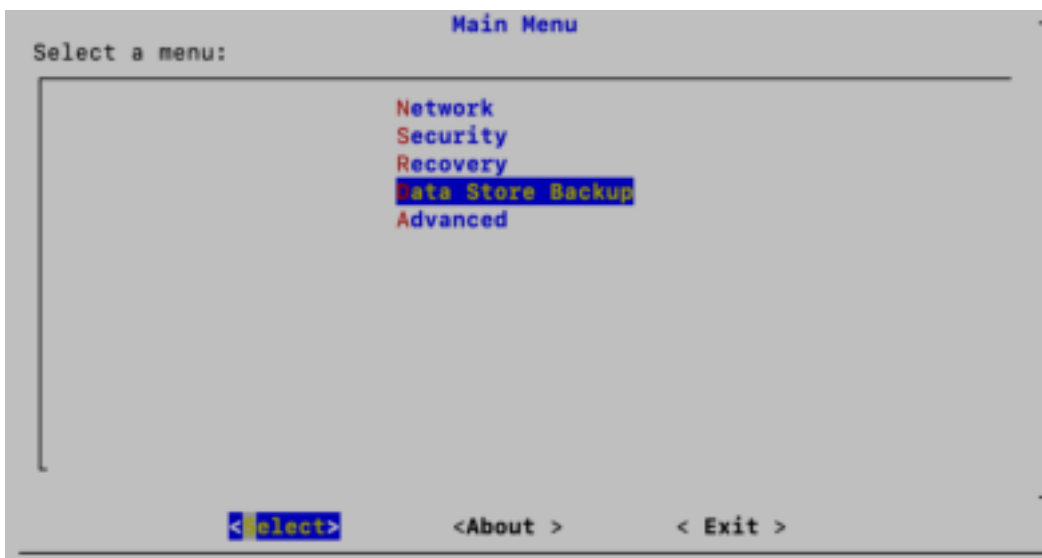
1. Log in to Your Appliance Console

1. Log in to your Data Node as sysadmin.
2. Review the failed login attempts information. Select **OK** to continue.

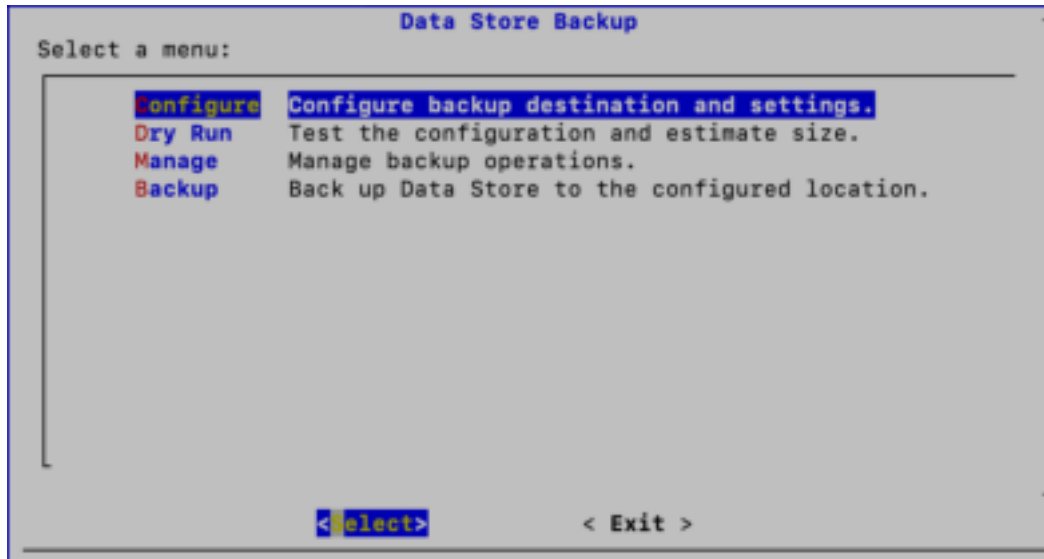


2. Configure Your Data Store Backup

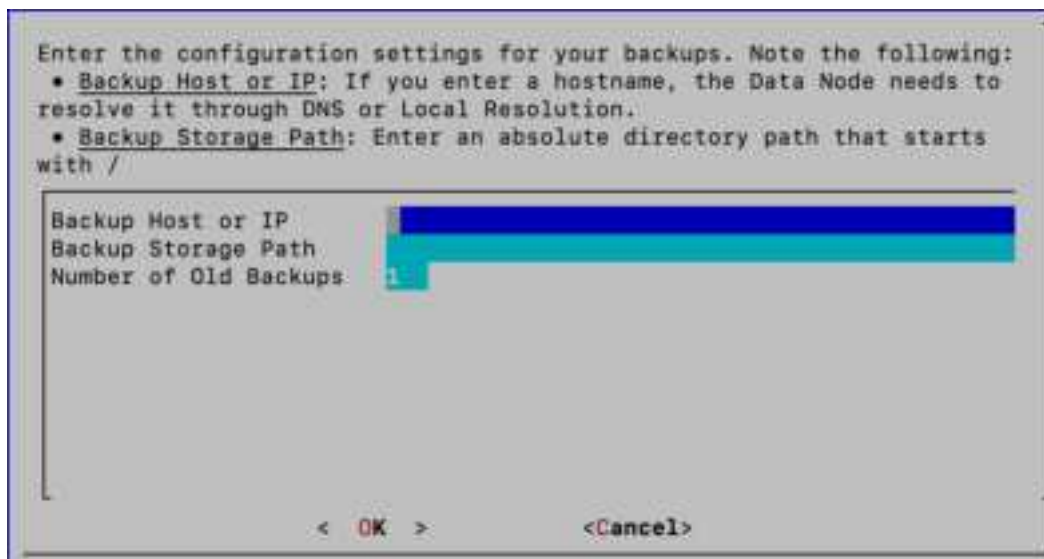
1. Select **Data Store Backup** from the Main Menu.



2. Select **Configure** to configure your backup destination and settings.



3. Enter the host name or IP address of the backup host in the **Backup Host or IP** field.
4. Enter your backup storage path on the backup host as an absolute directory path that starts with / in the **Backup Storage Path** field.
5. You can specify the number of old backups that you want to keep in the **Number of Old Backups** field. For example, if you want keep your past two backups, enter 2 in this field and the backup host will store 2 of your most recent old backups in addition to your current backup. Note that you may need to increase your backup space on the remote host, depending on how frequently you backup your database and how much data can be shared with older backups.



6. Click **OK** to continue.

3. Copy the SSH Public Key to the Backup Server

1. Select **Yes** if you need to copy the SSH public key to the backup server. This allows the backup and maintenance procedures to securely login without a password following an initial login during the setup process. You will need to follow this step at least once during the setup process but it becomes optional after that.

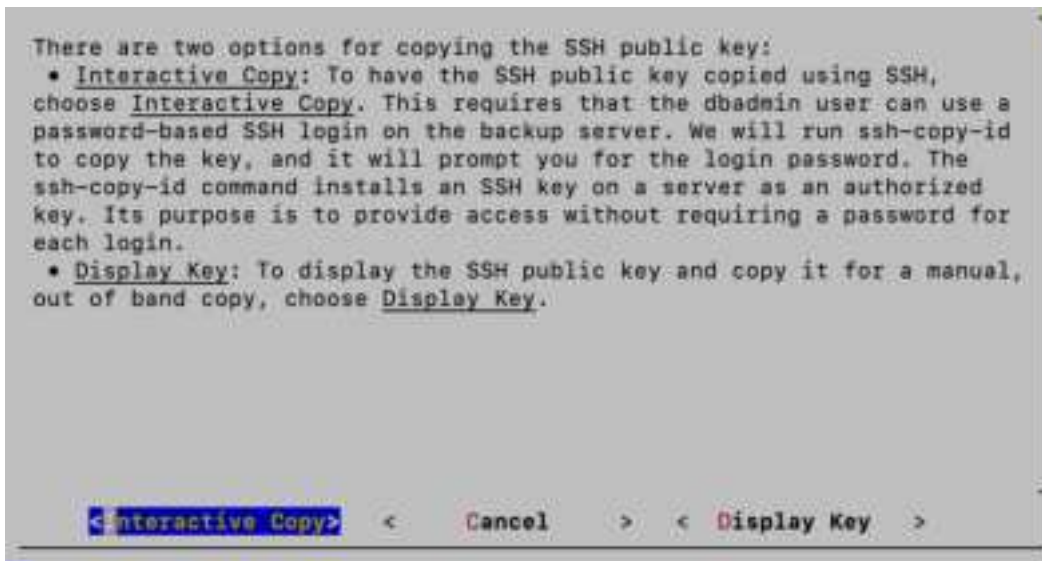


2. There are two options for copying the SSH public key:
 - **Interactive Copy:** This requires that the dbadmin user can use a password-based SSH login on the backup server. We will run `ssh-copy-id` to copy the key, and it will prompt you for the login password. The `ssh-copy-id` command installs an SSH key on a server as an authorized key. Its purpose is to provide access without requiring a password for each login. To choose the interactive copy option, select **Interactive Copy** and proceed to the instructions in [step 3](#) - [step 6](#).



We recommend that you use the Interactive Copy option as the process is much simpler than the Display Key option.

- **Display Key:** The Display Key option displays the SSH public key so you can copy it for a manual, out of band copy. To choose the Display Key option, select **Display Key** and proceed to the instructions in [step 7](#) - [step 12](#).



i [Step 3](#) - [step 6](#) is only applicable if you selected the Interactive Copy option in [step 2](#).

3. Click **OK** to clear the screen and interact with the `ssh-copy-id` command.



4. Review the key fingerprint to confirm that it matches the key that resides on your remote host. To obtain the actual host key for comparison, log in to the remote host and run the following command:

```
ssh-keygen -l -f /etc/ssh/<keyname>.pub
```

The remote host often has multiple host keys. If this is the case, you will need to run the `ssh-keygen -l -f <file>` command for each of the `/etc/ssh/*.pub` files

to generate a fingerprint for each until you see the matching key. Once you have found the matching key, type **Yes** to continue connecting. Optionally, you can paste your matching key fingerprint and press Enter.

```

/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/home/dbadmin/.ssh/id_rsa.pub"
The authenticity of host
ECDSA key fingerprint is 
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])?

```

5. Enter the password of your remote host and press **Enter**.

```

/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/home/dbadmin/.ssh/id_rsa.pub"
The authenticity of host
ECDSA key fingerprint is 
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter out any that are already installed
/usr/bin/ssh-copy-id: INFO: 1 key(s) remain to be installed -- if you are prompted now it is to install the new keys
dbadmin@prntstorage-pod0.lancops.cisco-labs.com's password:

```

6. The system displays the number of keys added. We recommend that you log into the remote host to confirm that only the keys that you wanted were added. Press **Enter** to continue. Proceed to **4. Initialize the Remote Backup Location**.

```

/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/home/dbadmin/.ssh/id_rsa.pub"
The authenticity of host
ECDSA key fingerprint is 
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter out any that are already installed
/usr/bin/ssh-copy-id: INFO: 1 key(s) remain to be installed -- if you are prompted now it is to install the new keys
password:

Number of key(s) added: 1

Now try logging into the machine, with:
and check to make sure that only the key(s) you wanted were added.

Press ENTER to continue:

```

i **Step 7** - [step 12](#) is only applicable if you selected the Display Key option in [step 2](#).

7. Click **OK** to view and copy the dbadmin public key.



8. Copy the text starting with **ssh-rsa** as one very long line, with no embedded new lines. Press **Enter** to continue.



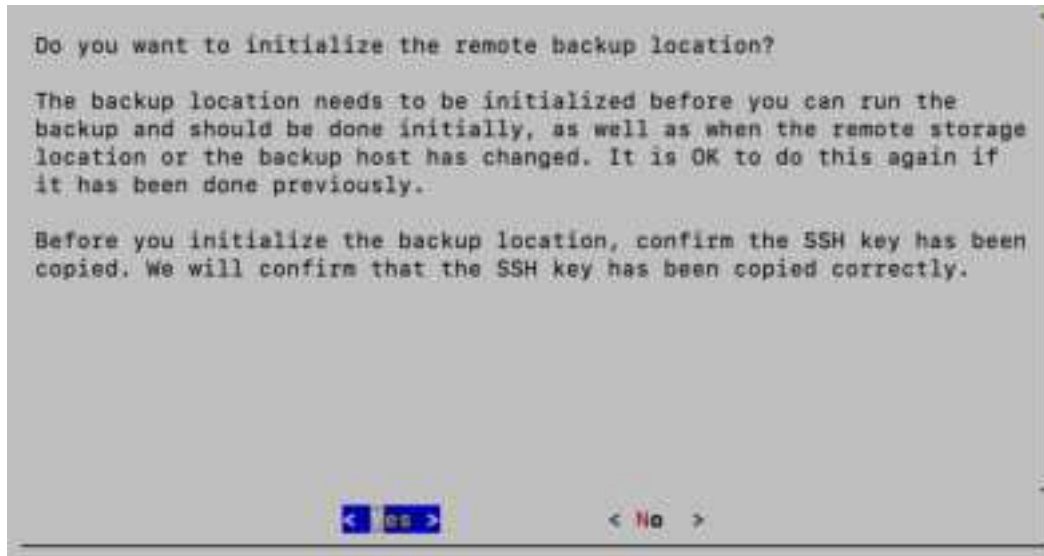
9. Use a plain text editor to insert this very long line into a file called `dbadmin_key.pub`.
10. Log in to the remote machine as "dbadmin" and copy the `dbadmin_key.pub` file to dbadmin's home directory (or create the file there as "dbadmin" in the first place).
11. Confirm the file has only one line, by running `wc -l dbadmin_key.pub` to show the line count.
12. Run the command: `ssh-copy-id -f -i ./dbadmin_key.pub dbadmin@localhost`. The key will be added to the `/home/dbadmin/.ssh/authorized_keys` file on the remote system.



If you don't have a password set up for dbadmin and you receive an error at this point, you will need to contact [Cisco Support](#) for assistance with setting up your authorized key.

4. Initialize the Remote Backup Location

1. Select **Yes** to initialize the remote backup location. Be sure to confirm that you have copied the SSH key before you begin the initialization process.



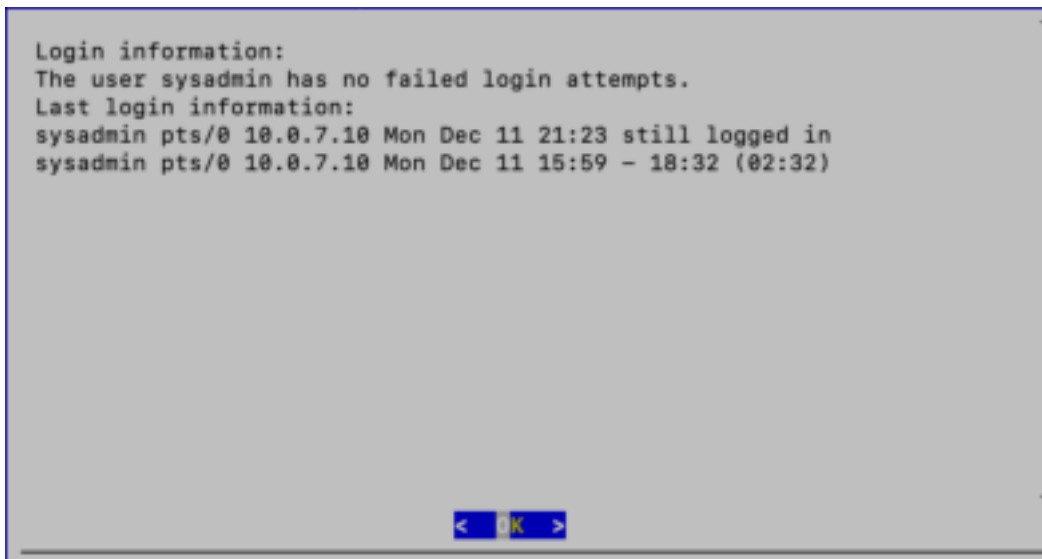
2. The system will confirm that the backup locations have been initialized. Press **Enter** to return to the Data Store Backup menu.



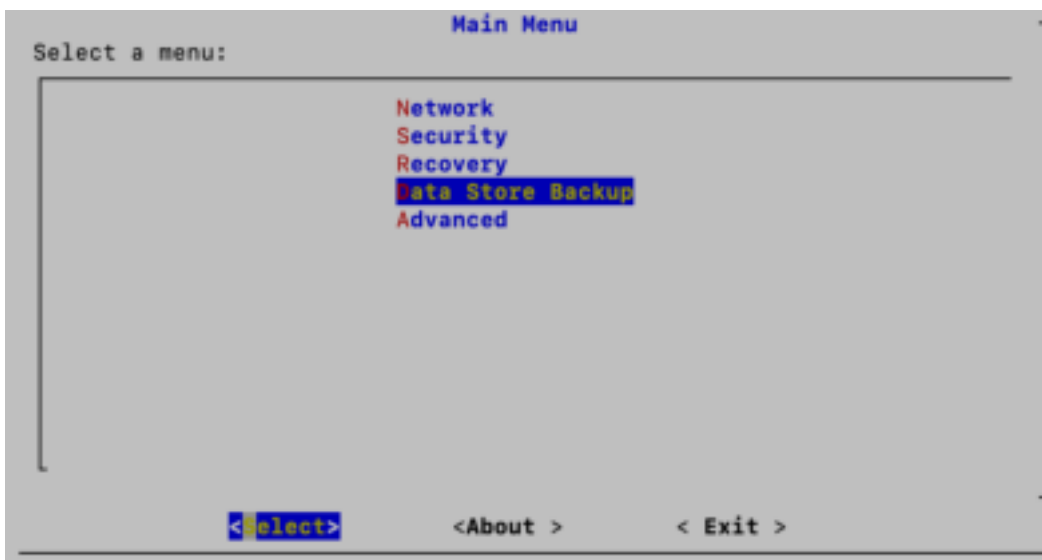
6. Perform a Dry Run of Your Backup and Estimate Backup Size

The dry run is an optional procedure that allows you to test connectivity and estimate the size of your backup. Follow the steps below to perform a dry run.

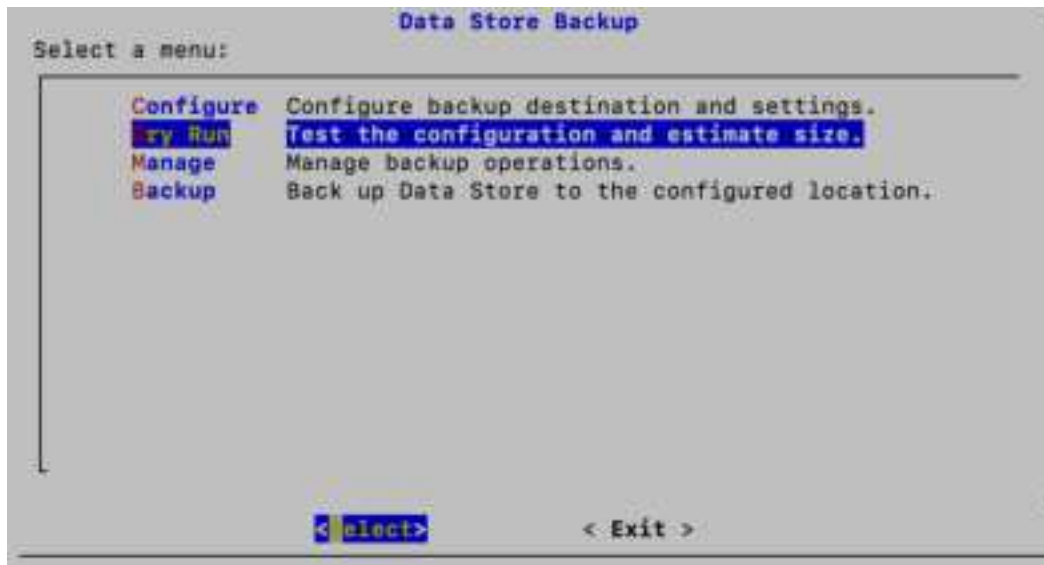
1. Ensure that you have initialized the remote backup location. Refer to [4. Initialize the Remote Backup Location](#) for more information.
2. Log in to your Data Node as sysadmin.
3. Review the failed login attempts information. Select **OK** to continue.



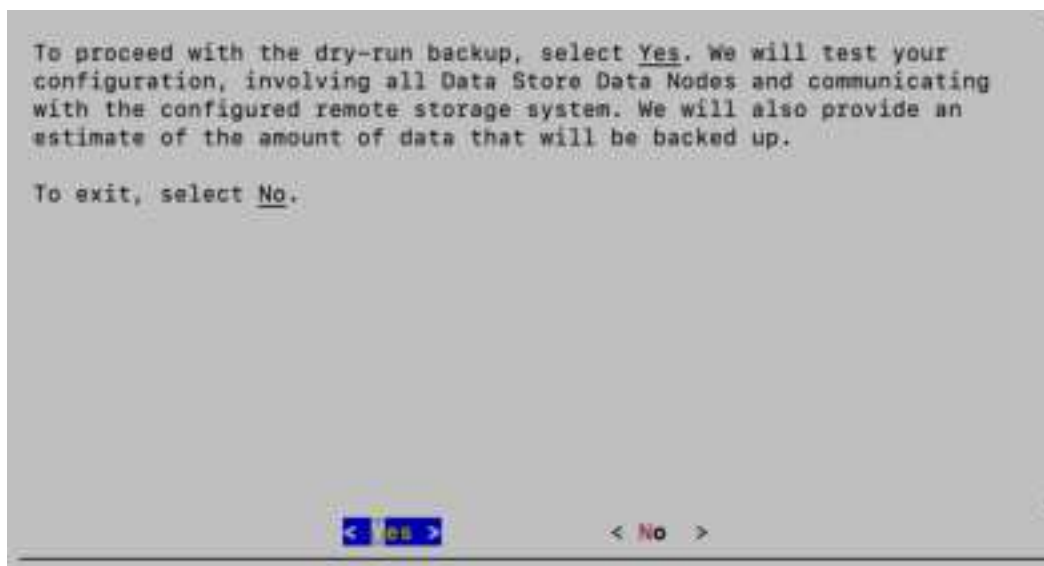
4. Select **Data Store Backup** from the Main Menu.



5. Select **Dry Run** to perform a dry run of your backup.



6. Click **Yes** to continue.



7. Press **Enter** to return to the Data Store Backup menu.

```
Starting dry-run backup...
Starting backup of database sw.
Participating nodes: v_sw_node0001.
Snapshotting database.
Snapshot complete.
Approximate bytes to copy: 14672 of 134709832 total.
Dry run finished. Run vbr without --dry-run to complete the task.

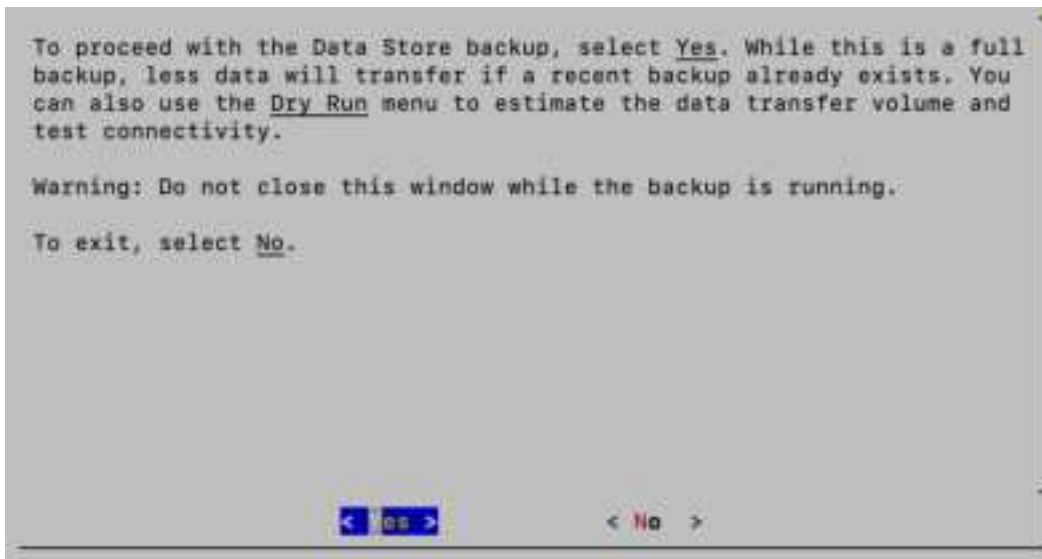
Press ENTER to continue: █
```

7. Back Up the Data Store Database

1. Select **Backup** from the Data Store Backup Menu.



2. Select **Yes** to proceed with the Data Store backup.



3. Once the backup is complete, press **Enter** to return to the Data Store Backup menu.



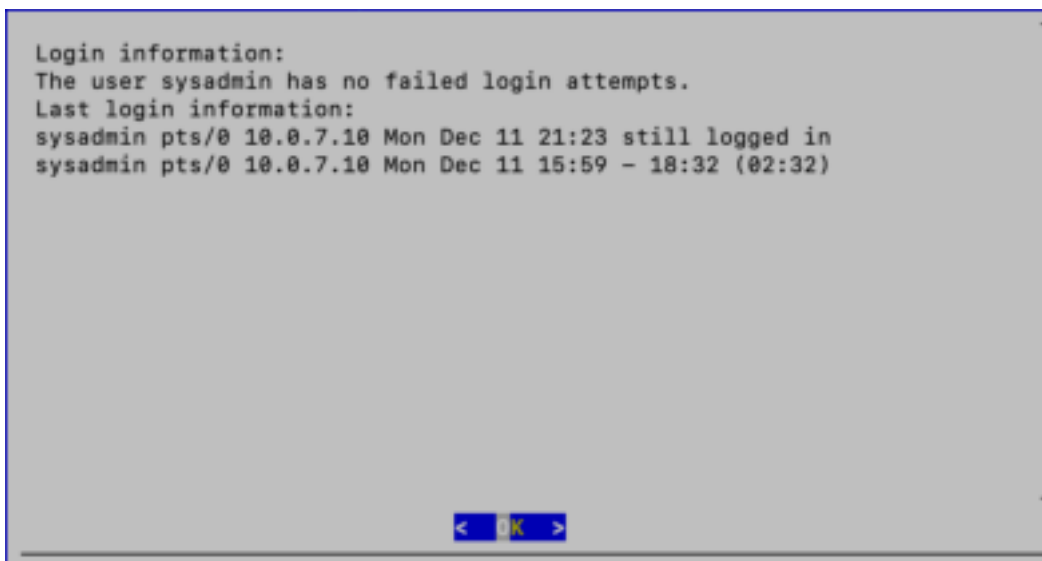
Managing Your Data Store Backups

The Manage option on the Data Store Backup menu allows you to check the integrity of your saved backups, view saved backup files on your remote host, delete backups, rebuild backup manifests, remove unreferenced files, and remove known backup hosts from your list of known hosts. If a problem is identified during the Check Backups process, you can attempt to repair the file using either the [Repair Backups](#) or the [Collect Garbage](#) options. The Collect Garbage process performs a more complete repair of your files and should be attempted if the Repair Backups process fails.

Check Backups

Follow the steps below to check the integrity of your saved backup files.

1. Log in to your Data Node as sysadmin.
2. Review the failed login attempts information. Select **OK** to continue.

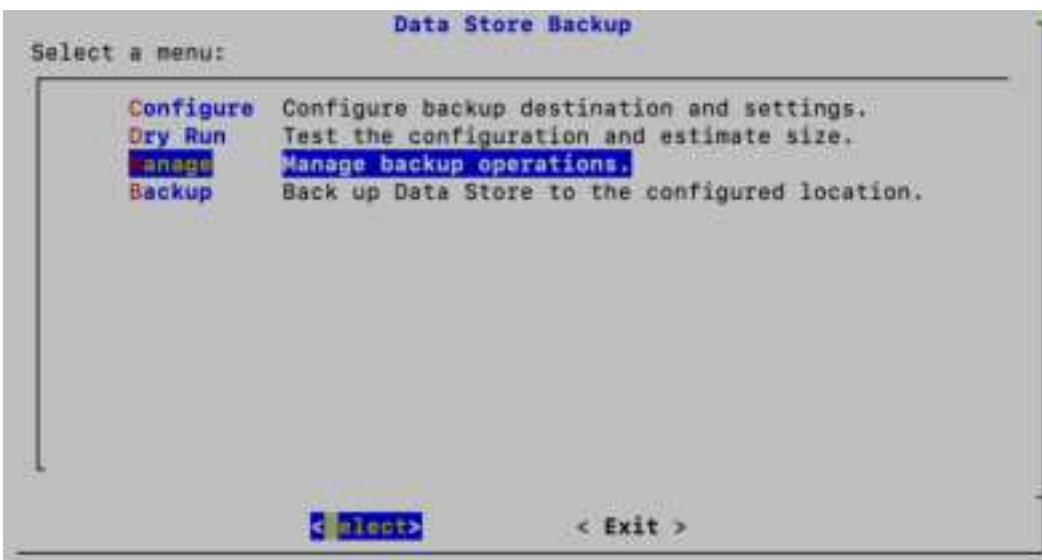
A terminal window with a gray background and black text. The text displays login information for the user 'sysadmin'. It states that there are no failed login attempts and shows the last login details: 'sysadmin pts/0 10.0.7.10 Mon Dec 11 21:23 still logged in' and 'sysadmin pts/0 10.0.7.10 Mon Dec 11 15:59 - 18:32 (02:32)'. At the bottom center of the terminal, there is a blue button with the text '< OK >' in white.

```
Login information:
The user sysadmin has no failed login attempts.
Last login information:
sysadmin pts/0 10.0.7.10 Mon Dec 11 21:23 still logged in
sysadmin pts/0 10.0.7.10 Mon Dec 11 15:59 - 18:32 (02:32)
```

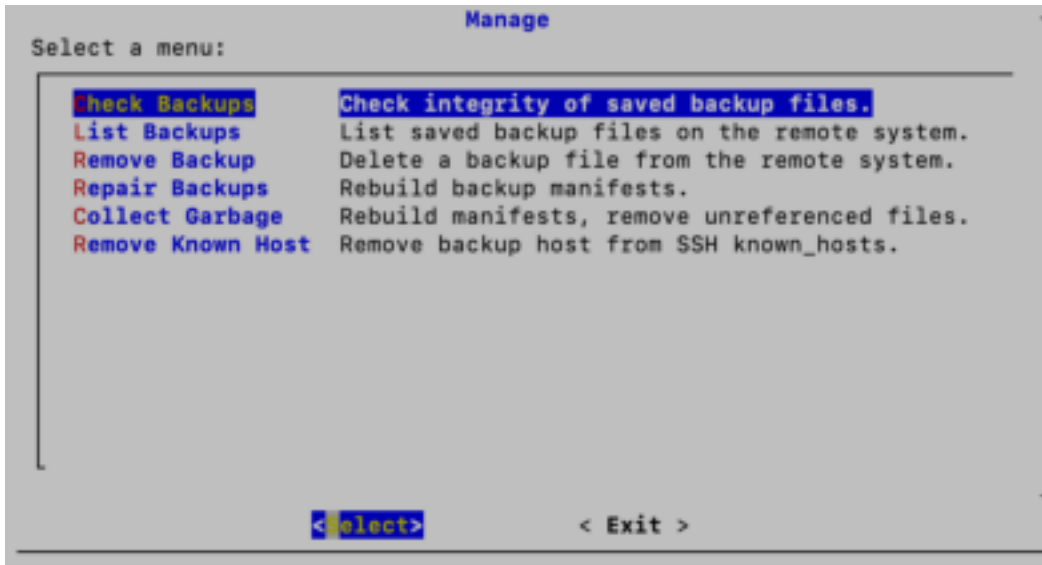
3. Select **Data Store Backup** from the Main Menu.



4. Select **Manage** from the Data Store Backup menu.

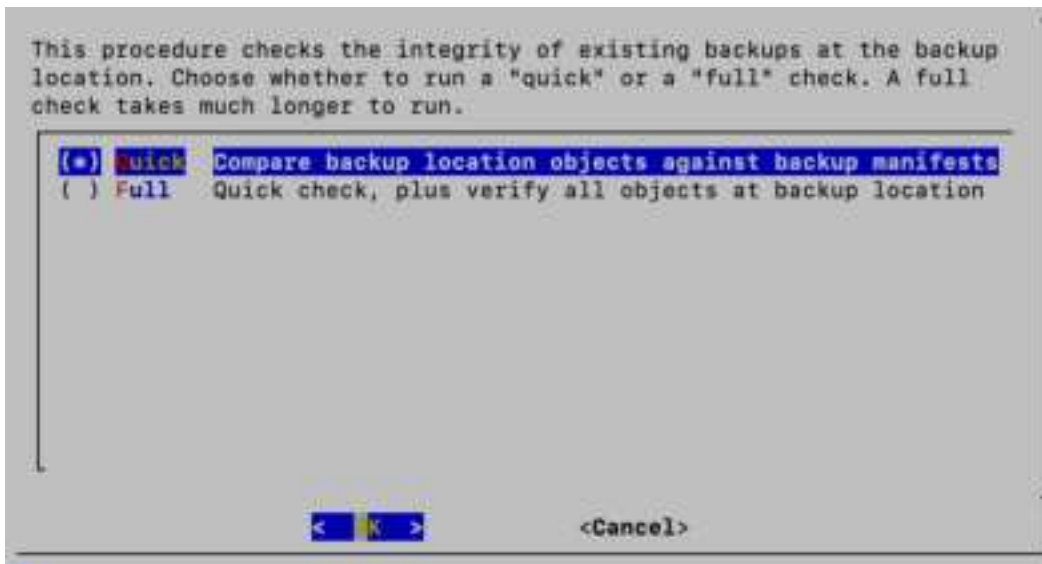


5. Select **Check Backups** from the Manage menu.



6. Select the type of check you want to perform:

- **Quick:** Compares backup location objects against backup manifests
- **Full:** Performs a quick check and verifies all objects at the backup location



7. For this example, we have performed a Quick check. Press **Enter** to close the window and return to the Manage menu.

```
Starting backup storage quick check...
Checking backup consistency.
List all snapshots in backup location:
Snapshot name and restore point: data_store_backup_20231019_193305, nodes:['v_sw
_node0001'].
Snapshot name and restore point: data_store_backup_20231019_194621, nodes:['v_sw
_node0001'].
Snapshot name and restore point: data_store_backup_20231024_160447, nodes:['v_sw
_node0001'].
Backup consistency check complete.

Press ENTER to continue: █
```

List Backups

Follow the steps below to view your saved backup files on the remote host.

1. Log in to your Data Node as sysadmin.
2. Review the failed login attempts information. Select **OK** to continue.

```
Login information:
The user sysadmin has no failed login attempts.
Last login information:
sysadmin pts/0 10.0.7.10 Mon Dec 11 21:23 still logged in
sysadmin pts/0 10.0.7.10 Mon Dec 11 15:59 - 18:32 (02:32)

< OK >
```

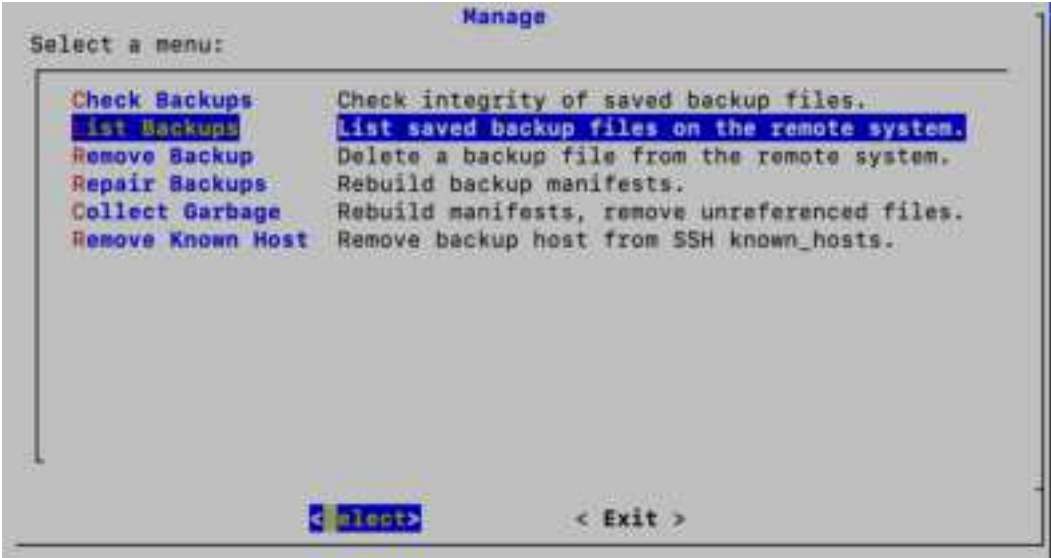
3. Select **Data Store Backup** from the Main Menu.



4. Select **Manage** from the Data Store Backup menu.



5. Select **List Backups** from the Manage menu.



6. Once the backup list is loaded, you will see the list in a new window. Press **Enter** to close the window and return to the Manage menu.

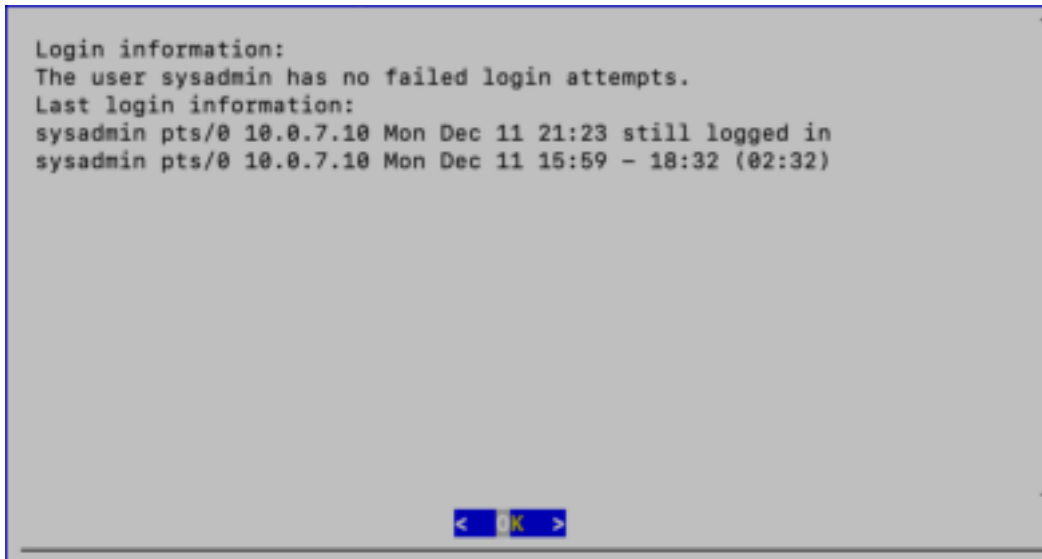
backup	epoch	version	hosts
data_store_backup_20231024_	6	v11.1.1-15	
data_store_backup_20231019_	1	v11.1.1-15	
data_store_backup_20231019_	1	v11.1.1-15	

Press ENTER to continue: █

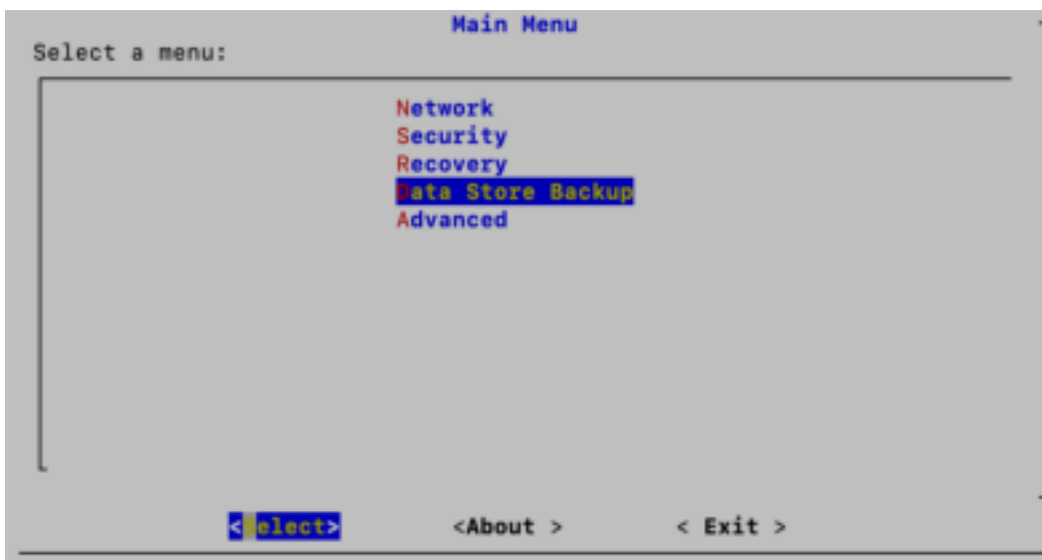
Remove Backups

Follow the steps below to remove your saved backup files on the remote host.

1. Log in to your Data Node as sysadmin.
2. Review the failed login attempts information. Select **OK** to continue.



3. Select **Data Store Backup** from the Main Menu.



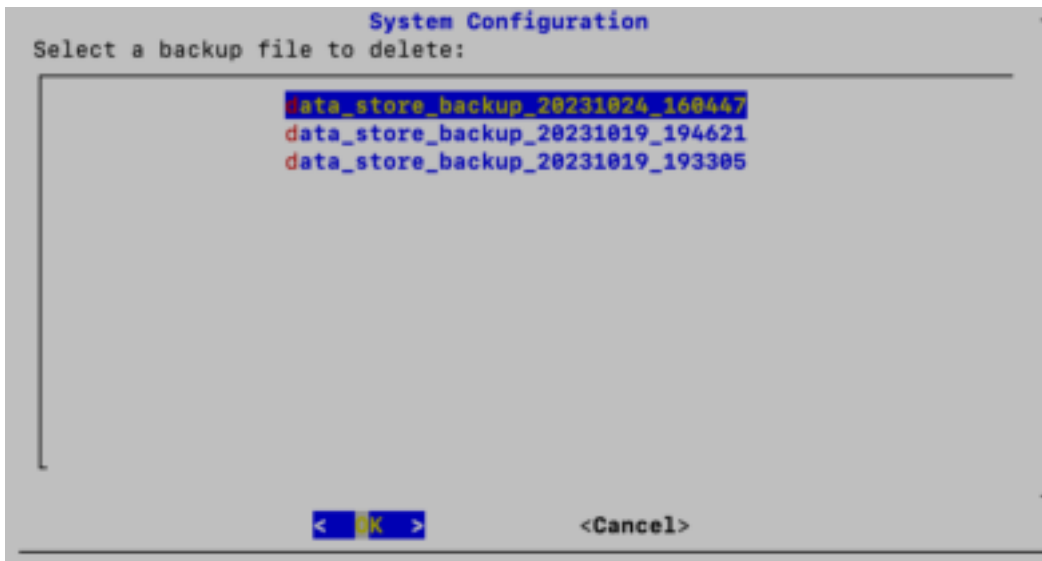
4. Select **Manage** from the Data Store Backup menu.



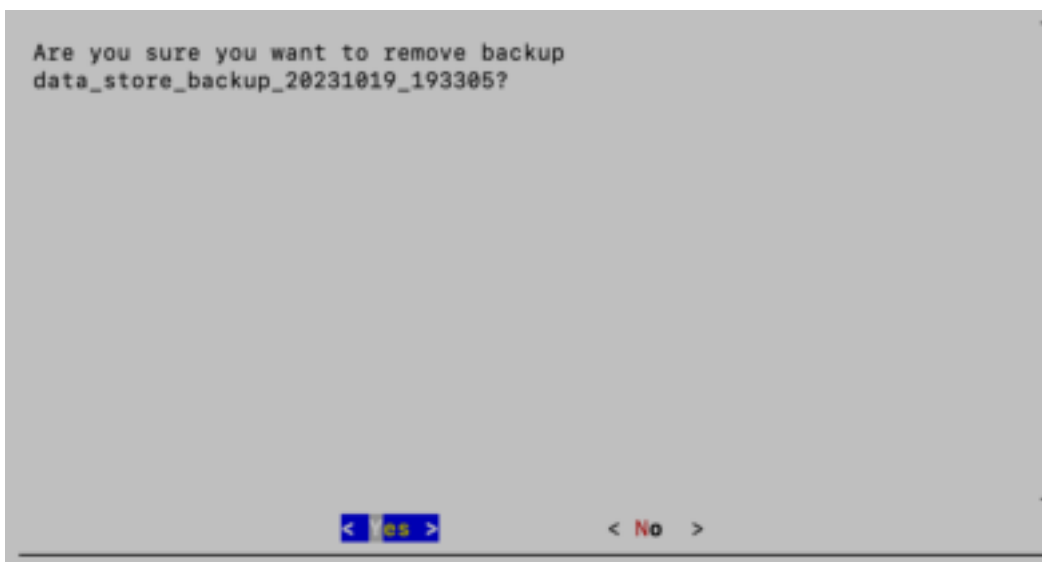
5. Select **Remove Backups** from the Manage menu.



6. Select the back up file you want to delete and click **OK**.



7. Click **Yes** to confirm the deletion, or **No** to cancel.



8. Press **Enter** to close the window and return to the Manage menu.

```
Starting remove...
Removing restore points: 20231019_193305
Remove complete!

Press ENTER to continue: █
```

Repair Backups

If a problem is identified during the [Check Backups](#) process, you can attempt to repair the file using this process or the [Collect Garbage](#) process. The Collect Garbage process performs a more complete repair of your files and should be attempted if the Repair Backups process fails. Follow the steps below to rebuild the backup manifests of your saved backup files.

1. Log in to your Data Node as sysadmin.
2. Review the failed login attempts information. Select **OK** to continue.

```
Login information:
The user sysadmin has no failed login attempts.
Last login information:
sysadmin pts/0 10.0.7.10 Mon Dec 11 21:23 still logged in
sysadmin pts/0 10.0.7.10 Mon Dec 11 15:59 - 18:32 (02:32)
```

< **OK** >

3. Select **Data Store Backup** from the Main Menu.



4. Select **Manage** from the Data Store Backup menu.



5. Select **Repair Backups** from the Manage menu.



6. Select **Yes** to rebuild the backup manifest or No to exit.



7. Once the backup manifest is rebuilt, press **Enter** to return to the Manage menu.

```
Starting backup repair...
Rebuilding backup manifest
Backup manifest rebuilt

Press ENTER to continue: 
```

Collect Garbage

If a problem is identified during the [Check Backups](#) process, you can attempt to repair the file using the [Repair Backups](#) process or this process. This process performs a more complete repair of your files and should be attempted if the Repair Backups process fails. Follow the steps below to rebuild the manifests of your saved backup files as well as remove unreferenced files.

1. Log in to your Data Node as sysadmin.
2. Review the failed login attempts information. Select **OK** to continue.

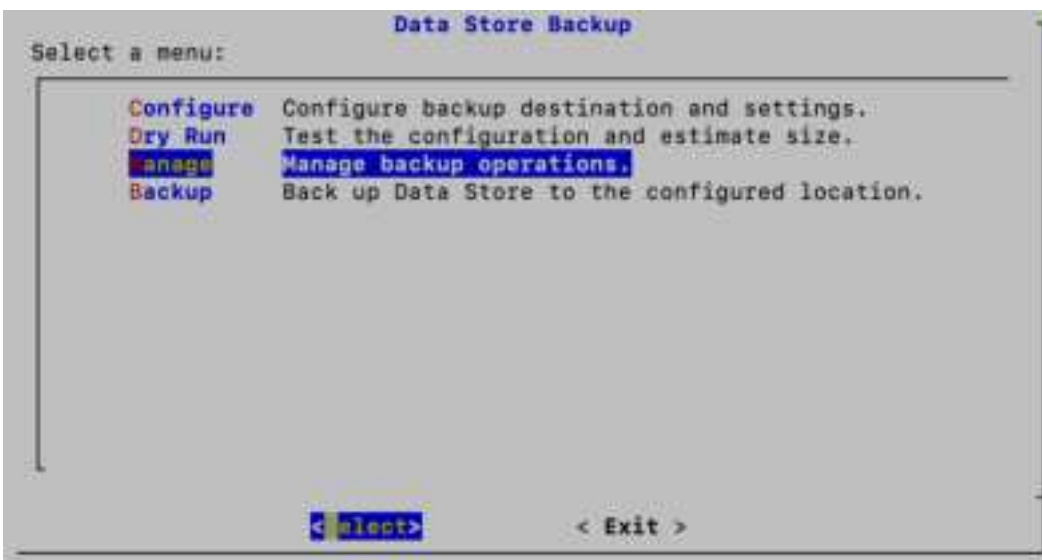
```
Login information:
The user sysadmin has no failed login attempts.
Last login information:
sysadmin pts/0 10.0.7.10 Mon Dec 11 21:23 still logged in
sysadmin pts/0 10.0.7.10 Mon Dec 11 15:59 - 18:32 (02:32)

< OK >
```

3. Select **Data Store Backup** from the Main Menu.



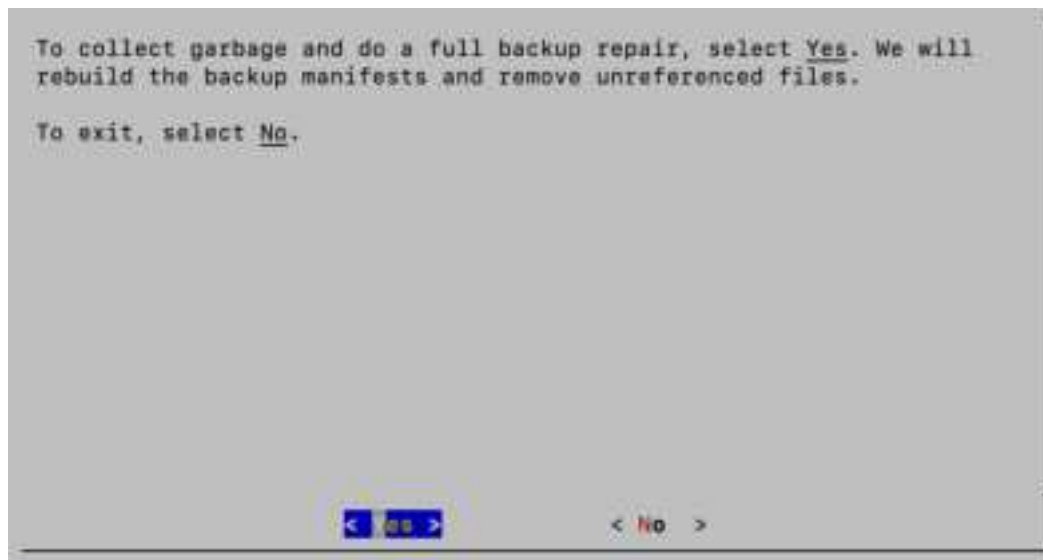
4. Select **Manage** from the Data Store Backup menu.



5. Select **Collect Garbage** from the Manage menu.



6. Select **Yes** to collect garbage and perform a full backup repair or No to exit.



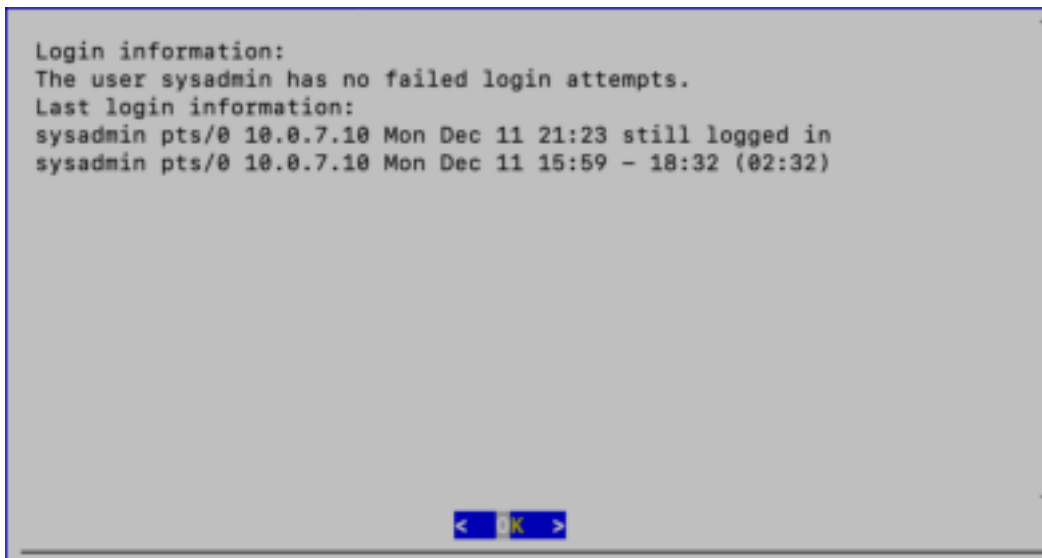
7. A success message appears when the process is complete. Click **OK** to return to the Manage menu.



Remove Known Host

Follow the steps below to remove the recorded host key of the backup host. You will want to follow this procedure if the public key on the backup host has changed.

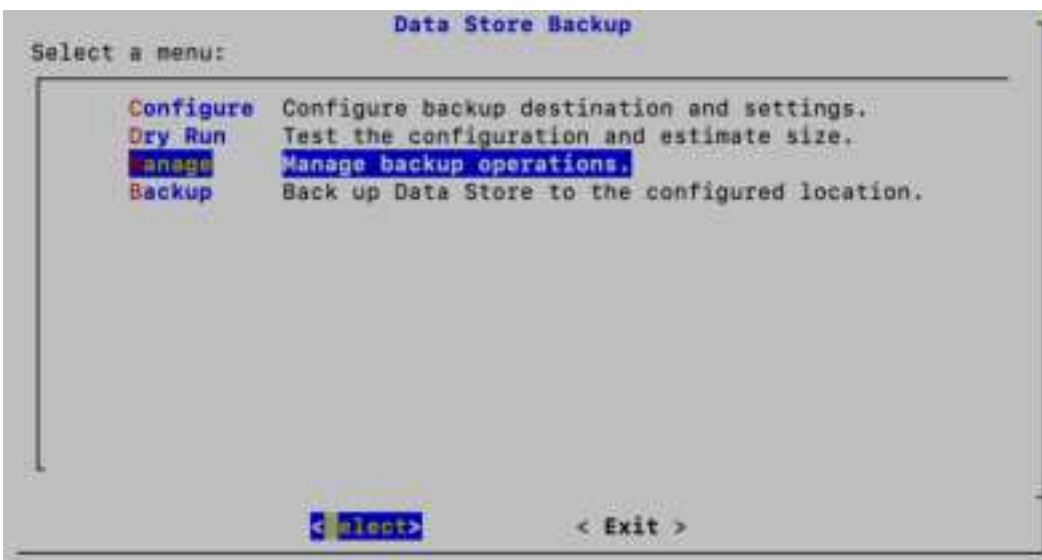
1. Log in to your Data Node as sysadmin.
2. Review the failed login attempts information. Select **OK** to continue.



3. Select **Data Store Backup** from the Main Menu.



4. Select **Manage** from the Data Store Backup menu.



5. Select **Remove Known Host** from the Manage menu.



6. Click **Yes** to remove the known host or No to exit. Both options will return you to the Manage menu when selected.



Restoring a Data Store Backup



Contact [Cisco Support](#) for assistance with planning and implementing these tasks.

Data Store Maintenance

This section includes the following Data Store topics:

- **Enabling Data Compression in the Data Store**
- **Adding a Data Store Domain**
- **Adding a Secondary Manager or Flow Collectors after the Data Store is Initialized**
- **Adding Data Nodes to the Data Store**
- **Replacing a Data Node (Hardware Only)**



Make sure you review the procedure before you start. Some of the procedures include contacting [Cisco Support](#) for assistance.

Enabling Data Compression in the Data Store

Data compression is enabled by default on new installations for Flow Collectors that are configured with Data Store. You can use it to reduce bandwidth usage between a Flow Collector and the Data Store. It is especially helpful in scenarios where the network bandwidth from a Flow Collector to the Data Store is limited.

By enabling compression, you may reduce this bandwidth by up to 90%. If Data Compression is disabled, it can be enabled on a per Flow Collector basis. Make the following configuration changes in the Flow Collector interface to enable compression of data sent to the Data Store.

1. Log in to the Flow Collector Appliance Admin interface.
2. Click **Support > Advanced Settings**.
3. In the ingest_enable_compression field, enter one of the following
 - 1 - Enable data compression
 - 0 - Disable data compression
4. Click **Apply**, then click **OK**.

While many of the settings on this page could negatively impact performance if set incorrectly, enabling data compression can only improve system performance in regards to data transfer between a Flow Collector and the Data Store.

Adding a Data Store Domain

You can add Managers, Flow Collectors, and Data Nodes to an existing Data Store domain as shown in this section. If you do not have a Data Store domain in your deployment, follow the instructions in [Adding Data Store to a Non-Data Store Deployment](#).

Adding a Secondary Manager or Flow Collectors after the Data Store is Initialized

Use the following instructions to add a secondary Manager or Flow Collector to your Data Store if you've already initialized the Data Store.

For detailed information about the secondary Manager and failover configuration, refer to [2. Defining a Manager Failover Relationship](#).

If you have existing Flow Collectors that you configured for use without a Data Store, you can transition them to a Data Store Flow Collector without loss of pre-transition data or visibility by following the instructions in [Adding a Data Store to a Non-Data Store Deployment and Transitioning Your Flow Collectors](#).

Adding Data Nodes to the Data Store



Contact Cisco Professional Services for assistance with planning and implementing these tasks.

Requirements

Before you add Data Nodes to your Data Store, review the following requirements:

- The Data Store supports 1 or 3 or more Data Nodes. You can add Data Nodes in sets of 3.
- If you have a Single-Data Node (1) deployment, you can add 2 Data Nodes to expand your deployment to a set of 3 Data Nodes (and additional sets of 3).
- A Data Store with only 2 Data Nodes is not supported.

Before you Begin

You may want to consider using a maintenance window when expanding your Data Store.

Before expanding your Data Store, all data is distributed evenly across your Data Nodes. For example, in a three node Data Store, one third of your data resides on each Data Node. Upon expansion of a Data Store, all data is redistributed evenly across the newly added nodes. For example, if a 3 node Data Store is expanded to 6 nodes total,

redistribution results in one sixth of the data on each Data Node. When expanding a single node Data Store to three nodes, data is redistributed one third to each node.

During the operation of redistributing data, the query performance of your Data Store may be temporarily reduced. The size and duration of the impact is related to the amount of data which needs to be moved and the bandwidth of your private LAN between Data Nodes. For example, a hardware Data Store with port bonding could use 20GB of private LAN bandwidth to move the data. The database will remain operational during the redistributing of data but we suggest using a maintenance window if you want to minimize impact to your users.

Procedures

To add Data Nodes to your deployment, complete the following procedures:

1. Create a Data Store Backup

Before you add a Data Node, back up the Data Store. For instructions, refer to [Creating a Data Store Backup](#) for more information.

2. Configure the Data Node and Add it to Central Management

1. Deploy the Data Nodes to your network. For instructions, refer to the [x2xx Series Hardware Appliance Installation Guide](#), the [Secure Network Analytics x3xx Series Hardware Installation Guide](#), or the [Virtual Edition Appliance Installation Guide](#).



Make sure you assign your Data Node Virtual Edition with two network adapters during the installation. When you start First Time Setup, it will fail to resolve if it cannot detect a second network adapter, which will prevent you from assigning a non-routable IP address for inter-Data Node communications.

2. Configure the Data Node in [First Time Setup](#). You will assign a routable (eth0) management IP address and configure inter-Data Node communications in this procedure.
3. Add the Data Node to Central Management using the [appliance console \(SystemConfig\)](#).

3. Add Data Nodes to the Data Store

1. Log in to the Manager appliance console as sysadmin.
2. Select **Data Store**.
3. Select **SSH**. Wait while SSH is enabled across your appliances.
4. From the **Data Store** menu, select **New Data Nodes**. Follow the on-screen prompts.

- After the process completes, check Central Management to ensure that the appliance status is Connected.
- When you exit the Data Store menu, the system restores your previous SSH settings.

4. Rebalance Data in the Data Store



A rebalance is required after adding additional Data Nodes to the Data Store. Contact [Cisco Support](#) for assistance with this process.

Replacing a Data Node (Hardware Only)

Use the following instructions to prepare a new (spare) Data Node for the following scenarios:

- Replacing a Data Node with a spare Data Node with different IP addresses
- Replacing an unresponsive Data Node
- Adding a spare Data Node after an existing Data Node goes down

In all scenarios, you will prepare the new (spare) Data Node and work with [Cisco Support](#) to complete the replacement.



Contact Cisco Professional Services for assistance with planning and implementing these tasks.

1. Prepare the New (Spare) Data Node

1. Install the new (spare) Data Node appliance in the same rack setup as the existing Data Node appliances. For installation instructions, refer to the [x2xx Series Hardware Appliance Installation Guide](#) or the [Secure Network Analytics x3xx Series Hardware Installation Guide](#).

Check the following:

- Ensure that the new Data Node is connected to the same switches/ports.
 - Ensure that the new Data Node is in the same VLANs as the private and public interfaces on the existing Data Nodes.
2. Connect the Data Node to power and power on.
 3. Upgrade the image on the new Data Node to match the image already running on the existing Data Nodes. Please contact [Cisco Support](#) for assistance.
 4. Configure the Data Node in [First Time Setup](#). Assign it the appropriate eth0 management IP and private IP addresses, and confirm it is in the same VLANs as the existing Data Node eth0 and private IPs.
 5. Verify full connectivity by performing the following steps:
 - Ping from the Manager and all Flow Collectors to the eth0 IP address of the new Data Node.
 - Ping from all existing Data Nodes to the private IP of the new Data Node.

- Ping from the new Data Node to the eth0 management IPs of the Manager and all Flow Collectors.
- Ping from the new Data Node to the private IP of all existing Data Nodes.

2. Create a Data Store Backup

For instructions, refer to [Creating a Data Store Backup](#) for more information.

3. Contact Cisco Support

Contact [Cisco Support](#) to complete the replacement.

Adding Data Store to a Non-Data Store Deployment

Before you use these instructions, make sure you are already working in a Secure Network Analytics system with a Non-Data Store deployment. For instructions, refer to **Planning Your System Configuration**.

Use the appropriate instructions to add a Data Store to your Non-Data Store deployment.

- **Adding Data Store**
- **Adding New Flow Collectors to a Data Store**



For Data Store compatibility information, refer to the [Secure Network Analytics Hardware and Software Version Support Matrix](#).

Adding Data Store

To add a Data Store, refer to **Adding a Data Store to a Non-Data Store Deployment and Transitioning Your Flow Collectors**. This process also allows you to transition your existing Flow Collectors to use the Data Store database without loss of pre-transition data or visibility.

Adding New Flow Collectors to a Data Store

Follow the steps below to add a new Flow Collector to your Data Store.

1. Ensure your Flow Collector and appliances are all running on the same software version. Follow the instructions in the [Secure Network Analytics Update Guide](#).
2. Confirm that you have created the Data Store Domain in Secure Network Analytics that you will be associating your Flow Collector with. Refer to the [Creating a Data Store Domain](#) section in this guide for details.
3. Deploy and install your hardware or virtual Flow Collector. Refer to the [x2xx Series Hardware Appliance Installation Guide](#), the [Secure Network Analytics x3xx Series Hardware Installation Guide](#), or the [Virtual Edition Appliance Installation Guide](#) for more information.
4. Run [First Time Setup](#) on the Flow Collector, making sure to deploy the Flow Collector as part of a Data Store.
5. Add the Flow Collector to Central Manager. If you have a 52xx Flow Collector, be sure to add the Flow Collector database and Flow Collector engine (in that order). Select the Data Store domain that you want your Flow Collector to be a part of.
6. Repeat the above steps for all of the Flow Collectors that you want to add to your Data Store.
7. Add your Flow Collector(s) to your Data Store by logging into your Manager appliance console (SystemConfig) and selecting **Data Store>New Appliances**.

Adding a Data Store to a Non-Data Store Deployment and Transitioning Your Flow Collectors

Use the following instructions to transition your Non-Data Store Flow Collectors to Data Store Flow Collectors. This process allows you to transition your existing Flow Collectors to use the Data Store database without loss of pre-transition data or visibility. Once you have completed the steps below, you can preserve your pre-existing data until you no longer need it. Transitioning Non-Data Store Flow Collectors to Data Store Flow Collectors also allows you to take advantage of features only available in Data Store such as:

- **Increased Ingest Capacity:** Data Store deployments are scalable up to 3 million flows per second and may alleviate some of your current ingest capacity limitations. Flow Collectors in Data Store mode may exhibit up to a 200% increase in performance.
- **Multi-Telemetry Support:** Data Store deployments are capable of handling NetFlow, remote worker/endpoint (NVM), Zeek logs, Firewall connection, and security event telemetry.
- **Long-term Data Retention:** Data Store deployments provide scalable storage, enabling long-term data retention (up to 2 years) without adding Flow Collectors.
- **Enterprise-class Data Resiliency:** Telemetry data is stored redundantly across Data Nodes. This ensures no service interruption during single node failures.
- **Greatly Improved Query and Reporting Response Times:** The Data Store provides drastically improved query performance and reporting response times, in some cases 10x faster or more compared with a Non-Data Store deployment model.
- **Analytics:** Analytics provides additional detection and modeling capabilities as well as new interface features that enable you to review, prioritize, and address any security concerns. Analytics provides:
 - Automated role detection
 - Additional alerting capabilities
 - Experimental alert dashboard
 - Supporting device report

- **SAL Telemetry:** Security Analytics and Logging (SAL) streamlines decision making by aggregating logs from firewalls (FTD and ASA) and providing an intuitive view of network activity. SAL can be expanded at your discretion, allowing for longer retention and analysis, and even alerts on potential threats found in your firewall.

Preparation

Before you start the transition, review the instructions so you understand the preparation and steps that are required to transition your Flow Collector.

Note the following:

- **One at a Time:** You can only initiate the transition for one Flow Collector at a time. However, you can have many Flow Collectors in the transitioning state simultaneously.
- **Query Options:** Once your Flow Collector has entered the transitioning state, you can query both the historical Non-Data Store data, collected prior to initiating the transition via the Non-Data Store Domain as well as the new data collected in the Data Store after the transition via the Data Store Domain.

Backing up Configuration Files



Make sure you back up your Central Management configuration files after you change the Flow Collector state (Non-Data Store, Transitioning, or Data Store). You can only restore to a system when the Flow Collectors are in the same state as when the backup was taken.

Flow Collector Transition Requirements

Before you transition a Flow Collector, confirm that you have deployed at least one Data Node and that you have completed the Data Store initialization process as described in [5. Initializing the Data Store](#). If you have not already deployed at least one Data Node, refer to the [x2xx Series Hardware Appliance Installation Guide](#), the [x3xx Series Hardware Appliance Installation Guide](#), or the [Virtual Edition Appliance Installation Guide](#) for instructions. Once you have deployed your Data Node, you can follow the [Initiating a Flow Collector Transition to Data Store](#) procedure.

Initiating a Flow Collector Transition to Data Store

Follow these steps to transition a Non-Data Store Flow Collector to a Data Store Flow Collector.



Once you begin this process, you will not be able to return your Flow Collector to its previous state. You will need to finish the transition by following the steps below.

1. Review Your Data Store Domains

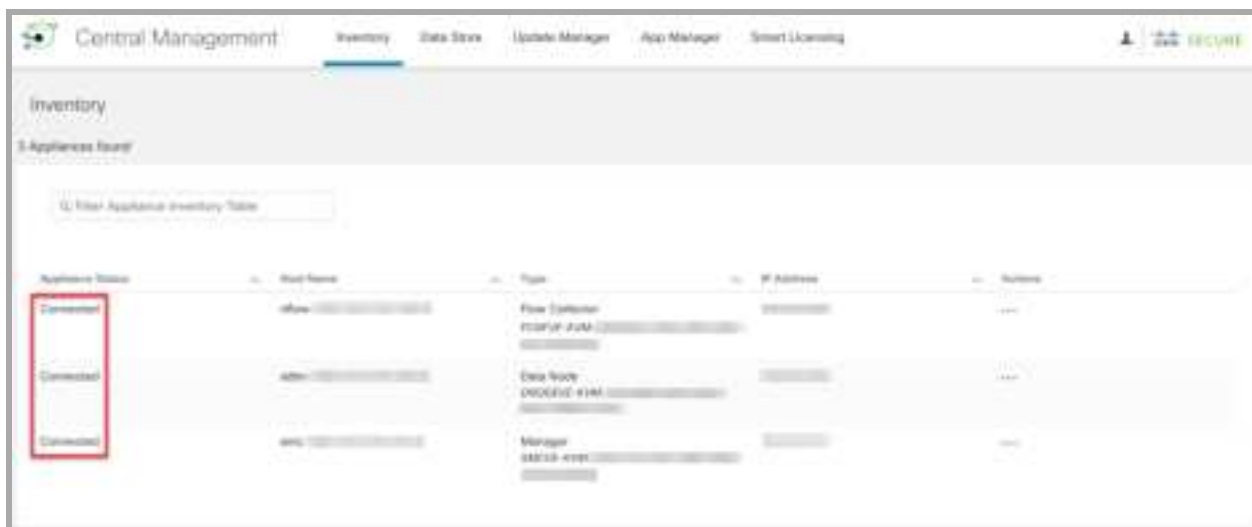
Identify the Data Store domain that corresponds to the Flow Collector you will be transitioning. Your Flow Collector will transition to this domain.

- **Adding a Data Store Domain:** If you need to add a Data Store domain, you can create one by following the instructions in [Adding and Configuring Domains](#).
- **Importing Existing Domains:** If you want to import the settings from an existing Non-Data Store domain, make sure you follow the instructions in the [Creating a Data Store Domain by Importing an Existing Non-Data Store Domain Configuration \(Optional\)](#) section in this guide.
- **Synchronizing Domains:** During your Flow Collector transition, you can keep your configurations and tuning synchronized between your pre-transition Non-Data Store domain and your Data Store domain. Refer to [Synchronizing Data Store and Non-Data Store Domains](#) for more information.

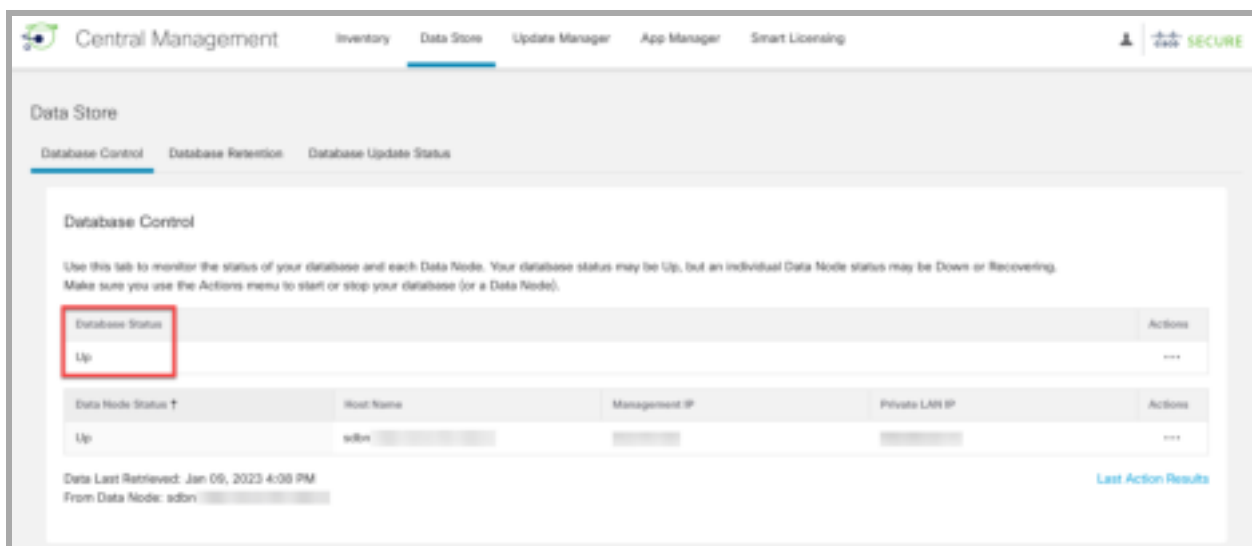
2. Check Your Appliance Status

Review your Central Management inventory

1. Select **Configure > Global > Central Management**.
2. Confirm that all appliances are shown as **Connected**. If the appliances are not in these states, attempt to get them into these states before proceeding to the next step. If you are unable to get your appliances into these states, contact [Cisco Support](#).



3. Select the **Data Store Database Control** tab. Confirm that your Database Status is shown as **Up**.

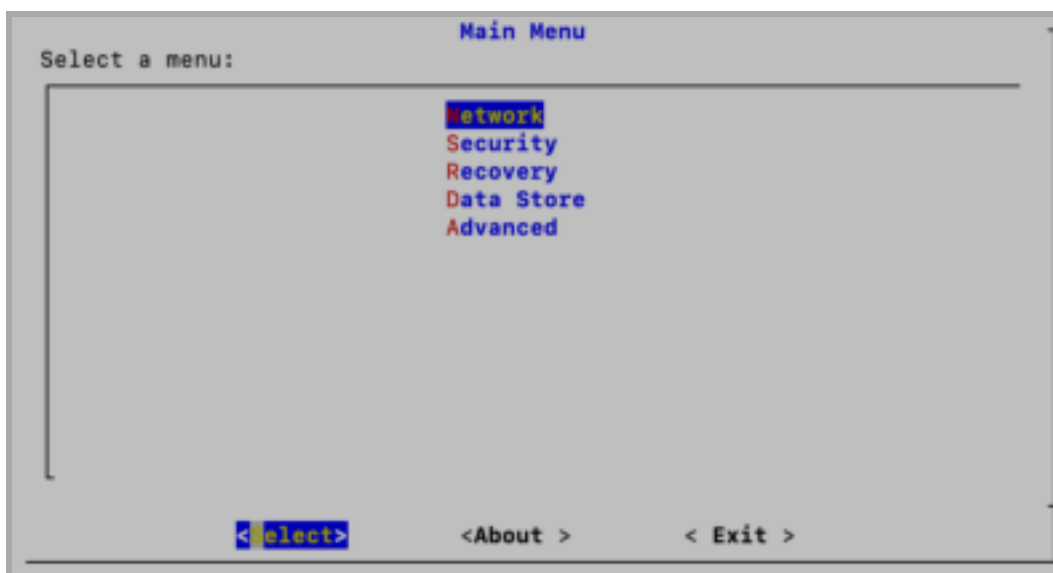


3. Transition Your Flow Collector

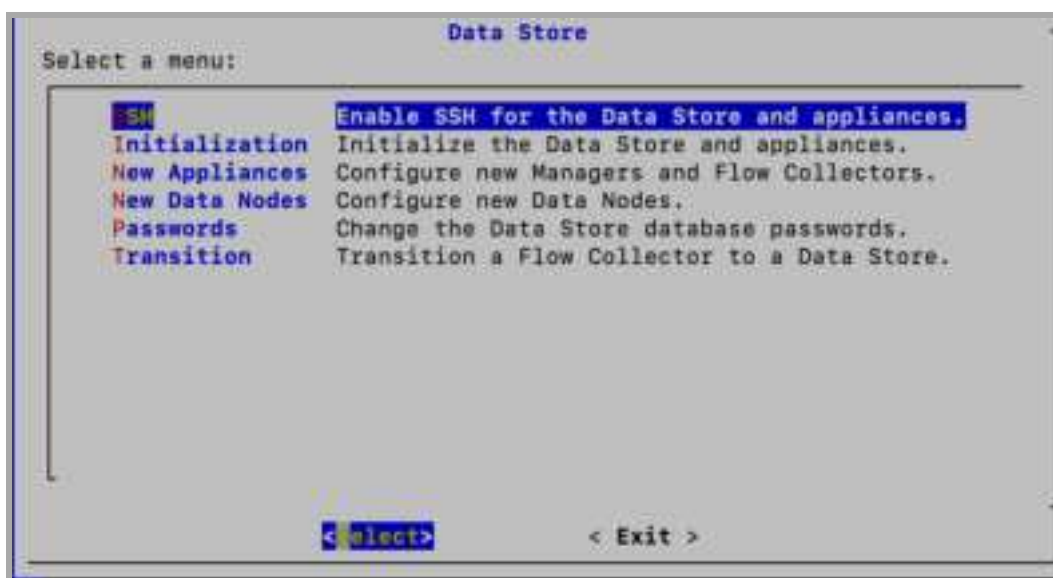


The Flow Collector will reboot during the transition operation. When the reboot is complete, the Flow Collector will begin to store new data in the Data Store database rather than the local Vertica database on the Flow Collector.

1. Log in to your Manager appliance console (SystemConfig) as sysadmin.



2. Select **Data Store** > **SSH**. This will enable SSH.



If you don't see the Data Store menu, ensure that you have a Data Store domain. For more information, refer to [1. Review Your Data Store Domains](#).

3. From the Data Store menu, select **Transition** > **Initiate Transition**.
4. Select a Flow Collector to transition.
5. On the Data Store Domains screen, select the Data Store domain that you identified (or created) in [1. Review Your Data Store Domains](#). Your transitioned Data Store Flow Collector data will be routed to the Data Store database and will be accessible

via this new domain instead of the prior Non-Data Store domain.

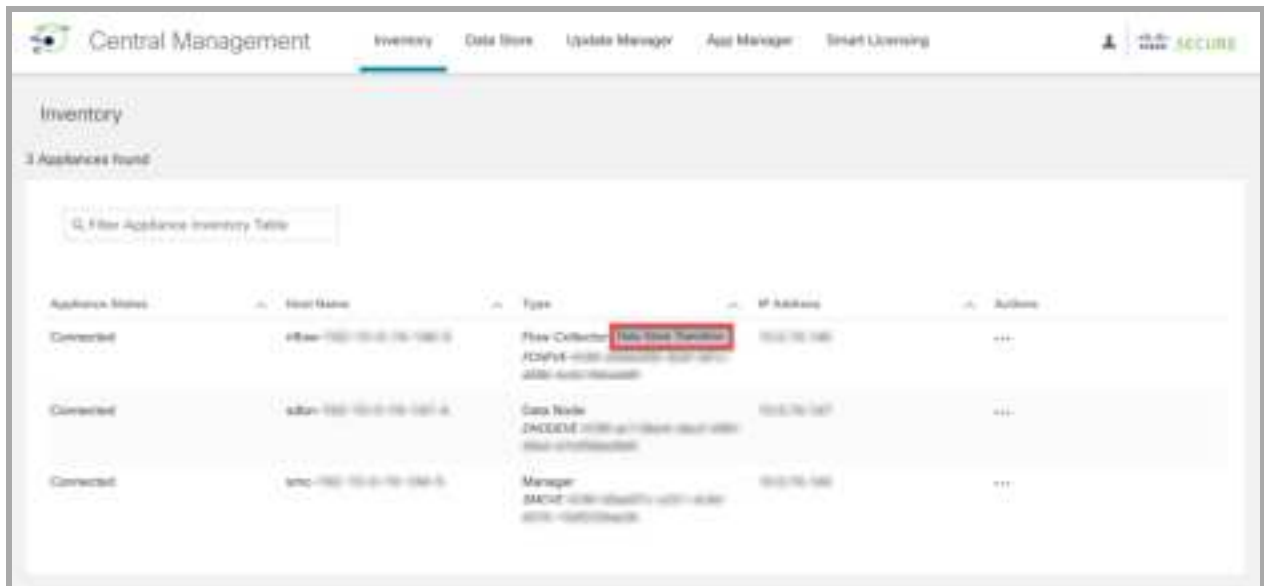
6. Follow the on-screen prompts to confirm the transition.



Once you are finished with the Initiate Transition procedure, do not complete your Flow Collector transition until you have confirmed you no longer need your historical data stored locally on the Flow Collector, as it will be deleted during this process. For more information, refer to [Completing your Data Store Flow Collector Transition](#).

7. Review the Central Management inventory (**Configure > Global > Central Management**).

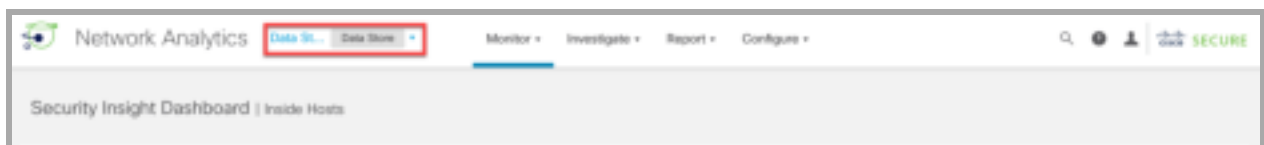
Confirm the Flow Collector you transitioned shows the **Data Store Transition** tag.



4. Verify Communications

Confirm that your Data Store is receiving flows.

1. Return to your Security Insight Dashboard.
2. Ensure the Data Store domain is selected from the Domains menu at the top of your screen.



3. Select the **Report** menu.
4. Select **Report Builder**.
5. Click **Create New Report**.
6. Click the **Flow Database Ingest Trend Report** template.
7. Select the parameters as needed. Click **Run**.
8. Review the report to confirm the database or Data Store are receiving flows.

In addition to running the Flow Database Ingest Trend Report, you can also confirm that your Data Store is receiving flows by doing the following:

- **Flow Collector Trend Table:** Navigate to your Security Insight Dashboard to review the Flow Collector Trend table. If your Data Store is receiving flows, you will see them here.
- **Database Retention:** Open Central Management (**Configure > Global > Central Management**) and review the information on the Data Store > Database Retention tab. The Oldest Data in Data Store table on this page will help you to track the date and number of days since the oldest record was written to Data Store. Note that the data in this table is updated only once per day so you will not see any data in this table on the day of your transition. Refer to the [Viewing Database Retention](#) section of this guide for more information.

Running Flow Searches

Select Investigate > Flow Search to run a flow query by domain. Use custom date ranges to customize your results.

- **Pre-transition Queries:** To query for pre-transition historical data in the Non-Data Store domain, be sure to select an end date that precedes your Flow Collector transition date.
- **Post-transition Queries:** To query on all post-transition Data Store data, be sure to select a start date that begins on or after the date that you transitioned your Flow Collector.

Removing a Transitioning Flow Collector From your Central Manager Inventory



Do not remove a transitioning Flow Collector from your Central Manager inventory. If you do, you will be required to complete the transition process with the assistance of [Cisco Support](#).

Transitioning Flow Collectors Behavior

Transitioning Flow Collectors will exhibit the following behavior.

- **New Data:** After you have completed the [Initiating a Flow Collector Transition to Data Store](#) procedure, your transitioning Flow Collectors will send all new telemetry to the Data Store database on the Data Node(s). Your new data will be accessible in the Data Store domain you identified (or created) in [1. Review Your Data Store Domains](#) and your local pre-transition data will continue to exist in your Non-Data Store domain.
- **Pre-transition Data:** Flow Collectors will continue to store the pre-transition data locally for as long as you want to maintain access to that data. See [Completing your Data Store Flow Collector Transition](#) for instructions on how to remove the pre-transition data when you no longer need it.
- **System Performance:** System performance during the Flow Collector transition will be similar to pre-transition performance. Once the transition is completed, you will see performance improvements aligned with Data Store Flow Collectors.

Synchronizing Data Store and Non-Data Store Domains

During your Flow Collector transition, you may want to keep your configurations and tuning synchronized between your pre-transition Non-Data Store domain and your Data Store domain. This section describes the process for synchronizing your Non-Data Store domain with its associated Data Store domain.

 You need administrator access for this procedure.

Synchronized Properties

The following properties will be synchronized between domains:

- Data Store domain specific configuration as well as alert configuration (if enabled). Domain configuration includes:
 - Host Group Management
 - Alarm Severity
 - Policy Management
 - Services, Applications
 - Exporter SNMP profiles (not including passwords)
 - Domain AS Numbers.

Recommended Synchronization Frequency

While you can synchronize your domains as often as you like, we recommend that you limit your synchronizations to only after you perform a group of changes or once a day or week. This is because the synchronization process requires the use of resources that take away from daily processing.

Synchronizing Domains Procedure

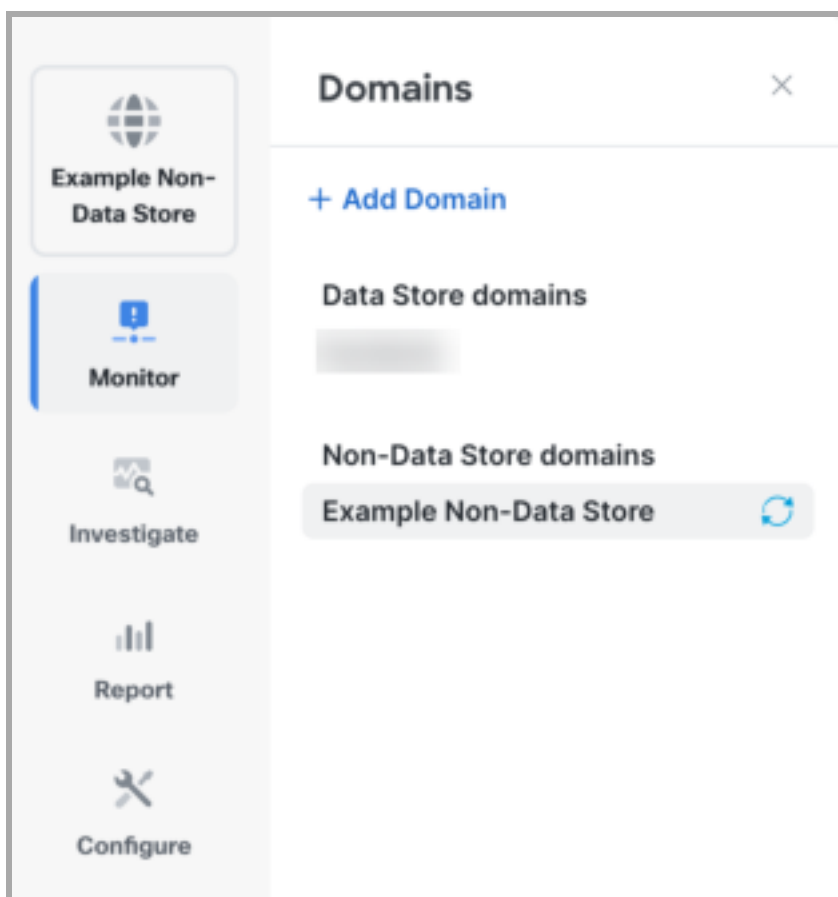
Follow these steps to synchronize your Non-Data Store domain (Source) with your Data Store domain (Target).

1. From the menu bar, choose the Non-Data Store domain that you want to synchronize with your Data Store domain.
2. From the main menu, choose **Configure > System > Domain Properties**.
3. Click **Edit**.
4. Choose the Data Store domain that you want to synchronize this domain with in the **Target Domain to Synchronize** drop-down menu.



You can only synchronize your target Data Store domain with one source Non-Data Store domain. If you attempt to synchronize your target Data Store domain with more than one source Non-Data Store domain, you will receive an error.

5. Click **Save** to save your changes. A Synchronize button appears next to the Non-Data Store domain that you selected to synchronize with your Data Store domain.



Completing your Flow Collector Transition

Once you no longer need your pre-transition data, you can complete the Flow Collector transition by following these steps.



Do not complete your Flow Collector transition until you have confirmed you no longer need your historical data stored locally on the Flow Collector, as it will be deleted during this process.

Completing your Data Store Flow Collector Transition

If you have followed the [process for transitioning your Non-Data Store Flow Collector to a Data Store Flow Collector](#) and no longer need to keep your locally-stored Non-Data Store data, you can finalize your Data Store Flow Collector transition.

There are two major procedures involved in transitioning your Non-Data Store Flow Collectors to Data Store Flow Collectors.

1. Initiate the transition process by following the steps in the **Completing your Data Store Flow Collector Transition** procedure. This transitions your Flow Collectors to the Data Store Transition state described in **Transitioning Flow Collectors Behavior**.
2. Complete the transition process. This causes your Flow Collector to solely become a Data Store Flow Collector. All of the pre-existing Non-Data Store data that this Flow Collector is storing will be deleted and resources will be recovered, thereby improving the performance of your Flow Collector.

Requirements

Before you complete your Data Store Flow Collector transition, review the following:

- **Initiate Transition:** Confirm you have completed the **5. Initializing the Data Store** procedure.
- **Historical Data:** Confirm that you no longer need your historical data stored locally on the Flow Collector, as it will be deleted during this process. If you have a data retention policy for your Non-Data Store data and want to understand how much new data is in your Data Store before completing your Data Store transition, review the Oldest Data in Data Store table. For more information, refer to **Viewing Database Retention**.

Completing a Flow Collector Transition to Data Store

Follow these steps to complete your Data Store Flow Collector transition.

1. Log in to your Manager appliance console (SystemConfig) as sysadmin.



2. Select **Data Store > Transition > Complete Transition**.
3. Select a Flow Collector to complete the transition to Data Store.
4. Follow the on-screen prompts to complete the transition.
5. Review the Central Management inventory (**Configure > Global > Central Management**).

Confirm the Flow Collector you transitioned shows the **Data Store** tag.



Post Completion Notes

Once you have finished the [Completing a Flow Collector Transition to Data Store](#) procedure:

- You will no longer see any NetFlow records in a Flow Query for this Flow Collector in the Non-Data Store domain.
- If there are no Flow Collectors in your old Non-Data Store domain, you can delete that domain. Refer to [Deleting a Domain](#) for details.
- All of the pre-existing Non-Data Store data that this Flow Collector was storing has been deleted and resources have been recovered, thereby improving the performance of your Flow Collector.

- If you are transitioning a Flow Collector 5000 Series Engine, you will no longer need the Flow Collector 5000 Series Database once the transition is complete.
- You will see a significant reduction in disk space usage on your transitioned Flow Collector. To see system statistics, services, disk usage, and docker services, log in to the Appliance Admin interface:
 1. On the [Central Management](#) Inventory page, click the *** (**Ellipsis**) icon for the appliance.
 2. Select **View Appliance Statistics**.
 3. Select **Home** to review the statistics.

Troubleshooting

Analytics Jobs are Lagging

In both of the following instances, the "Analytics performance has degraded" system alarm will be triggered.

The secondary Manager has been promoted to primary Manager

When you change the role of the primary Manager to that of the secondary Manager, and more than 5 hours has passed before the original primary Manager has been recovered and re-assigned to the primary role, the "Analytics performance has degraded" system alarm will be triggered. Analytics will recover and run the jobs that occurred during the last 6 hours, while the original primary Manager was down. Job performance will continue to lag until your system has processed all jobs from the last 6 hours and begins to process jobs in real time.

An appliance went down due to degradation

If your system is experiencing degradation (which is usually due to insufficient resources such as CPU or memory), jobs will begin to lag. If this lag exceeds 5 hours, then the "Analytics performance has degraded" system alarm will be triggered. At this point, results will be incomplete and unreliable.

A possible cause for this failure is that you have increased the flows per second beyond what is supported in your setup. To resolve this, either reduce the flows per second or increase the resources on the Manager, the Data Store, or both. If you cannot resolve the issue, contact [Cisco Support](#).

Appliance Status: Config Channel Down

If your Inventory page shows **Config Channel Down** for the appliance status, check the following:

- **Communication Settings:** Confirm your network communication settings.
- **Trust Stores:** Make sure your appliance identity certificates are saved to the correct Trust Stores. For instructions, refer to the [SSL/TLS Certificates for Managed Appliances Guide](#).
- **Certificates:** If you've changed the appliance identity certificate, check the procedure and confirm your certificates are saved to the correct Trust Stores. For instructions, refer to the [SSL/TLS Certificates for Managed Appliances Guide](#).
- **Removing an Appliance:** If you remove an appliance from Central Management while the configuration channel is down, make sure you also remove the appliance

from System Configuration:

- Log in to the appliance console as sysadmin.
- Select **Recovery** > **Remove Appliance**.

Appliance Status: Data Store Not Initialized

You need to finish your Secure Network Analytics system configuration.

After you add all Managers, Flow Collectors, and Data Nodes to your Central Management inventory, you need to initialize the Data Store. For instructions, refer to [5. Initializing the Data Store](#).

Appliance Status: Data Store Not Configured

If you've added a new Manager, Flow Collector, or Data Node to your Data Store, you need to finish your system configuration. For instructions, refer to [Data Store Maintenance](#).

Opening the Appliance Administration Interface

You can access the Appliance Admin interface through Central Management or by logging in to the appliance directly.

You may need to log in to Appliance Admin if you've removed your Manager from Central Management for troubleshooting.

In your browser address bar, type the appliance IP address as follows or enter the FQDN of your appliance.

`https://<IPAddress>`

- **Manager:** add **/Manager/Index.html** after the IP address.
- **Example:** `https://xx.xxx.xx.xxx/Manager/index.html`

Replacing the Appliance Identity

Each Secure Network Analytics version 7.x appliance is installed with a unique, self-signed appliance identity certificate. To replace the appliance identity certificate with a certificate from a Certificate Authority, refer to the [SSL/TLS Certificates for Managed Appliances Guide](#) for instructions.



Your certificates are critical for your system's security. Improperly modifying your certificates can stop Secure Network Analytics appliance communications and cause data loss.

Removing Data Store Appliances from Central Management

If you remove Data Store appliances from Central Management (Manager, Flow Collector, Data Node), it does not remove them from all necessary configuration files. The following files need to be manually cleaned up.

- **Managers and Flow Collectors:** For Managers and Flow Collectors removed from Central Management, you will need to remove the IP addresses of these devices from the `/lancope/var/services/data-store/config-datastore-inventory-snapshot` directory before attempting to re-add them to Central Management.
- **Data Nodes:** If you are attempting to remove/re-add a Data Node appliance entirely, contact Cisco Support for assistance with the removal Data Nodes as that process is more complicated.

Changing the Host Name, Network Domain Name, or IP Address

To change the appliance host name, network domain name, or IP address after you've installed and configured your appliances, follow the instructions in the [SSL/TLS Certificates for Managed Appliances Guide](#).

As part of the procedure, you will remove the appliance from Central Management temporarily. You will be given the option to regenerate your appliance identity certificate and in some cases, you can skip the regeneration altogether.



If you are using custom certificates, save your certificates before you change your network settings in case you accidentally overwrite them. To replace appliance identity certificates, follow the instructions in the [SSL/TLS Certificates for Managed Appliances Guide](#).

Changing the Network Mode of an Appliance

The only supported network mode for Data Nodes is IPv4 only. Changing the network mode of Data Nodes is not supported in this release.

-  When configuring a UDP Director, your options are IPv4 and Dual Stack. If you select the Dual Stack option, UDP will only forward over IPv4. You can, however use IPv6 for management. For information on IPv6 forwarding for UDP directors, refer to the [Cisco Telemetry Broker User Guide](#).

With the exception of your Data Node appliances and UDP Directors, You can change the network mode of your appliances in any of the following ways:

- IPv4 only to Dual stack
- IPv4 only to IPv6 only
- Dual stack to IPv6 only
- Dual stack to IPv4 only
- IPv6 to IPv4 only
- IPv6 only to Dual stack

-  Your appliance will reboot following a change to the network mode.

Changing the network mode may cause certificates to be replaced automatically or you may be prompted to confirm if you would like to replace certificates.



If you are connected over SSH, you may see a warning that your connection will be lost during the network change and you will need to exit and reconnect.

When switching the network mode from IPv4 only to IPv6 only or from IPv6 only to IPv4 only, the following settings will be affected. You will need to change the IP address of these settings after switching your network mode in order to avoid any communication disruptions.

- DNS servers
- NTP, email servers (if it contains IP address and not a hostname)
- All external destinations in response management

Perform the following steps to change the network mode of your appliances. If your Managers are in a failover configuration, refer to [Changing the Network Mode of](#)

Managers in a Failover Configuration for instructions on changing the network mode for those Managers.



We recommend that you change the network mode of all of your appliances during the same session. Failure to do so could result in a loss of communication between appliances. Be sure to read through all of the procedures for changing the network mode before starting the process.

1. Remove Your Appliances from Inventory



When removing your appliances from Inventory, be sure to remove your primary Manager last. If you are changing the network mode of Managers that are configured in a failover pair, refer to **Changing the Network Mode of Managers in a Failover Configuration** before continuing with this section.

1. Log in to your Manager.
2. Select **Configure > Global > Central Management**.
3. On the Central Management Inventory page, choose the **Actions** menu for the appliance.
4. Select **Remove This Appliance** making sure that you remove your primary Manager last and any secondary Managers before that.



Before removing any of your Managers from Inventory, confirm that their appliance status is "Connected".

5. Continue removing your appliances until you have removed all appliances that will be receiving a changed network mode.

2. Change the Network Mode of Your Appliances



When changing the network mode of your appliances, change the network mode of your Manager first, followed by your Flow Collectors, and then the rest of your appliances.

1. Log in to your appliance console (SystemConfig).
2. Select **Network**.
3. Select **Management**.
4. Select the new network mode for your appliance, then select **OK**.

5. Enter your network information for the new network mode you selected, then select **OK**.
6. Select **OK** to confirm your settings.

3. Add Your Appliances Back to Central Management

1. Log in to your appliance console (SystemConfig).
2. Select **Recovery > Add Appliance**.
3. Follow the on screen prompts to add your appliances back to Central Management, starting with your Manager and then your other appliances after that.

Changing the Network Mode of Managers in a Failover Configuration

Follow the steps below to change the network mode on Managers in a failover configuration.

1. Delete the failover configuration for your Primary and Secondary Managers. Refer to the "Deleting the Failover Configuration" section of the [Failover Configuration Guide](#) for details. This process includes performing an RFD of your Secondary Manager.
2. Once you have completed the RFD process on the Secondary Manager, run the **Configuring a Manager** on your former secondary Manager and change the network mode.
3. Upload the appropriate certificates to both of the Managers Trust Stores. Refer to the "Add Certificates to Trust Stores" section of the [Failover Configuration Guide](#) for details.
4. Change the roles of both the Managers so you have them in the proper failover configuration. Refer to the "Configure the Failover Pair" of the [Failover Configuration Guide](#) for details.

Creating a Diagnostic Pack

Having a diagnostics pack can be invaluable if you need to work with [Cisco Support](#) to troubleshoot an issue. Use the following instructions to create a diagnostics pack for an individual appliance.

1. Log in to the **Central Management**.
2. From the **Inventory** tab, choose the **Appliance**.
3. Click the *** (**Ellipsis**) icon, choose **Support**.
4. Click the **Diagnostics Packs** tab.

5. Click the **Create** button.
6. Use either **Public Key** or **Shared Password** for the encryption.
7. Click **Create** to create the diagnostics pack.

Opening Domain Properties

From the main menu, choose **Configure > System > Domain Properties**.

For more information, refer to [Domains](#).

Deleting a Desktop Client Domain

Use caution when deciding which Desktop Client domains you want to delete as you will lose access to all data which has been collected for the domain you are deleting.



Workaround: If you accidentally delete all of your domains in the Desktop Client and lock yourself out of the Manager Web App, create a new Non-Data Store domain in the Desktop Client. This will allow you to regain access into the Manager Web App. For information on creating a domain refer to the Add a Domain topic in the Desktop Client help.

System Configuration Overview

We've updated System Configuration with a new menu structure. System Configuration often involves troubleshooting. For assistance, please contact [Cisco Support](#).

- **Users:** Log in as sysadmin.
 - **SSH:** You may need to [enable SSH](#) to access a menu.
1. Log in to the appliance console.
 2. From the main menu, select a menu:
 - **Network:** To change appliance management port network, trusted hosts, and network interfaces (eth0 configuration , MTU, etc.), set your IP preference, and view your current configuration, select Network.
 - **Security:** To change or reset passwords (refer to [Passwords](#)), manage Syslog, USGv6 Compliance, and CSRF protection, configure the TLS version, enable or disable debug logging for certificate path validation (refer to [SSL/TLS Certificates for Managed Appliances Guide](#)), and reset the web admin password, select Security.

- **Recovery:** To add or remove an appliance from Central Management, reset factory defaults, create a diagnostics pack, or refresh the image or certificate, select Recovery.
- **Advanced:** To grant elevated access to Cisco Support, manage the admin user account, configure Single Sign-On, configure Smart Licensing to reserve licenses, create or manage packet captures, reboot, or shut down the appliance, select Advanced.
- **Data Store:** This menu is available in Managers configured for use with a Data Store. Use this menu for enabling SSH, initialization, [adding new Managers and Flow Collectors to the Data Store](#), [adding Data Nodes to the Data Store](#), [changing the Data Store database passwords](#), and [transitioning your Flow Collectors to Data Store](#).

Changing the Trusted Hosts

You can use System Configuration to change the trusted hosts list from the appliance defaults. However, please contact [Cisco Support](#) before you change your trusted hosts.

 Please contact [Cisco Support](#) before you change your trusted hosts.

If you change the trusted hosts list from the defaults, make sure each Secure Network Analytics appliance is included in the trusted host list for every other Secure Network Analytics appliance in your deployment. Otherwise, the appliances will not be able to communicate with each other.

1. Log in to the appliance console as sysadmin.
2. Select **Network > Trusted Hosts**.
3. Follow the on-screen prompts to change the Trusted Hosts.

Configuring the Interfaces and Exporters Cleaner

Exporters and their interfaces are managed on both the Manager and on each of the Flow Collector appliances independently.

Use the Interfaces and Exporters Cleaner for the following:

- To ensure that the Flow Collector maintains a list of interfaces and exporters which does not exceed its hard limits of 4,096 for exporters and 65,535 for interfaces.
- To ensure that the Manager's view of interfaces and exporters remains consistent with the actual number of interfaces and exporters on each the system's Flow Collector.

- To ensure that short lived interfaces used by some telemetry types do not build up on the system and exhaust the system resource limits.

Enable the Cleaner

 When the cleaner functionality is enabled, it applies to all domains.

1. Log in to the **Manager** as admin.
2. From the main menu, choose **Configure > Global > Manager**.
3. Click the **Interfaces and Exporters Cleaner** tab.
4. Click the **Enable Cleaning** toggle.
5. In the **Inactive Threshold in Hours** field, choose the number of hours an exporter can be inactive before it is removed.
6. Optionally, check the **Remove unknown interfaces** check box. For more details, refer to [Review the Flow Collector interface_age parameter](#).

If you choose this setting:

- The Flow Collector will record the last activity of interfaces known to it at the reset hour.
 - Two hours later, the Manager will query each Flow Collector to compare its local list of exporters and interfaces associated with that Flow Collector to the list of known exporters and interfaces returned by the same Flow Collector.
 - Interfaces that no longer exist in the Flow Collector will become unknown and will automatically be removed from the Manager.
7. Click **Save**.

Review the Flow Collector interface_age parameter

1. Log in to the **Flow Collector**.
2. Click **Support > Advanced Settings**.
3. In the **interface_age** row, enter the appropriate value (default is 2,678,400 seconds, which is equal to 31 days).

 If the interface_age variable is set to less than 24 hours on one or more Flow Collectors, make sure to check the **Remove unknown interfaces** check box in [Enable the Cleaner](#).

4. Click **Apply**.
5. When the confirmation message appears, click **OK**.

Configuring the Maximum Transmission Unit (MTU)

Use the following instructions to configure the maximum transmission unit (MTU) for the appliance eth0 network interface. The number sets the maximum packet size the eth0 interface can transmit per transaction.



The MTU impacts your network processing. If you change this number, make sure it is configured consistently in your network.

1. Log in to the appliance console as sysadmin.
2. Select **Network > Interface**.
3. Select **eth0**.
4. Enter **1500** (default), **9000**, or a number that meets your network configuration requirements.
5. Click **OK**.



We support a maximum MTU setting of 8,192 bytes for firewall logs and 9,216 bytes for NetFlow, sFlow, NVM flows, and Zeek logs. If you are ingesting firewall logs using Security Analytics and Logging (OnPrem) and another telemetry type, do not configure the MTU setting greater than 8,192 bytes.

6. Select **Confirm**.
7. Follow the on-screen prompts to confirm your changes.

Resetting Factory Defaults

Use the following instructions to reset an appliance to its factory defaults (RFD). To completely erase data, make sure you reset factory defaults twice.

- **RFD twice:** To completely erase data, make sure you reset factory defaults twice.
- **Back up Configuration:** If you plan to restore the appliance configuration, make sure you save the backup configuration and database backup files. Refer to **Backup Configuration Files** (in Central Management) and **Backup/Restore Database (Appliance Admin interface)** topics in the Help for details. To restore the backup after RFD, contact [Cisco Support](#).



If you reset factory defaults (RFD) on an appliance, all existing data and configuration information will be deleted and can only be restored if you've made a backup.



If you reset an appliance to factory defaults, you cannot restore the configuration using Central Management. For assistance, please contact [Cisco Support](#).

1. Log in to the appliance console as sysadmin.
2. Select **Recovery > Factory Defaults**.
3. Follow the on-screen prompts to reset factory defaults and restart the appliance.



Make sure you RFD each appliance twice to completely erase data.

4. Log in to the appliance console as **sysadmin** and follow the First Time Setup process. For instructions, refer to Configuring Your Environment Using First Time Setup. This step is required even if you preserve network settings when you RFD.

Enabling/Disabling Admin Users

Use the following instructions to enable or disable the default admin account.

1. Log in to the appliance console as sysadmin.
2. Select **Advanced**.
3. Select **Admin User**.
4. Follow the on-screen prompts to enable or disable the Admin User account.
5. Repeat these instructions to enable or disable the Admin User account on all appliances in your Secure Network Analytics cluster.

Editing Your Appliance Configuration in the Appliance Console (SystemConfig)

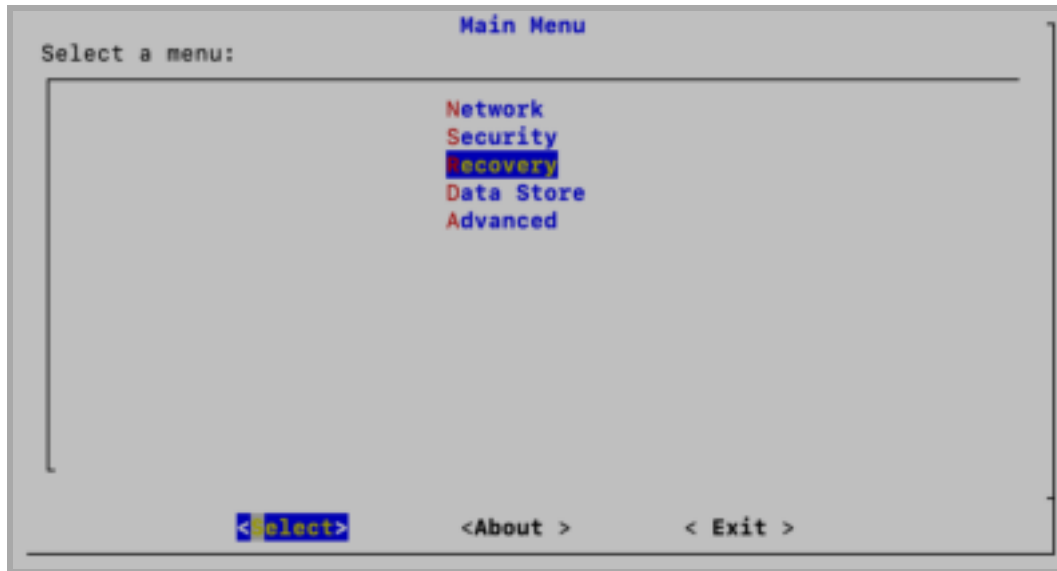
In some cases, such as changing user passwords or changing the network IP mode, host name, and domains, you will need to edit your appliance configuration in the appliance console (SystemConfig). Follow the instructions below to make configuration changes in the appliance console.

Follow the steps in this section to modify your appliance configuration.

Logging In to the Appliance Console (SystemConfig)

Use the following instructions to configure each appliance using the appliance console (SystemConfig).

1. Log in to each appliance through the console as sysadmin (password: lan1cope).



Changing the Network IP Mode



You will need to remove your appliance from Central Management before completing this procedure. Refer to [Removing Data Store Appliances from Central Management](#) for more information.

Network IP Mode: Select **Network>Management** and review the IP address and network interface fields. Confirm the default settings are correct.

- **Changes:** To change this information, confer with your network administrator and refer to [Changing the Network Mode of an Appliance](#).
- **IPv6 (optional):** To enable IPv6, select **IPv6** or **Dual Stack**. Check the **Enable IPv6** check box and complete the fields.



Data Store Deployment Troubleshooting

Hardware Deployment Troubleshooting

For issues with deploying or configuring your appliances, refer to the [x2xx Series Hardware Appliance Installation Guide](#) or the [Secure Network Analytics x3xx Series Hardware Installation Guide](#) for more information.

Virtual Appliance Deployment Troubleshooting

For issues with deploying or configuring your Virtual Edition appliances, refer to the [Virtual Edition Appliance Installation Guide](#) for more information.

First Time Setup and Data Nodes Virtual Edition

If you do not assign two network adapters to your Data Nodes Virtual Edition during the installation, First Time Setup will fail to resolve because it cannot detect a second network adapter. This will prevent you from assigning a non-routable IP address for inter-Data Node communications. Refer to the [Virtual Edition Appliance Installation Guide](#) for more information.

Data Store Troubleshooting

Note that the Data Store reserves up to 40% of the available storage space to maintain the Data Store. At a maximum, 60% of the total space is available for telemetry storage.

Vertica Analytics Platform does not automatically restart after a Data Node loses power and reboots

If a Data Node loses power unexpectedly, and you reboot the appliance, the Vertica Analytics Platform (Vertica) instance on that Data Node may not automatically restart due to possible corrupted data. If there are still enough running Data Nodes to allow the Data Store to continue running, the Data Store continues ingesting data from the Flow Collectors. However, you need to restart the Data Node as soon as possible, to allow it to rejoin the Data Store, retrieve missed data from adjacent Data Nodes, and catch up with the rest of the Data Nodes. Contact [Cisco Support](#) for assistance with restarting your Data Nodes.

Data Store Does Not Start After Power Failure

Review the database status on the Data Store tab in Central Management. You can start the database or Data Node from there. Refer to [Viewing the Data Store Database Status](#) for details.

Patches and Software Updates

Make sure you keep Secure Network Analytics up-to-date by installing the latest patches for your software version. For details and instructions, visit [Cisco Software Central](#).

Software updates are also posted to your Cisco Smart Account at [Cisco Software Central](#). For a successful update, make sure you follow the instructions in the [Secure Network Analytics Update Guide](#).

Contacting Support

If you need technical support, please do one of the following:

- Contact your local Cisco Partner
- Contact Cisco Support
- To open a case by web: <http://www.cisco.com/c/en/us/support/index.html>
- For phone support: 1-800-553-2447 (U.S.)
- For worldwide support numbers:
<https://www.cisco.com/c/en/us/support/web/tsd-cisco-worldwide-contacts.html>

Change History

Document Version	Published Date	Description
1_0	July 28, 2025	Initial version.

Copyright Information

Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: <https://www.cisco.com/go/trademarks>. Third-party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1721R)