System management tool, security, and Edge networking

Security settings and Edge networking in XCC

Lenovo

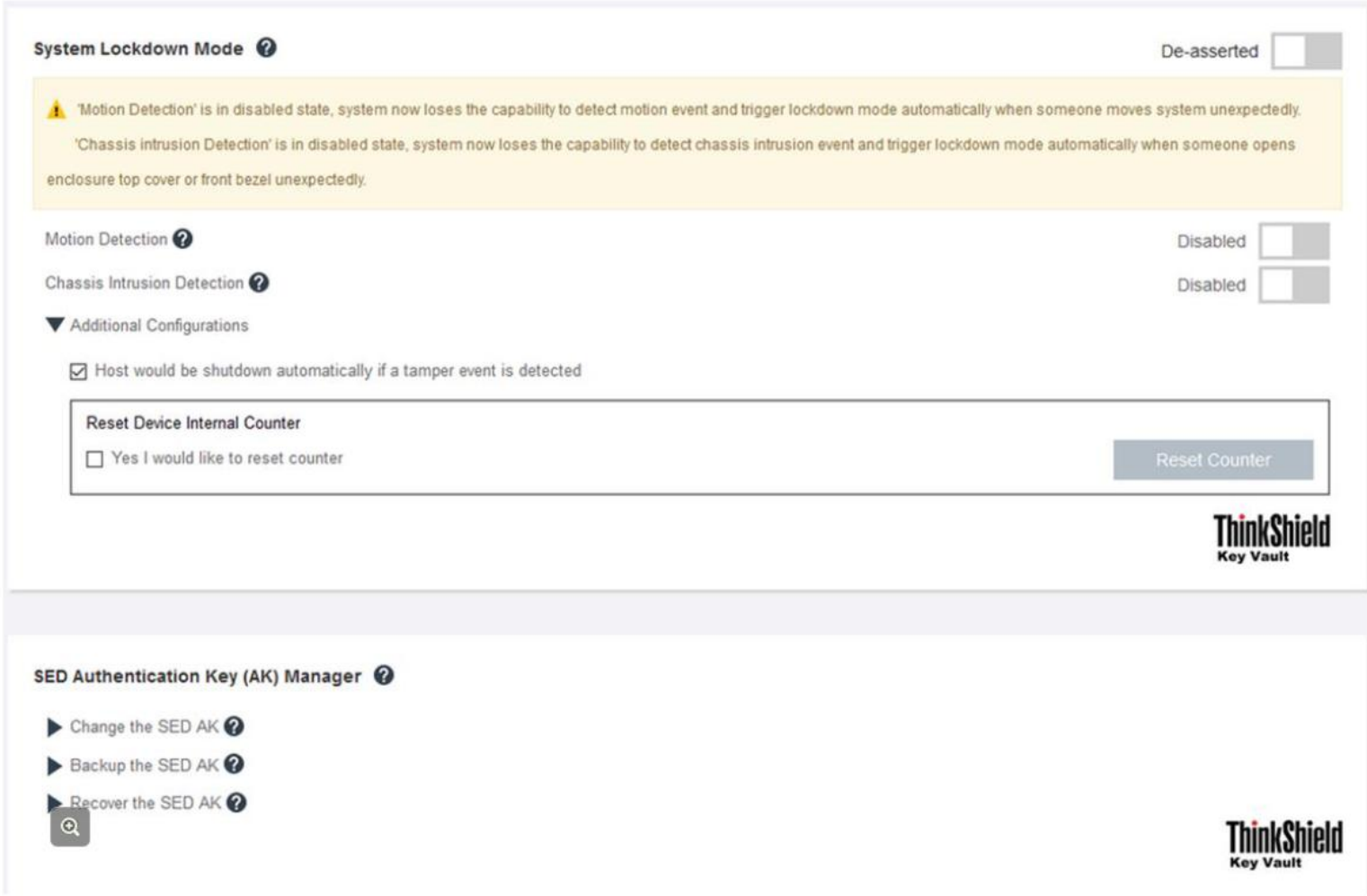
Server management tool

As with other Lenovo ThinkSystem products, the SE350 uses the XCC as a system management tool, but it also has the following specific features:

- ThinkShield Key Vault security settings:
  - System lockdown mode
  - Self Encryption Drive (SED) Authentication Key (AK) Manager
- Edge networking (Wireless-enabled LOM package only)
  - Edge device network topology
  - Wi-Fi connectivity
  - LTE connectivity
  - Edge network board address
  - BMC network bridge
  - Edge network board troubleshooting

ThinkShield Key Vault security settings

Select **BMC configuration** > **Security**, and then scroll down the page until you see **System Lockdown Mode** and **SED Authentication Key (AK) Manager**.

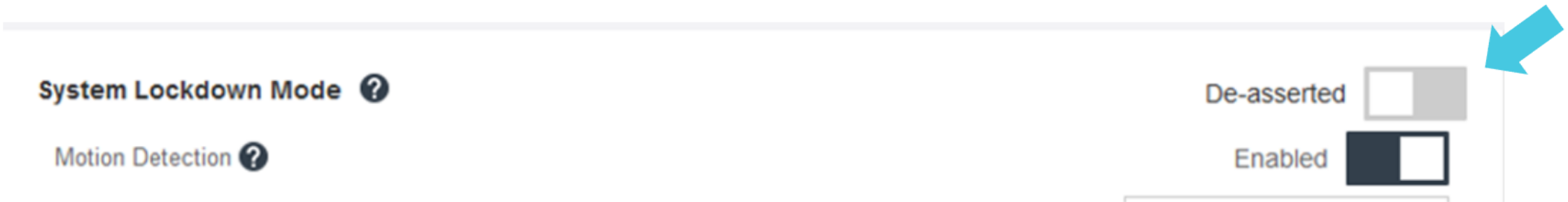


System lockdown mode

System Lockdown Mode is triggered either as a result of a tamper event (either chassis intrusion or motion detection) or because it was selected through the external BMC interface. One of the following things would have happened for system lockdown mode to be asserted:

- A chassis intrusion event was detected because the top cover or front bezel was opened.
- A motion event was detected by the accelerometer because the machine was moved a significant distance.
- The user manually asserted lockdown mode using the toggle button shown below.

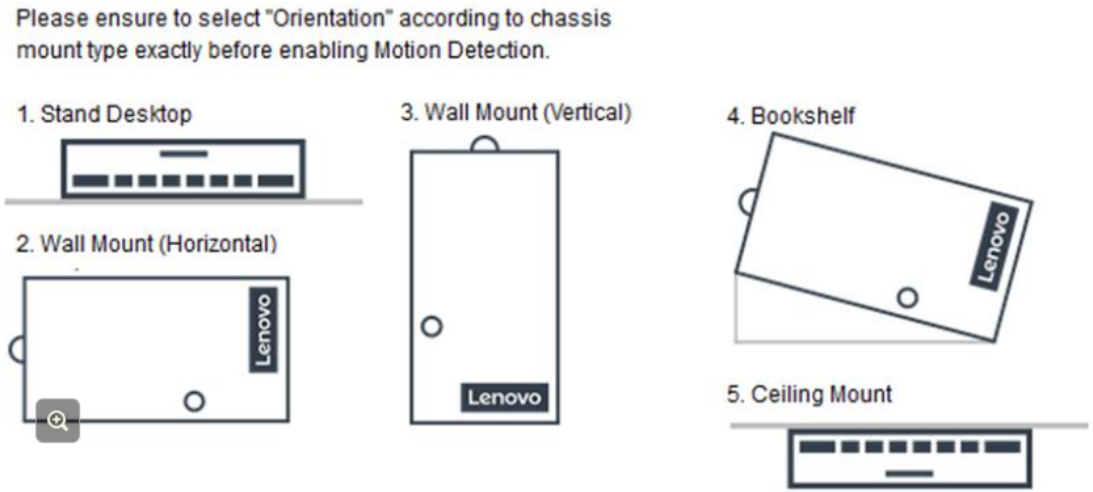
When system lockdown mode is asserted, access to the system is denied. When the system is locked, activation is required for it to be unlocked. Refer to the **Web manual activation** section in this course for details of how to unlock the system.



Motion detection

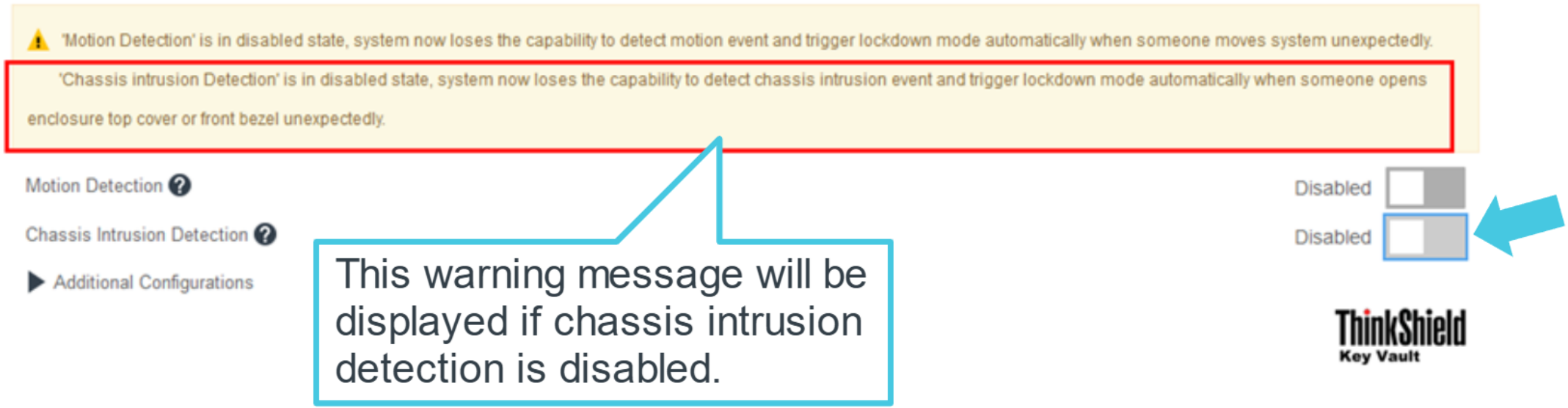
When motion detection is enabled, the BMC is able to detect motion events and protect the system by automatically triggering lockdown mode when someone moves the system. Users need to set up **Sensitivity Level** and **Orientation** when they enable motion detection.

- Sensitivity Level: This field allows users to configure accelerometer sensitivity.
  - Low: Shaking, falling, or rolling – 500 Gal / 100 ms
  - Medium: Stealing or significant movement – 250 Gal / 300 ms
  - High: Vibrations or a magnitude 5 earthquake – 250 Gal / 100 ms
- Orientation: This is set according to chassis mount type.



Chassis intrusion detection

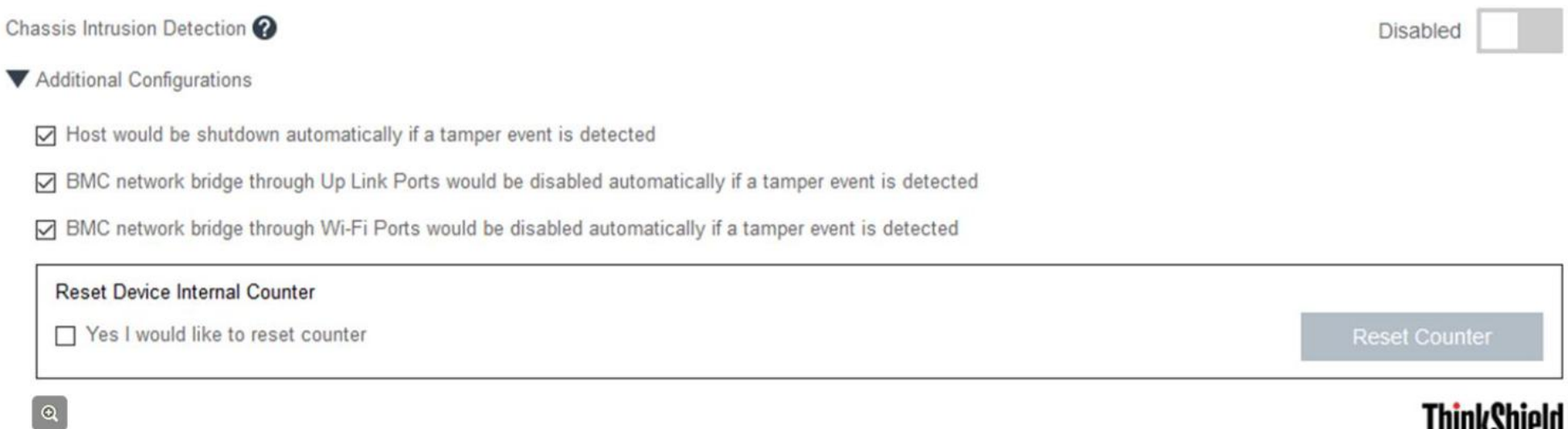
When chassis intrusion detection is enabled, the BMC is able to detect chassis intrusion events and protect the system by automatically triggering lockdown mode when someone opens the enclosure top cover or front bezel.



Additional configurations

Users can choose to select or deselect the following settings in the **Additional Configurations** section.

- Host would be shut down automatically if a tamper event is detected
- BMC network bridge through Up Link Ports would be disabled automatically if a tamper event is detected
- BMC network bridge through Wi-Fi Ports would be disabled automatically if a tamper event is detected



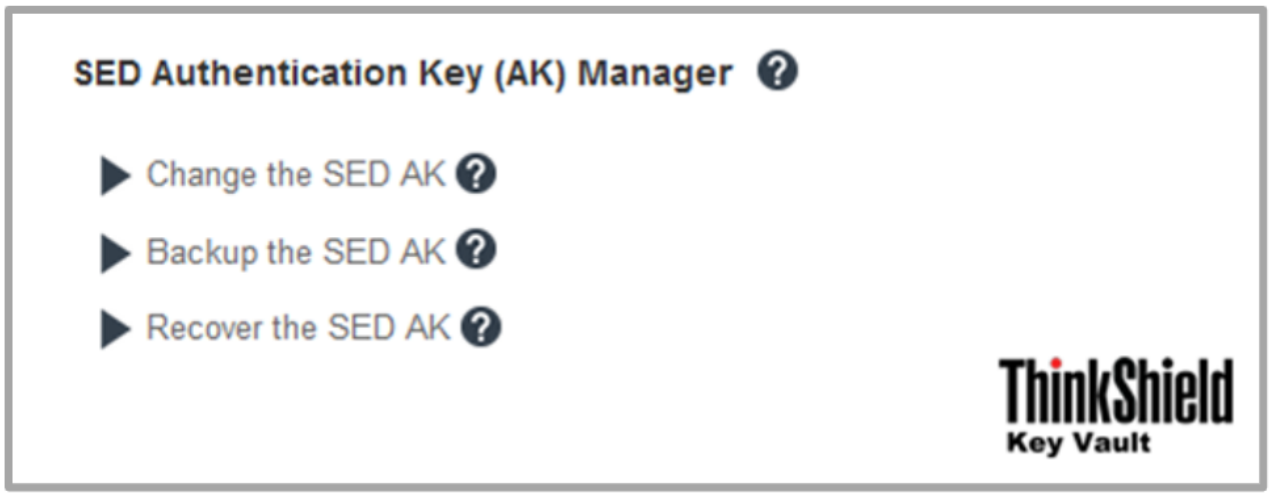
ThinkShield Key Vault

Lenovo

SED Authentication Key (AK) Manager

This feature allows the BMC to deploy the SED key. The SED key is designed for encryption of both boot and data drives, and it should be stored securely in the BMC to allow the system to boot without manual intervention. The SED AK Manager includes the following features:

- Change the SED AK
- Backup the SED AK
- Recover the SED AK



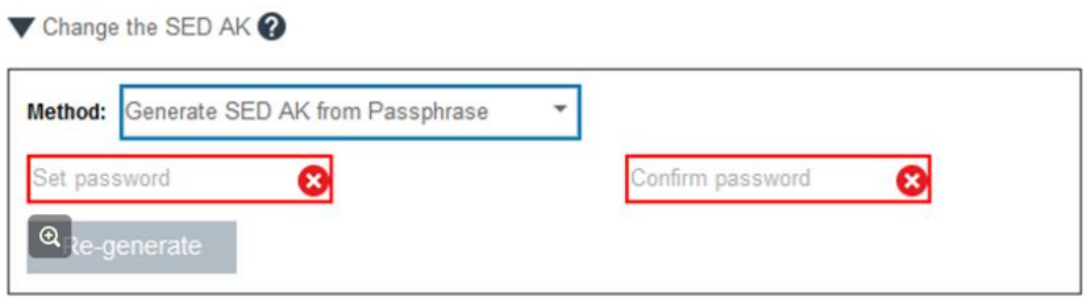
Note: This operation is not allowed when the system is not activated (lockdown mode has been asserted) or when the current user does not have the authority to manage the SED key.

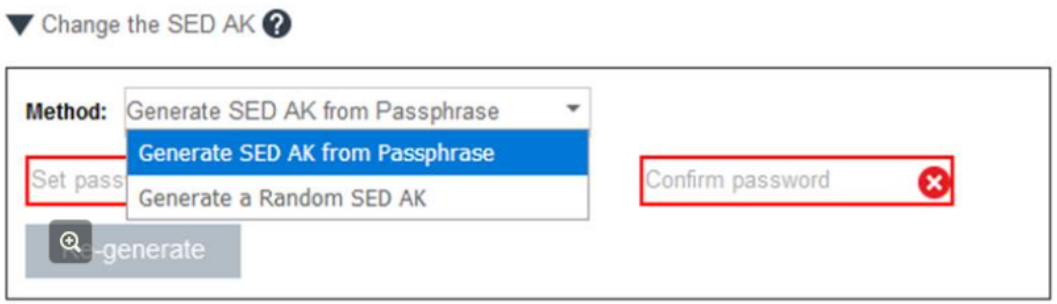
Change the SED AK

This option allows users to renew the SED AK. If users select **Generate a Random SED AK**, it is highly recommended that they back up the SED AK. Users can also select **Generate SED AK from Passphrase**.

- Generate SED AK from Passphrase:
  - XCC generates an SED AK based on the given passphrase, and the user is then able to restore the SED AK without having an SED AK backup file.
- Generate a Random SED AK:
  - XCC generates a random SED AK, and the user then needs to back up the AK file.

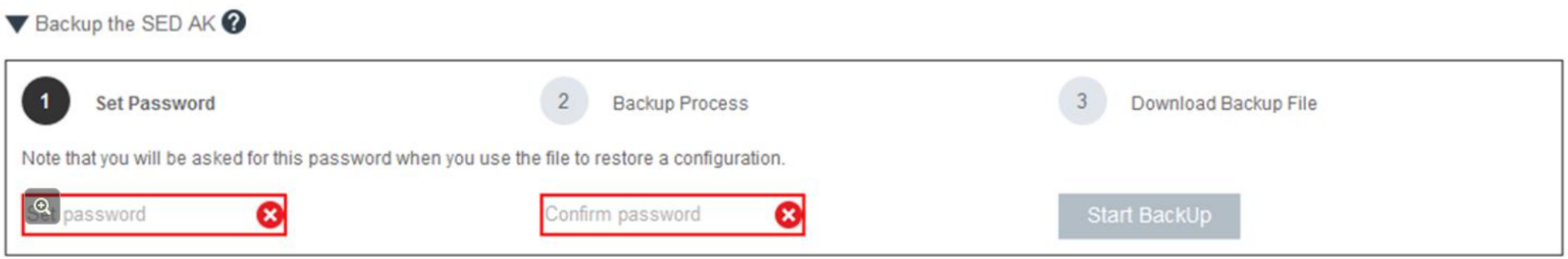
After a customer changes the SED AK, the security chip will keep two SED AKs (new and old). At the next system restart, UEFI will replace the old SED AK with the new AK. After completion, XCC will replace the AK in the security chip.





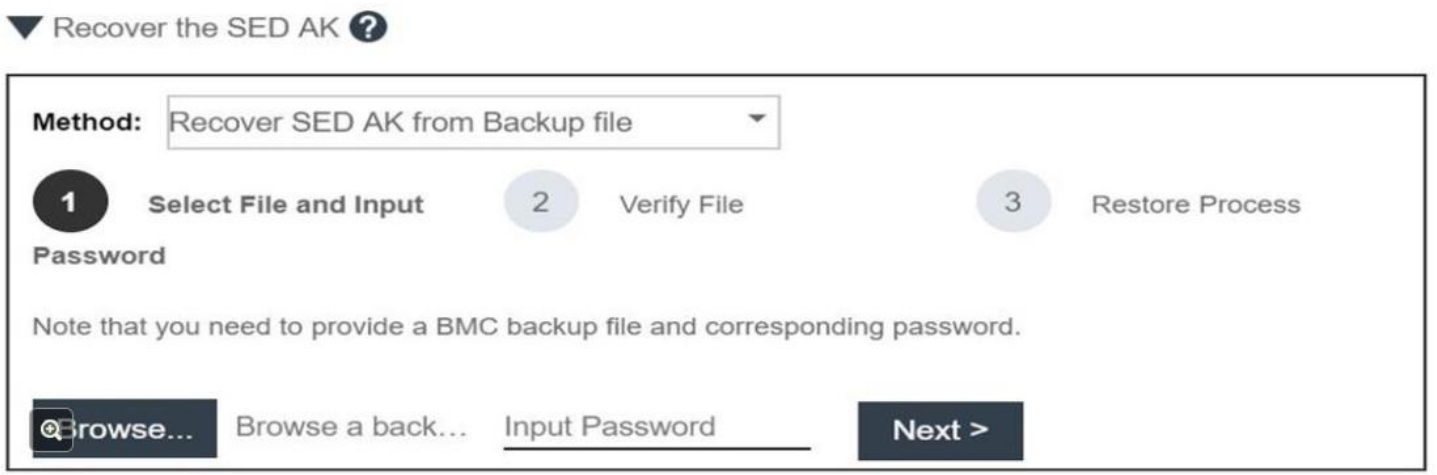
Backup the SED AK

It is the customer's responsibility to maintain the SED AK. To be fully prepared for a hardware failure, a user backup of the SED AK is required. For customer security, Lenovo does not keep a copy of the SED AK. Data loss could occur if the SED AK backup is not available after hardware repair.
Customers have to assign a unique password to the SED AK backup file; the password needs at least nine characters.



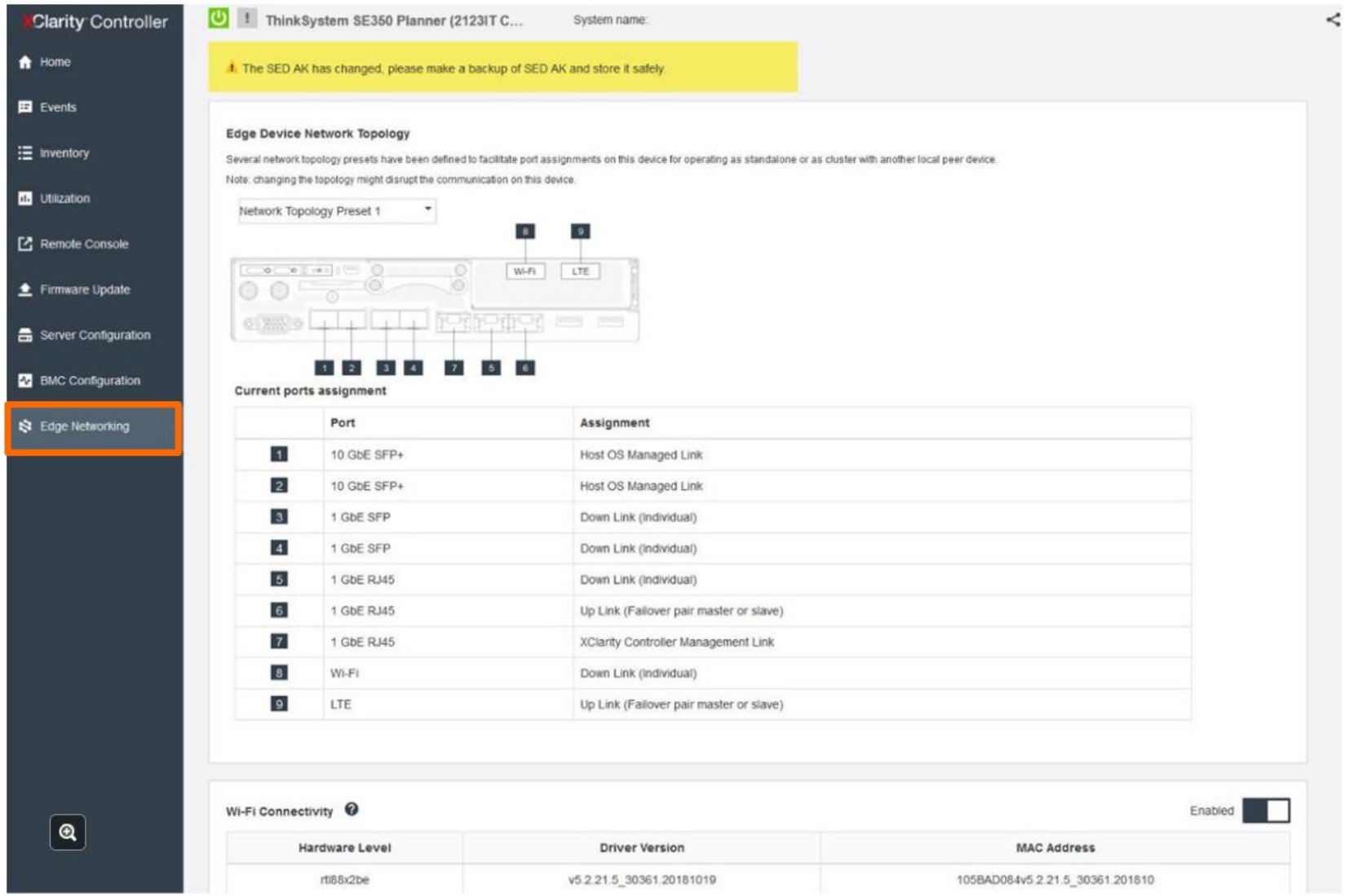
Recover the SED AK

The SED authentication key can be imported from an external file. Select the file that contains the SED authentication key you wish to recover. You will need to provide the password you specified when the SED authentication key was exported.



Edge Networking setting

The Edge Networking setting in XCC is only available for the Wireless-enabled LOM package model. Users can set up their network topology and WiFi/LTE connection in this section.



Edge device network topology settings

A network topology is the arrangement of nodes and their connections within a network. The system will reset the network settings of ports to default after a user changes their network topology.
Several network topology presets have been defined to facilitate port assignments on this device for operation as a standalone system or as a cluster with another local peer device. Five types of network topology are available. Click the preset buttons for more details.

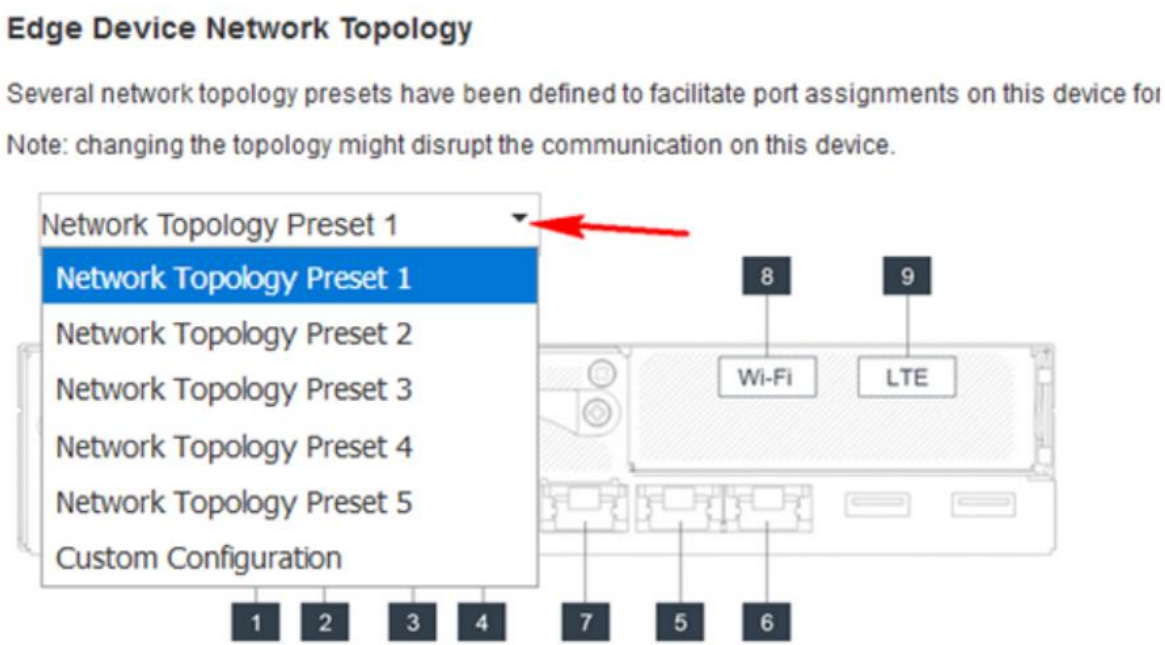
Preset 1

Preset 2

Preset 3

Preset 4

Preset 5



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Preset 1

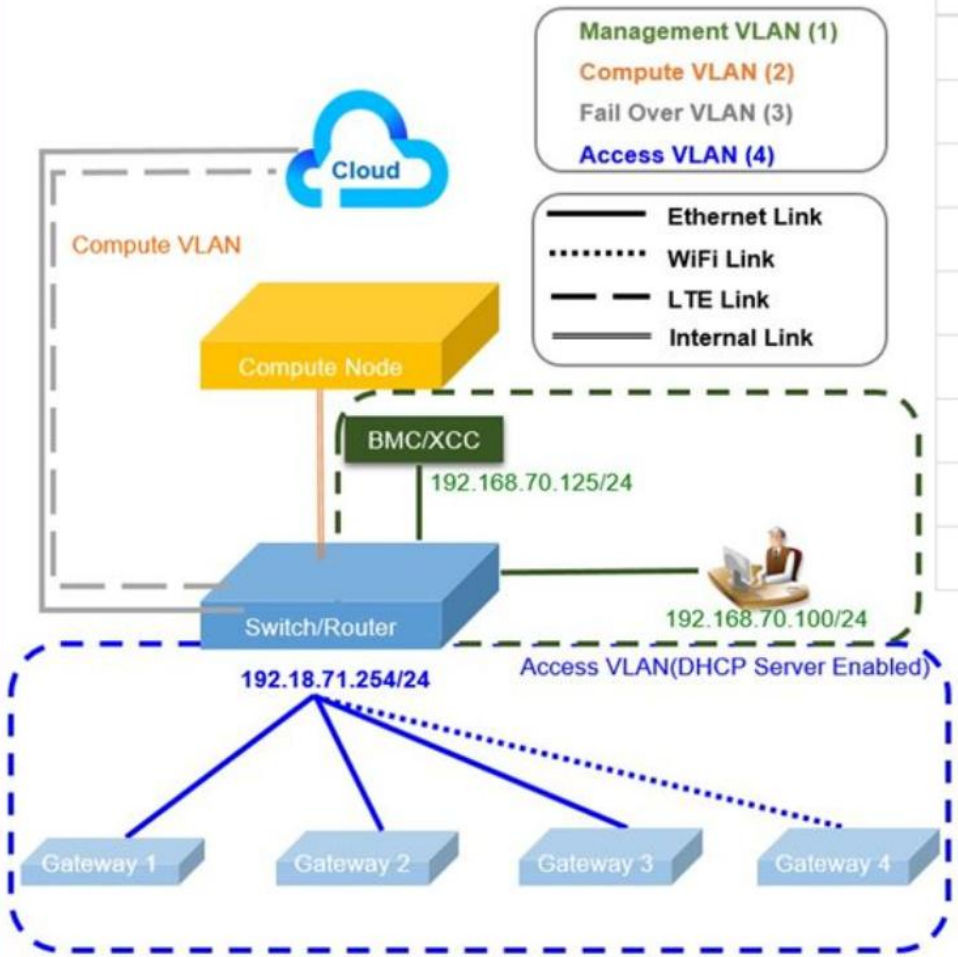
Preset 2

Preset 3

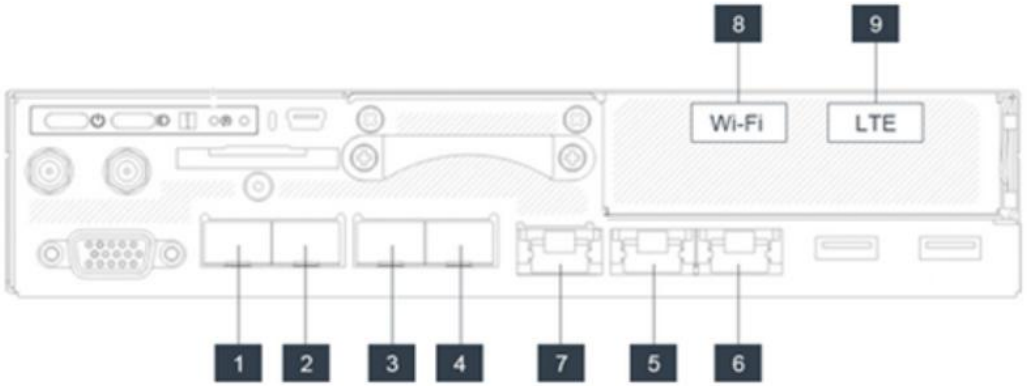
Preset 4

Preset 5

Preset 1 is the default configuration, and it provides maximum access links to the IOT gateway.



	Port	Assignment
1	10 GbE SFP+	Host OS Managed Link
2	10 GbE SFP+	Host OS Managed Link
3	1 GbE SFP	Down Link (Individual)
4	1 GbE SFP	Down Link (Individual)
5	1 GbE RJ45	Down Link (Individual)
6	1 GbE RJ45	Up Link (Failover pair master or slave)
7	1 GbE RJ45	XClarity Controller Management Link
8	Wi-Fi	Down Link (Individual)
9	LTE	Up Link (Failover pair master or slave)



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Preset 1

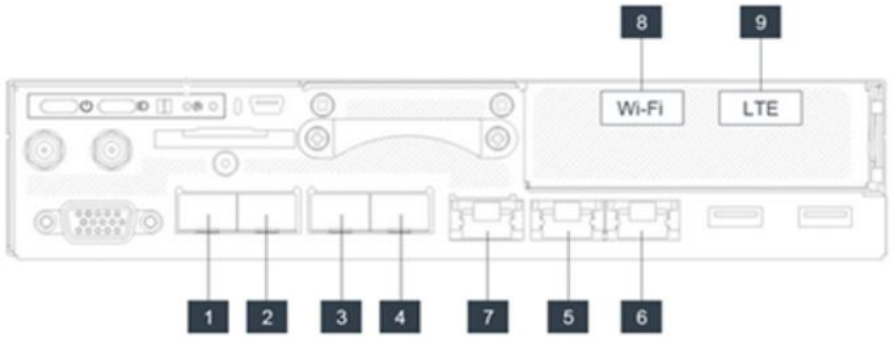
Preset 2

Preset 3

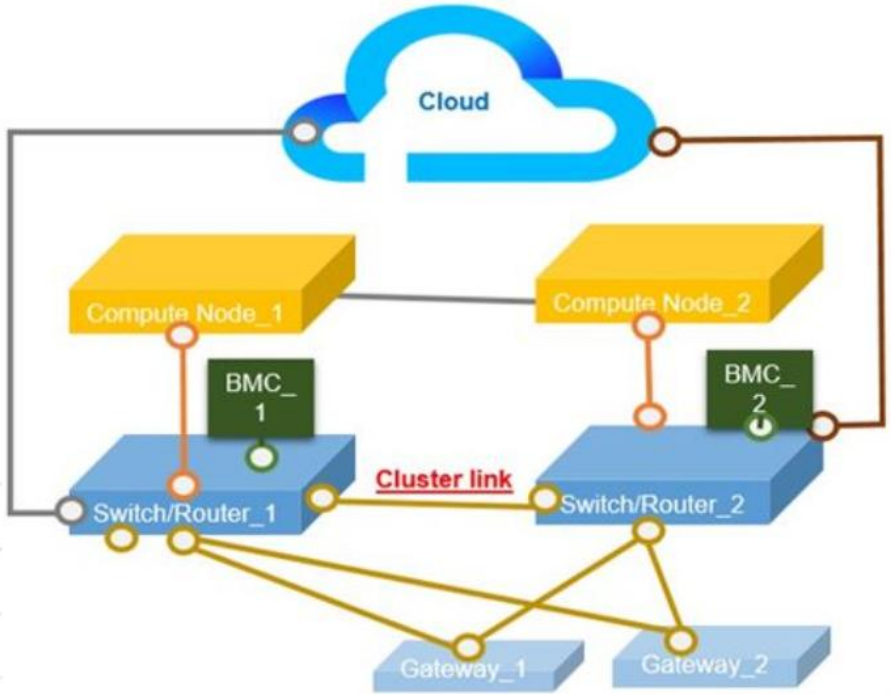
Preset 4

Preset 5

Preset 2 is used when two SE350s are connected for redundancy in cluster mode.
Note that Port 3 is assigned as the cluster port in this setting.



VLAN_Cloud_1
VLAN_Cloud_2
VLAN_BMC
VLAN_X86
VLAN_Edge



	Port	Assignment
1	10 GbE SFP+	Host OS Managed Link
2	10 GbE SFP+	Host OS Managed Link
3	1 GbE SFP	Cluster Port
4	1 GbE SFP	Down Link (Individual)
5	1 GbE RJ45	Down Link (Individual)
6	1 GbE RJ45	Up Link (Failover pair master or slave)
7	1 GbE RJ45	XClarity Controller Management Link
8	Wi-Fi	Down Link (Individual)
9	LTE	Up Link (Failover pair master or slave)

Lenovo

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Preset 1

Preset 2

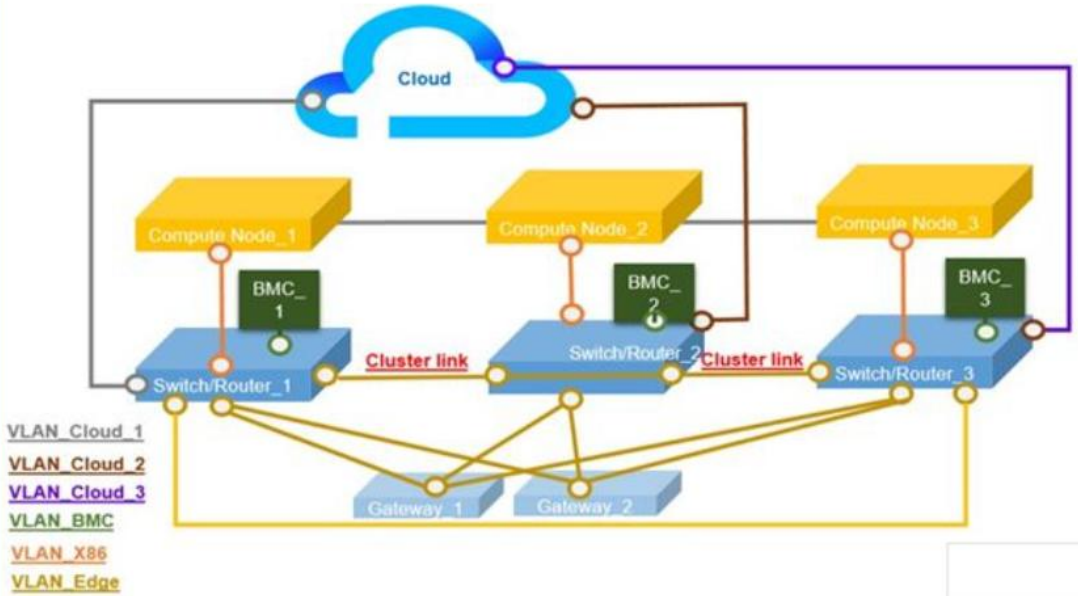
Preset 3

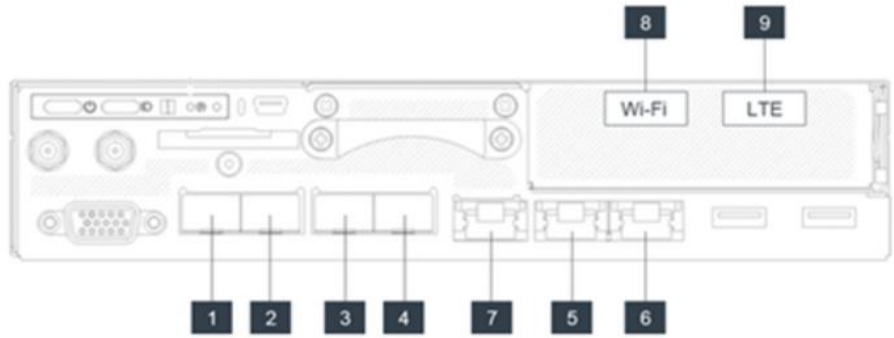
Preset 4

Preset 5

Lenovo

Preset 3 is used when three SE350s are connected for redundancy in cluster mode.
Note that Ports 3 and 4 are assigned as cluster ports in this setting.





	Port	Assignment
1	10 GbE SFP+	Host OS Managed Link
2	10 GbE SFP+	Host OS Managed Link
3	1 GbE SFP	Cluster Port
4	1 GbE SFP	Cluster Port
5	1 GbE RJ45	Down Link (Individual)
6	1 GbE RJ45	Up Link (Failover pair master or slave)
7	1 GbE RJ45	XClarity Controller Management Link
8	Wi-Fi	Down Link (Individual)
9	LTE	Up Link (Failover pair master or slave)

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Preset 1

Preset 2

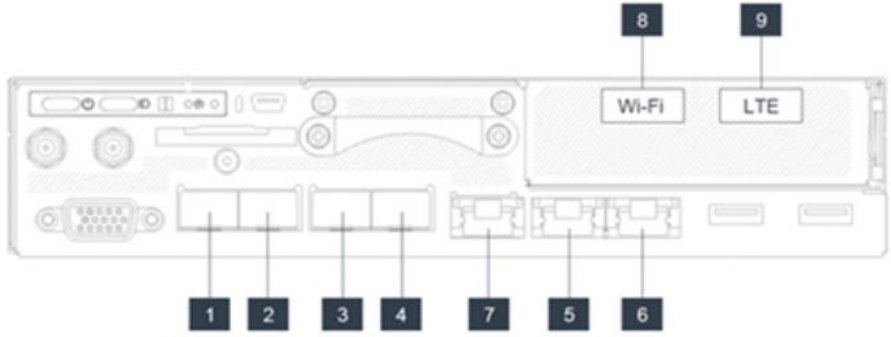
Preset 3

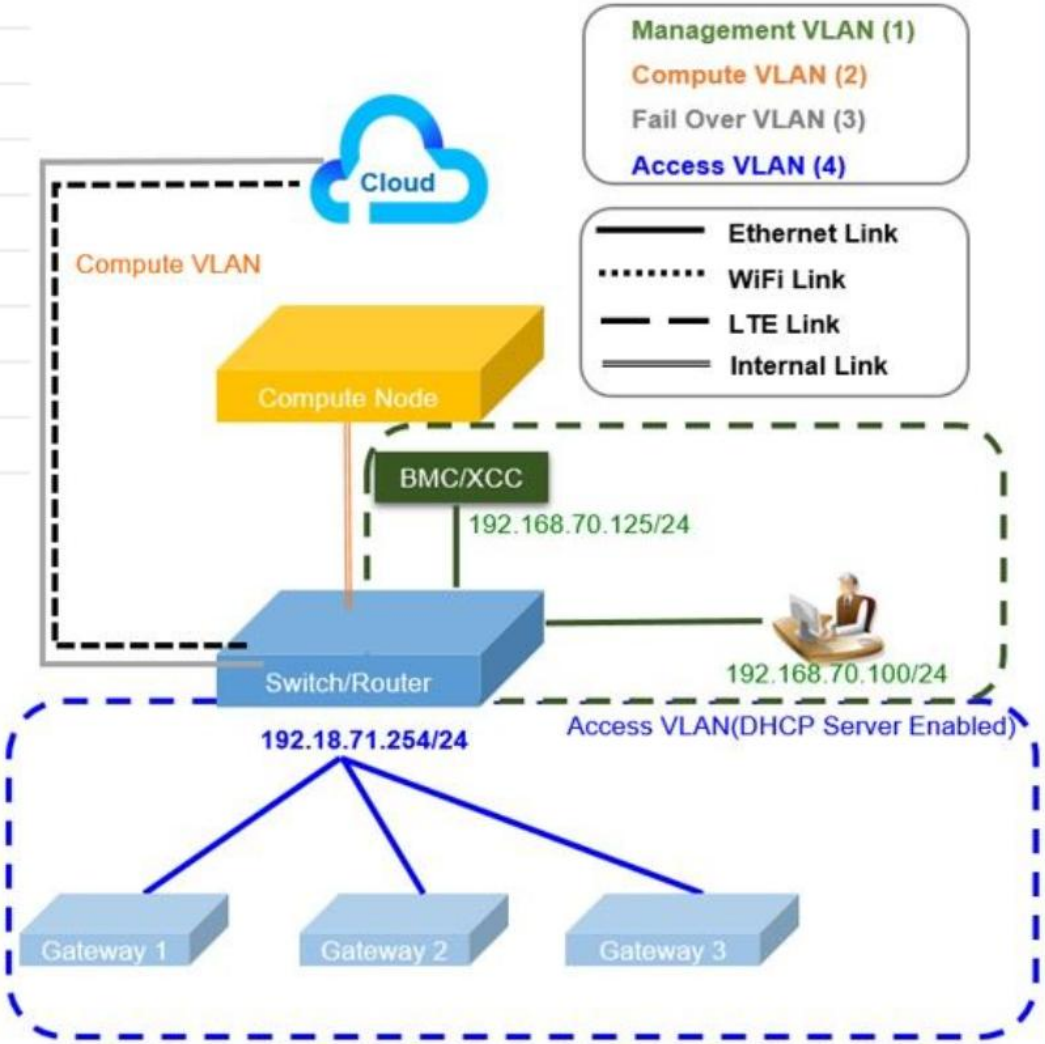
Preset 4

Preset 5

With Preset 4, Port 8 is configured as an uplink failover.

	Port	Assignment
1	10 GbE SFP+	Host OS Managed Link
2	10 GbE SFP+	Host OS Managed Link
3	1 GbE SFP	Down Link (Individual)
4	1 GbE SFP	Down Link (Individual)
5	1 GbE RJ45	Down Link (Individual)
6	1 GbE RJ45	Up Link (Failover pair master or slave)
7	1 GbE RJ45	XClarity Controller Management Link
8	Wi-Fi	Up Link (Failover pair master or slave)
9	LTE	Up Link (Failover pair master or slave)





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Preset 1

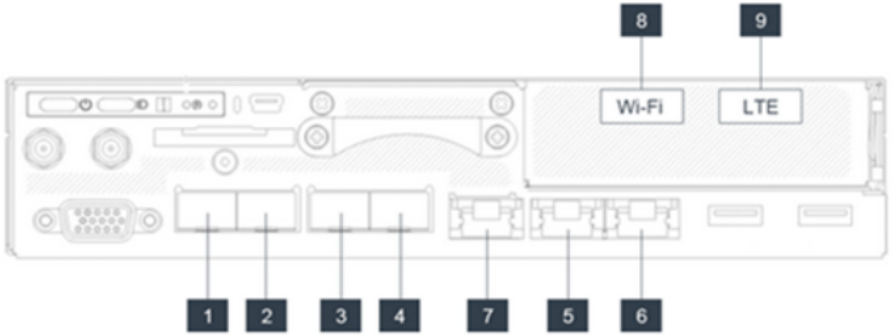
Preset 2

Preset 3

Preset 4

Preset 5

Preset 5 is used to change the assignment of Ports 3 to 6 and Port 8. Ports 3 to 6 are given the Plate assignment (like a layer 2 switch that only forwards frames in a LAN).



	Port	Assignment
1	10 GbE SFP+	Host OS Managed Link
2	10 GbE SFP+	Host OS Managed Link
3	1 GbE SFP	Plate
4	1 GbE SFP	Plate
5	1 GbE RJ45	Plate
6	1 GbE RJ45	Plate
7	1 GbE RJ45	XClarity Controller Management Link
8	Wi-Fi	User Configuration
9	LTE	Up Link (Failover pair master or slave)

Lenovo

Wi-Fi connectivity

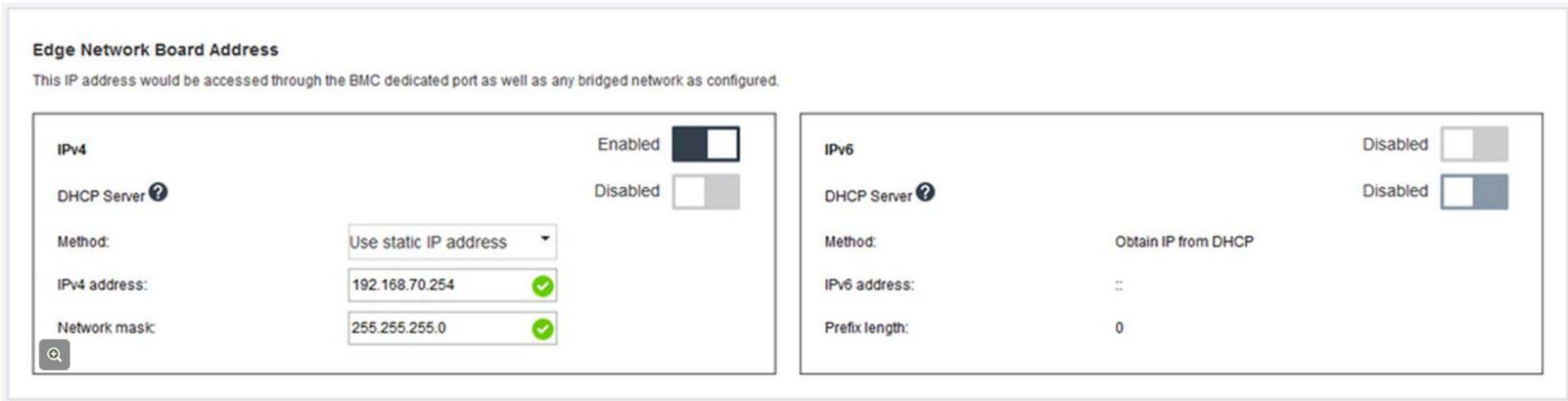
This feature uses the BMC to configure Wi-Fi credentials for the Edge network board. Users can choose between Access Point and Client methods, and they must also enter the SSID and WPA password. The information is stored securely in the BMC.

LTE connectivity

This feature allows users to enable or disable LTE connectivity for the Edge network board.

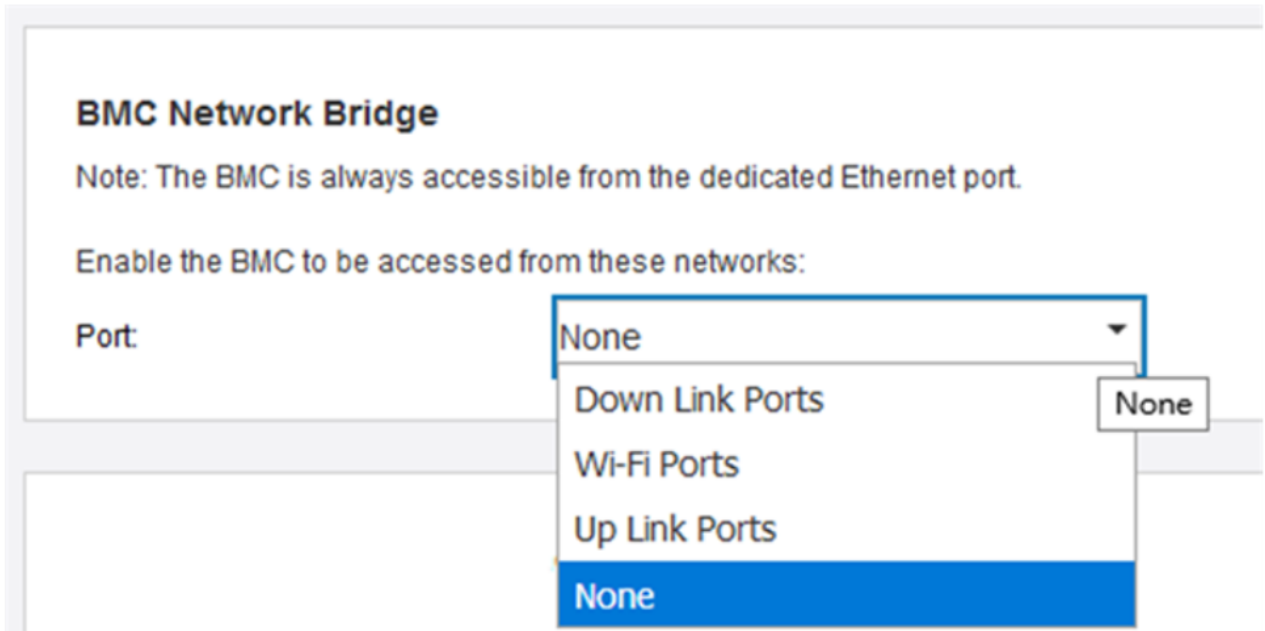
Edge network board address

This feature allows users to configure the IPv4 and IPv6 addresses of the Edge network board.



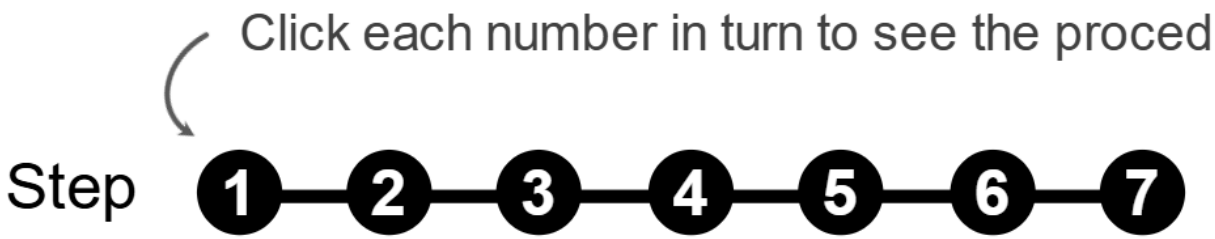
BMC network bridge

The BMC network bridge allows users to select the outbound interface to access the BMC management port. There are four options as shown below. The default option is **None**, which means that only the dedicated RJ45 port can access the XCC interface.



BMC network bridge configuration – example

The following steps show you how to configure BMC access through the Wi-Fi network.



Lenovo

BMC network bridge configuration – example

Assuming it is a new SE350, leave all the configurations in their default settings.

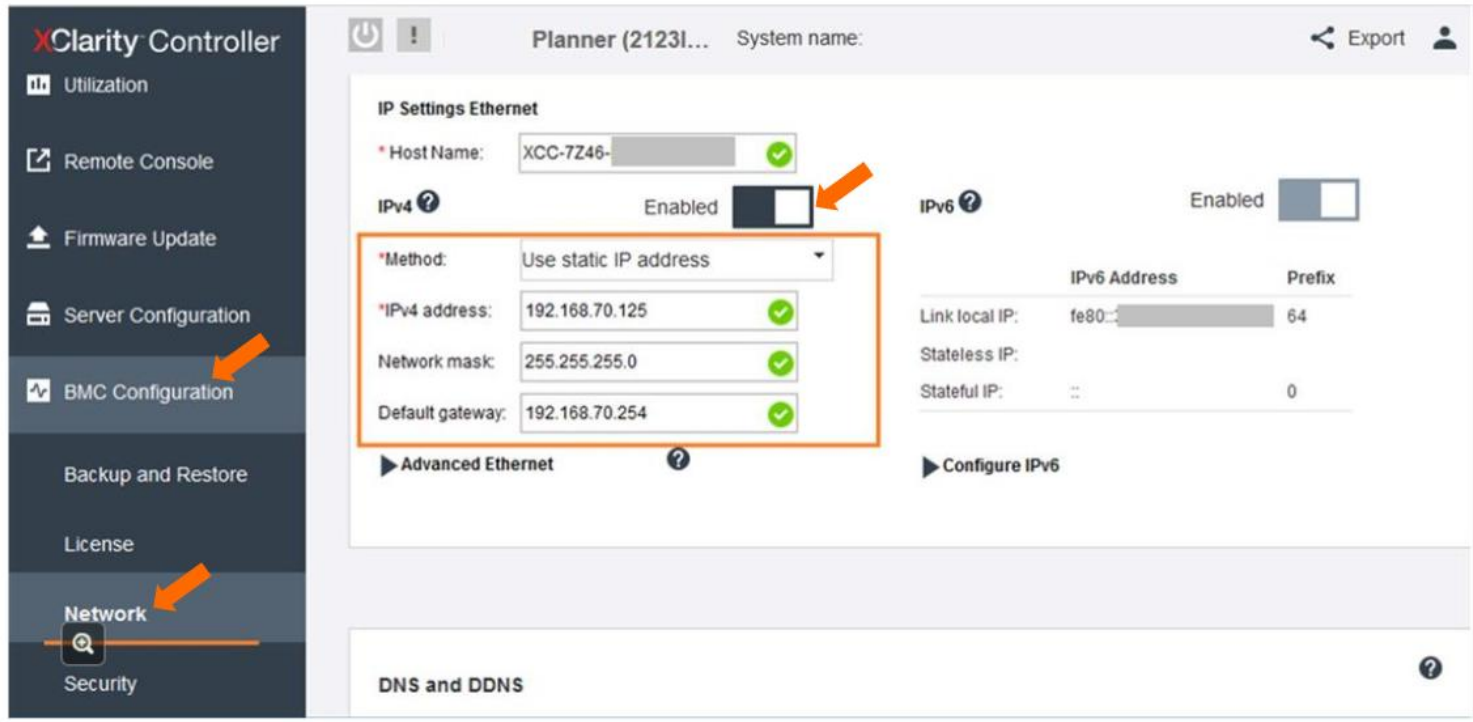
- Connect the RJ45 network cable to the SE350 XCC MGMT port and to your laptop.
- Open the XCC Web page in a Web browser and log in with the default XCC IP address and credentials:
  - Default XCC IP: 192.168.70.125
  - Username: USERID
  - Password: PASSW0RD (0 = Zero)

Note: You will be asked to change the default BMC password after logging in for the first time.

Step 1 2 3 4 5 6 7

BMC network bridge configuration – example

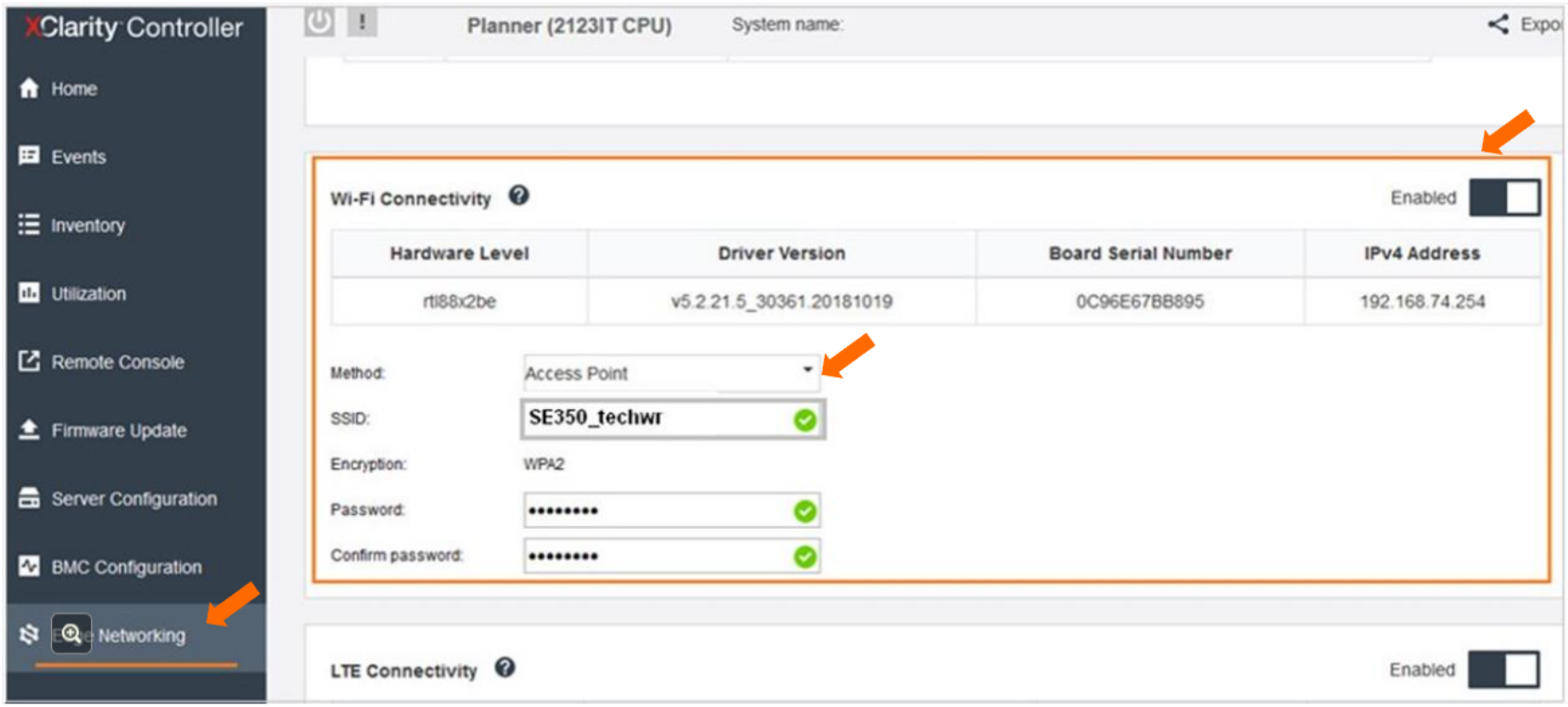
- Set up the XCC IPv4 configuration.
- From the XCC Web GUI, select **BMC Configuration → Network**.
  - **Method:** select **Use static IP address**
  - **Network mask:** customer preferences
  - **Default gateway:** customer preferences



Step 1 2 3 4 5 6 7

BMC network bridge configuration – example

- Set up the Wi-Fi connectivity configuration.
- From the XCC Web GUI, select **Edge Networking → Wi-Fi Connectivity**.
  - Select **Enabled**
  - **Method:** select **Access Point**
  - **SSID:** your own SSID
  - **Password:** your own password

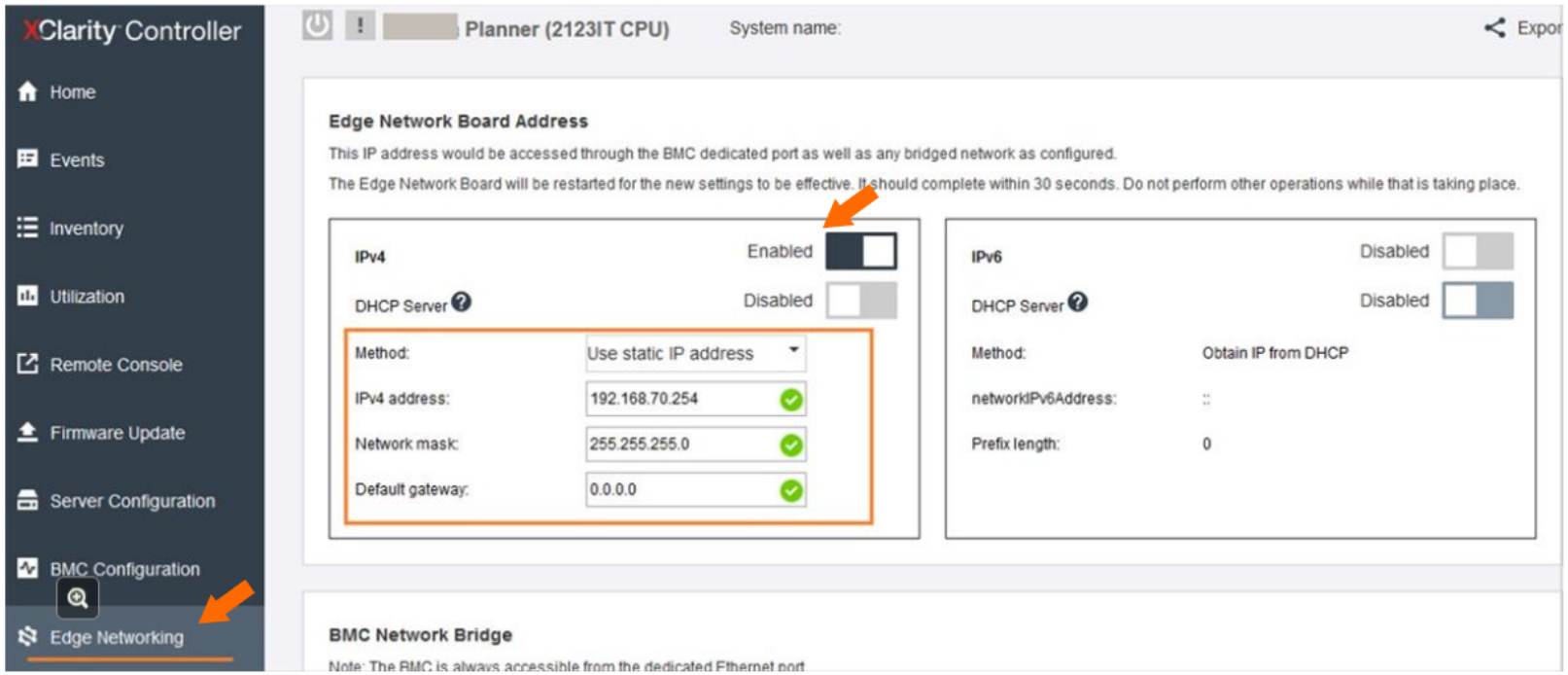


Step 1 2 3 4 5 6 7

Lenovo

BMC network bridge configuration – example

- Set up the Edge network board address.
- From the XCC Web GUI, select **Edge Networking → Edge Network Board Address**.
  - **IPv4:** select **Enabled**
  - **Method:** select **Use static IP address**
  - **IPv4 address:** your own
  - **Network mask:** your own
  - **Default gateway**: your own

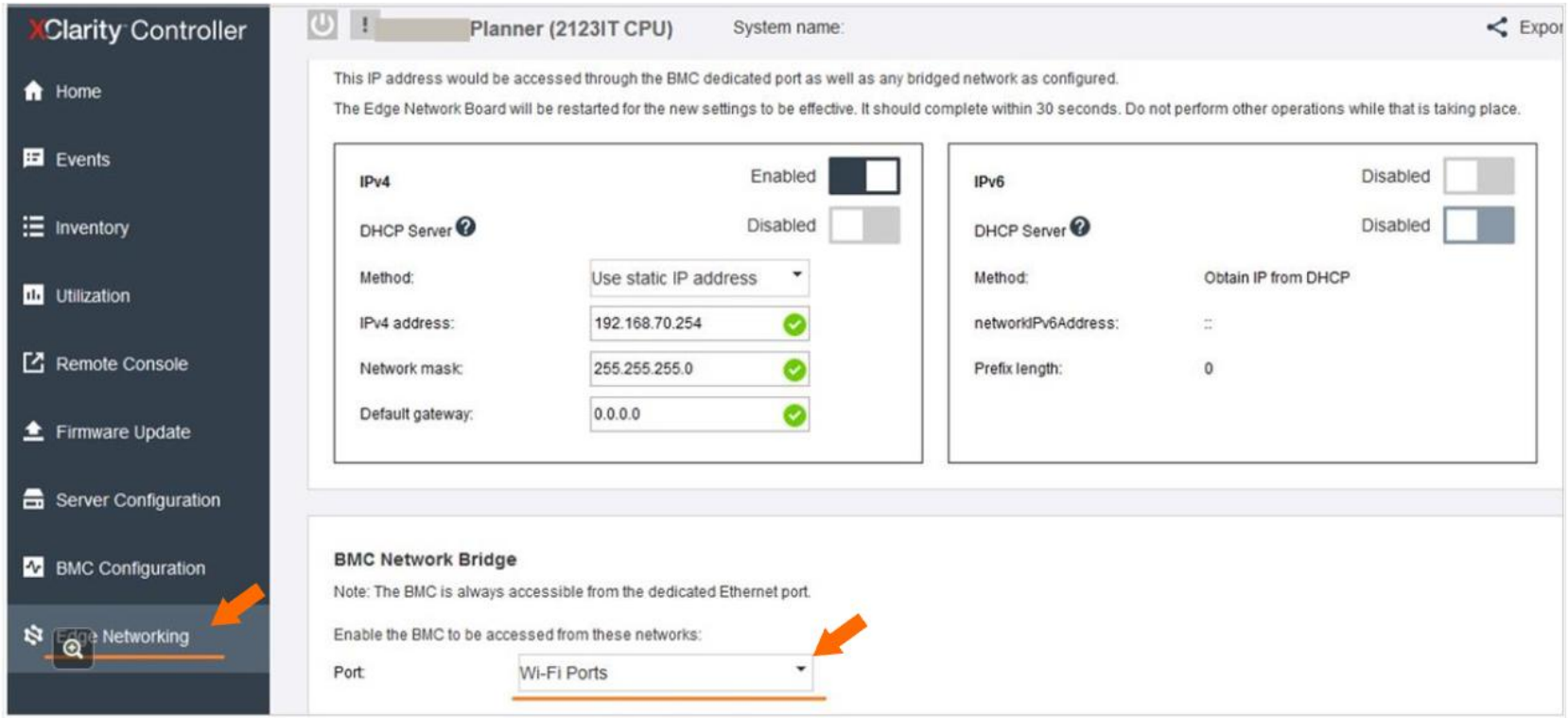


Step 1 2 3 4 5 6 7

Lenovo

BMC network bridge configuration – example

- Set up the BMC network bridge configuration.
- From the XCC Web GUI, select **Edge Networking → BMC Network Bride**.
  - **Port: Wi-Fi Ports**

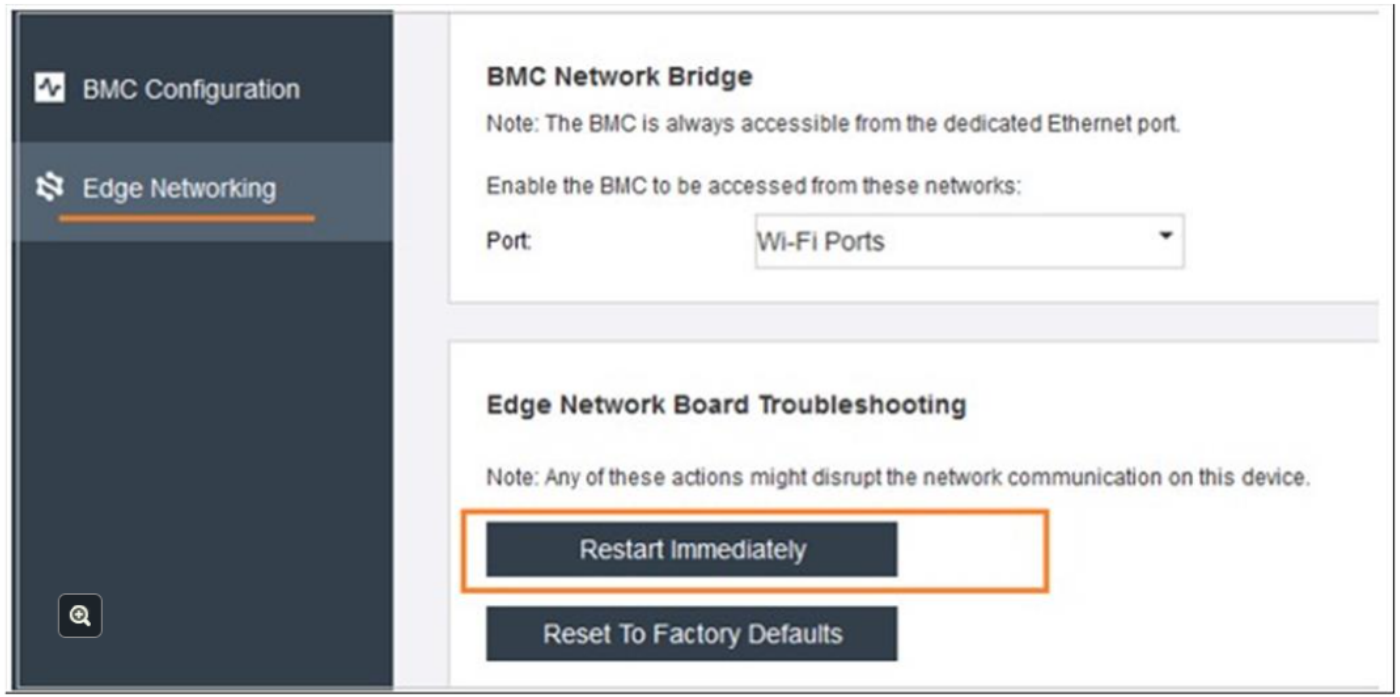


Step 1 2 3 4 5 6 7

BMC network bridge configuration – example

Activate the new settings.

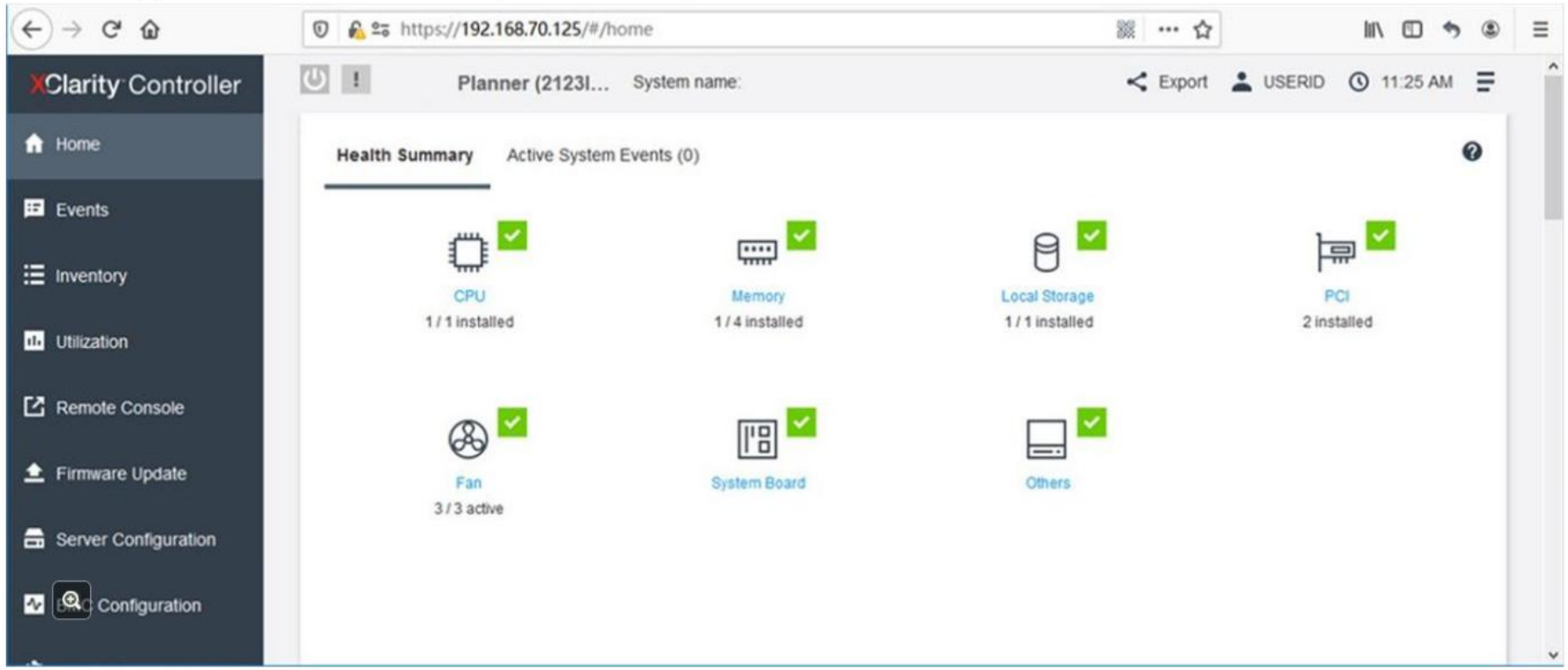
- From the XCC Web GUI, select **Edge Networking → Edge Network Board Troubleshooting → Restart Immediately**
- Wait for one to two minutes and then connect to the SE350's Wi-Fi access point. The SSID should have the name entered during step 3.



Step 1 2 3 4 5 6 7

BMC network bridge configuration – example

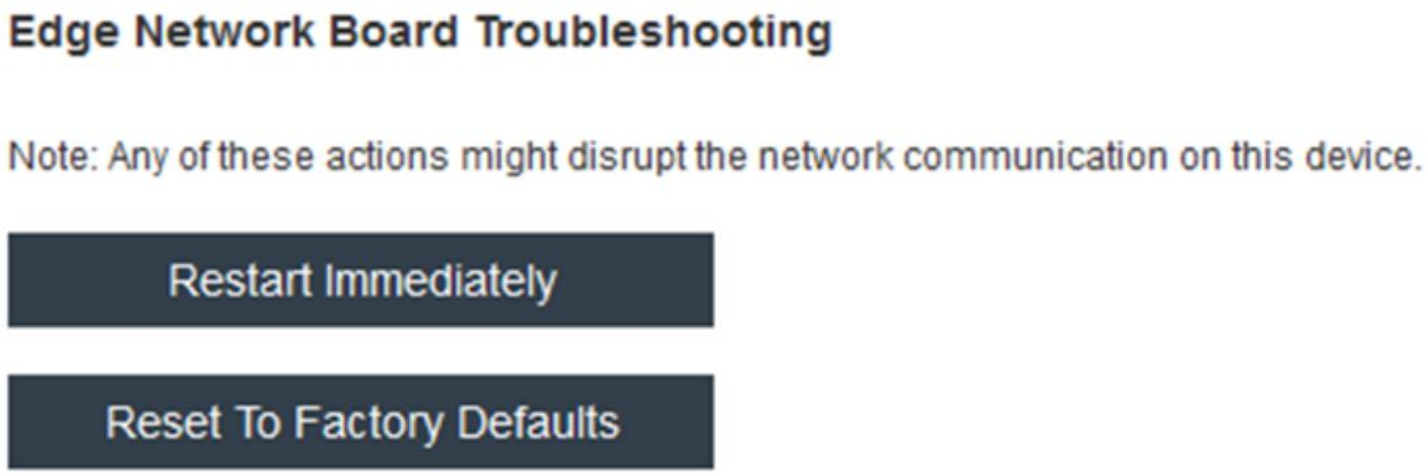
Using the PC or laptop connected to the SE350 Wi-Fi access point, open the XCC Web page in a Web browser with the correct XCC IP address. (In this example, it's 192.168.70.125.) The XCC home page will open if the configuration was set up correctly.



Step 1 2 3 4 5 6 7

Edge network board troubleshooting

Users can restart or reset the Edge network board when an error occurs.



Note: For more information about the edge network setting on the ThinkSystem SE350 edge server, refer to the **WLAN client Configuration** section on the Lenovo Info Center.