

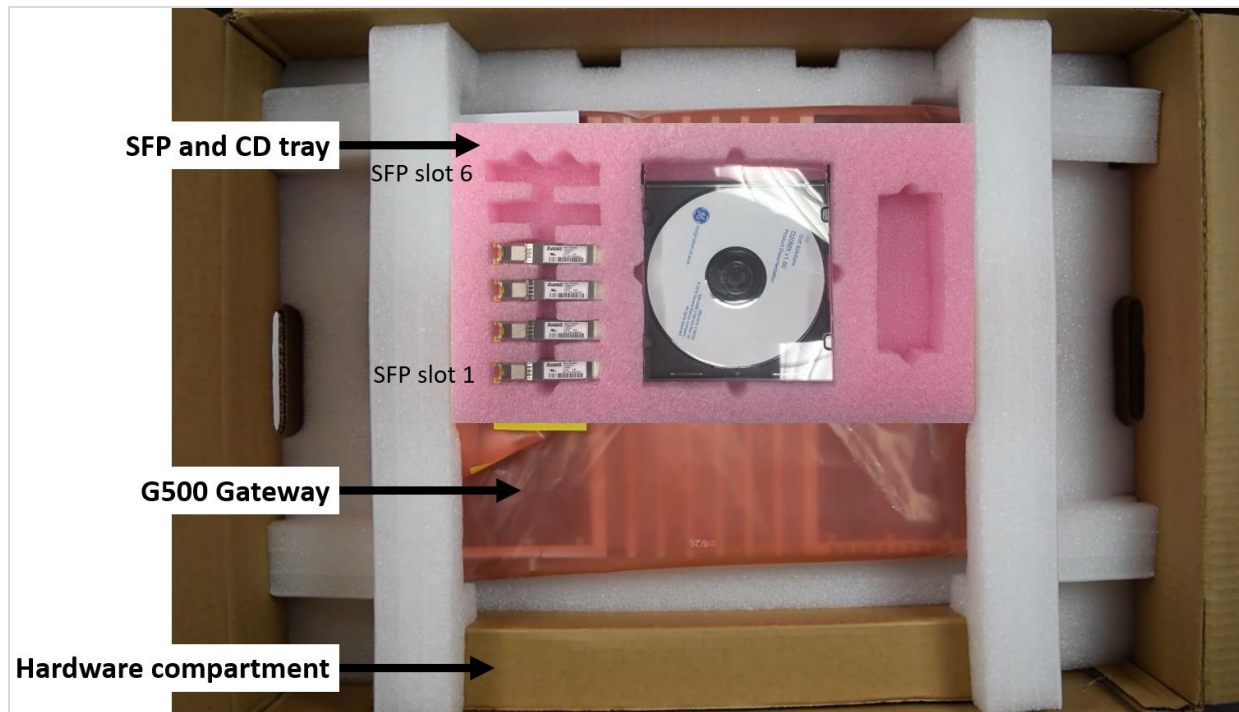
G500 Substation Gateway

Quick Start Guide

This document applies to G500 v4.00.

Please refer to previous versions of this document for previous G500 releases.

What's in the Box?



Your kit includes the following:

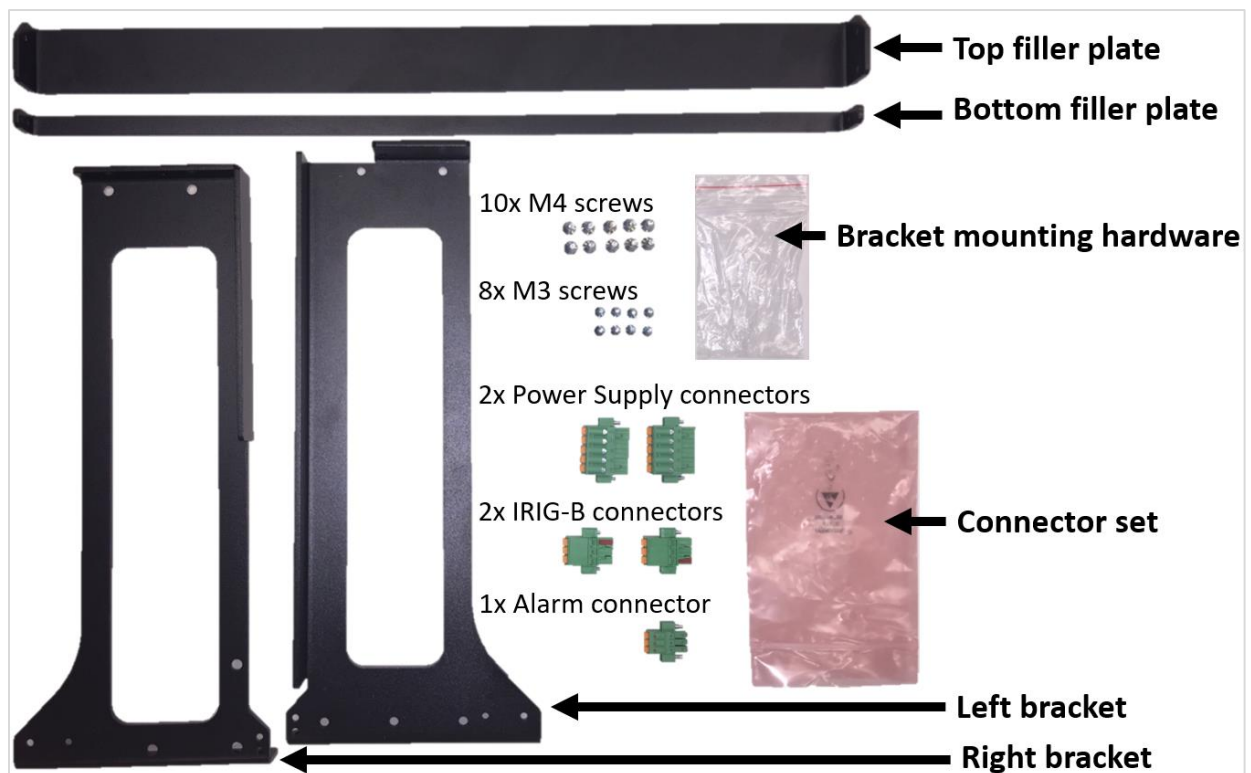
- G500 Substation Gateway
- SFP and CD tray
- Hardware Compartment



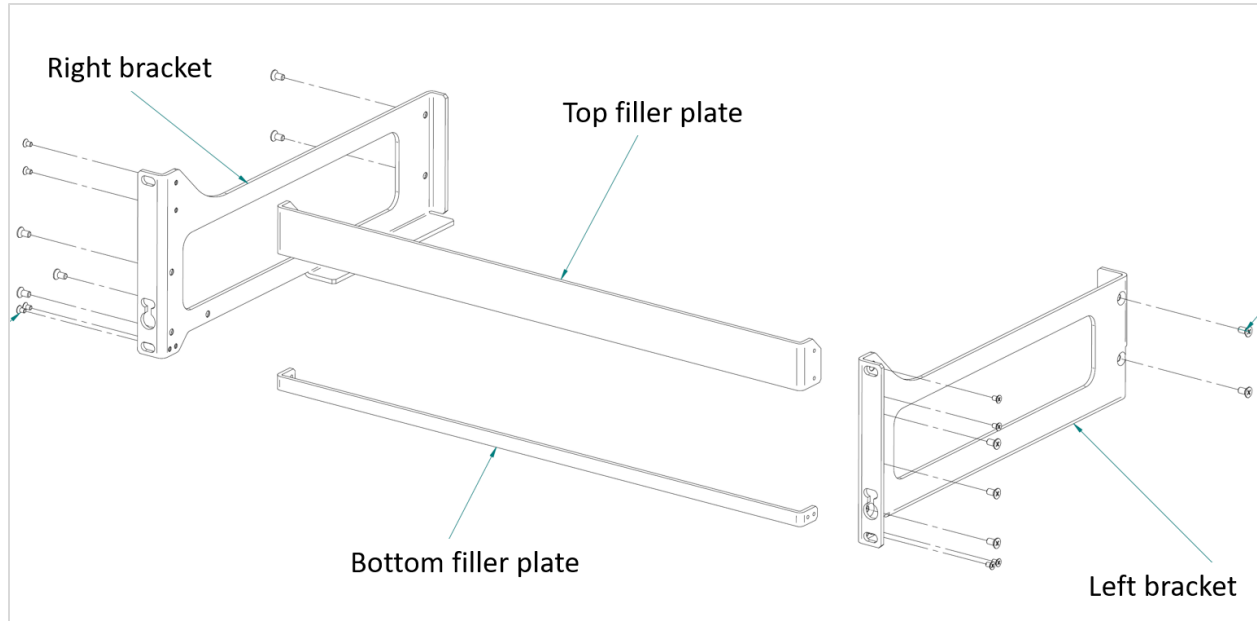
Hardware Compartment

The hardware compartment is a single package which contains:

- Mounting Bracket Kit : Top filler plate
Bottom filler plate
Left bracket
Right bracket
- Bracket mounting hardware : M4 screws (quantity 10)
M3 screws (quantity 8)
- Connector set : Power supply connectors (quantity – 2)
IRIG-B connectors (quantity – 2)
Alarm connector (quantity – 1)



The rack mounting kit includes 4 metal pieces (left bracket, right bracket, top filler plate and the bottom filler plate) along with M4 (quantity 10) and M3 (quantity 8) screws. The M4 screws are used to attach the left and right bracket to the G500 chassis and the M3 screws are used to secure the top and bottom filler plates to the brackets.

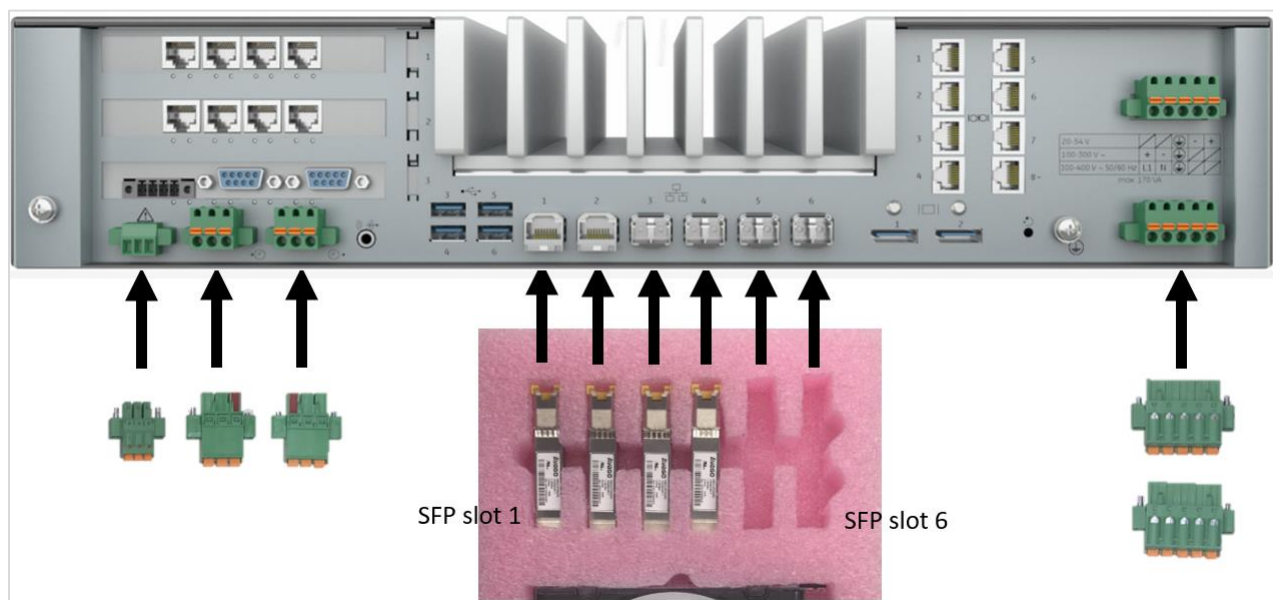


The SFP's are inserted in the tray in the same order as the cages are labeled on the rear of the G500 chassis.

NOTE: The single notch in the tray corresponds to the SFP cage labeled 1.

The Hardware compartment also includes the Connector set which includes two power supply connectors, one Alarm connector, one IRIG-B input and output connectors.

NOTE: The IRIG-B input and output connectors are keyed and can only be installed in the corresponding position.



Missing Something?

Contact [GE Vernova Customer Service](#) right away and we'll figure it out. Be sure to include your order number and mail address associated with your order.

Prerequisites

- DS-Agile Studio's MCP Studio
- Minimum Windows 7 x64, 10 x64 and 8GB Memory required for DS Agile MCP Studio

G500 Interface Options

The following connection/interface options are available after G500 first powers up.

- Local KVM (Keyboard, Video, Mouse)
- Front Ethernet port – Default IP address 192.168.168.81
- Front USB Serial port with a baud rate 115200

Setup & Configuration Tools

The following setup & configuration tools are available for the G500.

1. **DS Agile MCP Studio** Offline & Online Editor : To configure the Gateway & SCADA Configuration.
2. **MCP Runtime HMI** (Remote/Local) : To view and control the runtime stats including One-line diagrams and to configure the G500 Settings (e.g. User Management, Automatic Login etc.).
3. **G500 Local Configuration Utility or Gateway Settings GUI** : To configure G500 system settings and perform the initial G500 setup (e.g. Users, network, serial, time sync etc.).

G500 Gateway Settings GUI

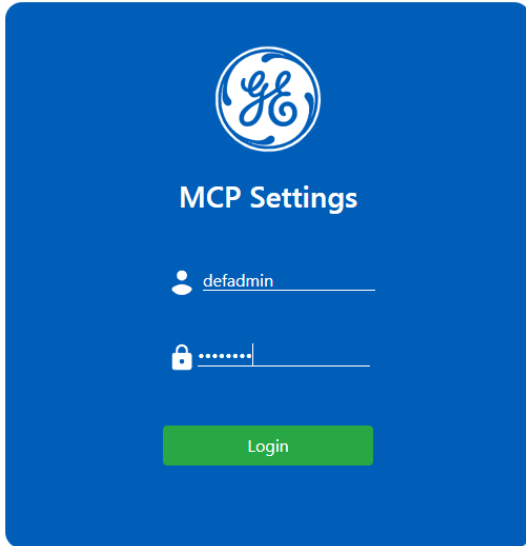
The local G500 settings, including Serial ports, Network configuration, Time settings, User management etc. are managed using the **Gateway Settings GUI**.

You can access MCP Settings Web Interface through Local or Remote G500 connection. Remote access must be completed using a supported web browser (Internet Explorer, Microsoft Edge, Mozilla Firefox, Google Chrome).

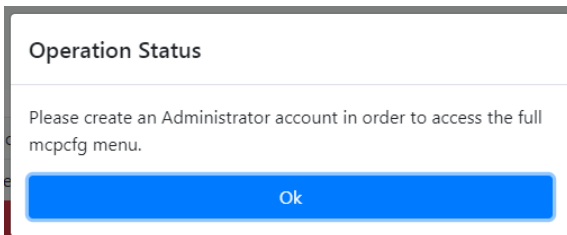
Initial Setup

NOTE: Initial Setup section is identical between Local/Remote access.

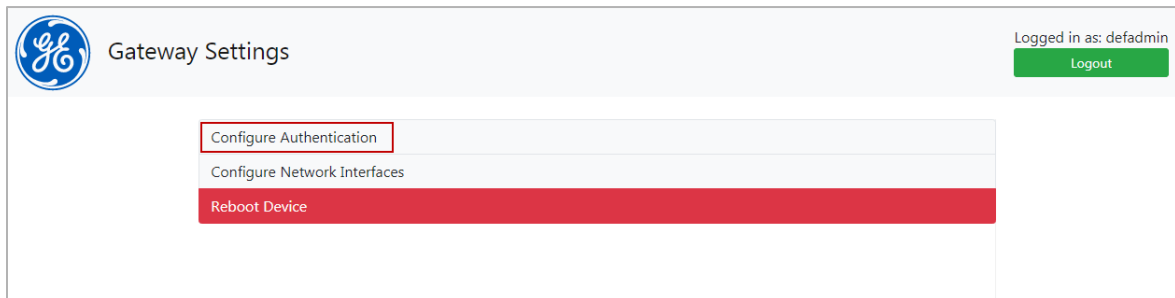
1. Enter the default **Username** (defadmin), default **Password** (defadmin) and click **Login**.

The image shows a login screen with a blue background. At the top center is the GE logo. Below it, the text "MCP Settings" is displayed. There are two input fields: the first is for the username, containing "defadmin", and the second is for the password, containing "defadmin". Below the password field is a green "Login" button.

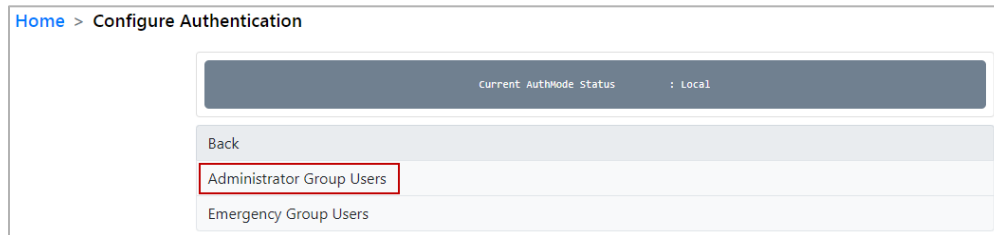
2. If the **defadmin** account is used to login, you will be prompted to create an **Administrator** account to access the full Settings GUI menu. Click **OK**.

The image shows a dialog box titled "Operation Status". The text inside says "Please create an Administrator account in order to access the full mcpcfg menu." At the bottom of the dialog is a blue "Ok" button.

3. The **Gateway Settings** main menu appears.
Select the **Configure Authentication** tab from the main menu.

The image shows the "Gateway Settings" main menu. At the top left is the GE logo and the text "Gateway Settings". At the top right, it says "Logged in as: defadmin" with a green "Logout" button. Below this is a list of three menu items: "Configure Authentication" (highlighted with a red border), "Configure Network Interfaces", and "Reboot Device" (highlighted with a red background).

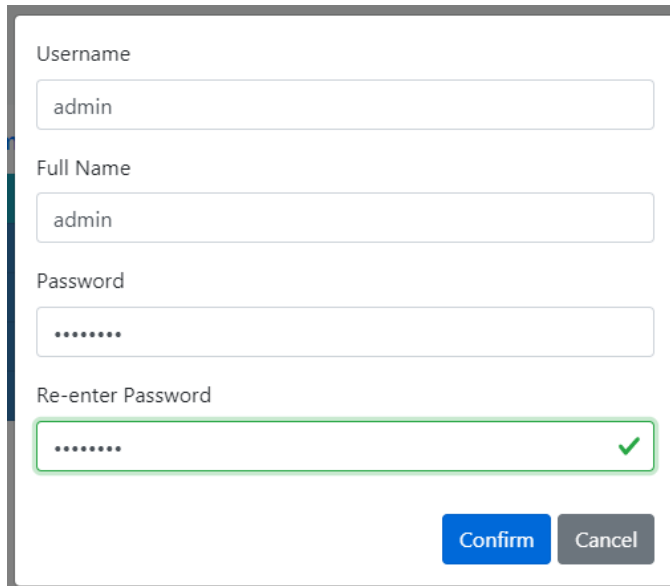
4. Select the **Administrator Group Users** tab from the **Configure Authentication** menu.



This function is used to perform the following actions:

- List Users
 - Add User
 - Change Password
 - Remove User
5. Select the **Add User** tab to create administrator-level users.
- Enter the desired **Username**, conforming to the Username rules as listed below:
 - Username must be between 2 and 31 characters
 - Username must start with a lowercase alphabetical character
 - Username must only contain [a-z] [0-9] [-, _] characters
 - Enter the **Full Name** of the User.
 - Enter the **Password**, conforming to the password security rules as listed below:
 - Password must be between 8 and 199 characters in length
 - Password must contain:
 - 1 character from [a-z]
 - 1 character from [A-Z]
 - 1 digit from [0-9]
 - 1 special character from the set [\$%@!&]

- **Re-enter Password** and click **Confirm**.

A user registration form with four input fields: Username (containing 'admin'), Full Name (containing 'admin'), Password (masked with dots), and Re-enter Password (masked with dots and a green checkmark icon on the right). At the bottom right are two buttons: 'Confirm' (blue) and 'Cancel' (grey).

Username
admin

Full Name
admin

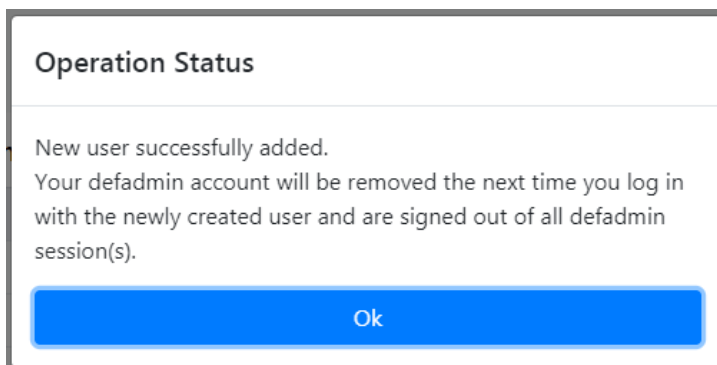
Password
.....

Re-enter Password
..... ✓

Confirm Cancel

RESULT: Pop-up window appears showing the **Operation Status**, click **OK**.

NOTE: defadmin account will be removed the next time you login with the newly-created user and are signed out of all defadmin sessions.

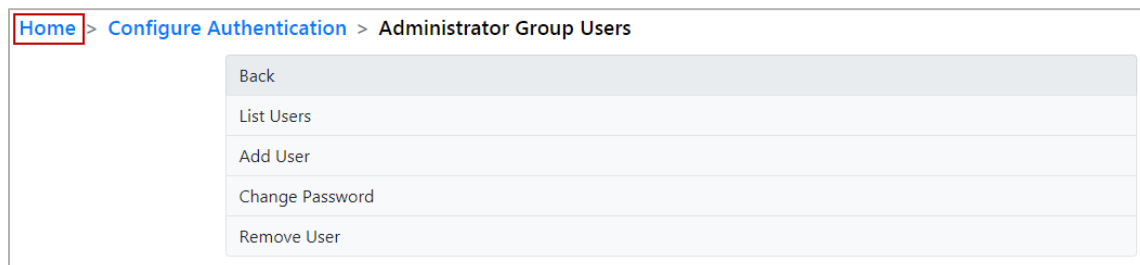
A pop-up window titled 'Operation Status'. The text inside reads: 'New user successfully added. Your defadmin account will be removed the next time you log in with the newly created user and are signed out of all defadmin session(s)'. At the bottom is a large blue button labeled 'Ok'.

Operation Status

New user successfully added.
Your defadmin account will be removed the next time you log in
with the newly created user and are signed out of all defadmin
session(s).

Ok

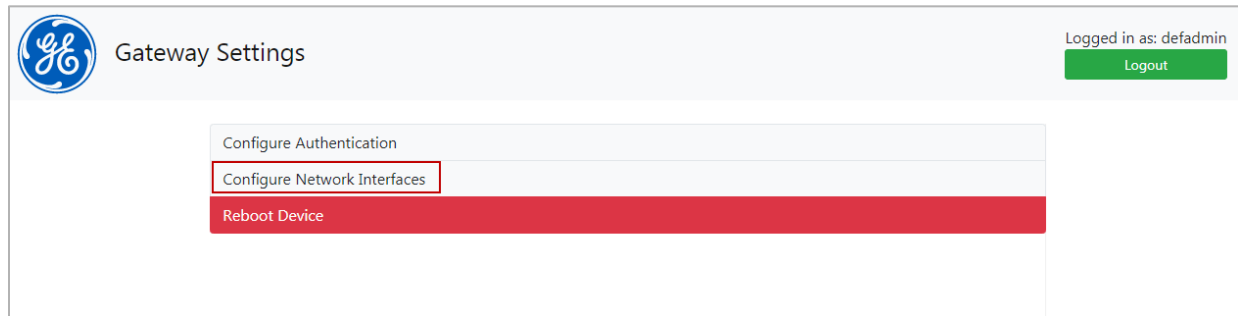
6. Navigate back to the main menu by clicking on the **HOME** link located at the upper left corner of the page.

A breadcrumb navigation bar showing 'Home' (highlighted with a red box), 'Configure Authentication', and 'Administrator Group Users'. Below it is a menu with five items: 'Back', 'List Users', 'Add User', 'Change Password', and 'Remove User'.

[Home](#) > [Configure Authentication](#) > Administrator Group Users

Back
List Users
Add User
Change Password
Remove User

7. Select the **Configure Network Interfaces** tab from the main menu.



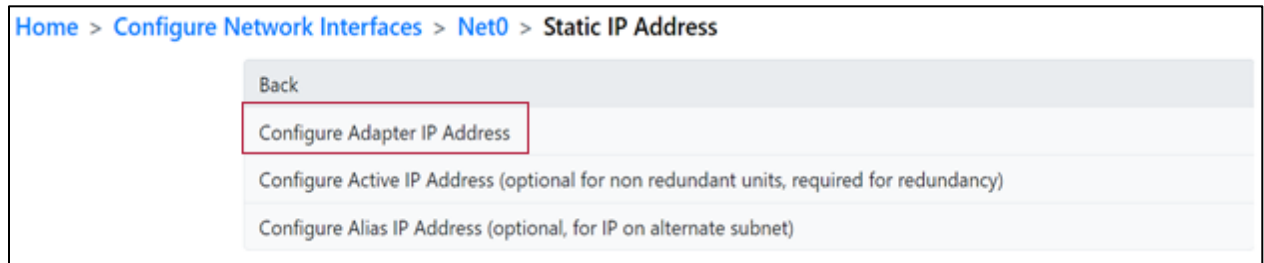
8. Select the desired network port (**default Net0/192.168.168.81**) which is connected to G500 device from the list.



9. Select the **Static IP Address** tab.



10. Select the **Configure Adapter IP Address** tab.



11. Enter **IP Address** and **Subnet Mask**. Click **Confirm**.

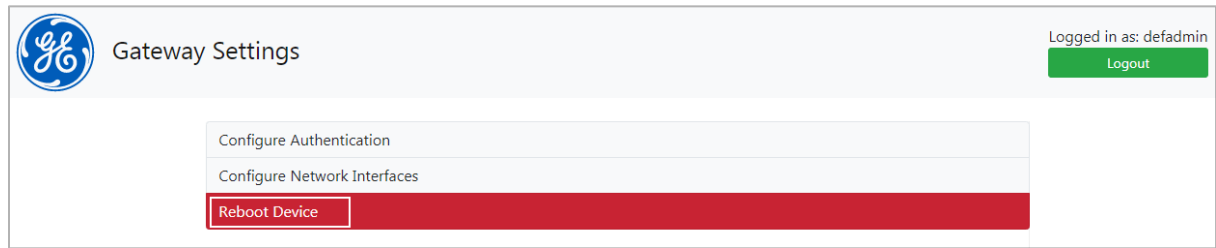
A screenshot of a form for configuring static IP settings. It contains two input fields: 'IP Address' with the value '172.12.222.222' and 'Subnet Mask' with the value '255.255.0.0'. The 'Subnet Mask' field is highlighted with a blue border. At the bottom right of the form are two buttons: 'Confirm' (in blue) and 'Cancel' (in grey).

12. Click **Yes** to confirm the newly-configured static IP settings.

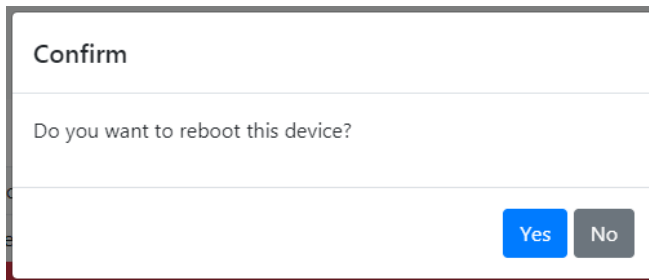
NOTE: Reboot the device for changes to take effect.

A screenshot of a 'Confirm' dialog box. The title is 'Confirm'. The text inside reads: 'Newly configured static IP settings', 'IP Address is: 172.12.222.222', 'Netmask is: 255.255.0.0', 'Broadcast Address is: 172.12.255.255', 'For these settings to take effect, reboot', and 'Do you wish to accept this?'. At the bottom right are two buttons: 'Yes' (in blue) and 'No' (in grey).

13. Navigate back to the main menu and select the **Reboot Device** tab.

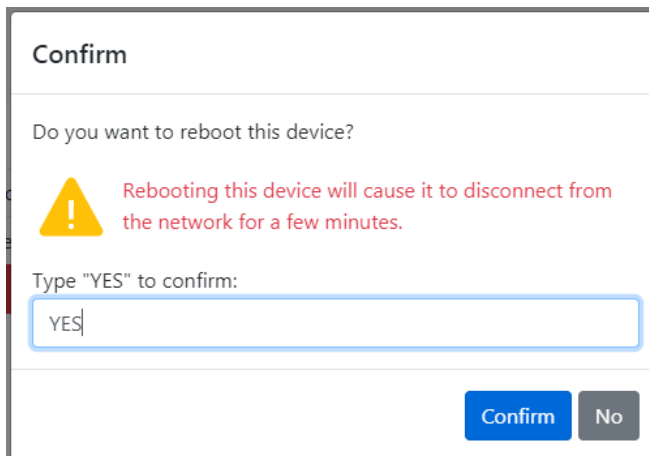


14. Click **Yes** to confirm and the device is rebooted.

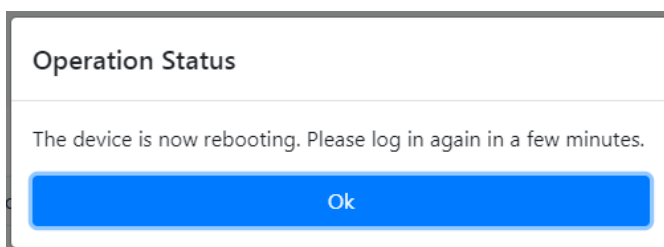


15. Type "YES" and click **Confirm**.

NOTE: Rebooting the device will cause it to disconnect from the network for a few minutes.

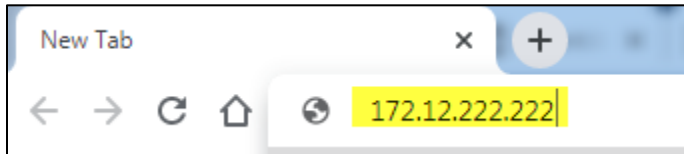


RESULT: The device reboot takes place. Click **OK**.

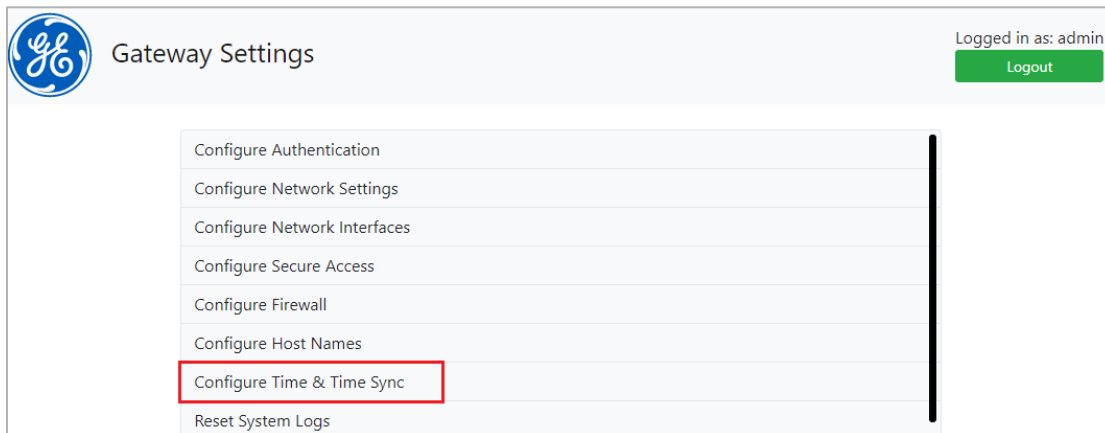


16. Upon G500 reconnect, you can access **MCP Web Interface** remotely via the newly-configured IP Address and a supported web browser. In the supported browser address bar, type in the new G500 device IP.

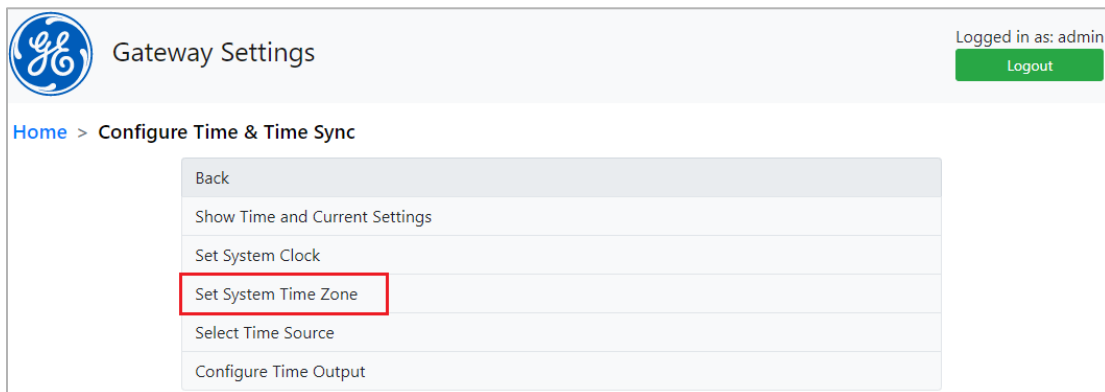
(ex.: **172.12.222.222**) as shown in figure below:



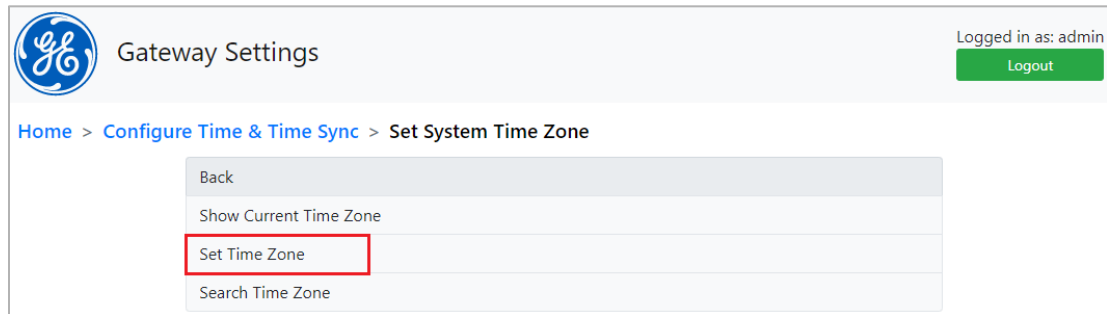
17. Press the **Enter** key and the **MCP Settings Login** page appears. Login using the newly-created admin username/password and click **Login**. Select the **Configure Time & Time Sync** tab.



18. Select the **Set System Time Zone** tab.

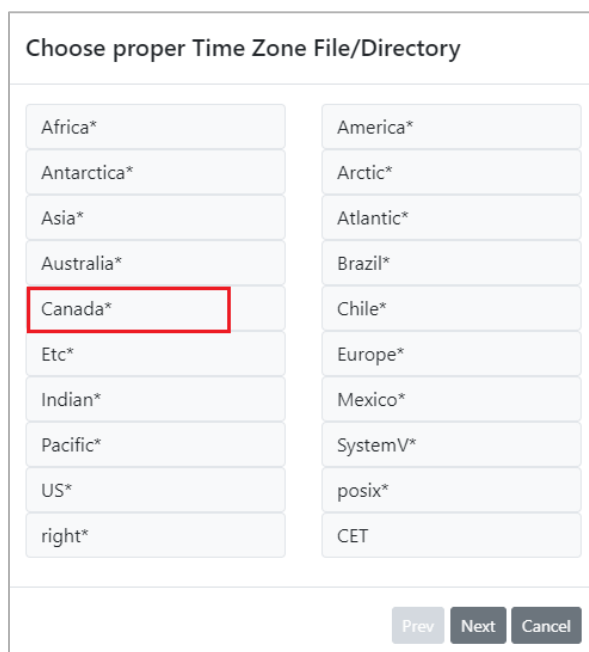


19. Select the **Set Time Zone** tab to configure the G500 to the same time zone as remote PC.



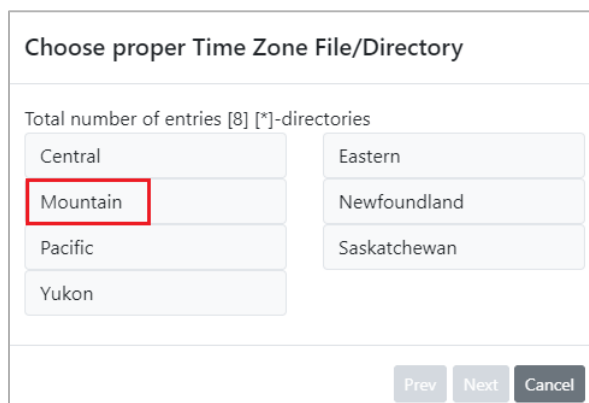
The screenshot shows the 'Gateway Settings' web interface. The top header includes the GE logo, the title 'Gateway Settings', and a 'Logout' button. The breadcrumb trail is 'Home > Configure Time & Time Sync > Set System Time Zone'. A sidebar menu on the left contains four options: 'Back', 'Show Current Time Zone', 'Set Time Zone' (which is highlighted with a red box), and 'Search Time Zone'.

20. Select the applicable time zone. User can navigate the menu using the **Prev/Next** buttons.



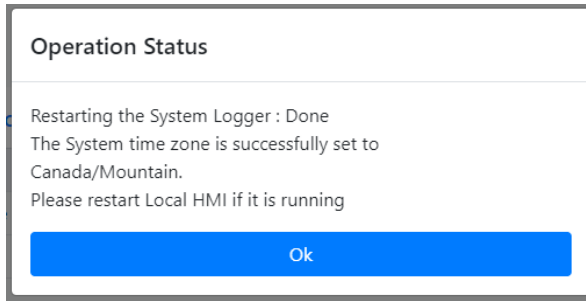
The screenshot shows a dialog box titled 'Choose proper Time Zone File/Directory'. It contains two columns of time zone options. The left column lists: Africa*, Antarctica*, Asia*, Australia*, Canada* (highlighted with a red box), Etc*, Indian*, Pacific*, US*, and right*. The right column lists: America*, Arctic*, Atlantic*, Brazil*, Chile*, Europe*, Mexico*, SystemV*, posix*, and CET. At the bottom right, there are three buttons: 'Prev', 'Next', and 'Cancel'.

21. Select the applicable region within the selected time zone.

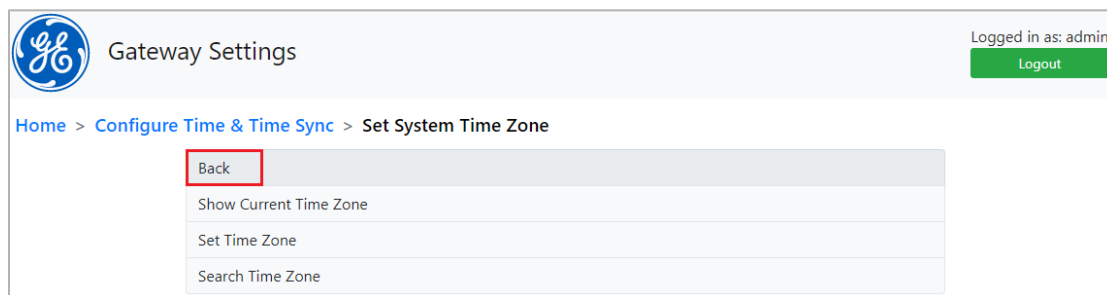


This screenshot shows the same 'Choose proper Time Zone File/Directory' dialog box, but with a different set of options. Above the list is the text 'Total number of entries [8] [*]-directories'. The left column lists regions: Central, Mountain (highlighted with a red box), Pacific, and Yukon. The right column lists: Eastern, Newfoundland, and Saskatchewan. The 'Prev', 'Next', and 'Cancel' buttons are at the bottom right.

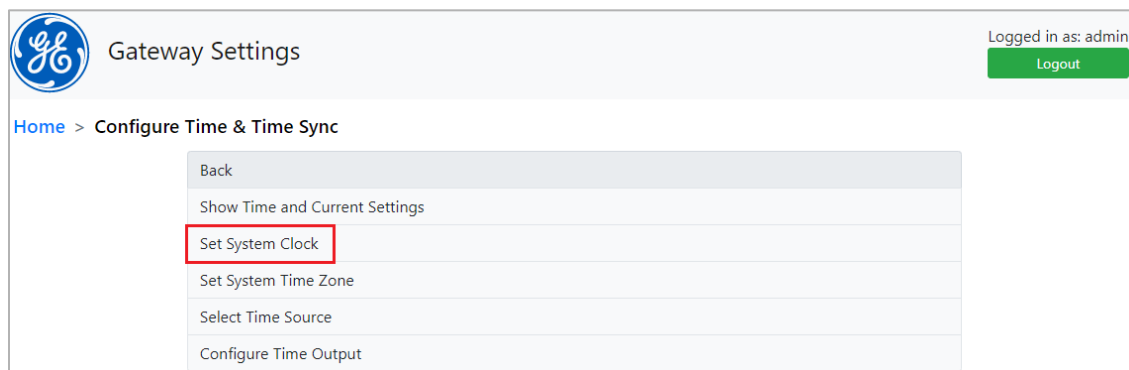
RESULT: The Operation Status dialog shows success message. Click **OK**.



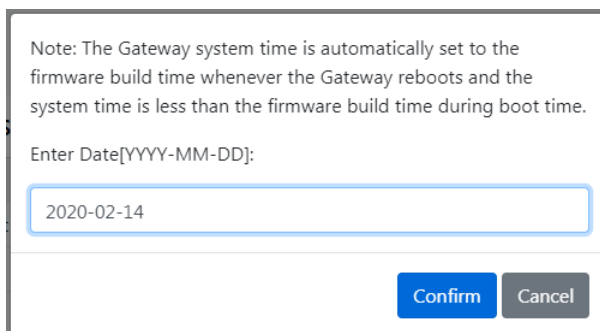
22. Select the **Back** tab.



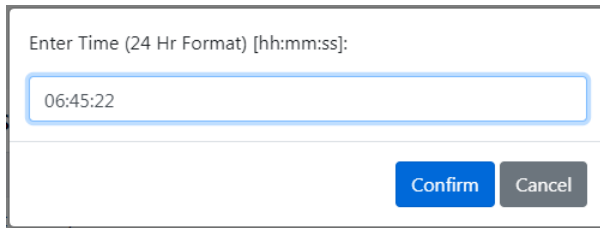
23. Select the **Set System Clock** tab.



24. A dialog is displayed informing the user to enter a date using the format **YYYY-MM-DD**. Enter **today's date** and select the **Confirm** button.



25. A dialog is displayed informing the user to enter time, using the **24 Hr Format hh:mm:ss**. Enter **remote PC time** and select the **Confirm** button.

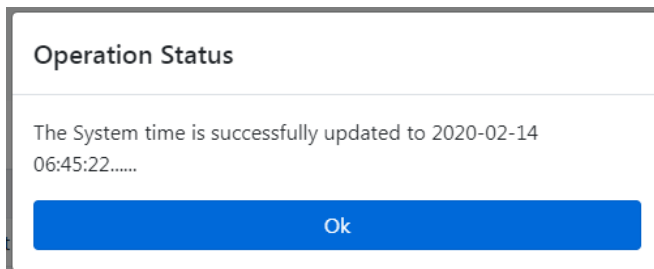
A dialog box titled "Enter Time (24 Hr Format) [hh:mm:ss]:". It contains a text input field with the value "06:45:22". Below the input field are two buttons: "Confirm" (blue) and "Cancel" (gray).

Enter Time (24 Hr Format) [hh:mm:ss]:

06:45:22

Confirm Cancel

RESULT: The Operation Status dialog shows success message. Click **OK**.

A dialog box titled "Operation Status". It contains a message: "The System time is successfully updated to 2020-02-14 06:45:22.....". Below the message is a single blue button labeled "Ok".

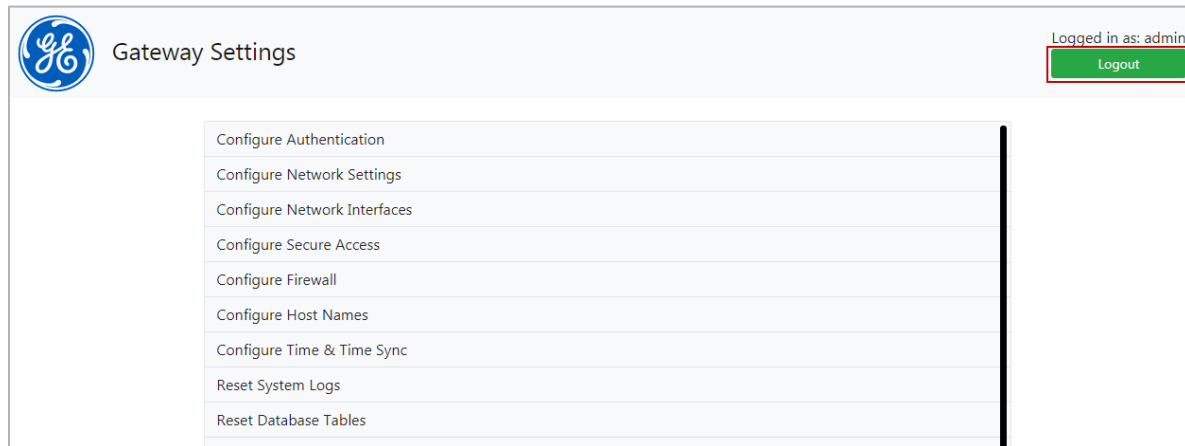
Operation Status

The System time is successfully updated to 2020-02-14 06:45:22.....

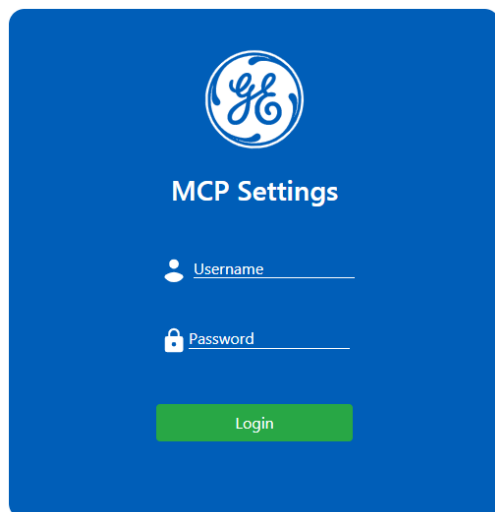
Ok

Logout

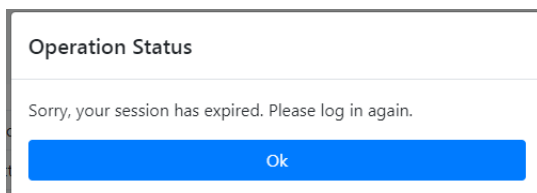
To **logout**, click the **Logout** link located at the upper right corner of the page as shown in the figure below.



When you have successfully logged-out of the system, the screen below will be displayed.



NOTE: After 20 minutes of inactivity, the session is automatically timed out and a message will be displayed as shown in below figure. In such cases, either click **OK** and login again or click on any of the links to be redirected to the login page.



G500 Snapshot Compatibility

The below table shows the G500 Snapshot Compatibilities:

FULL "Clone" Snapshot compatibility Configuration+Settings (using DSAS 2.1 or later)		Restore snapshot (Configuration and Settings) to target device:				Restore snapshot (Only Configuration part) to offline device:			
Save snapshot from device:		D400	G500			D400	G500		
		Any version	1.00	1.10	2.00 or later	Any version	1.00	1.10	2.00 or later
D400	<= 5.20	YES ONLY same D400 and same version	N/A	N/A	N/A	YES Direct same version	N/A	N/A	N/A
	5.30 or later	YES ONLY same D400 and same version	N/A	N/A	N/A	YES Direct same version	Indirect Via Create G500	Indirect Via Create G500	Indirect Via Create G500
G500	1.00	N/A	YES ONLY same G500	N/A	YES ANY G500	N/A	YES Direct	Indirect Via Offline Upgrade	Indirect Via Offline Upgrade
	1.10	N/A	N/A	YES ANY G500	YES ANY G500	N/A	N/A	YES Direct	Indirect Via Offline Upgrade
	2.00 or later	N/A	N/A	N/A	YES ANY G500	N/A	N/A	N/A	YES Direct same version

G500 Snapshot Management

Snapshots are an archived image of the G500 configuration created using DS Agile MCP Studio, which include all settings required to completely recover a G500 device. This workflow greatly reduces time when replacing hardware, eliminating the need for additional manual configuration.

Using DS Agile MCP Studio, Snapshots can be restored to the G500 using the **defadmin** default credentials.

Restoring a Snapshot updates the new G500 with the following hardware and software settings as were defined in the original G500, at the time when the snapshot was taken:

1. User Authentication
2. Network Settings
3. Network Interfaces
4. Secure Access
5. Firewall settings
6. Host Names
7. Time settings and time synchronization
8. Local HMI settings - except number of displays and displays resolution which are specific to the G500 being restored
9. Synch Manager
10. Redundancy (except paired keys when the G500 target is already paired as redundant)
11. Emulation of D20 IEC101 DPA Unbalanced Mode and quality event suppression at startup
12. Serial port modes (RS232/485, 2/4 wires)
13. Configuration implemented in MCP Studio:
 - Connections
 - Client and Server Map files
 - System Point Manager
 - Alarms
 - Calculator
 - Data Logger (storage may need to be re-adjusted if the target G500 has different storage sizes)
 - Load Shed
 - Systemwide (storage may need to be re-adjusted if the target G500 has different storage sizes)
 - Access (Local users, Automatic HMI login settings, VPN Client List)
 - ARRM
 - AI Text Enumeration
 - Online Screens
 - Analog Reports
 - IEC61850 Client
 - LogicLinx

Cyber security related certificates are not included in snapshots, and therefore cannot be restored. All certificates must be imported again after the snapshot restore. All secure connections using certificates must be re-associated with the new imported certificates (e.g. Secure Connection Relay, VPN Server, etc.)

License file (key) is not restored with the snapshot.

G500 enrollment in Predix Edge Manager Cloud and associated settings are not restored with the snapshot.

Default Users

G500 from the factory has two default users.

1. **Default Root User – root** (root has all permissions to the G500 but only available via the serial maintenance port).
2. **Default Administrator user – defadmin** (restricted permissions - used for initial setup).

NOTE: There are no other default users on a from factory G500.

Default Root User - root

G500 unit that comes from factory has below default **root** user credentials.

Username: **root**

Password: **geroot**

The default root user is a super user in G500 which can access all the settings and files. The **root** user access is restricted via:

- Front serial maintenance port

NOTE: For Cyber Security reasons, you are required to change this default root password using G500 Local Configuration Utility (**MCP Settings GUI**).

Warning: The User is responsible for the new root password. There is no back door, if lost, a factory reset is required to recover a unit. Contact customer support for a Return Materials Authorization (RMA) estimate.

Default Administrator User – defadmin

G500 unit that comes from factory has below default administrator(**defadmin**) user credentials.

Username: **defadmin**

Password: **defadmin**

G500 supplies a temporary default administrator user with limited access for initial hardware configuration. This **defadmin** user can perform only limited set of operations.

The default administrator (defadmin) user cannot perform other settings or gateway configuration changes, any operational workflows and login to runtime HMI. The default administrator (defadmin) user is intended to perform only below operations.

- To change or configure IP address to front and rear ethernet ports
- To add a nominated administrator-level user(s)

- To restore G500 Snapshots

Warning: The default administrator (**defadmin**) user will be deleted automatically once a nominated administrator user is created successfully. The local root user is required to recover the new administrator user if the credentials are lost.

Getting Started

Refer to G500 Substation Gateway Instruction Manual (*GE Vernova Part Number 994-0152*) for details about powering up the G500. Once the G500 is powered up, use the below workflow(s) to prepare the G500 for operation.

1. Minimum setup for a new G500 without a pre-existing **Snapshot**:

- [Task 1: Connect to the G500](#)
- [Task 2: Create a New Administrator User](#)
- [Task 3: Set the IP Address](#)
- [Task 4: Change the Root Password](#)
- [Task 5: Download existing G500 Configuration](#)

2. To restore an existing G500 Snapshot:

- [Task 1: Connect to the G500](#)
- [Task 2: Restore Snapshot to the G500](#)

NOTE: In the following procedures/workflows, “**Enter**” indicates that the menu item number is typed in and then the Enter key is pressed.

Setup G500 - First Time Setup

Task 1: Connect to the G500

There are three methods to connect to a new G500:

- Local monitor and keyboard via Local KVM interface (Keyboard Video Mouse).
- Using a supported Web Browser, connect to the front maintenance LAN port - default IP address 192.168.168.81
- USB Serial connection via the front USB type B maintenance port.

Connect to G500 via Local KVM GUI

1. Connect the **Display Port** on the rear panel of the G500 to a monitor with a Display cable.
2. Connect a keyboard and mouse to any of the USB ports.
3. Once the G500 device is powered up and has a valid license installed, click on the **G500** name via the taskbar.
4. Click **System Settings**.
5. A default web browser will be opened showing **MCP Settings** Login screen.
Enter the default **Username** (defadmin) and default **Password** (defadmin) and click **Login**.

Connect to G500 via Front Maintenance LAN Port

1. Connect a LAN cable between your computer and the G500 front maintenance LAN port.
 - The PC's network settings will have to be configured to the same subnet as the G500 to establish communications.
2. Using a supported web browser, type the Net0 (default IP 192.168.168.81) into the address bar and press the **Enter key**.
 - The destination port number is 8081 if is required
3. User is required to **confirm security certificate** exception.
4. The **MCP Settings** Login screen is displayed.
Enter the default **Username** (defadmin) and default **Password** (defadmin) and click **Login**.

Connect to G500 via Front Serial USB Maintenance Port

1. Connect a USB 2.0 type B cable to your computer USB port and to the G500 front maintenance port.
NOTE: First time users will have to install all the required Windows USB serial drivers, obtained from GE.
2. Launch the **Secure Terminal Emulator** from the DS Agile Studio folder in the start menu.
3. Select **File → Connect** and ensure the Protocol is set to **Serial Port**.
4. Confirm the settings before selecting Connect:
 - Serial Port: Select the simulated G500 serial port
 - Baud rate: **115200**
5. At the G500 command shell login prompt, enter the default admin credentials:
 - Username: **defadmin**
 - Password: **defadmin**

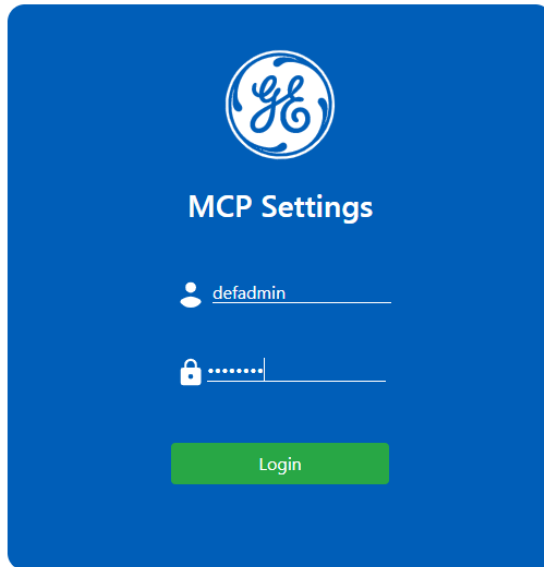
Task 2: Create a New Administrator User

The default administrator (**defadmin**) is restricted to prevent setting or gateway configuration changes. This is to force the creation of a new nominated administrator-level user account to continue the G500 Setup. New administrator-level user account(s) are created using G500 Local Configuration Utility (MCP Settings GUI). After completing this task, the defadmin user is removed automatically.

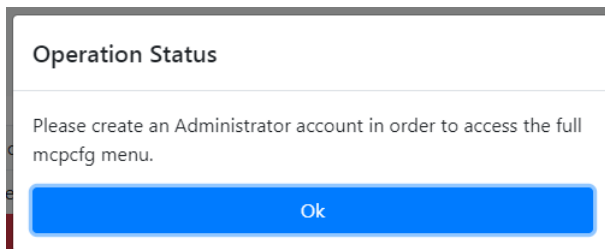
To create a new administrator-level user account, follow the steps below using Settings GUI.

NOTE: This section is identical between Local and Remote Settings GUI access.

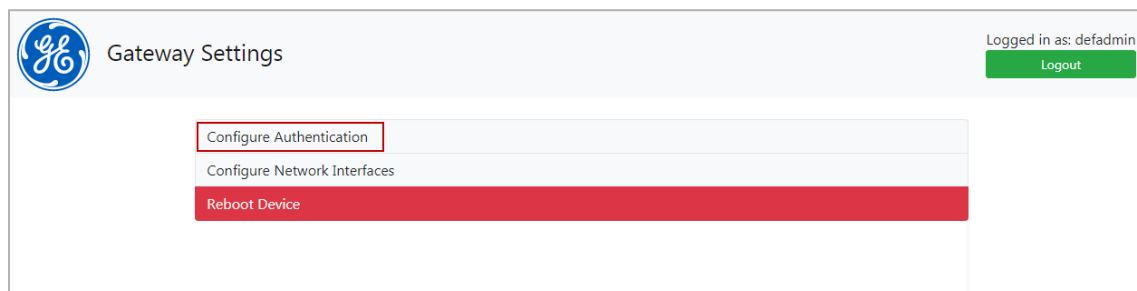
1. Enter the default **Username** (defadmin), default **Password** (defadmin) and click **Login**.



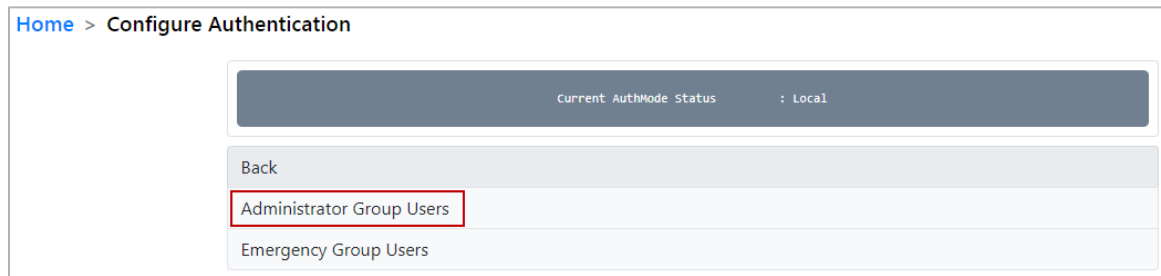
2. If the defadmin account is used to login, you will be prompted to create an Administrator account to access the full Settings GUI menu. Click **OK**.



3. The **Gateway Settings** main menu appears.
Select the **Configure Authentication** tab from the main menu.



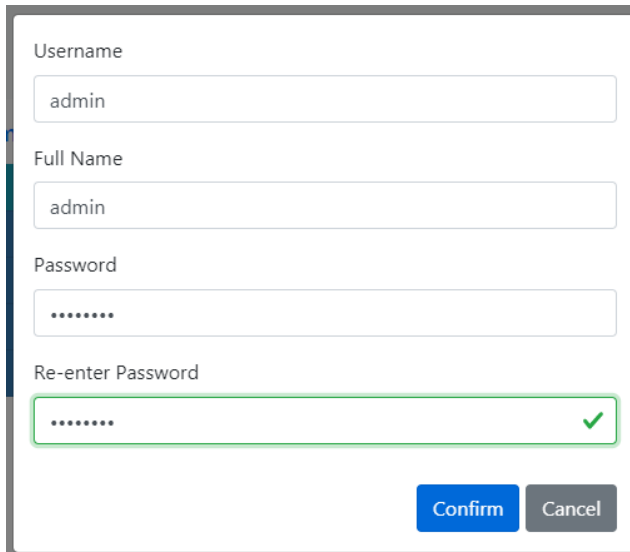
4. Select the **Administrator Group Users** tab from the Configure Authentication menu.



This function is used to perform the following actions:

- List Users
 - Add User
 - Change Password
 - Remove User
5. Select the **Add User** tab to create administrator-level users.
- Enter the desired **Username**, conforming to the Username rules as listed below:
 - Username must be between 2 and 31 characters.
 - Username must start with a lowercase alphabetical character.
 - Username must only contain [a-z][0-9][-,_] characters.
 - Enter the **Full Name** of the User.
 - Enter the **Password**, conforming to the password security rules as listed below:
 - Password must be between 8 and 199 characters in length.
 - Password must contain:
 - 1 character from [a-z]
 - 1 character from [A-Z]
 - 1 digit from [0-9]
 - 1 special character from the set [\$%@!&]

- **Re-enter Password** and click **Confirm**.

A user registration form with four input fields: Username (containing 'admin'), Full Name (containing 'admin'), Password (containing seven dots), and Re-enter Password (containing seven dots and a green checkmark icon on the right). Below the fields are two buttons: 'Confirm' (blue) and 'Cancel' (grey).

Username
admin

Full Name
admin

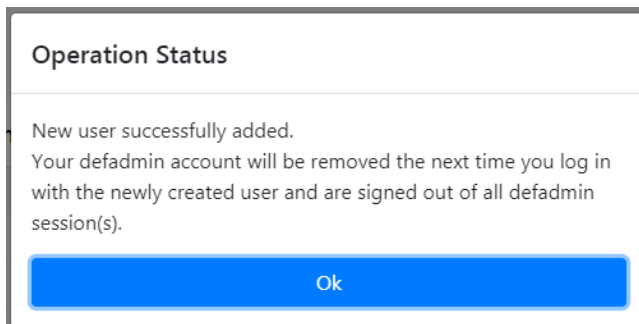
Password
.....

Re-enter Password
..... ✓

Confirm Cancel

RESULT: Pop-up window appears showing the **Operation Status**, click **OK**.

NOTE: defadmin account will be removed the next time you login with the newly created user and are signed out of all defadmin sessions.

A pop-up window titled 'Operation Status'. It contains the text: 'New user successfully added. Your defadmin account will be removed the next time you log in with the newly created user and are signed out of all defadmin session(s).' and an 'Ok' button at the bottom.

Operation Status

New user successfully added.
Your defadmin account will be removed the next time you log in
with the newly created user and are signed out of all defadmin
session(s).

Ok

6. Navigate back to the main menu by clicking on the **HOME** link located at the upper left corner of the page.

NOTE:

- The defadmin user will be deleted automatically once nominated administrator-level user is logged in and all the defadmin opened sessions are logged/signed out.
- The root user is available to recover the new administrator password.

Task 3: Set the IP Address

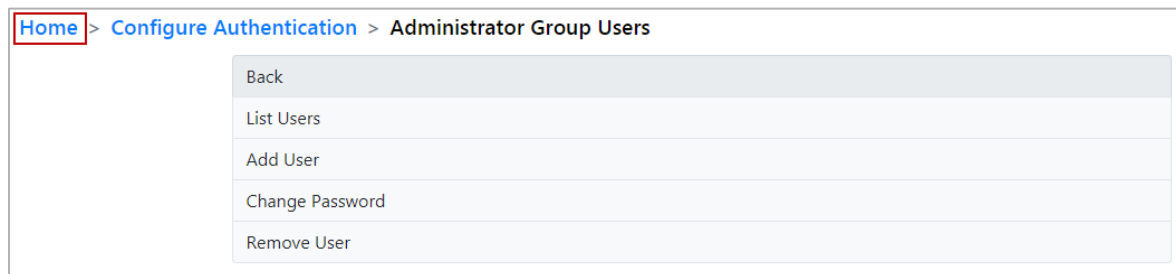
G500 has the following Network Interfaces, which can be configured independently.

1. Front Network Maintenance Port (Net0).
2. Rear Network Maintenance Ports (Net1-Net6).

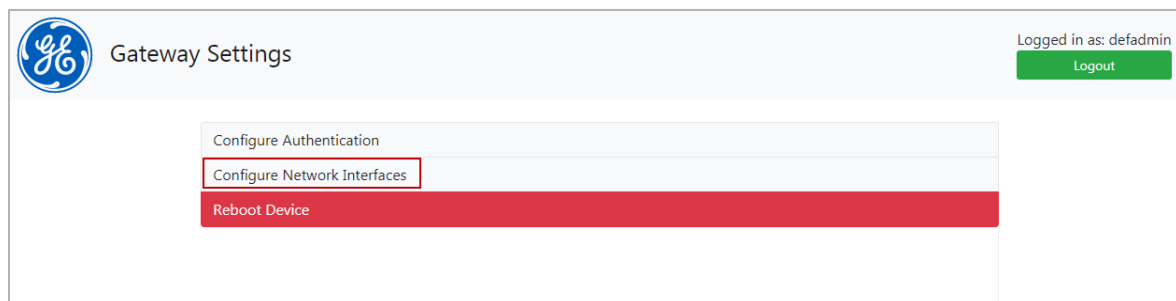
Follow the steps below using Settings GUI to set the IP Address of each required port.

Setting IP Address for Front Network Maintenance Port (Net0)

1. Go to the **Settings GUI** main menu by clicking on the **HOME** link located at the upper left corner of the page.



2. Select the **Configure Network Interfaces** tab from the main menu.



3. Select the Network port Net0 (**default IP 192.168.168.81**) which is connected to G500 device from the list.



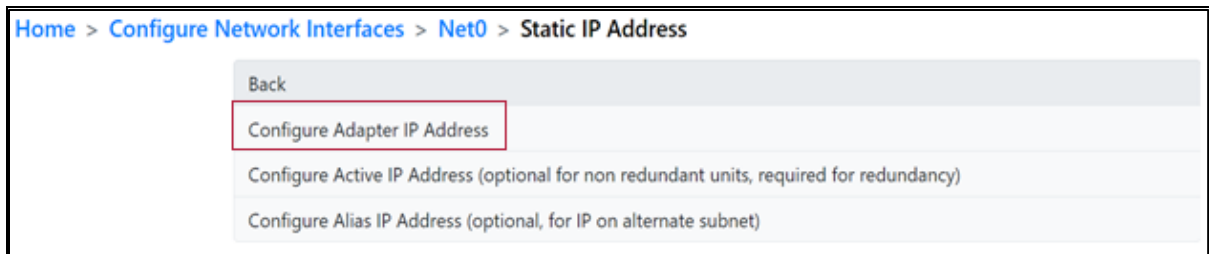
4. Select the **Static IP Address** tab.



Home > Configure Network Interfaces > Net0

Back
Current Configuration
Static IP Address
Dynamic Address
Network Zone
VLAN
Remove Configuration

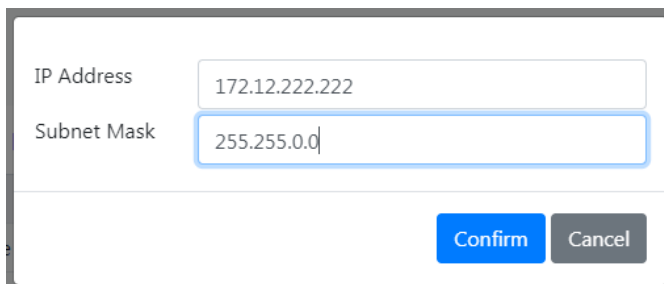
5. Select the **Configure Adapter IP Address** tab.



Home > Configure Network Interfaces > Net0 > Static IP Address

Back
Configure Adapter IP Address
Configure Active IP Address (optional for non redundant units, required for redundancy)
Configure Alias IP Address (optional, for IP on alternate subnet)

6. Enter **IP Address** and **Subnet Mask**. Click **Confirm**.



IP Address	172.12.222.222
Subnet Mask	255.255.0.0

Confirm Cancel

Click **Yes** to confirm the newly configured static IP settings.

NOTE: Reboot the device for changes to take effect.

Confirm

Newly configured static IP settings

IP Address is: 172.12.222.222

Netmask is: 255.255.0.0

Broadcast Address is: 172.12.255.255

For these settings to take effect, reboot

Do you wish to accept this?

7. Navigate back to the main menu and select the **Reboot Device** tab.

 Gateway Settings

Logged in as: defadmin

Configure Authentication

Configure Network Interfaces

Reboot Device

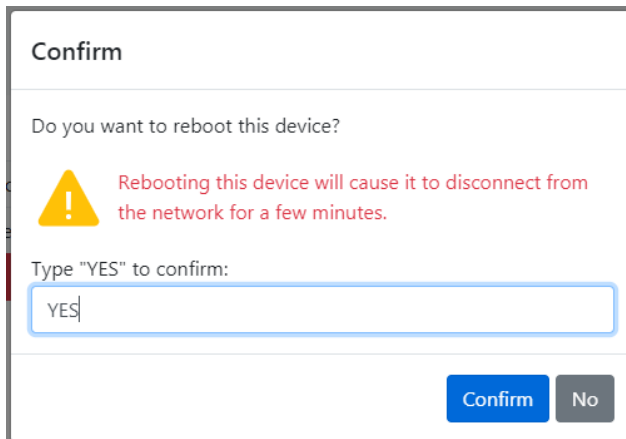
8. Click **Yes** to confirm and the device is rebooted.

Confirm

Do you want to reboot this device?

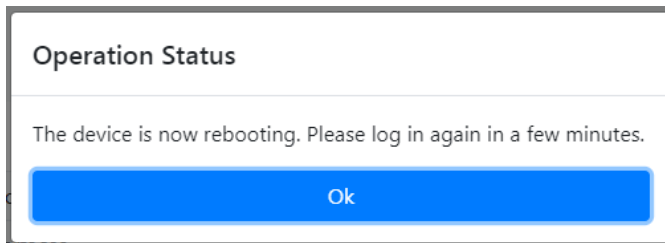
9. Type **"YES"** and click **Confirm**.

NOTE: Rebooting the device will cause it to disconnect from the network for a few minutes.



A confirmation dialog box titled "Confirm". It asks "Do you want to reboot this device?". Below the question is a yellow warning triangle icon and a red text message: "Rebooting this device will cause it to disconnect from the network for a few minutes." Below this is a text input field with the label "Type 'YES' to confirm:" and the text "YES" entered. At the bottom right are two buttons: "Confirm" (blue) and "No" (grey).

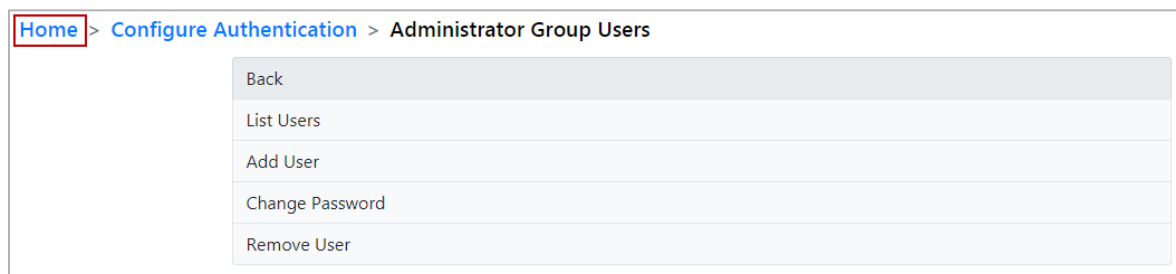
RESULT: The device reboot takes place. Click **OK**.



An "Operation Status" dialog box. It contains the text "The device is now rebooting. Please log in again in a few minutes." and a large blue "Ok" button at the bottom.

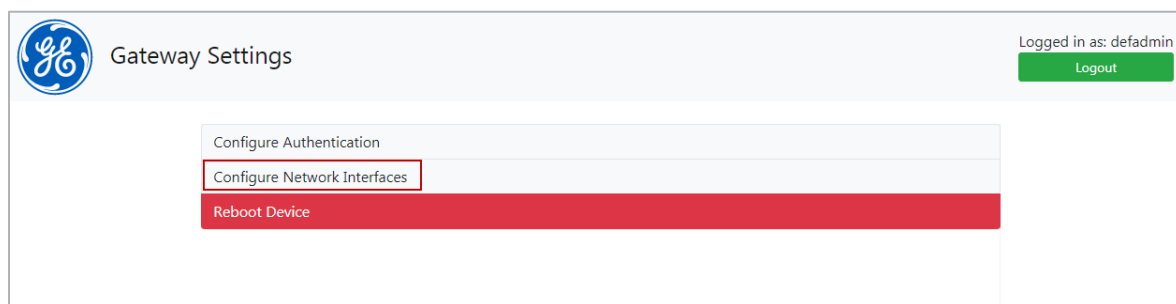
Setting IP Address for Rear Network Ports (Net1-Net6)

1. Go to the **Settings GUI** main menu by clicking on the **HOME** link located at the upper left corner of the page.



A screenshot of the Settings GUI showing a breadcrumb trail: "Home" (highlighted with a red box) > "Configure Authentication" > "Administrator Group Users". Below the breadcrumb is a vertical menu with the following items: "Back", "List Users", "Add User", "Change Password", and "Remove User".

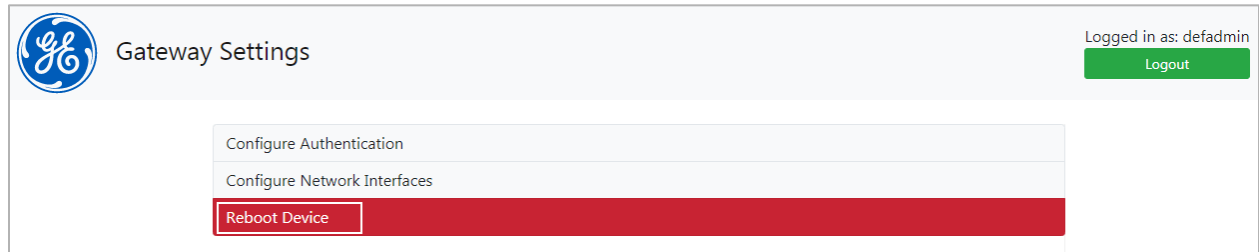
2. Select the **Configure Network Interfaces** tab from the main menu.



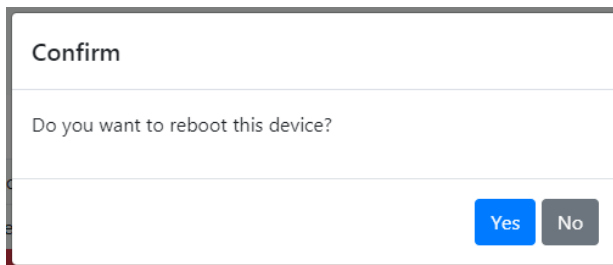
A screenshot of the "Gateway Settings" main menu. It features the GE logo and the text "Gateway Settings". In the top right corner, it says "Logged in as: defadmin" with a green "Logout" button. Below this is a list of menu items: "Configure Authentication", "Configure Network Interfaces" (highlighted with a red box), and "Reboot Device" (highlighted with a red background).

3. Select the network interfaces **Net1-Net2** or **Net3-Net4** or **Net5-Net6**.

4. Choose the network mode: **Single** or **Redundant** or **PRP**.
5. Select the specified option as per your requirement and enter the **IP Address** and **Subnet Mask** credentials and select the **Confirm** button to proceed.
6. Navigate back to main menu and select the **Reboot Device** tab.

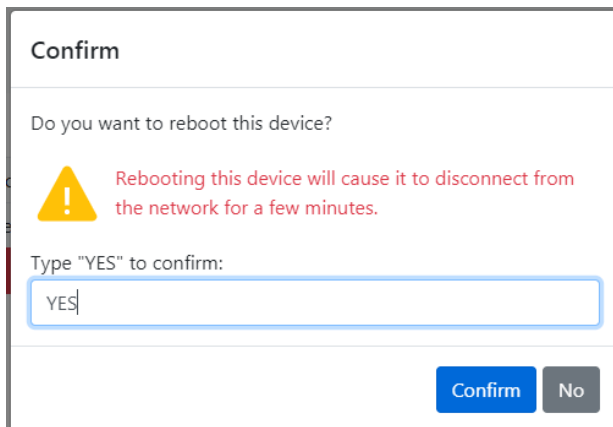


7. Click **Yes** to confirm and the device is rebooted.

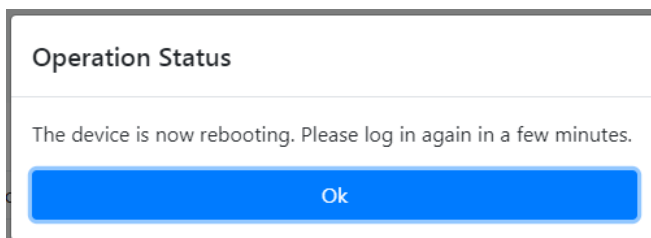


8. Type **"YES"** and click **Confirm**.

NOTE: Rebooting the device will cause it to disconnect from the network for a few minutes.

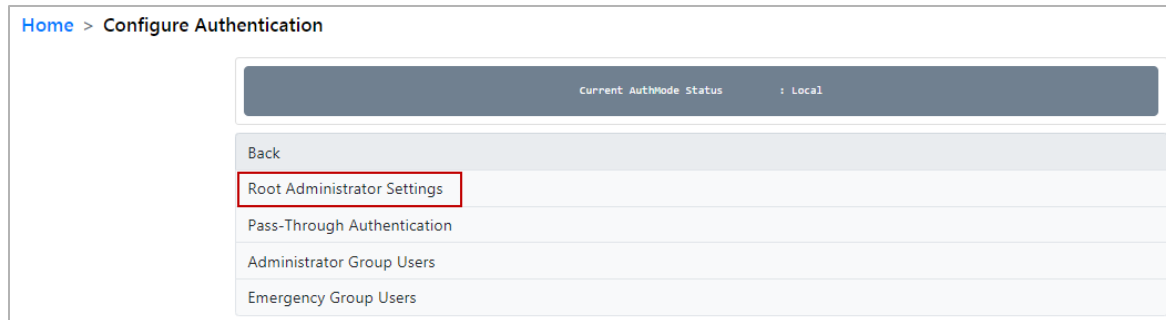


RESULT: The device reboot takes place. Click **OK**.

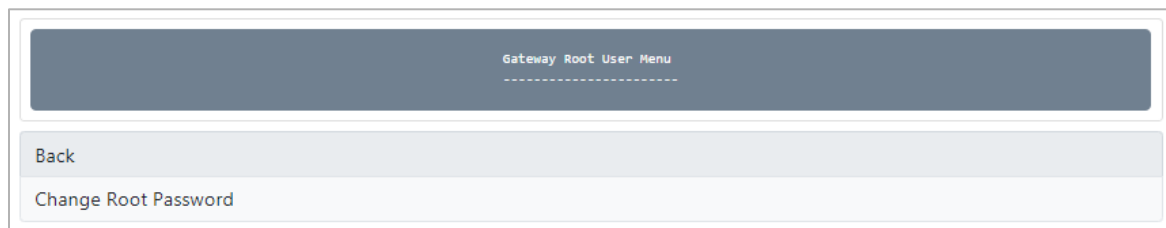


Task 4: Change the Root Password

1. Go to the **Settings GUI** main menu by clicking on the **HOME** link located at the upper left corner of the page.
2. Click **Root Administrator Settings** tab.



3. Click **Change Root Password** to change the password associated with the system root user account.



4. Change Password:
 - Password cannot contain the user's account name or parts of the user's full name that exceed two consecutive characters.
 - Password must be at least 8 characters in length.
 - Password must contain characters from all the following four categories:
 - At least 1 character from [a-z]
 - At least 1 character from [A-Z]
 - At least 1 digit from [0-9]
 - At least 1 special character from set [\$%@!&]

- **Re-enter** password.

Change Password

Password

✖

Password cannot contain the user's account name or parts of the user's full name that exceed two consecutive characters

Password must be at least 8 characters in length

Password must contain characters from all of the following four categories:

- Should contain at least 1 character from [a-z]
- Should contain at least 1 character from [A-Z]
- Should contain at least 1 digit from [0-9]
- Should contain at least 1 special character from set [\$%@!&]

Re-enter password

✔

Confirm

Cancel

5. Click **Confirm**.

Change Password

Password

.....

✔

Re-enter password

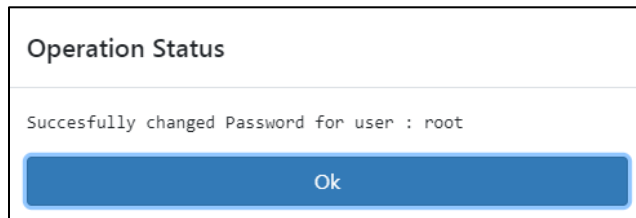
.....|

✔

Confirm

Cancel

RESULT: Pop-up window appears showing the **Operation Status**. Click **OK**.



NOTICE

The root user's password should be defined and securely stored by the system administrator; This is crucial information. **No method is available for recovery** outside the factory.

Task 5: Download existing G500 Configuration

Follow the steps below to download the G500 project in DS Agile Studio:

1. Launch **DS Agile MCP Studio**.

Connect to the G500 from the front ethernet port (default: 192.168.168.81). See [Task 3](#).

Login with the new nominated administrator user and password. See [Task 2](#).

2. Select the desired G500 configuration and select the **Sync To** button. Follow the steps as prompted on the screen.

Converting D400 configuration to G500

DS Agile MCP Studio can restore D400 archives created in **SGConfig**.

D400 devices with v530 configuration can be directly converted to G500. Previous D400 versions need to be first upgraded to v530 using the D400 Upgrade Manager. Launch DS Agile MCP Studio.

1. If you need to obtain the D400 configuration from an existing operational unit - connect to D400 device and use **Sync From** to upload the configuration.
Alternatively, select the existing D400 offline configuration to be converted.
2. With the D400 device selected, select the **Create G500** button in the menu. Follow the prompts.
3. When the conversion is complete, the new configuration can be saved and downloaded to the G500 using the **Sync To** option.

Setup G500 - With a Snapshot

Task 1: Connect to the G500

1. Connect a **LAN cable** between your computer and the G500 front maintenance LAN port.
2. Launch command prompt and use the command **ping 192.168.168.81** to ensure the G500 is connected.
 - The PC's network settings should be configured to the same subnet as the G500 to establish communications.

Task 2: Restore Snapshot to the G500

1. Launch the **DS Agile MCP Studio** on the local configuration PC.
2. Restore your G500 snapshot to a device in a project in DS Agile MCP Studio (**Archive > Restore Snapshot to Device**).
3. Edit the IP address in the projects device properties to match the default G500: 192.168.168.81
4. Select this device, initiate **Synch To Device > Restore Snapshot to Device**.
5. Select all Restore options
 - Restore Configuration Data
 - Restore Network Settings
 - Restore information required to clone a device
6. If used, enter the Optional Password - This is the password selected when saving the snapshot, not the password on the G500. This feature will verify the Snapshots authenticity, but not prevent the Snapshot sync if lost.
7. Login with the default admin user:
 - Username: defadmin
 - Password: defadmin

Refer to **DS Agile Studio User Manual** for more details. Follow the steps as prompted on the screen.

Result: After successfully restoring the snapshot, the G500 will restart and finish applying the changes. G500 runs with the same settings and configuration created for previous snapshot.

You can now change the Projects device properties IP address set in **Step 3** as desired.

Checking Licenses

G500 units are factory licensed.

To check the provided licenses, two workflows are provided:

1. [Shell access-based workflow \(read only\)](#)
2. [DSAS Based Workflow](#)

Shell access-based workflow (read only)

For G500,

1. Start a **terminal session** and log into the G500 with an Administrator-level or root user account.
2. At the G500 #>> prompt, enter the following commands:
 - `cd /home/MCP_APPS/`
 - `sudo ./swlic-report`

Result: The application output shows the G500 ownership information and a list of available features.

Each item under **Application License** represents an application or feature that can be licensed.

They are shown in the format: *Application ID number: Description of feature | License status*

```
License Report Utility v01.000
```

```
License Information
```

```
=====
```

```
Target Unit           : MCP
Serial Number         : 12345678
Customer              : GE MULTILIN
License created from   : License Utilities V1.0.4
```

```
Application License    Status
```

```
=====
```

```
000 : MCP Core          Unlocked
001 : Remote Desktop HMI Unlocked
002 : ARRM              Unlocked
004 : 61850 Client      Unlocked
008 : 61850 Server      Unlocked
016 : LogicLinx         Unlocked
064 : TEJAS V Server    Unlocked
Container License      Status
```

```
=====
```

```
No container licenses found
```

If the G500 unit does not contain a license file, perform the following steps:

1. Start a **terminal session** and log into the G500 with an Administrator-level or root user account.
2. At the G500 #>> prompt, enter the following commands:
 - `cd /home/MCP_APPS/`
 - `sudo ./swlic-info`
3. Provide the information shown to GE Vernova Technical Support.

Refer to MCP Software Configuration Guide (*GE Vernova Part Number SWM0101*) for additional details.

For D2X function inside G500,

1. Start a **terminal session** and log into the G500 with an Administrator-level or root user account.
2. At the G500 #>> prompt, enter the following commands:
 - `cd /home/MCP_APPS/`
 - `sudo ./d2xswlic-report`

Result: The application output shows the D2X license information and a list of available features – if present.

Each item under **Application License** represents an application or feature that can be licensed.

They are shown in the format: Application ID number: Description of feature | License status

```
License Report Utility v01.000
```

```
License Information
```

```
=====
=====
```

```
Target Unit           : MCP-D
Serial Number         : 12345678-D
Customer              : GE MULTILIN
License created from   : License Utilities V1.0.4
```

```
Application License           Status
=====
=====
```

000 : D2X Core	Unlocked
001 : D2X Applications	Unlocked
002 : Advanced Automation Applications	Unlocked

If the G500 unit does not contain a D2X license file and you wish to obtain one, perform the following steps:

1. Start a **terminal session** and log into the G500 with an Administrator-level or root user account.
2. At the G500 `#>>` prompt, enter the following commands:
 - `cd /home/MCP_APPS/`
 - `sudo ./d2xswlic-info`
3. Provide the information shown to GE Vernova Technical Support.

Refer to MCP Software Configuration Guide (*GE Vernova Part Number SWM0101*) for additional details.

DSAS Based Workflow

Users have the possibility to **read/extract/apply** licenses to G500 using the Licensing option available in the DSAS Configuration Tool. Same screen and workflow applies to both MCP and D2x Licenses.

To access these options:

1. Open **Device Properties** for your DSAS offline device in your project. If one was not created, follow the normal workflow to create one.
2. Go to the **Licensing** Tab.
3. Under **License Management**, there are the following buttons:
 - a. [Read License](#)
 - b. [Extract License](#)
 - c. [Apply License](#)
 - d. [Refresh License Information](#)
4. When the user clicks on any of the buttons, a login dialog is prompted to connect to G500 with **Administrator privileges** (this role is required to access any of the licensing information).
5. After successful authentication, the user is authorized to access the license information. If the user stays within this tab, subsequent button actions will not prompt again to login.

Read License

This option displays the license information of the live target unit (connected G500 device), for both MCP and D2x (if present) licenses, and regardless of the selected function.

Displayed information may be copied to the Windows Clipboard with regular actions (mouse click and drag or CTRL+A to select, right-click or CTRL+C to copy).

MCP Properties

Model Number: **G500-BH08-TTU00T-BBU0-444-UUU-S-CAD0094-UUUUUUUU**

Properties | Licensing | Redundancy | ICS | Localization | Service Updates

MCP Licensed applications

094

☒ Automated Record Retrieval Manager
☒ IEC 61850 client
☒ IEC 61850 server
☒ LogicLink executor
☒ TEJAS V Server
☐ Remote Desktop HMI

License Management

Target Unit : MCP
 Hardware Identifier :
 License File : (Good)

License Report Utility v01.000

License Information

=====

Target Unit : MCP
 Serial Number :
 Customer :
 License created from : License Utilities V1.0.3

Application License Status

=====

000 : MCP Core	Unlocked
001 : Remote Desktop HMI	Unlocked
002 : ARRM	Unlocked
004 : 61850 Client	Unlocked
008 : 61850 Server	Unlocked
016 : LogicLink	Unlocked
064 : TEJAS V Server	Unlocked

Container License Status

=====

C001 :

System Information

License Information Utility V01.000

=====

Target Unit : MCP-D
 Hardware Identifier :
 License File : Does not exist

OK Cancel

Extract License

This option allows user to extract the current license file from the live target unit to a specified PC location, for example to archive a copy.

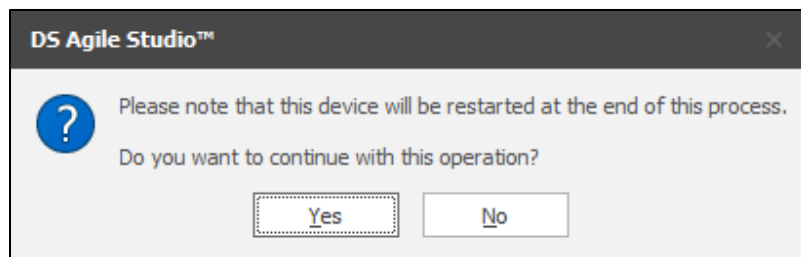
The extracted license file is saved as a *.key file (default name is license but can be changed as desired).

This applies to both MCP and D2x licenses (if present).

Apply License

This option allows user to apply a compatible license key, from a location in the PC, to the live target unit.

NOTE: The live target unit is restarted at the end of this process, not immediately, and only if a hardware compatible license file was selected.

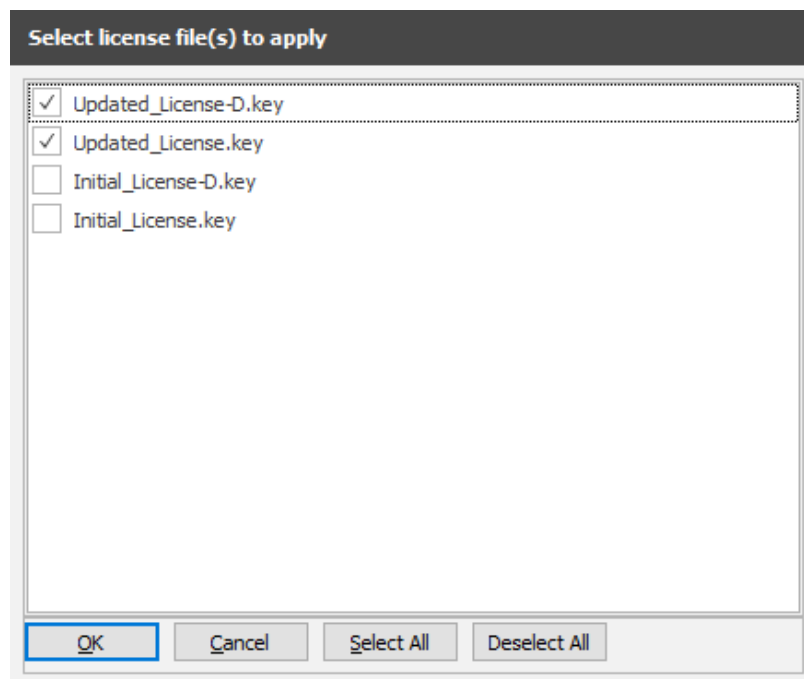


When browsing for the license files, user must select the folder containing one or more license files. The action does not include sub-folders of the selection.

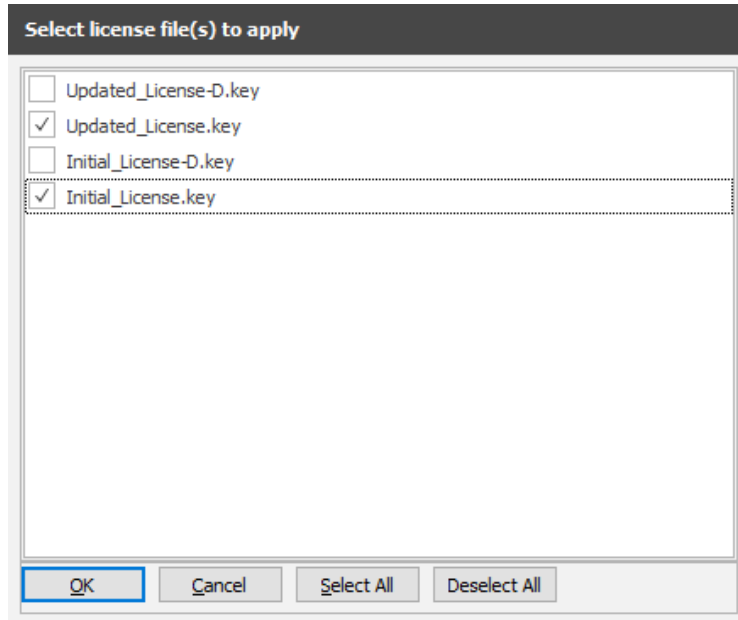
In the resulting dialog only the license files (any filename) that match the Hardware Identifier of the live target unit are displayed for selection. This is the reason why users must first login to the live device as Administrators.

Both MCP and D2x license files are shown, the D2x ones typically end in -D (if present).

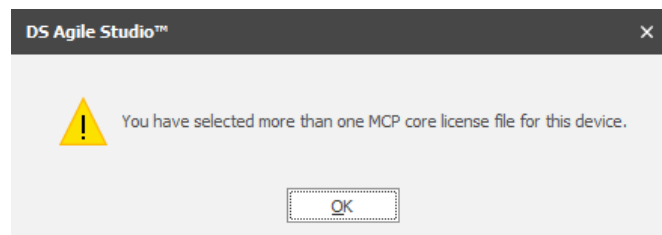
Maximum one MCP and one D2x license can be selected at same time.



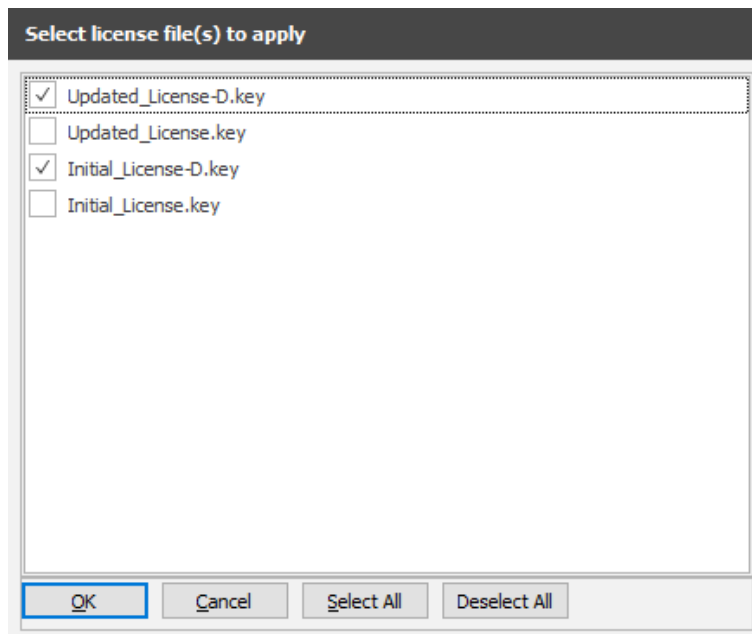
If multiple licenses of same type are selected a dialog prompts the user to re-select.



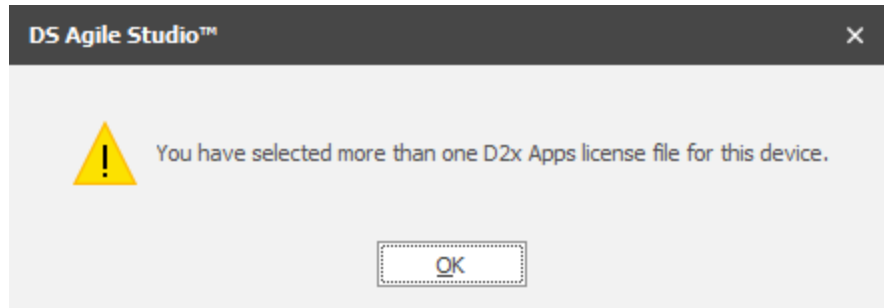
Results in:



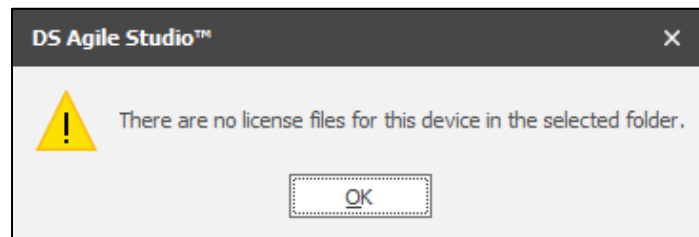
Or:



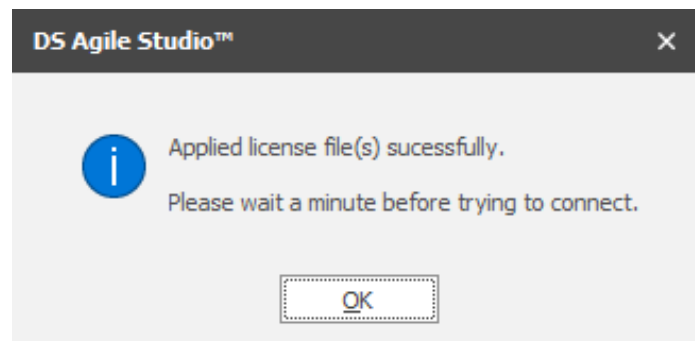
Results in:



If the selected folder has no license compatible with the connected live unit, an information dialog is presented to this effect:



If a valid license file has been selected, it will be applied and the device restarts.



The workflow to apply a license can be cancelled at any time before selecting a valid license and click **OK**.

Refresh License Information

Refresh License information should be used only when license.key file has been deployed to target device outside of DSAS and the device was not yet restarted - causing DSAS to not be able to read the license information.

MCP Runtime HMI

MCP Runtime Human Machine Interface (HMI) is available to view the real time information on G500. With the HMI, a user has the option to monitor the status of a substation network, view data, execute control commands and change the system set-up.

MCP Runtime HMI is available on a local monitor (via the display ports on the rear panel of the G500) and on remote PC's as a standalone application.

The remote MCP Runtime HMI runs as a standalone application.

Install MCP Runtime HMI

The remote MCP Runtime HMI requires **Windows x64** bit OS. This is available via GE Vernova support channels and consists of a single installation file named **SetupMCPHMI_x64_v.abc.exe** – where **abc** represents the version (this must match your G500 firmware version).

Note: Installation of Java/JRE on the Windows PC is not required.

To install the MCP Runtime HMI:

1. Run the **SetupMCPHMI_x64_vabc.exe** install file.
2. Select **OK** at the Windows security prompt.
3. Select **Next** in the installation wizard.
4. Select **Finish** to complete the install.
5. Launch the MCP HMI from the Start Menu or open from the install folder.

Install Location: C:\Program Files\MCP Runtime HMI\abc\MCPHMI_x64_vabc.exe

Refer to MCP Software Configuration Guide (*GE Vernova Part Number SWM0101*) for more details.

Accessing Remote HMI

1. Double-click the **MCPHMI_x64_v4.0.exe** file <shortcut> or launch from the start menu.
2. Enter the **IP address** of the G500 ([assigned in Task 3](#)).
 - The TCP port of the MCP HMI is always 443. If you need to use a different TCP port, due to the routing rules existing between the PC and G500, you may enter it in the form of IP: TCP, for e.g. 10.10.11.50:30500
3. Login with the user credentials created in [Task 2: Create a New Administrator User](#).
4. Click **Login**.

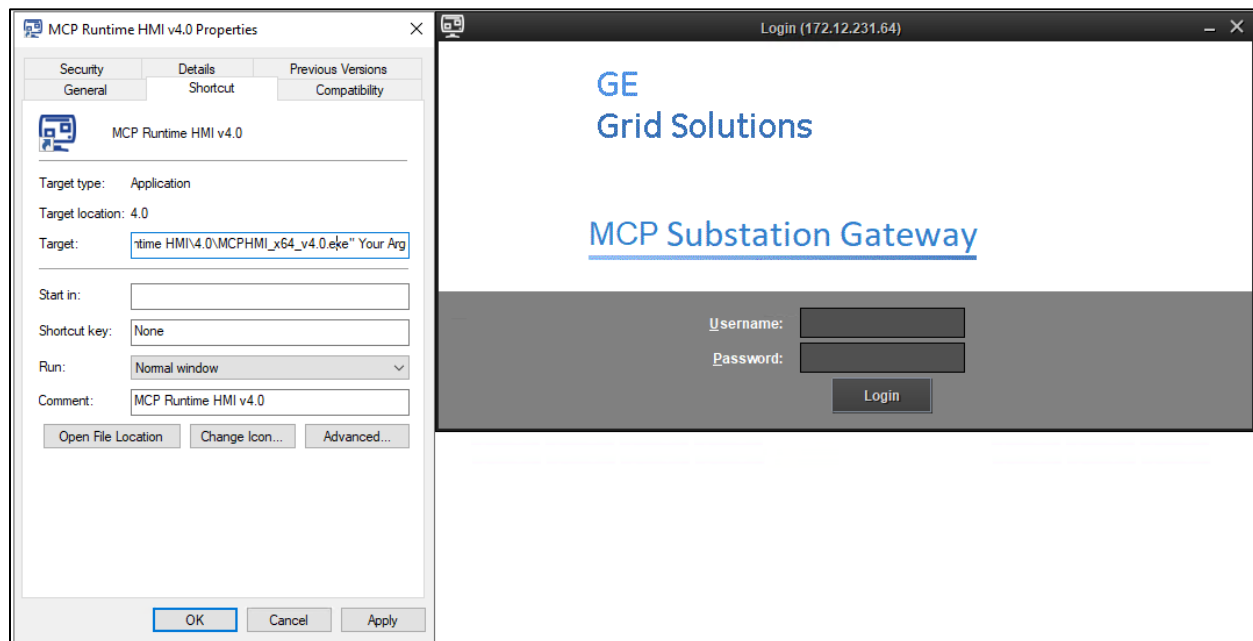
NOTE: Users can be assigned with different HMI access levels. Refer to MCP Software Configuration Guide (*GE Vernova Part Number SWM0101*) for additional details.

Remote HMI Auto Login

By customizing a MCP Runtime HMI shortcut, the user can predefine the Login User, IP Address, or Remote Port.

1. Locate the MCP Runtime HMI shortcut.
2. Copy the shortcut to the desktop, or a desired location, or pin it to Taskbar or Start Menu.
3. Right-click on the shortcut and select **Properties**.
4. Add the below parameters to the shortcut at the location **Target** as shown in the below table:

Target Parameters	Shortcut Target content
IP Address	C:\Program Files\MCP Runtime HMI\4.0\MCPHMI_x64_v4.0.exe - host 192.168.168.81
IP address & Port (e.g. for local port re-direct) Default port is 443	C:\Program Files\MCP Runtime HMI\4.0\MCPHMI_x64_v4.0.exe - host 127.0.0.1 -port 30500
Only Username	C:\Program Files\MCP Runtime HMI\4.0\MCPHMI_x64_v4.0.exe - username admin1
Shortcut with All Parameters	C:\Program Files\MCP Runtime HMI\4.0\MCPHMI_x64_v4.0.exe - host 192.168.168.81 -port 30500 -username admin1



Note: The shortcut properties will display the updated **Target** data that launches the HMI with the IP and pre-defined Username.

5. Double-click the newly created shortcut to launch the MCP Runtime HMI using the parameters configured in the Target.

Accessing Local HMI

1. Local HMI starts automatically when a monitor is connected to the MCP display port on startup.
If the G500 is configured for **Auto Login**, then the MCP Home Page is launched with the configured user privileges on startup.
2. When prompted, login with the user credentials created in [Task 2: Create a New Administrator User](#).
3. Click **Login**.

NOTICE

When you have finished your work, it is suggested to logout from the G500 Local HMI to secure the system. Logging out terminates the respective user session with the G500 and closes all G500 Local HMI displays and windows.

The internal G500 alarm buzzer or alarm audio output is active only when the Local HMI runs. Create a default auto logged on Observer user if the internal alarm buzzer is required to operate in an un-attended mode, and to ensure the Local HMI is not shut down.

Configure Screen Layout

1. Screen Layout and resolutions may be configured using the Screen Layout utility in the Local HMI.
2. The utility can be launched from the Local HMI start menu using **Start → System → ScreenLayout**.
3. The minimum resolution supported in the Local HMI is 1280 x 1024 and the recommended resolution is FHD (1920 x 1024) or higher.

Configuring Monitor Layout

Multiple monitors can be connected to MCP via display ports (G500 only).

When a single monitor is connected, the connected monitor becomes the Primary.

When 2 two monitors are connected to the G500, by default, the monitor connected to display port (labelled as DP 1, at the rear side of the device) becomes Primary. And the monitor connected to display port (labelled DP 2 at the rear side of the device) becomes extended monitor as shown below.

1. Monitor A - connected to DP 1 (shown as Display Port 1 on Screen Layout).
2. Monitor B - connected to DP 2 (shown as Display Port 0 on Screen Layout).

Refer to MCP Software Configuration Guide (*GE Vernova Part Number SWM0101*) for more details.

Runtime HMI User Preferences

HMI Runtime (Remote/Local) supports the following features. These features are available from the **User** tab of MCP the Power Bar.

Mode of Operation:

- Docked → All windows open within the parent frame.
- Single → A single window is opened at a time in the parent frame, new window replace the previous page.
- Floating → All windows open as independent windows in the desktop area (no parent frame).

Persistency

Windows Persistency is a default feature in Runtime HMI (Remote/Local) which maintains the following independently for each user:

- Persistence of sorting order of the columns, column filters, column width in all the tabular screens or windows.
- Vertical and horizontal re-sizing of all layout boundaries between screen areas of same screen.
- Size and position of all windows in floating mode, except location of child pop up dialogs.

NOTE: Use Reset Persistency option in the Runtime HMI Preferences to clear the persistency state of the windows for the current or all users, or when changing to a lower screen resolution and your persisted windows exceed the screen space. Refer to MCP Software Configuration Guide (*GE Vernova Part Number SWM0101*) for more details.

List of Factory Default Open Ports - TCP and UDP

For more details about the open port numbers and protocols, refer to **SWM0101 Appendix H**.

Additional Documentation

For further information about the G500, refer to the following documents:

- *G500 Substation Gateway Instruction Manual (994-0152)*
- *MCP Software Configuration Guide (SWM0101)*
- *Configuring UEFI Settings on G500 User Guide (SWM0110)*
- *Configuring UEFI Settings on G500 with Intel Hardware User Guide (SWM0125)*

Product Support

If you need help with any aspect of your GE Vernova Grid Solutions product, you can:

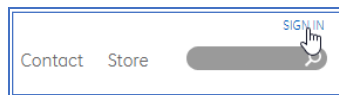
- Access the GE Vernova Grid Solutions Web site
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Contact Technical Support

For help with any aspect of your GE Vernova Grid Solutions product, please contact our support team, 24/7, as follows:

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Global Contact Centre	GA.support@GEVernova.com	+44 1785 250070
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India	GA.supportIND@GEVernova.com	No Phone Line
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Modification Record

Version	Revision	Date	Change Description
1.00	0	25 th March, 2019	Created.
	1	11 th June, 2019	Updated the “Default Root User” section.
1.10	0	14 th February, 2020	Updated for G500 V1.10 release. Replaced Initial Setup using mcpcfg to Settings GUI.
	1	4 th March, 2020	Added “List of factory default open ports – TCP and UDP” section.
2.00	0	30 th March, 2020	Added G500 Snapshot Compatibility section.
2.50	0	20 th Sep, 2021	Replaced the GE logo on the first page. Changed the screen showing Maintenance IP to Adapter IP. Updated list of ports.
2.60	0	15 th Nov, 2021	Removed Secret Signature content.
	1	17 th Dec, 2021	Updated “List of factory default open ports – TCP and UDP” section.
3.00	0	30 th Jan, 2023	Added Refresh License Information content in the DSAS based workflow section. Added a reference for SWM0101 Appendix H and removed “List of factory default open ports – TCP and UDP” section.
4.00	0	28 th March, 2024	GE Vernova Logo is added on the first page. In Shell access-based workflow (read only) section: - D2x Legacy is changed to Tejas V Server - Added a sub-section “For D2X function inside G500” Updated DSAS Based Workflow section. Updated MCP Runtime HMI section.
	1	15 th May, 2025	Updated to GE Vernova style. Updated Additional Documentation section. Updated GE Vernova email addresses and phone numbers in Contact Technical Support section.