2011 | G100 Access

Learning Module Objective

At the completion of this module you will be able to identify and recite all concepts presented.

If you are viewing this as part of a structured training program *PLEASE* complete the associated assessment test. You are required to score above 80%.
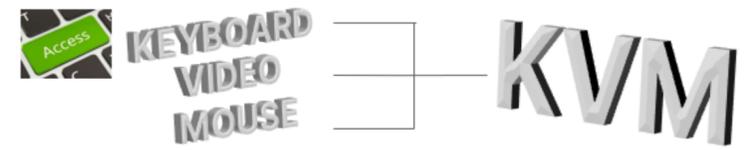
1. G100 Interface Options

2. Local KVM – Local HMI Task Functions

3. Local KVM – Screen Layout and Virtual Keyboard

4. Local KVM – MCP Local Configuration Utility (mcpcfg)

5. Local KVM – MCP Settings GUI

6. Local KVM – Local MCP Runtime HMI

7. Ethernet – MCP Local Configuration Utility (mcpcfg) via SSH

8. Ethernet – MCP Settings GUI via HTTPS

9. Ethernet – Remote MCP Runtime HMI via HTTPS

10. Ethernet – MCP Runtime HMI via Remote Desktop

11. Serial Maintenance Port – MCP Local Configuration Utility (mcpcfg)

G100 Interface Options

The following connection / interface options are available to connect to the G100:

Local KVM (Keyboard, Video and Mouse) :

- Connect the Display Port to a monitor with a display cable

- Connect a keyboard and mouse to any of the USB type A ports

- Support Access: MCP Local Configuration Utility (mcpcfg) / MCP Settings GUI / Local MCP Runtime HMI

Ethernet Interfaces:

- Ethernet Port #1:
  - ✓ Port #1: 10/100/1000Base-T RJ45 Copper port
  - ✓ Default IP address: 192.168.168.81

- Ethernet Port #2,3,4
  - ✓ Port #2: 10/100/1000Base-T RJ45 Copper port
  - ✓ Port #3, 4 are SFP ports that support multiple 100 Base and 1000 Base Options
  - ✓ Must be in Internal Zone to access the G100

- Support Access: MCP Local Configuration Utility (mcpcfg) / MCP Settings GUI / remote MCP Runtime HMI / MCP Runtime HMI via Remote Desktop
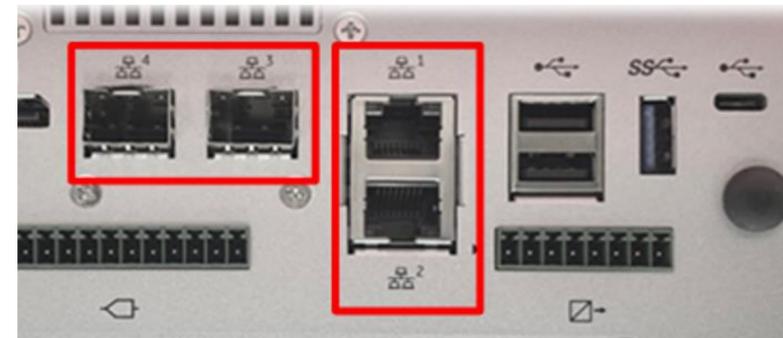
Serial Maintenance Port:

- Default serial maintenance port: Serial port #4 with a Baud rate 115200

- Support Access: MCP Local Configuration Utility (mcpcfg)
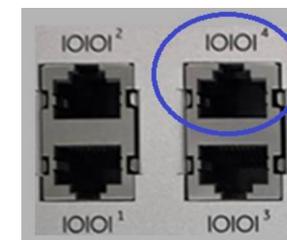
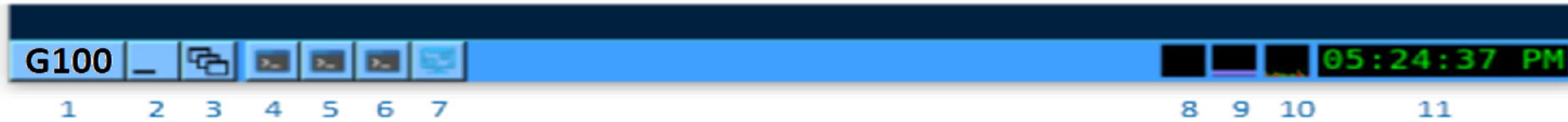**MCP Local Configuration Utility (mcpcfg) or MCP Settings GUI**

To configure MCP system settings and perform the initial MCP setup (e.g., Users, network, serial, time sync etc.)
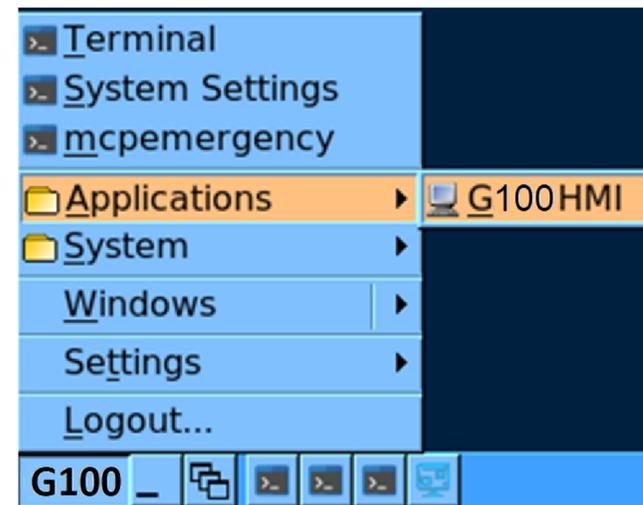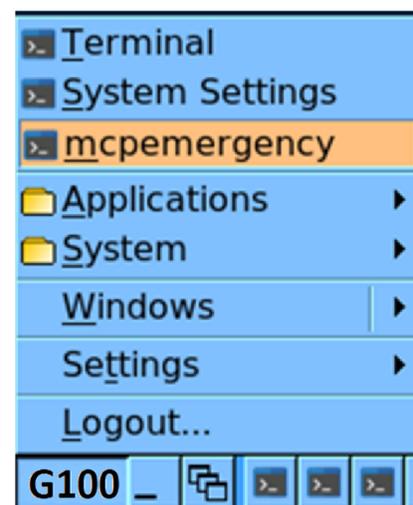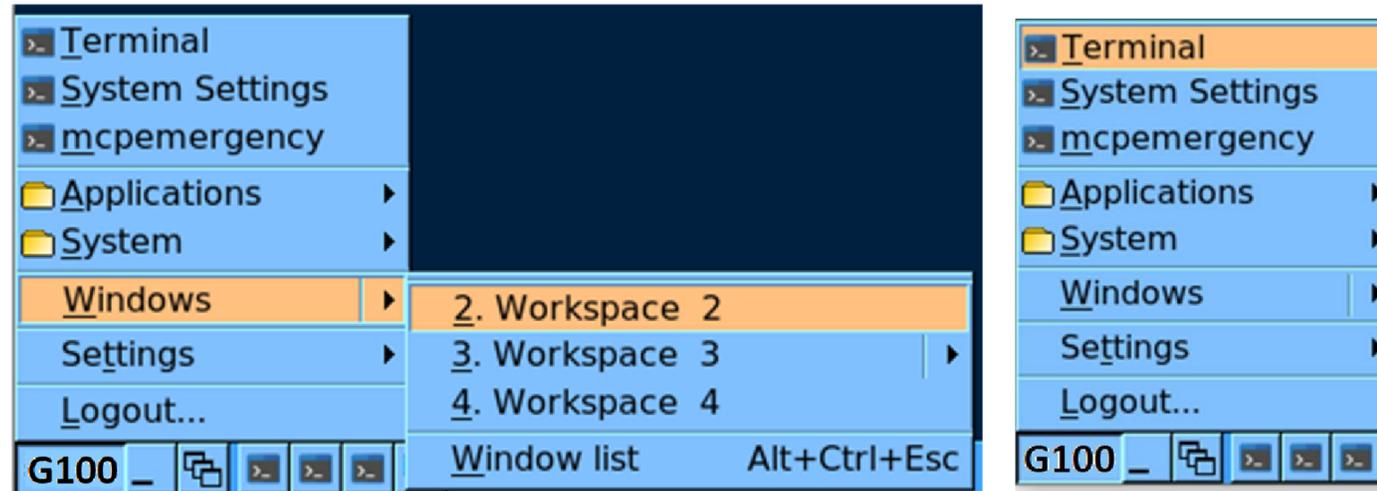
MCP Runtime HMI

To view and control the runtime statistics including One-line diagrams and to configure the MCP Settings (e.g., User Management, Automatic Login etc.)

L&D

Local KVM – Local HMI Taskbar Functions

The Local HMI provides access to the G100 through a local substation computer setup via KVM. The Taskbar shown in the Local HMI on the bottom of the screen provides the following functions:

The Color theme can be changed using Start → Settings → Themes

The Local HMI and all running applications can be restarted using Start → Logout

1. Access to Start applications

2. Minimize all windows and Show Desktop

3. Switch between active windows and workspaces

4. Launch a Terminal session to the MCP shell

5. Launch MCP System Settings GUI

6. Launch MCP Emergency access

7. Launch Local Runtime HMI

8. Network Interface 0 statistics

9. Memory statistics

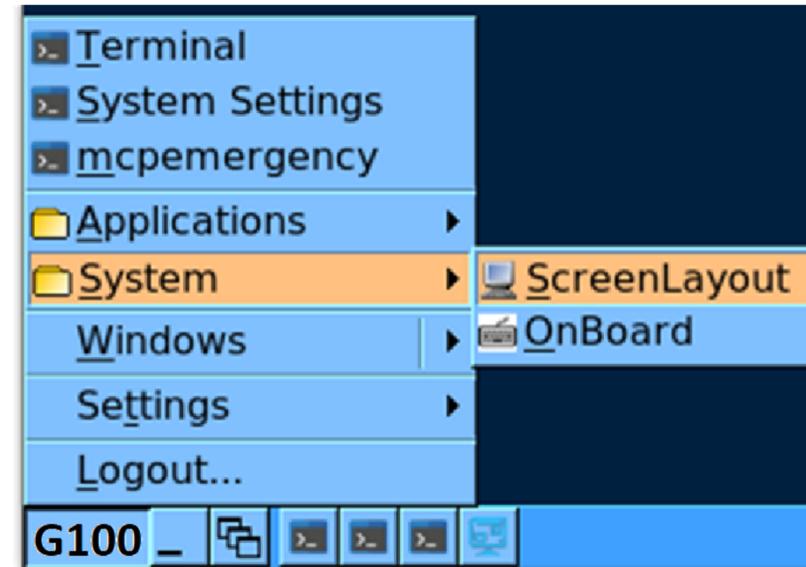10. CPU statistics

11. Local time clock

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Local KVM – Screen Layout and Virtual Keyboard

The configured layout will always be persisted once the Screen Layout utility is closed. And whenever the HMI is relaunched, it will open as per the last configured layout

Screen Layout

- Screen/Monitor layout and resolutions may be configured using Screen Layout utility

- This utility can be launched from Local HMI start menu using **Start → System → Screen Layout**

- G100 supports single monitor only. Once connected, the monitor becomes the Primary

- The minimum resolution supported in Local HMI is 1280x1024 and the recommended resolution is FHD (1920x1024) or higher

Virtual Keyboard

- A virtual keyboard may be displayed on the screen **using Start → System → OnBoard**

- Clicking on the top right X will close the virtual keyboard

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Local KVM – MCP Local Configuration Utility (mcpcfg)

This interface is the Shell based equivalent of the MCP Settings GUI

The MCP Gateway Local Configuration Utility (mcpcfg) is used to configure system level settings on the G100

Once the G100 device is powered up and has a valid license installed, click on the G100 name via the taskbar then click **Terminal**

Only one instance is allowed to run at any given time across both "mcpcfg" and "MCP Settings GUI".


```
GE Multilin MCP Firmware Release 310 Production Build 153 2023-08-18:00:01:30

admin@G100:~$ sudo mcpcfg
[sudo] password for admin: █
```



```
====================================================================
            Gateway (G100) Settings Menu
====================================================================

        0.    Back
        1.    Configure Authentication
        2.    Configure Network Settings
        3.    Configure Network Interfaces
        4.    Configure Secure Access
        5.    Configure Firewall
        6.    Configure Host Names
        7.    Configure Time & Time Sync
        8.    Reset System Logs
        9.    Reset Database Tables
        10.   Reset File Persistence Data
        11.   Local HMI
        12.   Configure Sync Manager
        13.   Redundancy
        14.   ARRM
        15.   Suppress Forced Qualities To Masters
        16.   Emulate D20 RTU IEC101 DPA Unbalanced Mode Functionality
        17.   Configure IEC101+104 DPA Startup Quality Event Suppress Interval
        18.   Configure Serial Ports
        19.   Configure D.20 Port Settings
        20.   EdgeOS Host
        21.   Clear Chassis Intrusion State (Not available in G100)
        22.   Restore Clone Snapshot
        23.   Restore Factory Default
        24.   Reboot Device

Enter Your Choice : ( Between 0 and 24 ): █
```
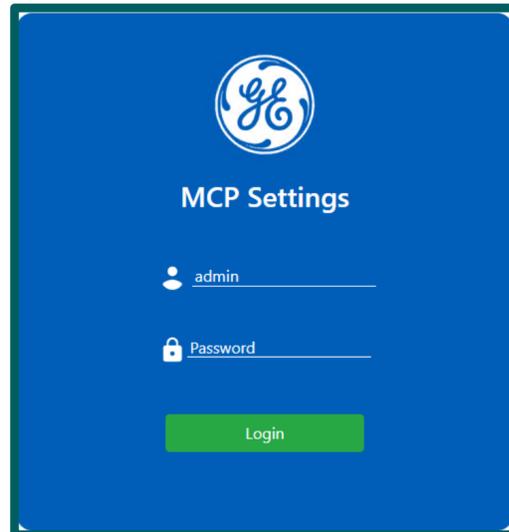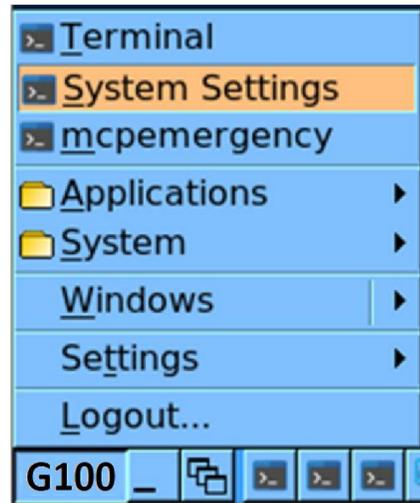
A default Terminal application will be opened showing Login screen

- Login using Administrator credentials

- Shell based command line interface

- Type "**sudo mcpcfg**" and the user password when prompted

Proceed with the settings

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Local KVM – MCP Settings GUI

The MCP Settings GUI is the Web based equivalent of the MCP local Configuration Utility (mcpcfg), is used to configure system level settings on the G100
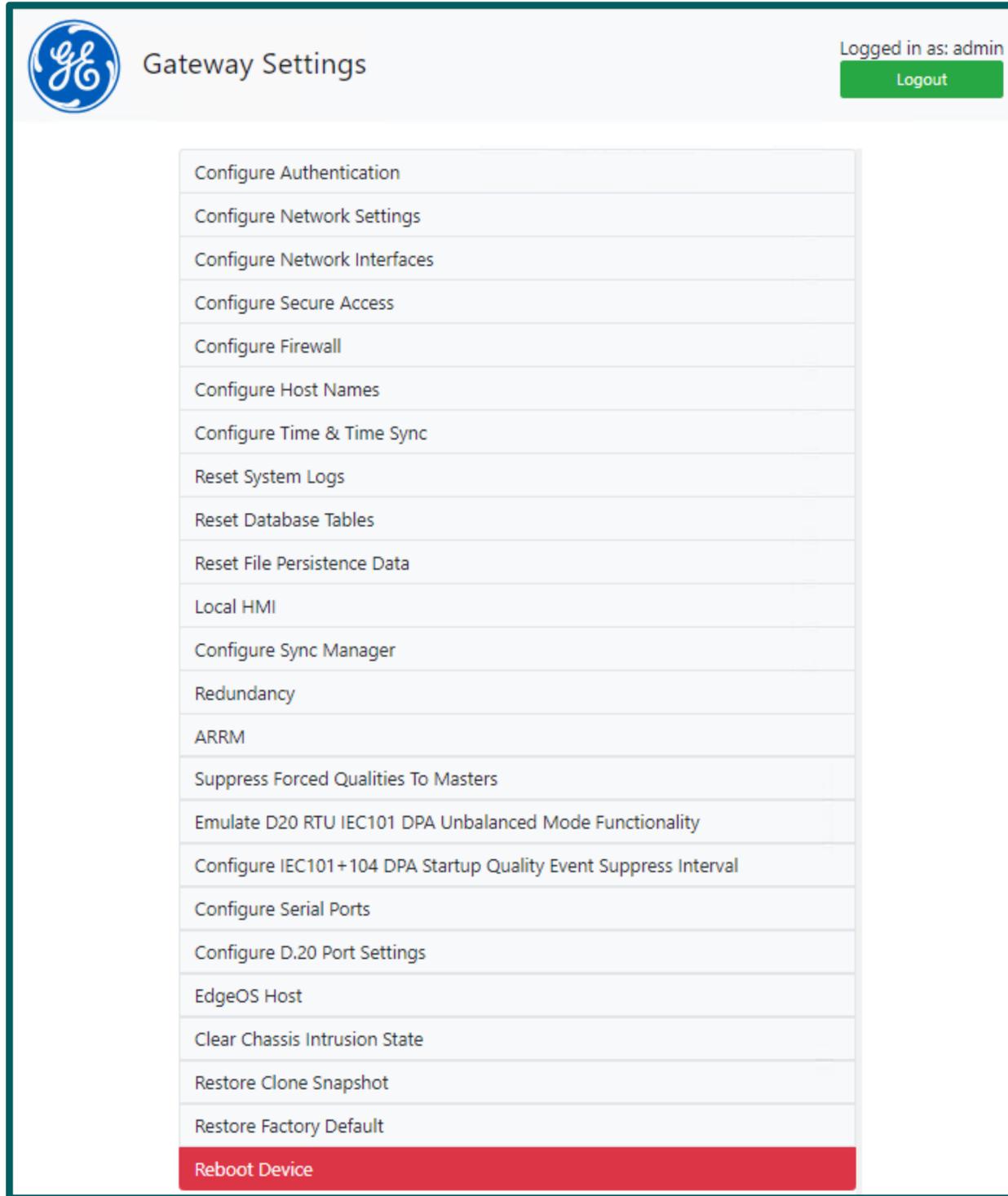
Once the G100 device is powered up and has a valid license installed, click on the G100 name via the taskbar then click **System Settings**

The functionality of the system is identical when system is configured via MCP Setting GUI or MCP Local Configuration Utility (mcpcfg). The only difference is that settings GUI is a Web based interface

A default web browser will be opened showing MCP Settings Login screen

Login using Administrator credentials

Proceed with the settings

Gateway Settings

Logged in as: admin
Logout

- Configure Authentication
- Configure Network Settings
- Configure Network Interfaces
- Configure Secure Access
- Configure Firewall
- Configure Host Names
- Configure Time & Time Sync
- Reset System Logs
- Reset Database Tables
- Reset File Persistence Data
- Local HMI
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- Restore Clone Snapshot
- Restore Factory Default
- Reboot Device

Local KVM – Local MCP Runtime HMI

Local Runtime HMI will be started automatically once G100 is powered up and has a valid license installed

Local Runtime HMI can be launched by clicking on the G100 name via the taskbar then click **Application → G100HMI**

The Local Runtime HMI access is protected by a Login screen that requires a username and password

If configured with Auto Login, then Local Runtime HMI will be launched automatically with G100 Home Page and the configured user privileges

Local HMI Settings

From system settings (mcpcfg or MCP Settings GUI), you can:

- Configure the settings of the monitor

- Enable/Disable Standby HMI Redirect to Active

Standby HMI Redirects to Active

If the Standby HMI redirects to the Active G100 when redundancy is enabled, both the Local HMI monitors connected to each G100 unit points to Active MCP only

The Local HMI Power Bar on each G100 indicates whether the Local HMI is showing information for this G100 or the PEER G100
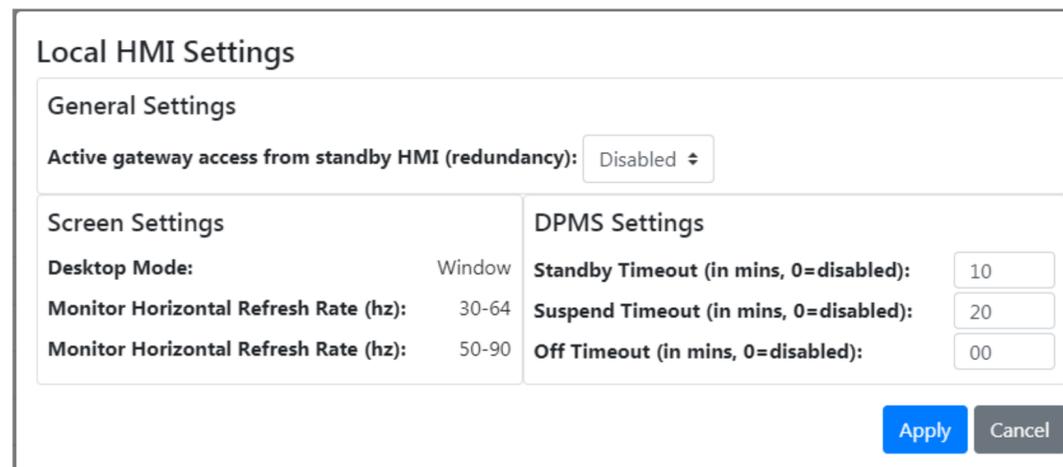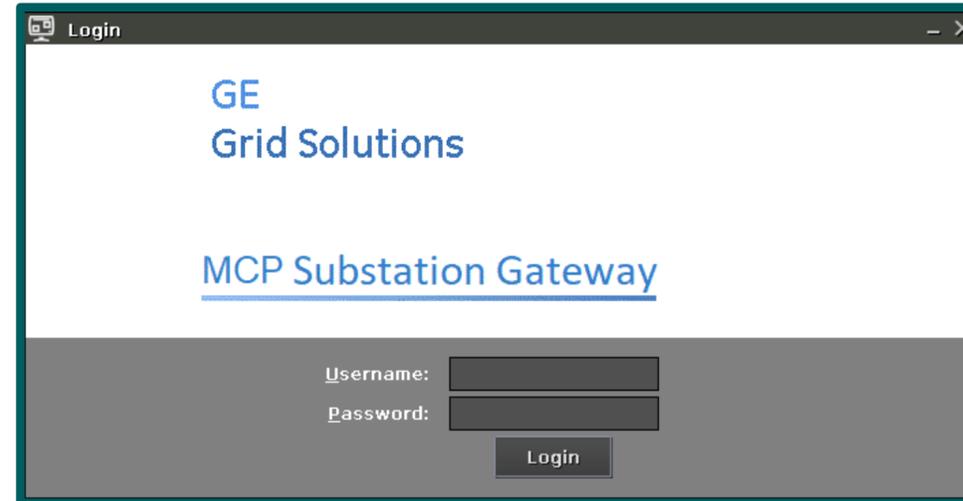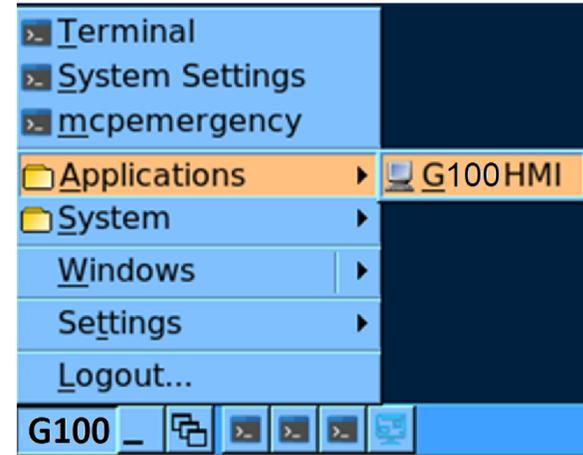
The Local HMI provides the same functions for local display and control as the remote HMI with few exceptions
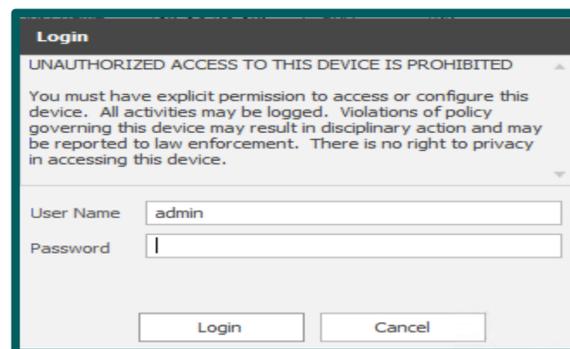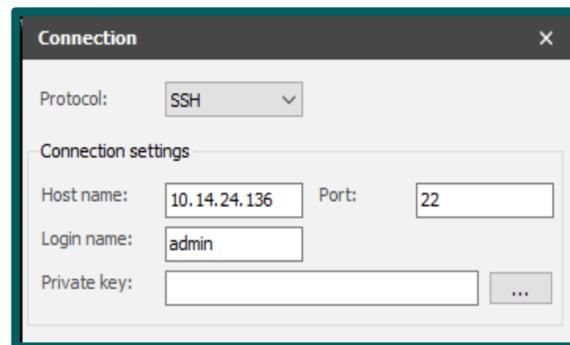
The User Login level/role determines which Local Runtime HMI features and functions the user can have access to/support

Multiple users can use the MCP Runtime HMI simultaneously, using any of the Local/Remote/Remote Desktop concurrently

The number of concurrent users is configurable under **Systemwide → Access Manager → Max Simultaneous Observers/ Operators/ Supervisors**

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Ethernet – MCP Local Configuration Utility (mcpcfg) via SSH

- Establish network connection between the PC and the G100 (any LAN port)

- Terminal session with SSH as Protocol type with Port number: 22

- Login with Administrator credentials

- Shell based command line interface

- Type "sudo mcpcfg" and the user password when prompted

- Proceed with the settings

The PC and the G100 shall be in the same subnet to establish communications

Ping is not enabled by default and can be enabled through the "Network Settings" option in mcpcfg


```
GE Multilin MCP Firmware Release 310 Production Build 153 2023-08-18:00:01:30

admin@G100:~$ sudo mcpcfg
[sudo] password for admin:
```



```
Connection                                    ×
Protocol:        SSH        ∨
Connection settings
Host name:   10.14.24.136    Port:    22
Login name:  admin
Private key:                             ...
```

```
Login
UNAUTHORIZED ACCESS TO THIS DEVICE IS PROHIBITED
You must have explicit permission to access or configure this
device.  All activities may be logged.  Violations of policy
governing this device may result in disciplinary action and may
be reported to law enforcement.  There is no right to privacy
in accessing this device.

User Name   admin
Password    |

          Login            Cancel
```

```
================================================
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        20.   EdgeOS Host
        21.   Clear Chassis Intrusion State (Not available in G100)
        22.   Restore Clone Snapshot
        23.   Restore Factory Default
        24.   Reboot Device

Enter Your Choice : ( Between 0 and 24 ):
```

L&D

Ethernet – MCP Settings GUI via HTTPS

- Web based equivalent of the MCP local Configuration Utility (mcpcfg)

- Establish network connection between the PC and the G100 (any LAN port)

- Using a supported web browser, disable proxy and enter the G100's IP address with port number 8081 into the address bar

- User is required to confirm security certificate exception

- The MCP Settings Login screen is displayed

- Login with Administrator credentials

- Proceed with the settings
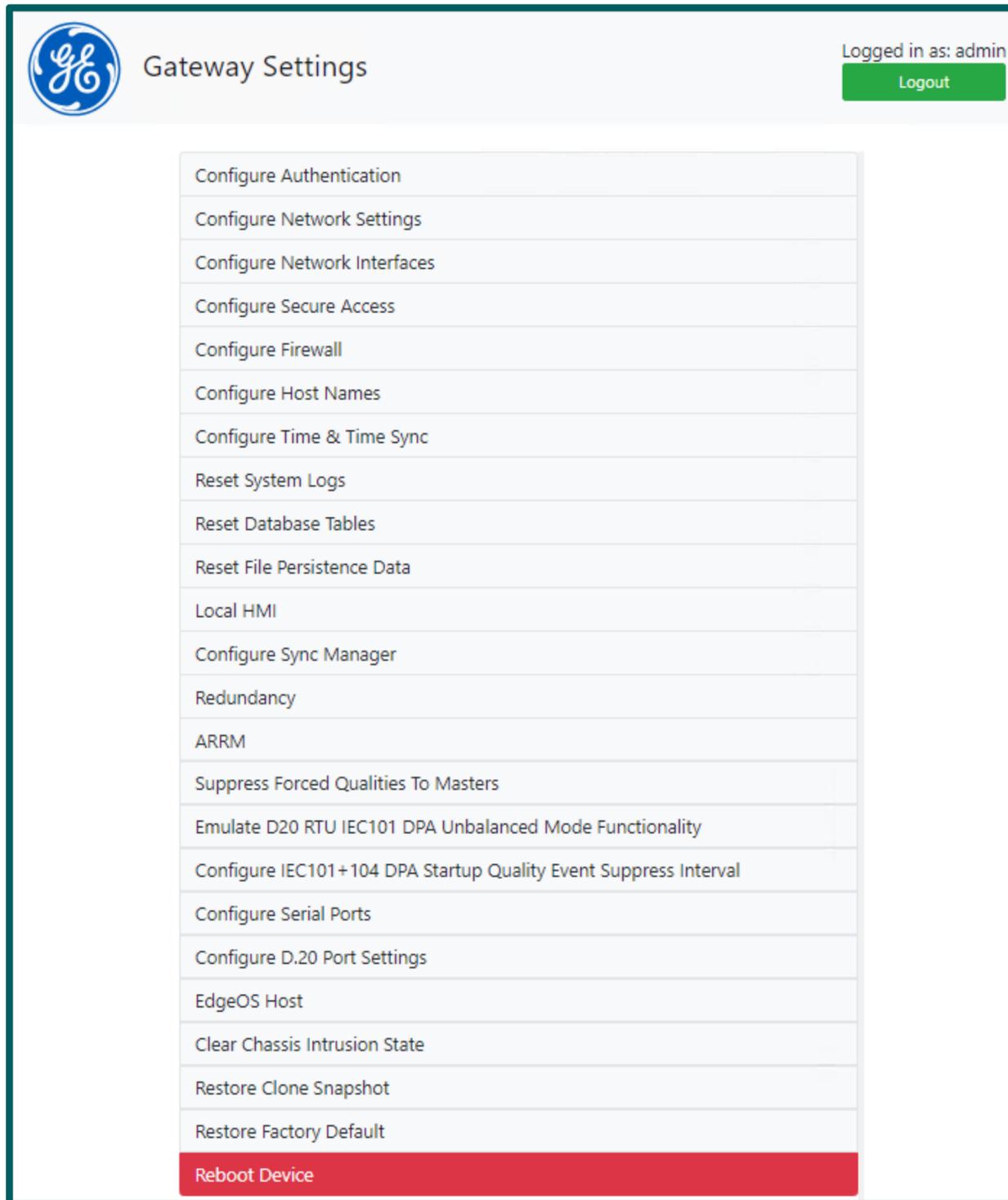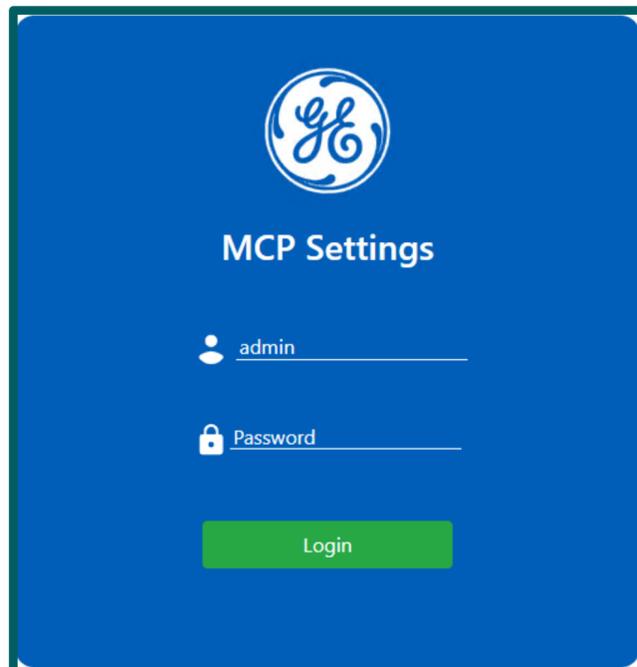
The PC and the G100 should be in the same subnet to establish communication

Supported web browser: **Internet Explorer, Microsoft Edge, Mozilla Firefox and Google Chrome**
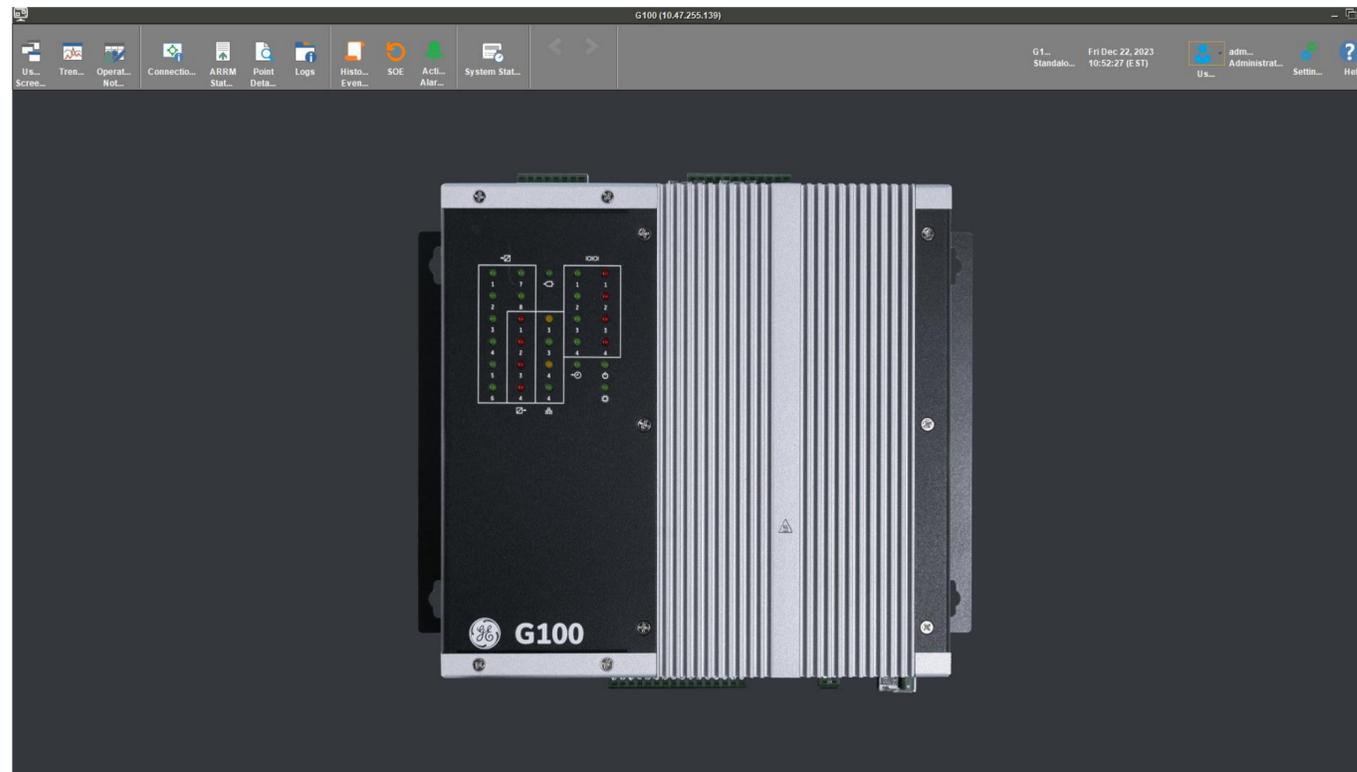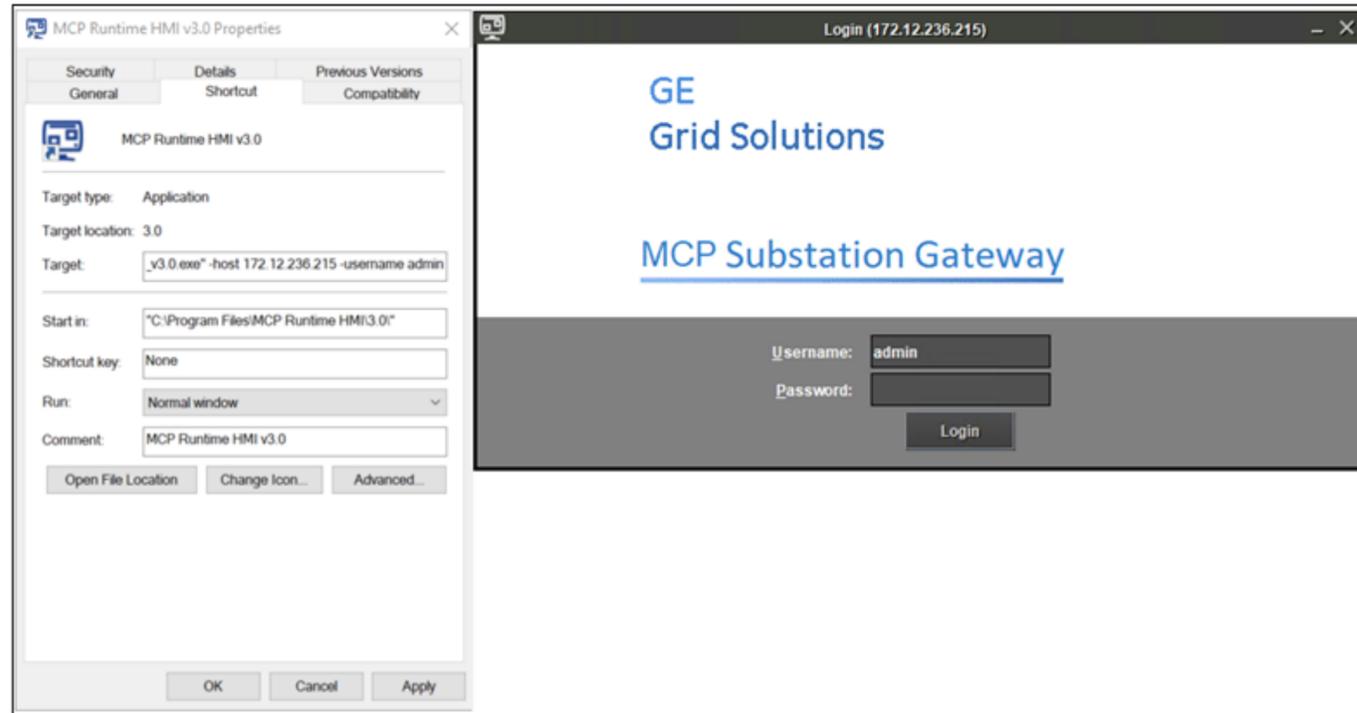
Only one instance is allowed to run at any given time between "mcpcfg" and "MCP Settings GUI".

MCP Settings

- admin
- Password

Login

Gateway Settings

Logged in as: admin
Logout

Configure Authentication
Configure Network Settings
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Ethernet – Remote MCP Runtime HMI via HTTPS

The Remote Runtime HMI provides access to the G100 from a remote computer setup:

- Requires Windows x64 bit OS

- Requires download and installation of setup file

- The remote MCP Runtime HMI runs as a standalone application.

- Once launched, the login mode is always secure HTTPS and the default port number is 443

- The User Login level/role determines which MCP HMI features and functions the user can have access to/support

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

- When Remote HMI auto login is enabled, the configured user screen is launched automatically with the configure user and privilege level

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

After successful login, the MCP runtime HMI shows either G100 or G500 automatically, by detecting the connected device type.

The G100 contains a lock out feature which prevents you from logging in after several failed attempts for a set period.

User Management	Authentication	Automatic Login
Name		
Local UI Automatic Login	false	
Local UI Automatic Login Wait Time	60	
Local Automatic Login Privilege Level	Observer	
Local Automatic Login User		
Remote UI Automatic Login	true	
Remote UI Automatic Login Wait Time	60	
Remote Automatic Login Privilege Level	Observer	
Remote Automatic Login User	auto_observer	

L&D

Ethernet – MCP Runtime HMI via Remote Desktop (RD)

Starting with MCP v3.00 is possible to connect to a separate instance of the Local HMI using Remote Desktop (RD)

- Requires a Remote Desktop MCP license and a separate RD HMI Application installed using PETC based workflow

- RD sessions use the Windows Remote Desktop Connection application

- For security reasons, all RD sessions are handled inside an RD SSH tunnel.

- Only user declared Rdtunnel role will be able to initiate the RD SSH Tunnel session.

- Only one RD session is allowed at a time

RD Configuration and Settings

- Declare users with Rdtunnel role

- Enabled /Disabled RD functionality

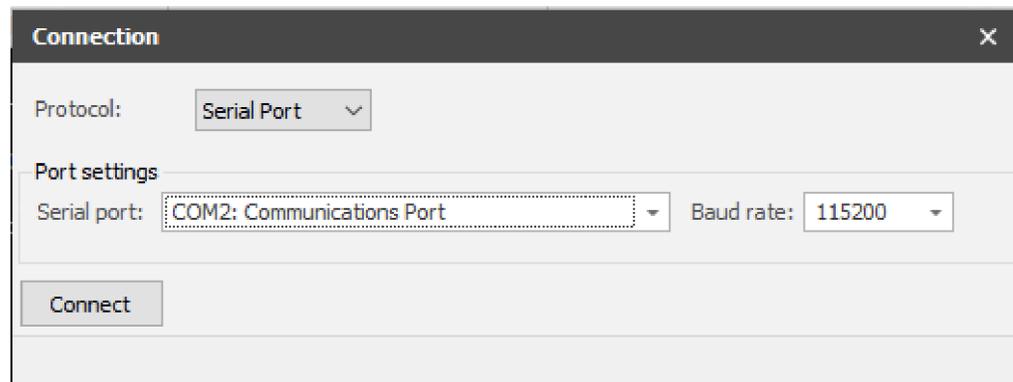- Configure RD inactivity timeout (default 15 mins)

The RD HMI application is not included in firmware images of MCP 3.0 (G100 and G500), unless was factory ordered

Users can operate independently the KVM Local HMI and the RD Local HMI Sessions

RD sessions with HMI application runs in the target device. The user experience, relative to performance, depends on the target device resources and speed.

Serial Maintenance Port – MCP Local Configuration Utility (mcpcfg)

Only one instance is allowed to run at any given time across both "mcpcfg" and "MCP Settings GUI".

- Connect a RS232 cable between your computer and the serial maintenance port of the G100

- The default serial maintenance port is serial port #4 configured as RS232 at 115200 bps

- Launch the Terminal Application such as **Secure Terminal Emulator** from the **DS Agile Studio** folder in the start menu

- Select **File → Connect** and ensure the Protocol is set to **Serial Port.** Select the PC serial port for the connection to G100 with Baud rate – 115200 and then **Connect.**

- Login with Administrator credentials at the G100 command shell prompt.

- Type "**sudo mcpcfg**" and the user password when prompted

- Proceed with the settings

```
GE Multilin MCP Firmware Release 310 Production Build 153 2023-08-18:00:01:30

admin@G100:~$ sudo mcpcfg
[sudo] password for admin: 
```

```
===============================================================
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        23.    Restore Factory Default
        24.    Reboot Device

Enter Your Choice : ( Between 0 and 24 ): 
```

Connection   ✕

Protocol: Serial Port ▼

Port settings

Serial port: COM2: Communications Port   ▼   Baud rate: 115200 ▼

Connect

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Thank You for Watching this Module.

If you are watching this as part of a structured learning program, please don't forget to take the test.

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