PRT-GX-SRVR

Protege GX System Networking

Administrator Guide

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The Protege GX System

Introduction

The Protege GX system is a powerful integrated alarm and access control management system designed to provide integration with building automation, apartment complex control and HVAC in one flexible package.

Communication is over a proprietary high speed protocol across an encrypted local area network and AES encrypted proprietary RS-485 module network. Using modular-based hardware design, system installers have the flexibility to accommodate any installation, small or large, residential or commercial.

Document Information

This document outlines the operation of the various networking and communication protocols used by the Protege GX system.

It is recommended that at a minimum the ports specified in this document are opened for devices to allow upgrade and effective management of the access control system.

Software Version

This document is independent of the software version that is operating and is based on the default configuration of the system.

Third Party Software Applications

The Wireshark utility is an excellent diagnostic tool when identifying connectivity issues.

- Wireshark download link: http://www.wireshark.org/download.html

Protege GX Server Operation

The Protege GX system is composed of three services when in the standard configuration. Each service is designed to perform a number of related tasks as detailed below.

Protege GX Data Service

The Protege GX Data Service receives requests from the client user interface. The service maintains a connection to SQL Server for programming and editing records and alerts the user interface when new events or alarms are available.

The service also manages control requests or manual operator commands that result in an outbound connection to the controllers from the attached client interfaces.

Protege GX Event Service

The Protege GX Event Service uses inbound connections to receive events sent by controllers. These events are saved to the database. Status updates and messages are also sent to the event service.

Protege GX Download Service

The Protege GX Download Service transfers programming changes to controllers. It sequentially checks each controller to determine whether programming changes are required, and if so downloads the updated configuration to the controller.

Allowing Services Through a Firewall

It may be necessary to allow the Protege GX services through a firewall to prevent system communication being blocked. The following executables will need to be granted access:

- GXSV.exe
- GXSV2.exe
- GXSV3.exe
- GXPI.exe
- GXEvtSvr.exe
- GXDVR1.exe
- GXDVR2.exe

The executables can be found in the Protege GX installation directory. The default installation directory is C:\Program Files (x86)\Integrated Control Technology\Protege GX.

System Architecture

The following diagram is indicative of the general structure of a Protege GX system when connected to an IP network. This is a basic overview of the setup and is not intended to include all connections. You should use this as a reference when opening ports and configuring routers to allow communications to operate correctly.
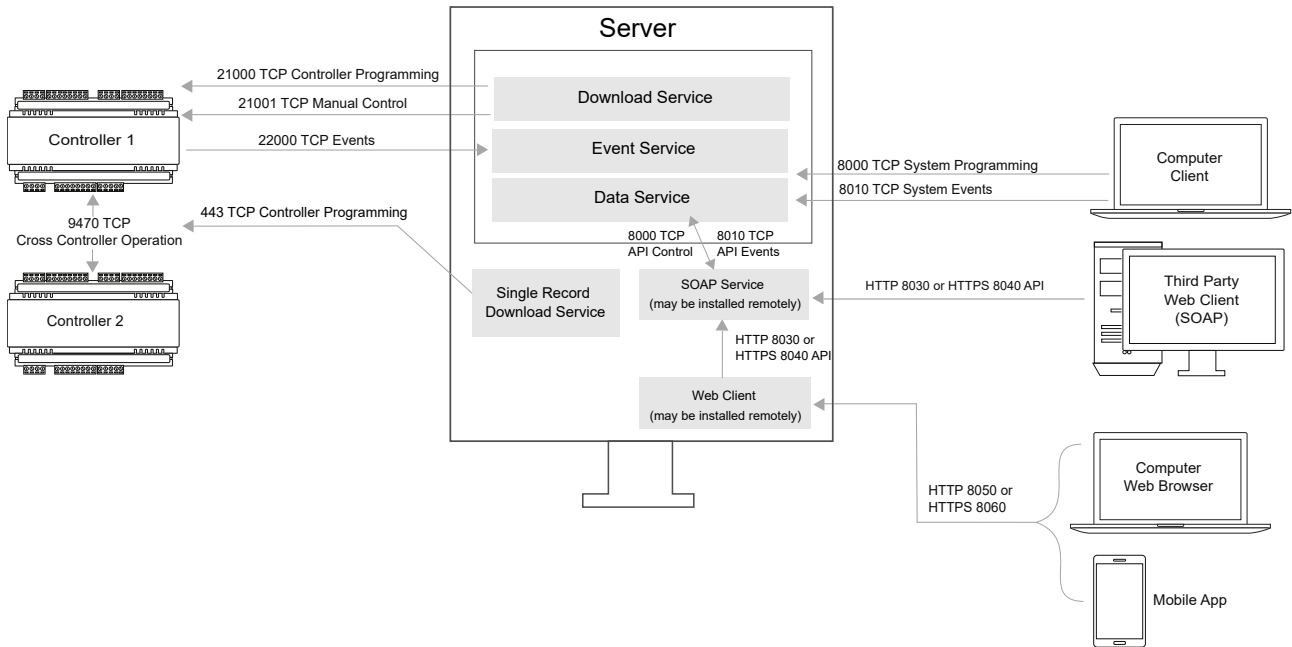
IP Networking Ports

The following ports may need to be forwarded or approved in your firewall.

From	Outbound Port	To	Inbound Port	Protocol	Description
Download Service	Any	Controller	21000	TCP	Controller programming.
Download Service	Any	Controller	21001	TCP	Manual control commands.
Controller	Any	Event Service	22000	TCP	Store system events and status updates in SQL database.
Client	Any	Data Service	8000	TCP	Store system programming in SQL database.
Client	Any	Data Service	8010	TCP	Display system events.
SOAP Service	Any	Data Service	8000	TCP	Store system programming in SQL database.
SOAP Service	Any	Data Service	8010	TCP	Display system events.
Single Record Download Service	Any	Controller	443	TCP	Controller programming.
Modules	9450	Controller	9450	UDP	Module communication. Programming, control and status.
Modules	9460	Controller	9460	UDP	Touchscreen communication.
Controller	9450	Modules	9450	UDP	Module communication. Programming, control and status.
Controller	9460	Modules	9460	UDP	Touchscreen communication.
Entry Station	Any	Controller	9450	TCP	Programming, control and status.
Controller	9470	Controller	9470	TCP	Cross controller operation.
Controller	Custom	Central Monitoring Station	Custom	TCP	Offsite IP Monitoring (equivalent to ContactID alarm monitoring). Ports should be agreed between the installation company and monitoring company.
Web Client	Any	SOAP Service	8030	HTTP TCP	API for controlling and programming Protege GX systems.
Third Party Web Client (SOAP)	Any	SOAP Service	8030	HTTP SOAP	API for controlling and programming Protege GX systems.
Web Client	Any	SOAP Service	8040	HTTPS TCP	API for controlling and programming Protege GX systems.

From	Outbound Port	To	Inbound Port	Protocol	Description
Third Party Web Client (SOAP)	Any	SOAP Service	8040	HTTPS SOAP	API for controlling and programming Protege GX systems.
Web Browser	Any	Web Client	8050	HTTP TCP	Web based interface for controlling Protege GX systems.
Mobile App	Any	Web Client	8050	HTTP TCP	Web based interface for controlling Protege GX systems.
Web Browser	Any	Web Client	8060	HTTPS TCP	Web based interface for controlling Protege GX systems.
Mobile App	Any	Web Client	8060	HTTPS TCP	Web based interface for controlling Protege GX systems.
Data Service	Any	SQL Server	1433*	TCP	Store programming in SQL database. Transfer programming to controllers.
Event Service	Any	SQL Server	1433*	TCP	Store system events and status update in SQL database.
Download Service	Any	SQL Server	1433*	TCP	Store programming in SQL database. Transfer programming to controllers.
Single Record Download Service	Any	SQL Server	1433*	TCP	Store programming in SQL database. Transfer programming to controllers.

*The SQL Server connection port is configurable. 1433 is the default. The following .NET Framework Data Provider for SQL Server connection string can be used for connections to SQL Server 2019, 2017, 2016, 2014, 2012 and 2008. See the Connection Strings website for more information.

```
Server=myServerName,myPortNumber;Database=myDataBase;
```

Some of the above ports can be changed if required. Contact ICT for further information on port customization.

Additional ports may be required for integration to third party systems, such as HLI integrations with elevator systems, and DVR integrations. Refer to the relevant documentation for specific integration requirements.

IP Networking Ports (Legacy Products)

From	Outbound Port	To	Inbound Port	Protocol	Description
Download Service	Any	PCB Controller	9000	TELNET	Control and service menu for firmware updates.
Telnet Client	Any	PCB Controller	9000	TELNET	Control and service menu for firmware updates.
Download Service	Any	PCB Controller	69	TFTP	Firmware update (transfer).
TFTP Client	Any	PCB Controller	69	TFTP	Firmware update (transfer).
TFTP Client	Any	PCB Controller	10001	TFTP	Hardware subsystem configuration and maintenance.

# Remote Controller Download Communications
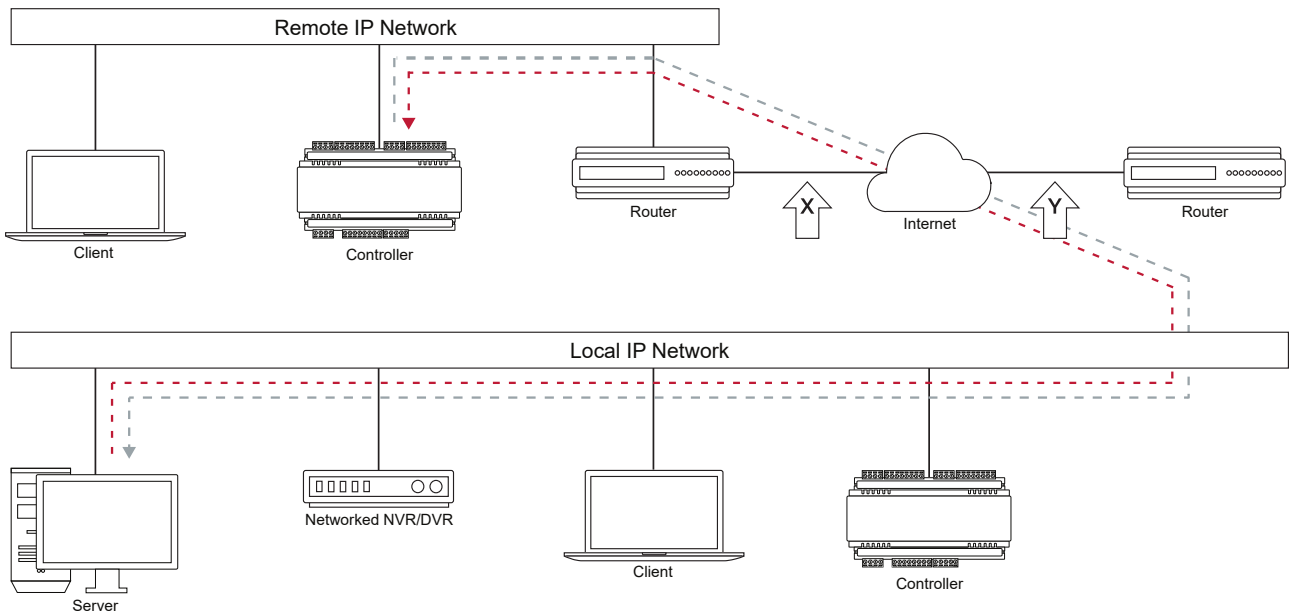
Protege GX Remote Controller Download Communications

During a download, a communication connection is initiated at the server and sent to the controller.

When the controller is on a remote IP network, the key to getting the controller online and communicating is to set up the correct port translation at points X and Y (see image above). The download service requires port forwarding configuration at point **X**. The event service requires port forwarding to be configured at point **Y**.

Cellular Network Connection
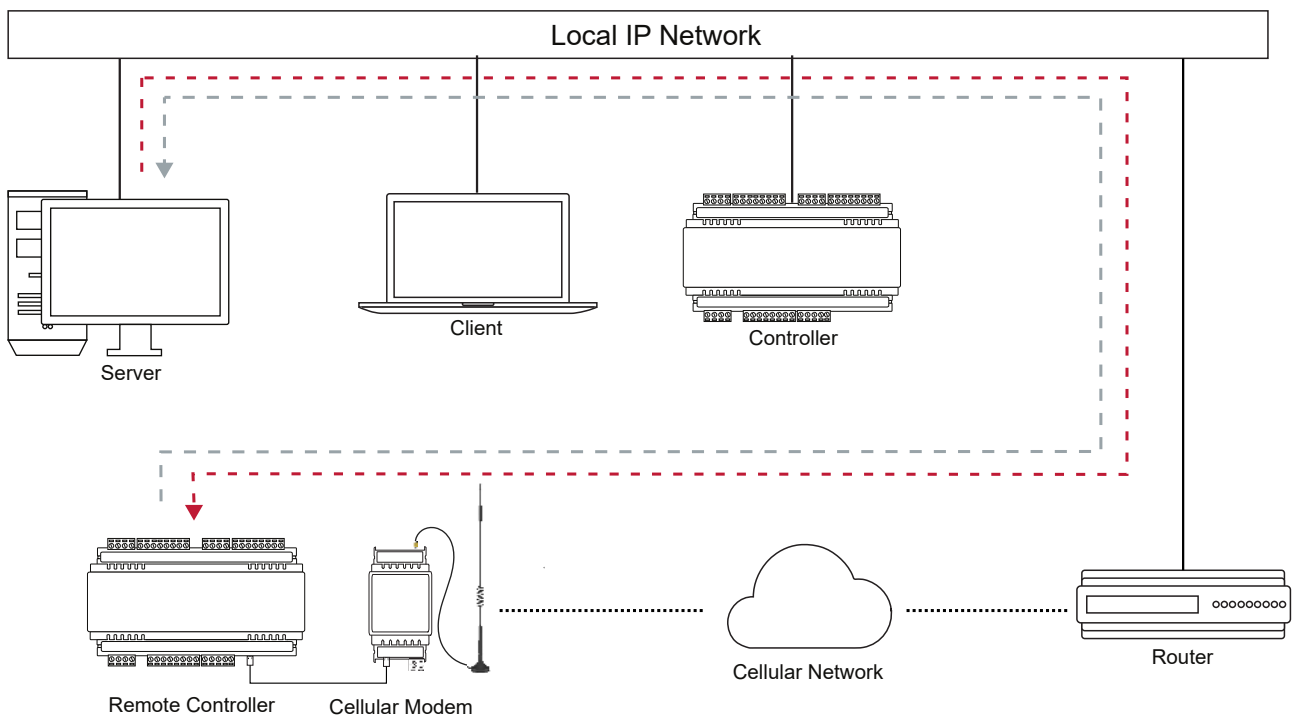
Protege GX controllers can also use the Protege DIN Rail Cellular Modem to communicate with the server via the 4G cellular network. This allows you to connect controllers to the Protege GX system even when they are located outside of wired networks.

The SIM card network provider for the cellular modem must allow both inbound and outbound connections, and you must enable dynamic IP address updates for this controller if the cellular modem does not have a fixed IP address. For more information and configuration instructions, see the Protege DIN Rail Cellular Modem Configuration Guide, available from the ICT website.