



PRT-GX-SRVR

Protege SE to Protege GX

Upgrade Guide



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Upgrading from Protege SE to Protege GX

To ensure our customers can take advantage of new technology and functionality, ICT provides an upgrade path that enables existing Protege SE users to migrate to Protege GX.

There are two key steps to upgrading:

1. Updating the software and transitioning existing programming
2. Updating the system controller(s)

This guide outlines the upgrade methods available and steps required to suit the needs of your site.

Before You Begin

Before starting the upgrade from Protege SE to Protege GX, you must contact the ICT Technical Support team (via telephone or by logging a support ticket; see ict.co/Contact-Us). This is necessary for the following reasons:

- To discuss the options for upgrading your site.
- To convert your Protege SE license to a Protege GX license and add the correct features and functions. If your Software Maintenance Agreement (SMA) is up-to-date and you purchase a Protege GX controller (either PCB or DIN rail) then your software will be upgraded free of charge. If your SMA is not up-to-date or you do not wish to purchase a new controller then you will need to buy the software.

Without the correct license the upgrade will fail, or portions of the system will be inoperable.

- To obtain the SE to GX Upgrade Tool and required software/firmware files.

Please remember to provide your current Protege SE serial number when contacting Technical Support.

We also recommend that you read through this guide thoroughly before beginning the process.

Prerequisites

Software

The following software components are required.

Software	Version	Notes
Protege SE	2.5.26.475 or higher	Any features added later than the stated version will not be transitioned.
Protege GX	4.3.308.3	Currently ONLY the stated version can be used for the upgrade. However, you can update Protege GX to the latest version after the transition. If you are importing the Protege SE site into an existing Protege GX installation, this must be version 4.3.308.3 or below. Once the database has been upgraded past this point it cannot be downgraded. This version can be provided by ICT Technical Support. For detailed instructions on installing the software and any prerequisites, please refer to the Protege GX Installation Manual.
SE to GX Upgrade Tool	-	This tool is provided by ICT Technical Support.

Hardware

The recommendation is to replace the Protege SE PCB with a Protege GX DIN Rail Controller (PRT-CTRL-DIN).

For more information, see [Controller Upgrade Options](#) (page 13).

Licensing

An active Protege GX software license is required.

Imported Items

While the upgrade tool imports most of the data from Protege SE, there is some data that cannot be transferred.

Data that is imported	Data that is not imported
<ul style="list-style-type: none">• Site record details• Controllers and all controller-related information (doors, areas, inputs, input types, etc.)• DVRs and cameras• Roles, security levels and operators• Schedules, access levels and users• Keypad groups• Door groups• Area groups• Output groups• Menu groups• Elevator groups• Floor groups	<ul style="list-style-type: none">• Alarm priorities• Event types• Events• Acknowledged alarms• Alarm instructions• Alarms• Condominiums• Custom fields• Event filters• Floor plans• Jobs• Modems• Event reports• Muster reports• Photo ID templates• Attendance reports• Workstations

As Protege SE does not have record groups, any security levels assigned to a role are given **All Record Group** access.

Import Criteria

For information to be imported correctly, certain criteria must be met:

Description	Rule
Keypads, reader expanders, input (zone) expanders, output (PGM) expanders and analog expanders	<p>If the Only Import Online Modules option is selected, the item is not imported if:</p> <ul style="list-style-type: none">• The module is not registered• The module is offline• The module serial number is zero (0), or• The module firmware version is not recorded <p>If this option is not selected, the module is imported provided it has previously been online.</p>
Outputs (PGMs), inputs (zones) and trouble inputs	<p>These are imported if the related module is imported. For example, if a reader expander is imported, the outputs for that module are also imported.</p>
Keypad groups, door groups, output groups, floor groups, area groups and elevator groups	<p>Groups are imported when they contain items (for example, a door group is imported if it contains one or more doors), or when the group has been renamed from the default. If the group is empty or has not been renamed, it is ignored.</p>
Doors	<p>Doors are imported when they have a lock output assigned, or when the door has been renamed from the default. If no lock output is assigned, or the door has not been renamed, it is ignored.</p>
Services	<p>A service is only imported when that service type exists in Protege GX. This means that the Monitor Phone, Upload Direct, DVAC, Modbus Remote, BACnet services are ignored.</p>

Updating the Software

This section outlines how to use the SE to GX Upgrade Tool to transfer your Protege SE database and controller configuration to Protege GX.

It is possible to transition a Protege SE site either into a fresh installation of Protege GX, or into an existing installation. Each Protege SE site will become a new site in Protege GX.

The procedure requires you to have a working knowledge of Microsoft SQL Server Management Studio. The examples given show the use of Microsoft SQL Server 2012 Express.

Preliminary Setup

Before beginning the database upgrade of a site from Protege SE to Protege GX, regardless of size, carefully complete the following steps:

1. Ensure that all **prerequisites** outlined above are met. Update all **software versions** to those stated.
2. Upload the modules to obtain the **serial numbers**. The upgrade tool works on the registration of modules that already exist in the database. If you do not have a serial number in the module and the status of that module is not known, the upgrade tool will not import the module or related objects within that module such as zones, PGMs and trouble zones (see previous page).
3. Upload any **external changes** that have been made on a site (e.g. local changes made on keypads or another instance of SE) from the controller to the database. External changes that are not in the database will not be imported into Protege GX.
4. **Disconnect** the Protege SE controller from the server for the duration of the upgrade process.
5. Perform a **backup** of the Protege SE database. Although performing a backup is required for the transfer, you must also perform one before you begin. This provides a known starting point which can be used by ICT Technical Support if necessary.
6. If you have an existing Protege GX installation and you are planning to import a new Protege SE site into it, perform a **backup** of the existing Protege GX database.
7. **Delete excess databases** from any versions of Protege GX other than 4.3.308.3 via SQL Server Management Studio. Note that the upgrade tool will only work within one instance of SQL. This is for performance reasons, as a large number of records must be transferred between databases.

Performing the Upgrade

The main steps involved in performing the SE to GX upgrade are as follows:

1. Take a backup of the Protege SE database.
2. Load the Protege SE backup into the SQL server instance containing the Protege GX databases.
3. Run the Protege SE to GX Upgrade Tool.
4. Run the Protege GX installer to modify the application.
5. Check and test the transitioned programming.

Apart from the first, all steps must be completed on the workstation hosting the Protege GX server.

Taking Backups

Back up the Protege SE database by selecting **Backup** from the **Global Options** screen, **Main Database** tab.

Ensure that you receive a message confirming that the backup has completed successfully. For large systems, a backup can take some time to complete. Do not stop, close, or terminate the application during the backup process.

Take a note of the backup path as shown on screen. Browse to this directory and copy the backup (*.bak) file to a location on the machine that has Protege GX installed.

This drive must reside on the **same physical machine** as the Protege GX server.

In addition, if you are loading the Protege SE database into an existing Protege GX installation, ensure that you take a backup of your Protege GX programming before beginning the upgrade process, so that it is easy to roll back the import if necessary.

Restoring the Protege SE Backup to the Protege GX Server

The following process outlines the steps required to attach the Protege` SE backup to the Protege GX instance in SQL server. If you accepted the defaults when installing Protege GX, this will be **COMPUTERNAME/ProtegeGX** (where computername is the name of your computer). If you use a different SQL instance, substitute this in place of ProtegeGX.

The following instructions may vary slightly between different versions of Microsoft SQL Server Management Studio.

1. Stop the Protege GX services by stopping the Protege GX Update Service.
2. Open Microsoft SQL Server Management Studio and connect to the Protege GX server.
3. Right-click on the **Databases** node and select **Restore Database...**
4. In the **General** page, select the **Device** option, then click the **[...]** button to open the Specify Backup window.
5. In the **Backup media type** field, select File, then click **Add**.
6. Browse to the directory created where the Protege SE database backup is stored and select the .bak file. Click **OK** to return to the Select backup devices screen, then **OK** to return to the Restore Database screen.
7. From the **Destination** section, enter Protege in the **Database** field.

Important: The database name must be Protege **exactly**. If you use any other name (including adding either a suffix or prefix), the upgrade tool will not find the database and the upgrade will fail.

8. Check the **Restore** checkbox for the backup set that you wish to restore. If multiple backup sets are shown, restore only one and ensure that it is the most recent. This should be identified by the date and time the backup was performed within Protege SE.
9. By default, SQL server restores the .mdf and .ldf files to the SQL program files location. However, since the use of this Protege SE backup is temporary, it is better to restore it to a unique location so it does not interfere with the live Protege SE installation.

Open the Windows File Explorer and create a new location to restore these database files; e.g.

C:\ICT\Protege SE to GX Import\Data.

10. Return to SQL server and navigate to the **Files** page. Check the **Relocate all files to folder** option.
11. Click the **[...]** button next to the **Data file folder** field and browse to the directory created above. Click **OK**.
12. Select the **[...]** button next to the **Log file folder** field and enter the same directory as above.
13. Click **OK**. SQL server will begin executing the restore process.
14. Progress is shown as the restore completes. Large databases can take some time to restore, so **do not** close the window before you get a message confirming the backup has completed successfully.

When the restore has been completed, there should be three databases in that SQL server Instance: ProtegeGX, ProtegeGXEvents and Protege.

Troubleshooting

If a problem arises during the restore process, identify the error first. SQL server error messages are very detailed and will provide the exact reason why the restore cannot be completed. Common problems include:

1. The file `Protege.mdf` or `Protege.ldf` already exists, or is in use by an application. In this case, it will not override the files. To rectify this, disconnect or close the application, then proceed.
2. The directory is not writable by SQL Server Management Studio. You must select a directory you have access to.
3. You have attempted to restore a backup from a later version of SQL than the current version you are using.

Running the Upgrade Tool

1. Stop the Protege GX services by stopping the Protege GX Update Service.
2. Run the Protege SE to GX Upgrade Tool.
3. Enter the **SQL Server** instance name for the Protege GX server. If you accepted the defaults during installation, this should be `LOCALHOST\ProtegeGX`.
4. Click **Connect**. The upgrade tool attempts to connect to the Protege database (your Protege SE backup) and the Protege GX database.
5. Select the Protege SE **Site** you wish to import.
6. To upgrade only the Protege SE modules currently online, ensure the **Only Import Online Modules** option is enabled. If this option is not selected, any modules previously online within Protege SE will be upgraded (see page 7).
7. Click **Upgrade**. The system proceeds with the upgrade.

Note: Progress of the upgrade being performed is not displayed and the application may appear to have frozen. Do not attempt to close or control the application.

8. Wait until the upgrade tool notifies you that the upgrade has been completed, then close the upgrade tool.

Exporting Images

Images held in the Protege SE database are stored in a special binary format and this format cannot be migrated directly to Protege GX. The **Export Images** function enables the export of all images associated with a site to a specified directory.

1. Run the Protege SE to GX Upgrade Tool again.
2. Under **Export Images from SE**, enter the location where you wish to save the files.
3. Click **Export Images**.

The exported images will appear in the specified directory, from where they can later be used in Protege GX for user records, floor plans, etc.

Modifying the Protege GX Installation

It is necessary to re-run the Protege GX installer to upgrade the database to Protege GX version 4.

1. Open the Windows **Programs and Features** window by pressing **Windows key + R**, entering `appwiz.cpl` and clicking **Ok**.
2. Locate Protege GX in the program list, right click and select **Change**. This will open the InstallShield Wizard.
3. Click **Next**, then select **Modify**. Continue clicking **Next** to accept the default settings.
4. Click **Install** when prompted. When the reinstallation begins processing, the Protege GX V3 to V4 Migration Tool should launch.
5. Enter any relevant settings (default settings are normally fine) and run the migration tool.

Setting Up Protege GX

If you have created a new Protege GX installation, you must log in and license your software:

1. From the server machine, run the Protege GX client and log in using the default credentials:
 - **Username:** admin
 - **Password:** <blank>
2. From the main menu, select **About | License**.
3. Select the **License update** tab.
4. Select the **Automatic** or **Manual** option to download and activate your Protege GX license:
 - If the server machine has internet access, use the **Automatic** option.
 - If the server machine does not have internet access, you must use the **Manual** option.

The steps of manually generating the license and uploading it to Protege GX must be carried out from the server rather than a remote client workstation, or the profile will not match and the license activation will fail.

Licensing: Automatic

1. Click **Download license**, enter the required information and select **OK**.
2. The Protege application passes your details to the ICT web registration service, then activates your software automatically.
3. Close and restart the Protege GX client to implement the new license.

Licensing: Manual

1. Click **Generate** to create a license request file. When prompted, save the **ICT_LicenceRequest.req** file to a folder on your network or a portable drive.
2. Click the link to **Select your licensing options**. This opens a webpage where you will be prompted to enter your site, installer and serial number (SSN) details.
3. Browse to the saved **ICT_LicenceRequest.req** file and click **Submit**.
4. Your details are then passed to the ICT web registration service. Once registration is complete you will be prompted to download your license (*.lic) file.
5. Click **Browse** to select the license file and activate your Protege GX license.
6. Close and restart the Protege GX client to implement the new license.

Note: Steps 2 to 4 can be performed on any workstation with internet access. Steps 1 and 5 **must be performed on the server**.

Testing the Protege GX Site

Once the upgrade is complete, log into Protege GX and check the site to ensure that everything has transferred correctly. Note that not all items from Protege SE can be transitioned (see page 6). These will need to be programmed manually if required.

It is **strongly** recommended that you test the site's functionality on the test bench before proceeding to implement it on the live site.

The restored backup is a snapshot of the current Protege SE system. It will retain the programming at exactly the same point it was at when you left the Protege SE system. If you make a mistake or something does not import correctly, you can repeat the backup and restore process as many times as required provided you delete the previous import.

- If this is a new Protege GX installation (that has not yet been programmed):
 - Uninstall Protege GX
 - Delete the SQL database
 - Reinstall Protege GX
 - Run the upgrade tool again
- If this is an existing/working Protege GX installation:
 - Restore the Protege GX database backup that you took in the preliminary setup stage
 - Run the upgrade tool again

Contact ICT Technical Support if you have any further issues.

Updating the System Controller

There are three options for upgrading your physical system:

1. Replace your Protege SE controller with a Protege GX DIN rail controller (recommended).
2. Replace your Protege SE controller with a Protege GX PCB controller. This upgrade path may have limited availability (see below).
3. Install the Protege GX firmware on an existing Protege SE controller. Please note that this approach is **not** recommended due to the limitations explained below (see next page).

It is not necessary to replace other system modules, although hardware requirements may change slightly depending on your choice of controller.

DO NOT replace or upgrade the hardware on an active site before the database has been successfully transitioned.

Controller Upgrade Options

Upgrading to a Protege GX DIN Rail Integrated System Controller

The recommended method is to replace the Protege SE PCB with a Protege GX DIN rail controller (PRT-CTRL-DIN).

This provides all the advantages that DIN rail hardware has over PCB units:

- Enclosed design provides extra durability and protects internal circuitry from physical damage or electrostatic discharge
- Front-panel LED indicators show the status of devices at a glance, making servicing and diagnosis quick and simple
- Removable plug-in terminals allow for easy servicing and rapid deployment
- Regular firmware updates are available, providing new features, bug fixes and important cybersecurity enhancements

The DIN rail controller has a different onboard capacity to a Protege SE controller, so consideration must be given to the hardware needed to meet your requirements. For example, a PCB controller has 16 inputs whereas the DIN rail controller only has eight. This means that if your site utilizes all 16 inputs, an additional reader expander or input expander will be required, as well as some programming to ensure that the inputs are correctly mapped to these expanders.

The amount of physical cabinet space required to store any additional hardware should also be taken into consideration. DIN rail controllers do not have the same shape or footprint as PCB controllers, so you may also need a new cabinet.

Upgrading to a Protege GX PCB Integrated System Controller

The PRT-GX-PCB controller has been discontinued and is being run out of stock. Please contact ICT to determine availability before planning to upgrade with this controller.

The technically simplest option is to replace your Protege SE PCB controller with a Protege GX PCB controller (PRT-GX-PCB).

This method is the simplest as it is just a matter of physically swapping the controllers, rewiring and reconnecting the power supply and additional devices. The controllers share the same capacity and footprint, so there is no need for additional hardware or space inside the enclosure.

However, if you select a PCB controller, more recent Protege GX features may not be available and it will not receive firmware updates. This controller also lacks important cybersecurity enhancements and is more vulnerable to attack.

Install Protege GX Firmware on an Existing Protege SE Controller

Another option is installing the Protege GX firmware on a Protege SE controller. PRT-CTRL-GX firmware version 3.52.4142 is compatible with PRT-CTRL-SE controllers, providing an upgrade path for the legacy hardware.

This option may be the most cost-effective, since it does not involve new hardware. However, it is not recommended as the restrictions of an SE controller limit the extensive capabilities of the Protege GX software. Protege GX software using Protege SE hardware has memory constraints that restrict the operation of a number of features. The following section outlines these restrictions.

Further, you will not receive new features and firmware updates from ICT. This controller also lacks important cybersecurity enhancements and is more vulnerable to attack.

Limitations of Protege SE Hardware

When using a Protege SE controller with the Protege GX firmware, the capabilities are restricted by the configuration parameters of the Protege SE software.

For example, Protege GX can support eight cards per user, but only two cards per user are supported in Protege SE. Accordingly, the number of cards supported within the Protege GX software when using a Protege SE controller is two. If the operator programs a user with more than two card numbers, an assertion event and a health status notification will be generated.

Records	Protege SE PCB Controller with Protege GX Firmware	Protege GX PCB or DIN Rail Controller
Cards per user	2	8
Access levels per user	4	Unlimited
Doors in access levels	Not supported	Unlimited
Door groups in access levels	1 per controller	Unlimited
Floors in access levels	Not supported	Unlimited
Elevator groups in access levels	1 per controller	Unlimited
Floor groups in access levels	1 per controller	Unlimited
Menu groups in access levels	1 per controller	1
Arming area groups in access levels	1 per controller	Unlimited
Disarming area groups in access levels	1 per controller	Unlimited
Outputs in access levels	1 per controller	Unlimited
Output groups in access levels	1 per controller	1
Doors in a door group	64	Unlimited
Areas in an area group	128	Unlimited
Keypads in keypad group	16	Unlimited
Outputs in an output group	24	Unlimited
Holidays in a holiday group	16	Unlimited
Elevators in an elevator group	128	Unlimited
Floors in a floor group	128	Unlimited

Protege GX Memory Profile

In Protege SE, memory profiles are used to divide up the available memory into regions that can be used for specific applications. While these profiles can no longer be selected using Protege GX, if you are running a Protege SE Controller with the Protege GX firmware, the following Protege SE limits still apply:

Description	Protege SE PCB Controller with Protege GX Firmware	Protege GX PCB or DIN Rail Controller
Keypad modules	32	200
Input expanders	32	248
Reader expanders	32	64
Output expanders	8	32
Inputs	912	5288
Trouble inputs	1472	9152
Outputs	676	2956
Output groups	128	Unlimited
Area groups	32	Unlimited
Menu groups	16	Unlimited
Door groups	248	Unlimited
Keypad groups	16	Unlimited
Areas	32	Unlimited
Access levels	248	Unlimited
Input types	128	Unlimited
Doors	64	248
Door types	8	Unlimited
Services	8	16
Phone numbers	16	Unlimited
Schedules	128	Unlimited
Holiday groups	16	Unlimited
Daylight saving adjustment settings	1	1
Automation points	32	248
Panel configuration information	1	1
Users	5000	Unlimited
Events	2000	50,000
User names	2000	Unlimited
Area names	32	Unlimited
Access level names	248	Unlimited
Zone type names	Not stored	Unlimited
Zone input names	720	904

Description	Protege SE PCB Controller with Protege GX Firmware	Protege GX PCB or DIN Rail Controller
Home names	8	248
Door names	128	248
Door type names	8	Unlimited
Area group names	32	Unlimited
Menu group names	16	Unlimited
Keypad group names	8	Unlimited
Phone no names	8	Unlimited
Schedule names	Not stored	Unlimited
Door group names	Not stored	Unlimited
Floor group names	Not stored	Unlimited
Output names	772	1164
Floor names	Not stored	128
Elevator names	8	8
Elevator floor groups	32	Unlimited
Elevator cars	8	8
Elevator floors	128	128
Programmable functions	64	248
Elevator car groups	8	Unlimited
Elevator car group names	Not stored	Unlimited
Analog expanders	8	32
Data values	248	248
Bit variables	248	0
Smart readers	0	248

Preliminary Setup

Before upgrading controller hardware/firmware, especially on a live site, we recommend the following:

1. Select which **hardware replacement** option you will use for this site. Carefully plan for any **additional hardware, firmware or storage requirements**.
2. Create a local connection with any new controller and update its **IP Address** to match that of the Protege SE controller that it is replacing. Get the controller online with the Protege GX server and ensure that all programming has been downloaded correctly.

See the relevant Protege GX Controller Installation Manual for help with getting a controller online.

3. Ensure that there is **sufficient offline time** allotted to complete the upgrade. If you are replacing the physical hardware, this will be the time needed to wire in the new hardware and get it online and configured. When upgrading firmware on a remote controller, the controller will not operate for the duration (between 2-4 minutes) and then will remain non-operational until the download has been completed from the Protege GX download server (approximately 1-5 minutes depending on the size of the site).

4. We recommend that there is an **installer on site** during the entire upgrade process. If you are upgrading a remote site that is not easily accessible, ensure you have a local installation professional or company available to help.
5. Ensure that the **ports** required for Protege GX operation are open by contacting the IT department or system administrator. Refer to the Protege GX Network Administrators Guide for information on the ports required. **DO NOT** perform an upgrade if this information is not available, as you may not be able to get the controller back online or complete the upgrade.

Installing a New Controller

Before you install new hardware, you should ensure that you can bring it online with Protege GX on the test bench. It is also recommended that you test the functionality of the transitioned programming before connecting the new controller on-site.

Each controller should be installed following the instructions in the corresponding installation manual (available from the ICT website, www.ict.co). DIN rail controllers will likely require you to install a new DIN rail cabinet and extend the RS-485 network to it.

Updating an Existing Protege SE Controller

To bring your Protege SE controller online with Protege GX, you must update the firmware to PRT-CTRL-GX version 3.52.4142. This can be provided by ICT Technical Support.

For instructions on upgrading firmware in SE, refer to application note AN-15: Protege System Controller TFTP Update, available from ICT support.

Updating the controller firmware should be the **last** step of the upgrade process. Do not jump ahead and do the firmware update first. Updating the firmware on a live system will keep it offline for the duration of the upgrade process, which can be an extensive period of time depending on the database and site configuration.

After the firmware has been updated, the Protege SE controller should connect with Protege GX as its programming has been transitioned. There will then be a further offline period as the Protege GX Download Service downloads to the controller.

Following that, the controller should come online. At this stage the site should be thoroughly tested to ensure that all functionality has been correctly transitioned from Protege SE.

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