



AN-279

Purging and Restoring the Protege GX Events Database

Application Note



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Introduction

It is good practice to regularly purge events from the Protege GX events database to prevent the database from becoming full. Microsoft SQL Server Express has a 10GB database size limit, and this can fill surprisingly quickly with larger systems that generate a lot of events.

As a good database management routine it is recommended to configure Protege GX to periodically purge old events and take a differential backup. The differential backup creates a record of the purged events so that if needed you can review past events by restoring the differential backup through SQL Server Management Studio.

If the events database has already become full you can manually purge events to resolve the immediate problem, and if the Protege GX system has been operating for more than a year without regular purging a manual purge should be performed before scheduling differential backups.

This application note demonstrates how to perform manual purging, how to set up automated periodic event purging and differential backups, and how to restore these backups when needed.

Prerequisites

The following must be installed and operational:

Component	Version
Protege GX	4.2.228 or higher

Manually Purging Events

The manual purging process can be used as an immediate remedy if the events database becomes full.

Additionally, if the system has been running for a long time without events being purged the first scheduled purge by Protege GX may be very slow and use a lot of memory, and could even fail. If the Protege GX system has been operating for more than a year without regular purging, a manual purge should be performed before scheduling differential backups.

Manual purging will only be necessary for existing sites that have been operating for more than a year without regular purging. New sites will not have any older events to manually purge.

Warning: Events that occur while the database is being purged may be lost. To reduce potential issues, purge the database at a time when few events are expected to occur.

1. In Protege GX, navigate to **Global | Global settings**.
2. Set the **Events DB backup path** and click **Backup now**.
3. You need to disable the Protege GX services to prevent new events from coming into the database while it is being purged.
Open the **Services** snap-in by:
 - Pressing the **Windows + R** keys
 - Typing **services.msc** into the search bar and pressing **Enter**
4. Locate the Protege GX Update Service, right click and select **Stop**. This automatically stops all of the services.
5. Open SQL Server Management Studio and connect to the Protege GX instance.
6. Click **New Query** in the toolbar and use the following script to purge events.

It is recommended that you begin from the earliest events and purge in batches of one month.

```
use ProtegeGXEvents;  
DELETE FROM dbo.Events  
WHERE LoggedTime BETWEEN '28 July 2016' AND '28 August 2016'
```

7. Click **Execute** to purge the specified events, then change the dates in the query and repeat to purge the next month of events.
8. Once you have purged all events up to a relatively recent date (e.g. 1 year ago), you can restart the services and enable regular automatic purges and differential backups as outlined in the following section.

Scheduled Purging and Differential Backups

Protege GX allows you to easily schedule periodic event purging and differential backup creation.

Backing Up the Events Database

Restoring events from a differential backup requires a restore point which predates the differential backup, so before scheduling differential backups you must first take a full backup of the events database.

If this is not performed **before** scheduling differential backups it will not be possible to restore those backups.

If the database has not been purged for more than a year, a manual purge (see previous page) should be performed before scheduled purging. The manual purge should be completed **before** creating the full backup.

1. In Protege GX, navigate to **Global | Global settings**.
2. In the **Events database backup** section, set the **Events DB backup path** then click **Backup now**.

It is recommended to use the same path for all backup files.

Setting up Differential Backups

Differential backups provide a way to preserve purged events so they can be viewed at a later time if required.

You must create a restore point by taking a full backup of the events database (see above) **before** scheduling differential backups. Otherwise it will not be possible to restore those backups.

1. In Protege GX, navigate to **Global | Global settings**.
2. In the **Events database** section, set the **Purge events older than** to the maximum time for events to be stored in the events database before they are purged.

The period can range from 1 month to 2 years and will depend on the size and nature of the site.

Events are deleted from the Protege GX events database only, not from the SQL Server transaction log.

3. Under **Purge start time**, set the time at which the database purge will occur each day.
4. Enable the **Generate differential events backup** option.
5. Set the **Backup path** where these backups will be stored.

Differential backups are stored in the backup path for the main database, **not** the **Events DB backup path**.

6. Click **Save**.

Once these options have been configured the events database will be purged of old events each day at the scheduled time, provided that the server is active at that time. A differential backup (.bak file) of the purged events will be saved to the designated location and suffixed with the day of the week that the backup occurred. If a backup file with that name already exists, the file will be expanded with the recently purged events.

Restoring Differential Backups

To view purged events, differential backups can be restored through the SQL Server Management Studio.

This operation will restore the events database to a past state, recovering older events but removing current ones, so it is important to take a backup of the current events database before restoring a differential backup.

Warning: Events that occur while the differential backup is being reviewed may be lost when the most recent backup is restored. To reduce potential issues, restore the differential backup at a time when few events are expected to occur or use a separate training server for the review.

1. Take a full backup of the events database:
 - In Protege GX, navigate to **Global | Global settings**.
 - In the **Events database backup** section, set the **Events DB backup path** then click **Backup now**.

For larger databases it may be quicker to force a differential backup. Simply set the **Purge start time** to one minute in the future and allow the backup to occur. Remember to correct the setting afterwards.

2. Open the **Services** snap-in by:
 - Pressing the **Windows + R** keys
 - Typing **services.msc** into the search bar and pressing **Enter**
3. Locate the Protege GX Update Service, right click and select **Stop**. This automatically stops all of the services.
4. Open SQL Server Management Studio and connect to the Protege GX instance.
5. **Right click** the events database and select **Tasks > Restore > Database**.

Leave the **Source** as its default option, Database.

6. Click on the **Timeline** button to open the Backup Timeline window.
 - Select the **Specific date and time** option.
 - Set the **Timeline Interval** to **Week**.
 - Scroll back through the weeks to view the differential backup dates and times.
 - Use the slider below the timeline to select the day you want to restore, then click **OK** to close the window.
7. In the **Options** tab, enable the **Close existing connections to destination database** option.

Do not change any other options from the defaults.

8. Click **OK** to restore the events database to the date of the differential backup.
9. Restart the Protege GX services.

Once this backup is complete the Protege GX software will display events that occurred before the day of the backup (up to the **Purge events older than** limit), but not any that occurred afterwards. To return the events to the present time, repeat these steps to restore the backup that you created at the beginning of this process.

Disk Space Management

With your Protege GX system periodically generating differential backups, over time these accumulated backup files will start to occupy a significant amount of space of your hard drive and could eventually lead to low disk space. Low disk space can cause unexpected issues such as slow performance, disk freeze or errors during updates, and can severely obstruct the functioning of database servers.

When setting up differential backups in Protege GX it is strongly recommended that you implement some form of disk space management strategy. This may include preventative measures such as:

- Setting a reminder to manually delete older differential backup files or move them to a separate data storage location on a regular basis (e.g. monthly).
- Using Windows features or other disk management programs to automatically delete old backup files.
- Configuring a low disk space alert, such as the one documented [here](#).

Without a full backup restore point which predates your differential backups it will not be possible to restore those backups, so be mindful of this when manually or automatically moving or deleting old backup files.

Events Database ID Maintenance

The events database has a maximum Event ID of 2147483647 (around 2.1 billion), which may be reached on very large and busy sites (200+ controllers) or those that have been running Protege GX for a long time. This is not affected by purging the events database.

As a preventative measure, we recommend turning off event logging for all or most inputs and outputs. This will prevent logging of unnecessary events, such as motion detection when areas are disarmed, but will not affect alarms and other functions.

- Disable **Log to event buffer** in **Programming | Inputs | Options**.
- Disable **Log output events** in **Programming | Outputs | Options**.

We also recommend archiving and replacing the events database before it reaches this limit. You can view the **Event ID** column in the All Events report or a status page (if this has been hidden, right click on any column header and select **Show column chooser** to retrieve it). When you observe new Event IDs exceeding one billion (ten digit numbers), contact ICT Technical Support for assistance with backing up the events database and creating a new one.

If the Event ID exceeds 2.1 billion, it will be unable to save new events. If this occurs:

1. **Immediately** open the Windows Services Manager and locate the Protege GX Event Service.
2. Right click and select **Properties**. Set the **Startup type** to Disabled.
3. Click **Apply**.
4. Click **Stop**. While the event service is stopped, controllers will save incoming events to prevent them from being lost (up to 50,000 events per controller).
5. Contact ICT Technical Support as soon as possible for assistance with backing up your events database and creating a new one.

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