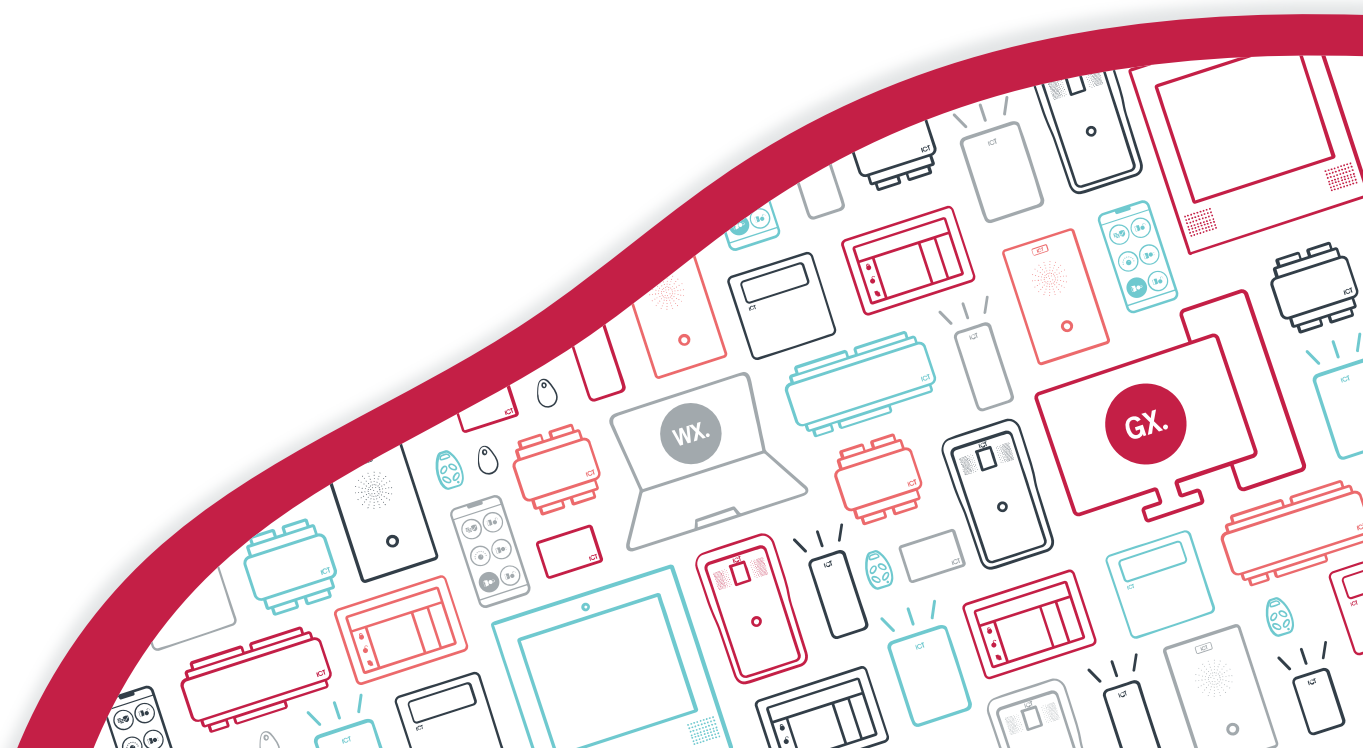
AN-262

Configuring Schedules in Protege GX

Application Note



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Introduction

Schedules in Protege GX allow you to define specific timeframes to control the operation of the system. They can be used to control when a user can gain access to doors, areas and floors, unlock doors and floors automatically, arm and disarm areas, turn outputs on or off, and change the way devices behave at different times and days.

A schedule can be programmed with up to 8 periods, which determine when the schedule is valid and invalid. When the schedule becomes valid, items that are programmed to depend on that schedule become active. For example:

- An access level will only grant access when its **operating schedule** is valid.
- A door will unlock when its **unlock schedule** is valid.
- An output will turn on when its **activation schedule** becomes valid.

As schedules are used to control access or secure doors and areas, it is common to require the schedule to behave differently on holidays. For example, if a door normally unlocks automatically at 9:00am, it is important to ensure this doesn't happen on days when no one is working in the building. This is achieved by adding **holiday groups**, which can change the operation of the schedule on specific dates.

This application note provides instructions for programming schedules and holiday groups in Protege GX, including notes on their operation.

Schedule and Holiday Group Programming Example

In this example we will program a schedule and holiday group for a clothing store. This schedule will be used to unlock the front door during the shop's opening hours. The opening hours are:

- 9:00am to 5:00pm during the week
- 10:00am to 3:30pm on weekends
- 11:00am to 3:00pm on public holidays

Creating the Schedule

First we will create the basic schedule for use on normal days (not holidays):

1. In Protege GX, navigate to **Sites | Schedules**.
2. Click **Add** to add a new schedule, and give it a descriptive name.
   (e.g. Shop Opening Hours: 9-5 Mon-Fri | 10-3:30 Sat-Sun)
3. Under **Time periods and groups** set times for the first period:
   - **Start time**: 09:00AM
   - **End time**: 05:00PM

   You can either type the time into the field or click on the clock icon to use the time picker.
4. This period will operate on weekdays, so check the boxes for each day of the week from Monday to Friday.
5. Observe that the **Graphics view** below has updated to show when the schedule will become valid.
6. To create the period for the weekend, enter the times and days in the second period:
   - **Start time**: 10:00am
   - **End time**: 3:30pm
   - **Days**: Saturday and Sunday
7. Click **Save**.

Creating the Holiday Group

You now have a schedule that will become valid for the relevant hours on weekdays and weekends, but it does not respect holidays. Next we will create a holiday group to define the relevant holiday hours:

1. Navigate to **Sites | Holiday groups**.
2. Click **Add** to add a new holiday group and give it a descriptive name (e.g. Public Holidays NZ).
3. Open the **Holidays** tab, where you can add all of the holidays which should apply to this schedule. We will add a few New Zealand holidays here as examples, but note that the holidays will be different in every region.
4. **Holidays that occur on the same day every year**: Click **Add** to create a new holiday called ANZAC Day. Set the **Start date** and **End date** to the 25th of April and click **Repeat**.
5. **Holidays that span multiple days**: Click **Add** to create a new holiday called Christmas and Boxing Day. Set the **Start date** to the 25th of December and the **End date** to the 26th. Click **Repeat**.
6. **Holidays that occur on different days every year**: Matariki is a public holiday that changes date every year, so you will need to program a few years in advance. Click **Add** three times to create multiple instances of the holiday:
   - Matariki 2022: 24th June 2022
   - Matariki 2023: 14th July 2023
   - Matariki 2024: 28th Jun 2024

Do not click Repeat for these holidays as each instance is a one-off date for that year.

7. Click **Save**.

Applying the Holiday Group to the Schedule

Finally, we must apply the holiday group to the schedule, and create a new period to set the holiday hours.

1. Return to **Sites | Schedules** and select the schedule you created earlier.
2. In the **Holiday groups** tab, click **Add**.
3. Select the holiday group you programmed above and click **OK**.
4. Return to the **Configuration** tab.
5. We must set the **Holiday mode** for each period, which defines how it behaves on a holiday. Both periods 1 and 2 are set to Disabled on holiday by default. This means that these periods will not become valid on a holiday.
6. In the **Period 3** row, create a new period that will operate on holidays.
   - **Start time**: 11:00AM
   - **End time**: 03:00PM
   - **Days**: All days
7. Set the **Holiday mode** to Enabled on holiday. This means that the period will only become valid on a holiday.

   The Ignore holiday options means the period will become valid regardless of whether it is a holiday or not.

8. Click **Save**.

Now that the schedule is complete, you can use it to control the door by assigning the **Unlock schedule** in **Programming | Doors | General**.

Schedule Operation

This section gives some general information to help you understand how schedules operate in Protege systems.

Rules for Schedules and Holidays

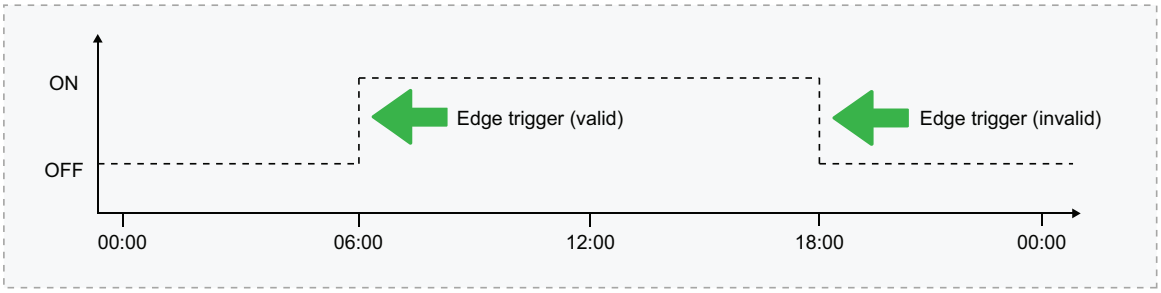
If you program times and days into a schedule but don't do anything else, the schedule will **always** operate.

For a holiday to prevent the schedule from becoming valid, the following must have been programmed:

1. The holiday must be programmed in a holiday group.
2. That holiday group must be applied to the schedule in the **Holiday groups** tab.
3. The **Holiday mode** for the schedule period must be set to Disabled on holiday.

Edge Triggering

Objects that are programmed to change when a schedule changes are **edge triggered**. This means that by default they are only checked and changed when the schedule changes state.



For example, if a door is programmed to unlock by a schedule at 6:00am, it will only unlock at the point that the schedule becomes valid. If you assigned this schedule as the door's unlock schedule at 10:00am, that door will not unlock until 6:00am the following morning. This is because the trigger that unlocks the door only occurs when the schedule changes from invalid to valid.

In summary:

- Devices that are controlled by a schedule will be edge triggered by default.
- Edge triggering allows full manual control of the devices in between times.
- Edge triggering is only processed at the start and end of a period.
- If you program a device to follow a schedule, control will not take place until the next 'start' time passes.
- If you configure the device to always follow the schedule, the device state will immediately start following the schedule (for example, using the **Always check unlock schedule** in **Programming | Doors | Options**).
- When a device is configured to always follow the schedule, manual control of the device is no longer possible.

Schedules and Multiple Time Spans

There may be times when schedules need to turn on and off more than once, or at different times on different days. Each schedule has 8 periods to allow for these scenarios.

Below are some examples of when you might use this.

Different Hours for Weekends

Premises may need to open for shorter (or longer) hours on a weekend.

To set this up, simply add a second period with shorter hours and select the relevant day(s).

Different Hours on a Holiday

In some installations, especially retail, a schedule must still operate on a holiday but may do so for shorter or longer hours.

To set this up, simply set up another period with the required days and times, and set the **Holiday mode** to Enabled on holiday.

Multiple Periods in a Single Day

Sometimes multiple periods are required in a single day. Consider a movie theater where there are multiple session times, so the doors must be unlocked during certain periods.

Set as many separate periods for the same day(s) as required.

Overnight Schedules

Where a schedule is required to operate overnight, enter a start time, but leave the end time as **12:00 AM**. This results in the period being valid from the start time until midnight.

Now program a second period to start at midnight and continue until the end of the shift. By extending the days that the period is valid, we can create an overnight Monday to Friday shift.

The graphics view is useful for providing a visual representation of when the schedule is valid.

Overlapping Periods

Where periods overlap, the schedule will take the sum of all periods.

Qualifying a Schedule with an Output

You can add more flexibility to your scheduling by qualifying a schedule with an output. In this case, when a period becomes valid the system will also check the state of the **Qualify output**. The schedule will only become valid if the output is in the correct defined state.

You can set a **Qualify output** in the **Options** tab. Enable one of the following settings:

- **Validate schedule if qualify output on**: When this option is enabled the schedule can only become valid when the **Qualify output** is on.
- **Validate schedule if qualify output off**: When this option is enabled the schedule can only become valid when the **Qualify output** is off.

This feature has many applications for integrating access control, intruder detection and automation. For example, you could use an area's **Disarmed output** as the qualify output so that the schedule only becomes valid when the area is disarmed. The schedule could then be used to control other areas, access levels, door types and other features within the system.

For an advanced programming example using a qualified schedule, see Application Note 307: Programming a Man Down Switch in Protege GX.

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