Silvair Scheduling

Application note

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1. Overview

The scheduling feature allows you to set up events that recall preconfigured scenes. A scene can define a constant light level or automatic operation based on the occupancy sensing or daylight harvesting.

First, you configure a profile with a *Multiple scenes / Scheduling* scenario in the Silvair web app. Then, you create events that specify in which zone, at what time, and on which day(s) a scene from this scenario will be recalled.

There are two types of scheduling: gateway scheduling and in-node scheduling. They both recall the preconfigured scenes but do it in a different way.

1.1 Gateway scheduling

> ❗ To use the gateway scheduling, a Silvair Gateway must be added to the project and assigned to the areas where you want it to be used.

The gateway scheduling requires a gateway to be added to the network. The gateway reads the current configuration of events from the Silvair cloud and recalls scenes in the mesh network (Fig. 1).
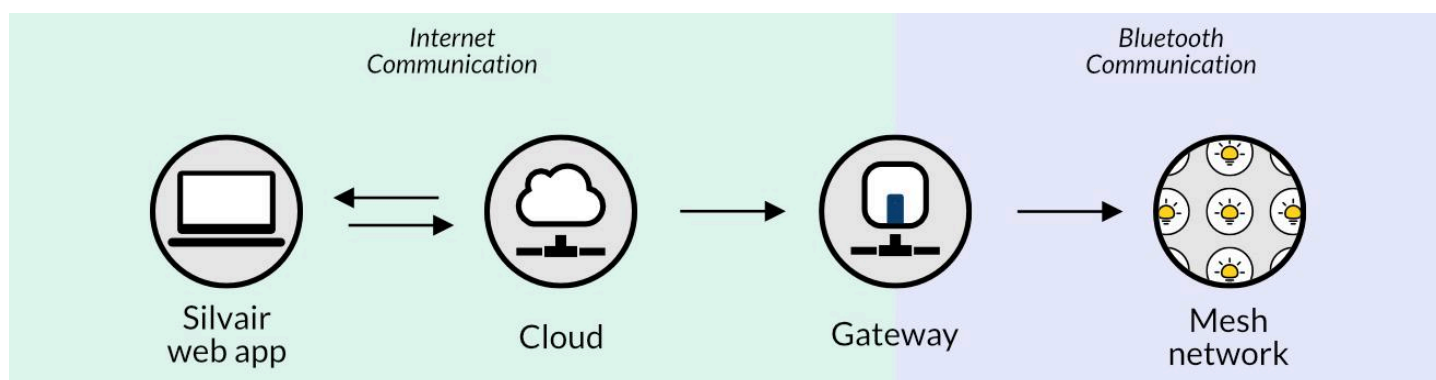

Fig. 1. *Workflow of the Silvair gateway scheduling*

The gateway scheduling starts with the Silvair web app. All changes made to the event configuration in the app are immediately synced with the cloud. The gateway reads the configuration every 4–6 minutes and then uses it to recall scenes in the mesh network according to the schedule. At the time of the event, a command is sent to the mesh network to recall the scene.

1.2 In-node scheduling

> ❗ In-node scheduling will work correctly only for project version 202101 or later with all devices using firmware version 2.20.2 or later.

In the in-node scheduling, the scheduling is done by the devices themselves. After the devices are commissioned in the project using the Silvair mobile app, they receive the event configuration from the cloud. As a result, the devices become able to recall the right scenes at the right times.
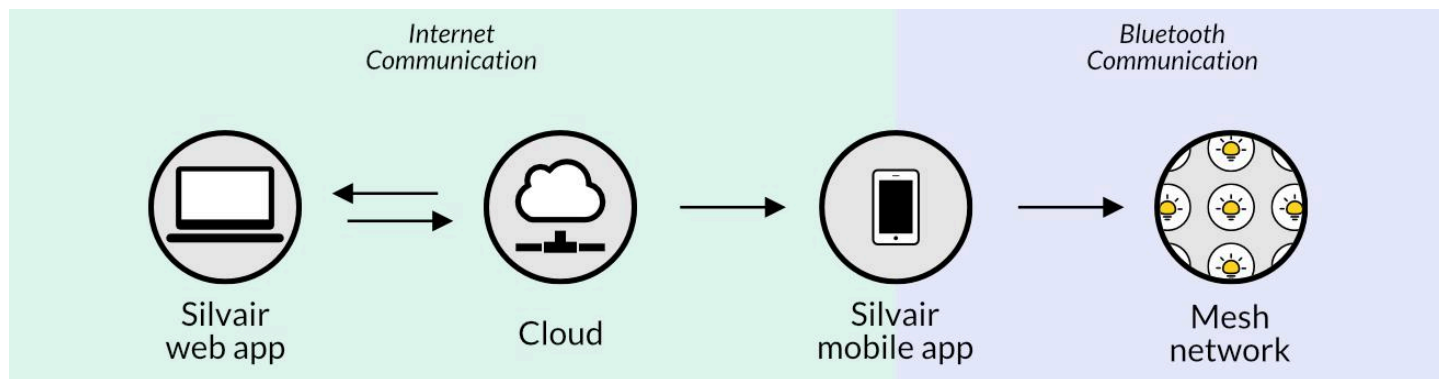
Fig. 2. Workflow of the Silvair in-node scheduling

In-node scheduling starts with the Silvair web app. All changes made to the event configuration in the app are immediately synced with the cloud. Then, the Silvair mobile app is used to send that configuration to the mesh network. After the mesh devices are configured with the new schedule, they recall the scenes autonomously according to the schedule.

In-node scheduling requires a source of time in the mesh network to know when to trigger events. Thus, it is very important to plan and implement the project so that there is connection between all the devices. For more information, see *SN-202 Optimizing mesh network performance*.

In-node scheduling is subject to a time drift, which is the difference between the real time and the time in the mesh network. In networks without a real-time clock (RTC), the time drift can be up to approximately 2 minutes per month. In networks with an RTC, the time drift can be up to approximately 30 seconds per month. Thus, we recommend that there is a device with an RTC in the network to make sure that the scheduling is accurate.

To provide a reliable source of time, one device must act as the time authority so that all the other devices sync their time with it. There are two ways of setting up a device as the time authority: automatic and manual.

ℹ️ For more information about in-node scheduling, see Frequently Asked Questions.

1.2.1 Automatic setting a device as the time authority

The Silvair app sets up the first device as the time authority (TA). When each next device is added to a zone, it can become the new TA. The app chooses the TA in the following sequence:
1. Device with a battery and the most accurate real-time clock (RTC)
2. Device with a battery
3. Device with an RTC and without a battery
4. Any other device in the project

ℹ️ The Silvair app may not always be able to detect if the device has a battery. If the necessary device has not been automatically set up as the TA, set up the device to act as the TA manually.

1.2.2 Manual setting a device as the time authority (for iOS/iPadOS)

ℹ️ We recommend that you manually set up a device as the time authority (TA) only if the necessary device has not been set up automatically. Follow the sequence from the previous section to select the best device.

Silvair mobile app for iOS/iPadOS

1. In the **Silvair mobile app for iOS/iPadOS**, go to the project, area, and zone.

2. On the **Devices** tab, select the device.

   ℹ️ To find the particular device, tap 💡 next to a device name to make the device flash.

   ℹ️ We recommend that you select a time-keeping device with a fully charged battery and an RTC. The battery will keep the source of time in the network during a power outage. The RTC will keep the time drift to a minimum to make sure that the scheduling is accurate.

3. Tap the **Time Authority** (TA) toggle bar to set up this device as the time authority.

   ℹ️ The automatic way of setting up the TA is now disabled. It will be restored only after you manually remove the device set as the TA from the project.

4. Go to the area with the device that was previously set up as the TA. If there is no zone alert in the area, search in different areas. Then, tap **Configure**, to reconfigure the old TA.

   ℹ️ If you do not reconfigure the old TA, the scheduling may not work correctly.
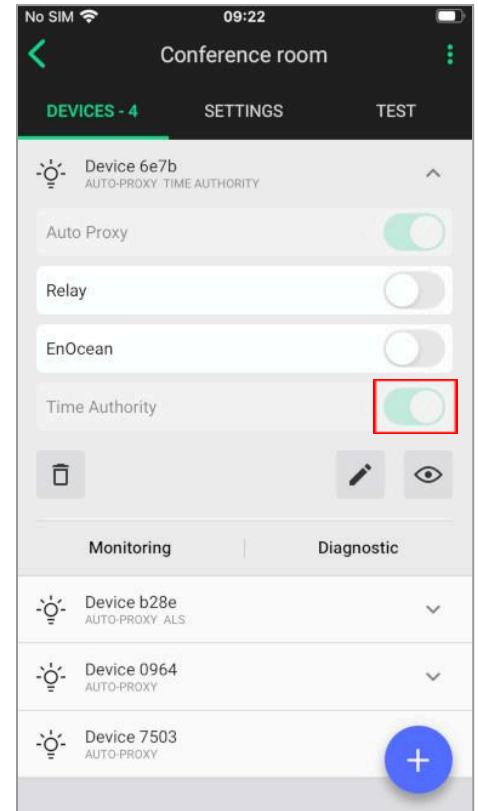
1.3 Comparison between gateway scheduling and in-node scheduling

	Gateway scheduling	In-node scheduling
Configuring scenes in the Silvair web app. Creating or editing a profile with a *Multiple scenes / Scheduling* scenario requires using the Silvair mobile app to configure the devices in the zones that use this profile.	✔	✔
Managing events in the Silvair web app. Editing an in-node scheduling event requires using the Silvair mobile app for iOS/iPadOS to reconfigure the devices in the zones affected by this event.	✔	✔
Configuring the scheduling events remotely. Silvair gateway requires an internet connection to send event configuration to the mesh network.	✔	✖
Configuring the scheduling events based on astronomical time, that is, according to sunrise and sunset time.	✔	✖
Events based on local time.	✔	✔

2. Using the scheduling

ℹ️ To use the scheduling feature, create at least one profile with a *Multiple scenes / Scheduling* scenario in the project. Then, set this profile in the zones that you want to be scheduled.

Silvair web app

1. In the Silvair web app, create a profile with a *Multiple scenes / Scheduling* scenario. All zones with the same profile selected will be managed using the same events. To recall different scenes, create additional scheduling profiles.

   Example:

   I have an area with 10 zones. I would like to recall a scene with 50% light level in five zones and a scene with 75% light level in the other five zones at the same time.

   To do this, create two profiles with a *Multiple scenes / Scheduling* scenario. Set the first profile in five zones and the second profile in the other five zones. Then, create events that will recall the right scenes.

2. Create gateway or in-node scheduling events.
3. If you are going to use gateway scheduling, add a gateway to the project and assign to areas.

2.1 Creating a new profile with a *Multiple scenes / Scheduling* scenario

Silvair web app

1. In the Silvair web app, open a project and then an area.
2. Right-click the zone for which you want to create a new profile and select **Edit**.
3. From the **Profile** list, select **New profile**.
4. In the **Profile name** field, enter the name for the new profile.
5. From the **Scenario** list, select **Multiple scenes / Scheduling** and click **Create**.
6. Enter the parameters for the scenario and scenes.
7. Click **Save**.
8. Set the new profile in all the zones where you want it to be used.

Silvair mobile app

9. In the **Silvair mobile app**, go to each area with zones that use this profile and tap **Configure**. The profile configuration will then be sent from the cloud to the devices.

ℹ️ For more information about the *Multiple scenes / Scheduling* scenario, see *SN-200 Silvair Commissioning user manual*.

2.2 Managing the scheduling events

Events are sets of instructions created in the Silvair web app to control the devices in a mesh network. Each event defines the following parameters:

- Scene to recall
- Fade time
- Days/times when the event will be triggered
- Zones affected by the event

Fig. 3 shows the **Scheduling** pane from the web app.

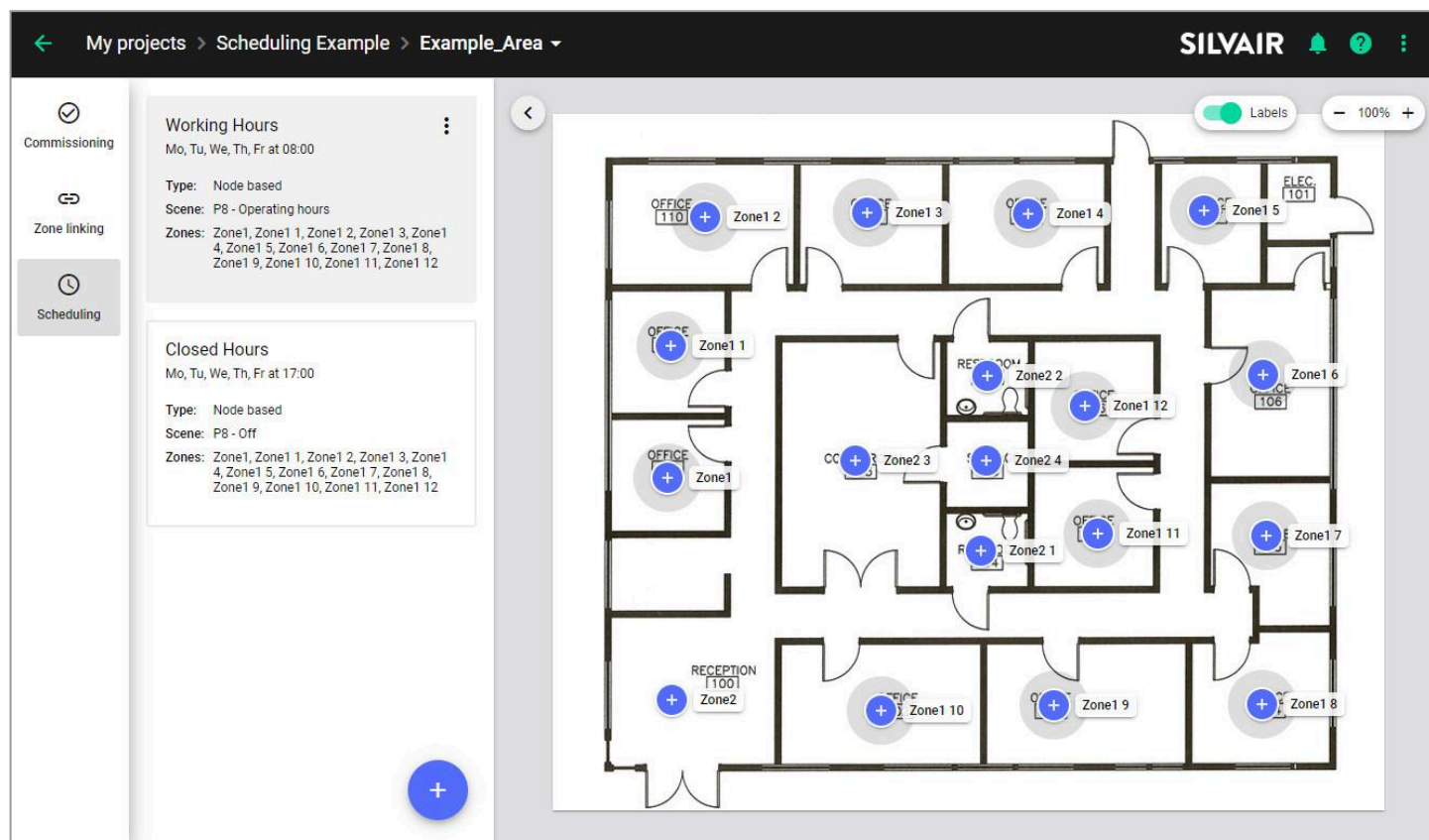**Fig. 3.** *Example of scheduled events in the Silvair web app*

ℹ️ Move the cursor over an event to highlight the affected zones.

🛑 Events created via the API may not appear in the web app. See *SN-221 Silvair APIs* for more information.

2.2.1 Creating an event

Silvair web app

1. In the [Silvair web app](#), open a project and then an area.
2. On the left, click **Scheduling**.
3. At the bottom, click the **+** icon.
4. Select **Gateway** or **In-node** and click **Next**.
5. In the **Event name** field, enter a name for the event.
6. From the **Scene** list, select the scene that will be recalled. When you move your cursor over a scene in the list, all zones with the corresponding profile will be highlighted in the floor plan.
7. In the **Fade in** field, enter the fade in time.
8. In the **Select days** field, select the days when you want the event to occur.
9. For an in-node event, enter when to trigger the event in the local time.
10. For a gateway event, enter when to trigger the event in the local time or select astronomical schedule:
    - If you want to trigger the event at a specific time, select **Time** and enter the local time.
    - If you want to trigger the event before or after sunrise, select **Sunrise**. Then, from the **Offset** list select **Before sunrise** or **After sunrise**. In the **Offset time**, enter the offset value.
    - If you want to trigger the event before or after sunset, select **Sunset**. Then, from the **Offset** list select **Before sunset** or **After sunset**. In the **Offset time**, enter the offset value.

    > ℹ️ The time of sunset and sunrise is based on the geographical location set for the gateway.

11. Click **Save**.

Silvair mobile app (only for in-node scheduling)

12. In the **Silvair mobile app**, go to each area with zones affected by the event and tap **Configure**. The event configuration will then be sent from the cloud to the devices.

2.2.2 Editing an event

Silvair web app
1. In the <u>Silvair web app</u>, open a project and then an area.
2. On the left, click **Scheduling**.
3. Click the event.
4. Edit the parameters.
5. Click **Save**.
Silvair mobile app (only for in-node scheduling)
6. In the **Silvair mobile app**, go to each area with zones affected by the event and tap **Configure**. The event configuration will then be sent from the cloud to the devices.

2.2.3 Removing an event

Silvair web app
1. In the <u>Silvair web app</u>, open a project and then an area.
2. On the left, click **Scheduling**.
3. Click ⋮ on the event and select **Remove**.
Silvair mobile app (only for in-node scheduling)
4. In the **Silvair mobile app**, go to each area with zones affected by the event and tap **Configure**. The event configuration will then be sent from the cloud to the devices.

2.3 Syncing the time in the mesh network (for iOS/iPadOS)

Syncing the time ensures that in-node scheduling (INS) is accurate if there is no RTC in the network. Syncing may be done when power is restored after a power outage, or periodically to keep the time drift to a minimum.

1. Open the **Silvair mobile app for iOS/iPadOS**.
2. In the project field, tap ⋮ and select **Time sync**.
3. Tap **Sync time** to sync the time between the mobile device and the mesh network.

2.4 Adding a Silvair Gateway to the project and selecting areas

ℹ️ Adding a gateway is necessary only for gateway scheduling. In-node scheduling does not require a gateway. For more information about Silvair Gateway, see *SGW-102 Silvair Gateway user guide*.

Silvair web app

1. Make sure that the status LED of the gateway is solid green.
2. In the Silvair web app, open the project and click **Gateways**.
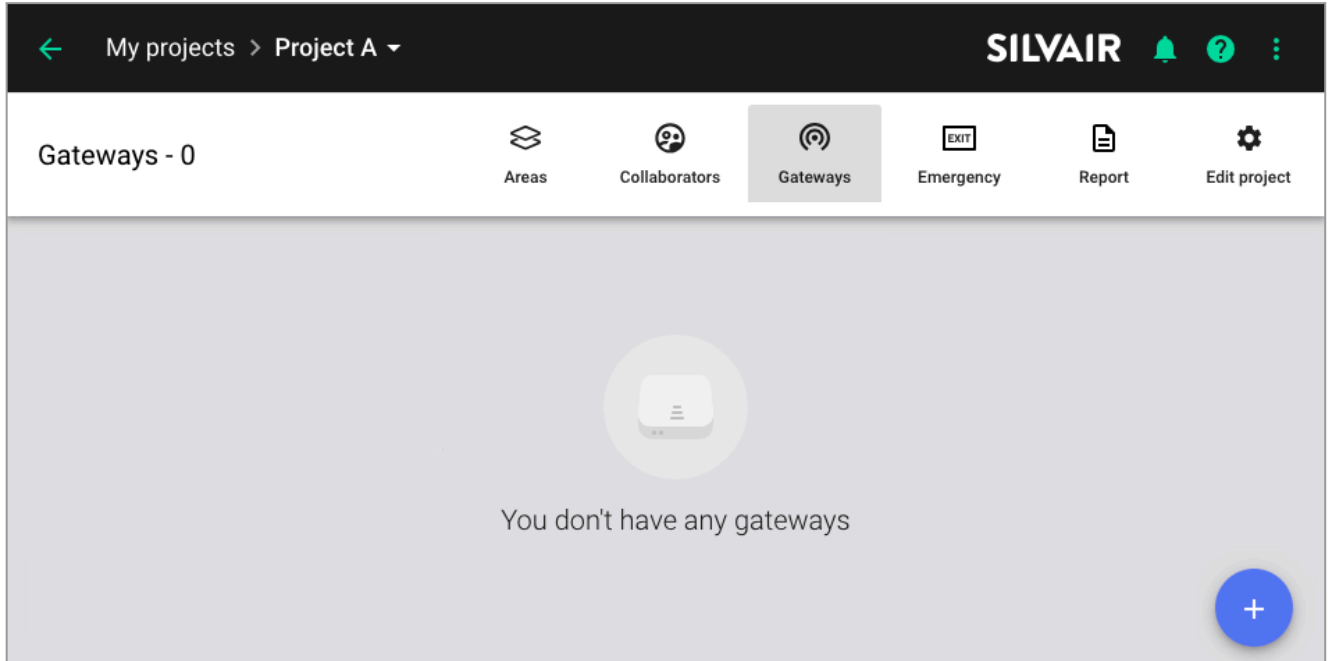
3. Click **+** to add the gateway.
4. If asked, enter the latitude and longitude of your project.

   ℹ️ To find the latitude and longitude, use Google Maps or OpenStreetMap.

   ℹ️ Enter the values with at least two decimal places. The more decimal places you use, the more accurate the calculated sunrise and sunset times will be.

5. Enter the serial number (S/N) of the gateway.

   ℹ️ Find the serial number on the back of the gateway.

6. Select areas to be scheduled by this gateway.
7. Click **Add**.
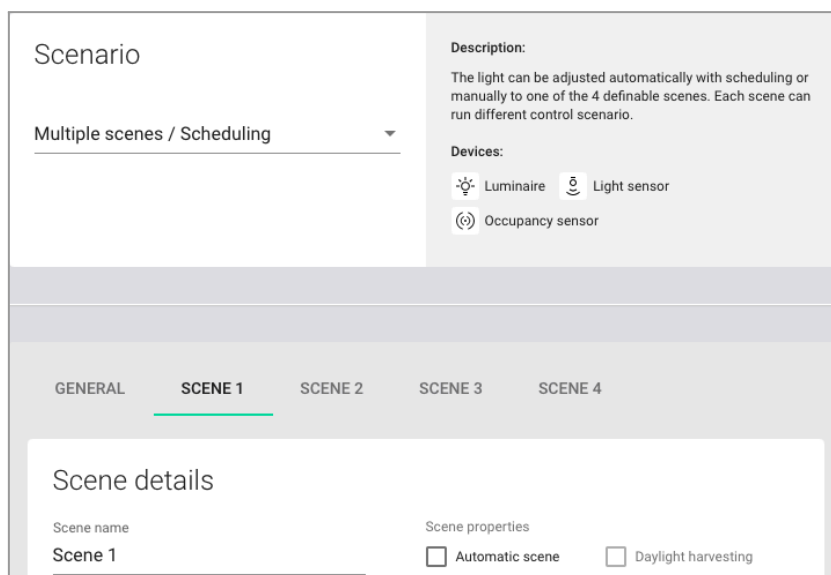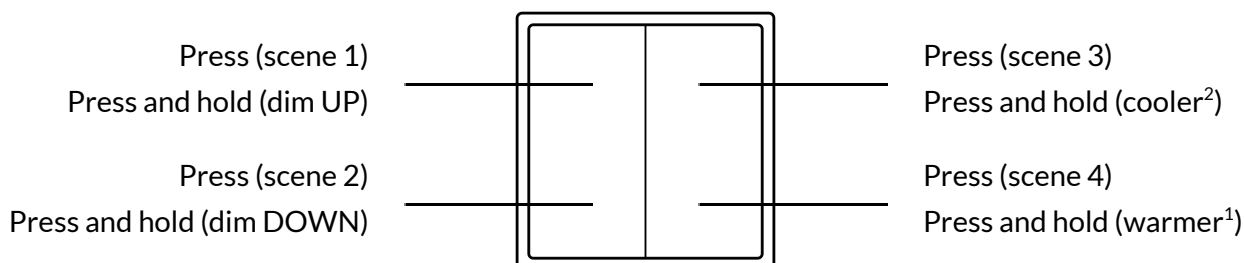
3. Recalling the scenes using an EnOcean switch

If a zone uses the *Multiple scenes / Scheduling* scenario, scenes from this scenario can be recalled manually using an EnOcean switch.

ℹ️ A manually recalled scene will stay active until the next scheduled event.

Scenario

Multiple scenes / Scheduling ▾

Description:

The light can be adjusted automatically with scheduling or manually to one of the 4 definable scenes. Each scene can run different control scenario.

Devices:

☀️ Luminaire   🌡️ Light sensor

📶 Occupancy sensor

| GENERAL | **SCENE 1** | SCENE 2 | SCENE 3 | SCENE 4 |

Scene details

Scene name
Scene 1

Scene properties
☐ Automatic scene   ☐ Daylight harvesting

The *press* action is used to recall scenes (scene 1 and scene 2, and if the right button is available: scene 3, scene 4). The *press and hold* action of the left button is used for dimming (dim UP/DOWN). The *press and hold* action of the right button (if available) is used to control color temperature (cooler/warmer).

Press (scene 1)   Press (scene 3)
Press and hold (dim UP)   Press and hold (cooler[2])

Press (scene 2)   Press (scene 4)
Press and hold (dim DOWN)   Press and hold (warmer[1])

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[1] Only for zones with compatible tunable white fixtures and Silvair firmware version 2.15 or later. Otherwise, the *press and hold* action of the right button will not work.

4. Frequently asked questions

What happens if the power supply or internet connection to the Silvair gateway has been interrupted?

- If the event settings have not changed, the gateway will behave in the same way as before the loss of power or internet connection.
- If in the meantime the event settings have changed, as soon as the power / internet connection is restored, the Silvair gateway will read the new configuration from the cloud and apply it at the right time.

How will the gateway scheduling behave if the internet connection is down?

- If the Silvair Gateway is powered on but the internet connection is down, scheduling will work with the last configuration that the gateway obtained from the cloud. The configuration is downloaded and stored in memory. It will work for at least one week.
- If the Silvair Gateway is restarted (turned off/on) while the internet connection is down, scheduling will not work, because the gateway will lose time. The time will be restored after the gateway reconnects to the internet. The gateway will then be able to trigger events according to the schedule.

How long does it take to trigger an event?

The Silvair gateway reads event configuration stored in the cloud every 4–6 minutes. Changes to an event start time will be applied in the mesh network a few minutes later.

Note that if the start time of an event is changed 4–6 minutes before the new start time, the update may not be read by the gateway in time. Thus, the event may not be triggered until the next start time of the event.

5. Document revisions

Revision	Date	Editor	Changes
5.6	8 February 2024	GM	Adjusting the time of events is no longer needed after each DST time change. Gateway events are now scheduled at the project's local time.
5.5	16 November 2023	GM	Replaced two images of two switches with one image of switch buttons. Added an image of the "Gateways" page. Added a check of the gateway status before adding a gateway. Clarified where the mobile app for iOS/iPadOS is required. Updated links to external documents.
5.4	17 November 2022	GM	Added a note about events created via the API.
5.3	13 October 2022	GM	Added Recalling the scenes using an EnOcean switch. Added information about the time drift. Added a recommendation that the device with a battery has also an RTC. Clarified that the gateway must be assigned to areas. Changes to adjusting the time. Reconfiguration of zones added as a final point in procedures. Added links to external docs. Editorial changes.
5.2	2 June 2022	GM	Added Manual setting a device as a time authority section. Changes to automatic setting a device as a time authority. Corrected the interval at which a gateway reads events configuration from the cloud. General updates of the document. Implemented template rev. 1.2.
5.1	7 October 2021	ZZ	Introduced general updates of the document and added the Document Revisions section.

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