Silvair Scheduling

Application note

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SILVAIR Sp. z o.o.
ul. Jasnogórska 44
31-358 Kraków
Poland

Overview

Scheduling allows you to set up the lighting system to automatically recall a predefined scene for a zone at the specified time on specified days. A scene can be a static scene or automated scenario, e.g. occupancy sensing or daylight harvesting.

Fig. 1 below shows a simplified communication flow in the Scheduling feature. The connection is established between the Silvair web application, cloud server and a gateway to pass the event configuration details (such as scene, day and time) to the devices in the zone.
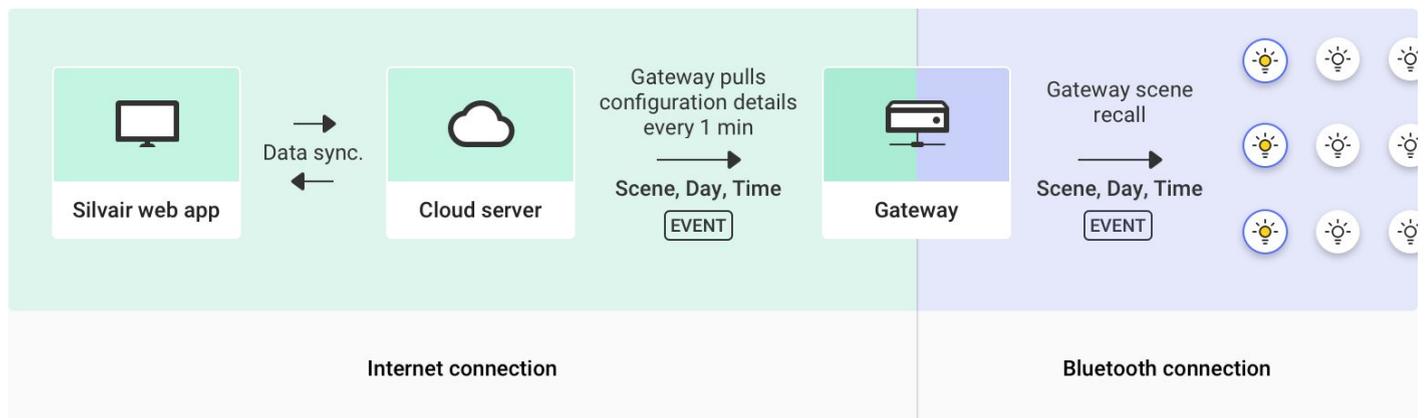
fig.1 Simplified Silvair gateway communication

Communication	Details
Silvair web application → cloud	The configuration parameters such as: ○ event day and time ○ gateway geographical location (for Astronomical time Scheduling) ○ scenario parameters ○ scene settings are stored in the cloud-based server. When these settings are changed in the web application, the cloud immediately receives the updated data.
Cloud ← Silvair gateway	The cloud-based server is used solely for data storage. The Silvair gateway pulls the data from the cloud about new events and scene configurations every minute.
Silvair gateway → luminaires	When the Silvair gateway receives the configuration details from the cloud, it sends the recall scene message to the devices in the zone. ● The gateway sends the recall message (5 messages at 20ms intervals) to recall the scene. ● Communication between the Silvair gateway and luminaires is over Bluetooth mesh.

	● Individual devices do not return an acknowledgement to the gateway.

For Scheduling to work, you need:

- A gateway provided by Silvair which will be used to add the gateway to the project. More information on Gateway configuration available in a document **SGW-102 Silvair Gateway - Set up and connections instruction**s available in our <u>Knowledge Base</u> > Connected Services documentation
- A Silvair gateway that will be placed next to the mesh network. To receive a gateway, please contact **business@silvair.com**

Scheduling setup step by step

1. Onboard the Silvair gateway

The Silvair gateway hardware facilitates communication between the Silvair web application and individual devices in a mesh network.

The gateway periodically (once per minute) refreshes the information about event (date, time and scene settings) to be up to date with the newest configuration and forwards scene recall command to the luminaires in the selected zone.

After receiving the command, the luminaires adjust to the scene settings over the transition time defined in the event configuration panel in the Silvair web application.

It is possible to use one gateway device for many areas.
This is valid only for installations where one of those features are used:
- Scheduling
- Energy Monitoring
- Occupancy Monitoring
If the lighting installation uses Energy Monitoring or Occupancy Monitoring feature, the total number of nodes monitored by the gateway in all areas should not exceed 200 nodes.

To onboard the Silvair gateway you need:

- A power supply: plug the gateway into a power supply.
- Internet connection: connect the Ethernet cable to the Silvair gateway.
  - We recommend that the gateway has a permanent Internet connection.
- To connect the gateway to the cloud-based Silvair web application:.
  - Make sure you have the gateway username (email address).

- To connect the Silvair gateway with the mesh network:.
    - Place the Silvair gateway within range of the mesh network where you will be using scheduling, ideally in the centre

Gateway set up - add gateway to the project

For more information regarding Gateway Set up, access the "*SGW-102 Silvair Gateway - Set up and connection instructions*" available in our Knowledge Base.

- A correctly configured Silvair gateway should start pulling information about the scheduled event(s) straight away. Check that your schedule is working correctly by observing the scenes in the zone . For more setup information, read points 2 and 3 in this document.

2. Create a "Multiple Scenes" scenario.

> (i) **Multiple scenes** is a lighting control **scenario type** that is available in Silvair Commissioning. It allows up to 4 scenes to be defined and automatically recalled by the Silvair gateway according to a defined schedule.

- Use the Silvair web application to set up the scenario.
- Select your Project > Plan (floorplan) > right-click on the zone icon > select "Edit" > click the small "Pencil" button> select **scenario** "Multiple Scenes" > and finally define Scenario Settings and Scenes.
    - Customize up to 4 scenes.
    - It is also possible to assign one "Multiple Scenes" scenario to 4 zones - giving each zone a different scene that will be automatically recalled by the Scheduling mechanism.
- Assign the scenario to the zones where you wish to use the Scheduling feature.
- The scenes defined in "Multiple Scenes" scenario will be automatically recalled in the zone(s) based on the Scheduled event logic.
- For details about "Multiple Scenes", refer to the latest version of "*Silvair Commissioning User Manual*" document available in our Knowledge Base.

3. Define events

ⓘ   Events are predefined days and times when a scene will be activated. Events are created in the Silvair web application > Project > Scheduling tab.

ⓘ   User can define Scheduling events in two time approaches:

1. **Time-based Scheduling**
   Allows you to set up the lighting system to automatically recall a predefined scene for a zone at the specified time (e.g. at 8:00 am) on specified days

2. **Astronomical time based Scheduling**
   Allows you to set up the lighting system to automatically recall a predefined scene for a zone based on astronomical clock (sunset, sunrise) on specified days. For example, exterior lighting will automatically turn on 10 minutes before sunset.
   The time of sunset and sunrise is based on geographical location set per gateway user.
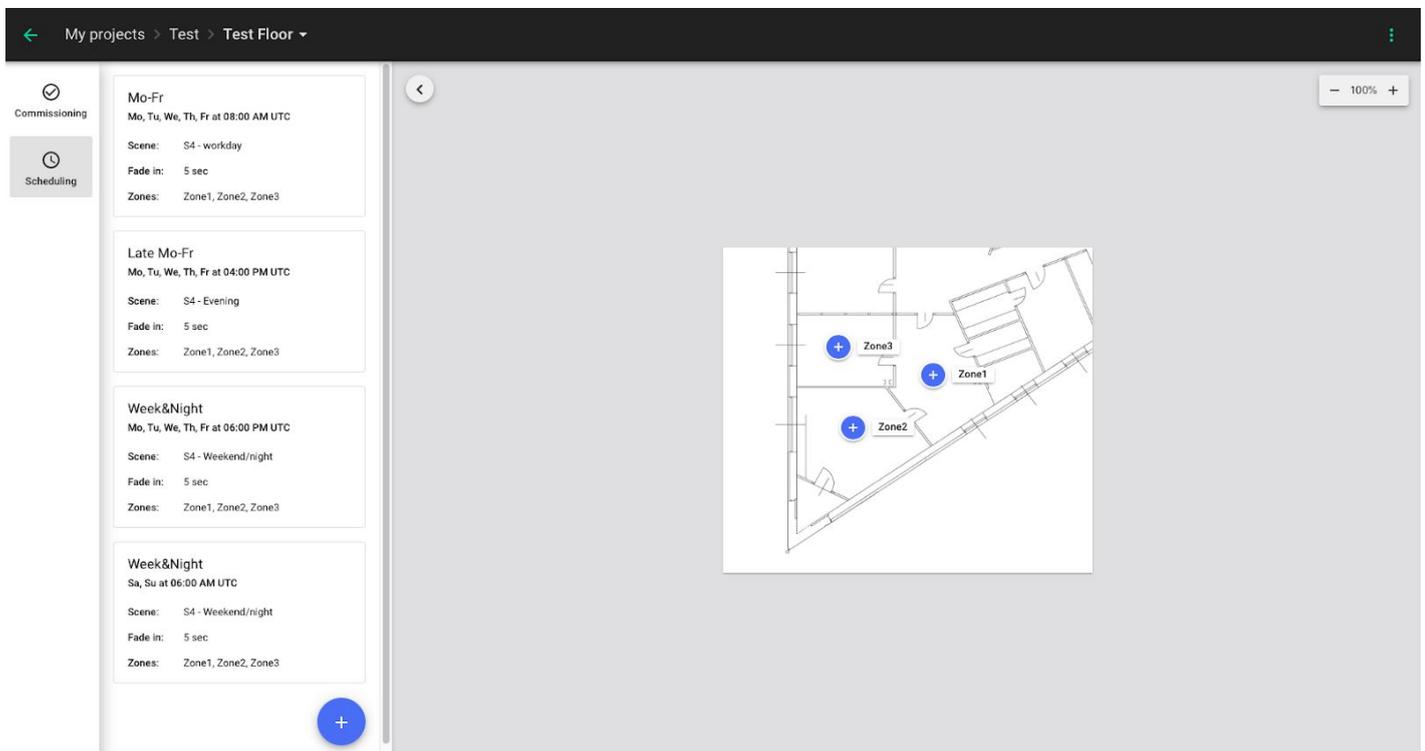

fig.2 Scheduling view (Silvair web application)

- Select and open your project, left-click on the floor plan icon.
- Click on the "Scheduling" tab located in the left menu.
- Press the blue ⊕ icon to add your first event.
- Complete the form with the following parameters:

Event name

This will be your event name, e.g., "After hours".

Select days

The day(s) when the event will be activated: e.g:
a) every day of the week
b) Mondays and Thursdays only
c) Monday through to Friday

Time

Define the time when the event will be activated on the selected days.

NOTE: All times entries must be in the **24-hour** UTC time format!

For example, if your building location is in CET (UTC +1) for the event to happen on Saturdays at 0:30 CET you need to set the schedule for Fridays at 23:30 UTC in the Silvair web app.

Sunrise

Select this option if you want to use Scheduling based on Astronomical time feature. Choosing "Sunrise" will activate the defined event on the selected days at the moment of sunrise for the specific geographic location (this information is passed on to the system from the gateway configuration parameters).

User can also select "Offset" option from the dropdown list.
- Before sunrise + specify "Offset time"
- After sunrise + specify "Offset time"

Offset can be selected when user wants to slightly modify the event start time, e.g. he/she wants the event to start 10 minutes before sunrise, of 10 minutes after sunrise.

Sunset

Select this option if you want to use Scheduling based on Astronomical time feature. Choosing "Sunset" will activate the defined event on the selected days at the moment of sunset for the specific geographic location (this information is passed on to the system from the gateway configuration parameters).

User can also select "Offset" option from the dropdown list.
- Before sunset + specify "Offset time"

- After sunset + specify "Offset time"

Offset can be selected when user wants to slightly modify the event start time, e.g. he/she wants the event to start 10 minutes before sunset, or 10 minutes after sunrise.

Fade in	Define the period (in seconds) over which the selected scene will fade in.
Add scene	Select the scene that will be activated in this event. You will be able to choose from all the scenes previously customized in the "Multiple scenes" scenario.
Schedule preview	After choosing the scene, you will see all the zones listed and highlighted where that scene is applied.

HINT: Once an Event is created, hover on the event label on the Scheduling page to see the zones where it has been added - they should be highlighted on the project plan.

fig.3 Zones with assigned events (Silvair web application - Scheduling)

Other information:

1. **The power supply or Internet connection to the Silvair gateway has been interrupted:.**
   - If 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, there are new event settings, the Silvair gateway will pull the information from the cloud and apply the new scene settings / event date and time.

2. **How long does it take to trigger an event ?**
   - The Silvair gateway checks event updates stored in the cloud every minute. Changes to the event start time will be applied in the mesh network in no longer than 60-70 seconds.
     - **Known edge case:**
       As the Silvair gateway pulls event updates every 60 seconds, if the start time of an event is changed within 1 minute of its activation, the new time may not be pulled by the gateway in time in which case the scene may not be triggered until the next scheduled event.

3. **How does the gateway behave for time-scheduling in case the cloud server is down?**

   3.1 Gateway is powered and the cloud server is down:

   Scheduling will work with the last configuration that the gateway obtained from Commissioning service. It is downloaded and stored in memory. It will work for at least one week.

   3.2 Gateway gets restarted (mains switch on/off) while the cloud server is down:

   Scheduling will not work then. Gateway does not have any persistency for scheduling configuration.

Contact Information

Support:	**support@silvair.com**
Business development:	**business@silvair.com**
For more information please visit:	**www.silvair.com**

Our Offices:

Europe
ul. Jasnogórska 44
31-358, Kraków
POLAND

North America
717 Market Street, Suite 100
San Francisco, CA 94103
USA