PHILIPS

dynalite

Multiroom System Manager
System Guide

Version 2.11, 2025-07-11

Table of Contents

This section details the architecture, requirements, and underlying design of Multiroom System Manager for hotel projects. It is intended to provide guidance for consultative selling by describing the features and capabilities offered by the system.

Chapter 1. Target Audience

- Specifiers
- Proposal Managers
- System Designers
- System Architects
- Application Engineers
- Customer IT representatives

Chapter 2. System Overview

Multiroom System Manager enables a hotel operator of any size or scale to create a distinctive range of intelligent rooms promoting a positive guest experience, while enhancing loyalty and brand differentiation.

The system can be extended to different areas of the hotel providing space versatility and assisting with sustainability and green building certification beyond the energy efficiency of LEDs.

Philips Dynalite hardware, software, and network protocols form a comprehensive platform for system operations. Networked sensors enable automated response to guest and hotel staff occupancy, temperature, humidity, sunrise, sunset, time-of-day, and seasonality. The platform's considerable strengths in modularity, scalability, and wide-ranging compatibility are suitable for all hotel areas and guestroom implementations.

2.1. Multiroom Features

Built on the original System Manager head-end software, Multiroom System Manager adds essential features to translate and structure operations for hotels, most notably:

- Room mapping table
- Room profiles engine

Through these, logical areas are mapped to reflect the physical layout of a hotel:

Building › Floor › Room › Zone › Services (HVAC, Lighting, Curtains, etc.)

Although the core structure is guestroom-centric, the system perfectly accommodates business centers, ballrooms, public areas, etc.

2.2. Interfaces (API, Dashboard, Integrations, Template Library)

System functionality is directly accessible through our range of interfaces. The dashboard, API, and first-party integrations all directly utilise and reflect the mapping and profiles, enabling communication to and from the rooms.

The STR Template Library is a preconfigured System Builder file containing a mix of mandatory and optional settings to aid in commissioning and ensure standardisation and compatibility with system components and integrations.
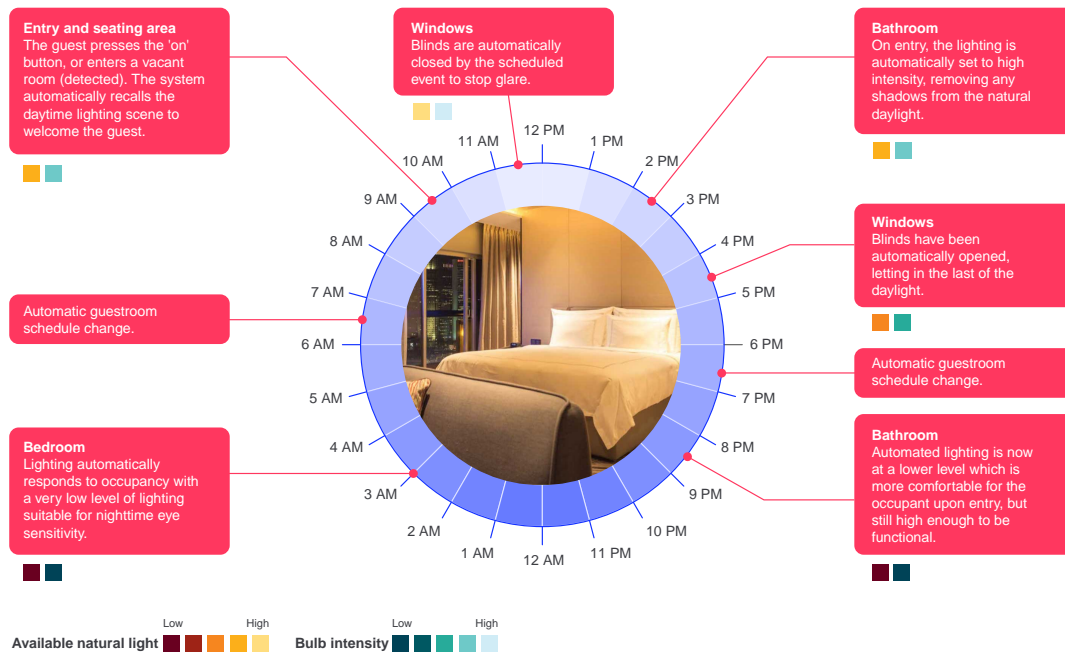
2.3. Interact and partner apps

Built on the Hotel Integration API, both first- and third-party applications extend a rich user interface to enhance guest experience. Whether that is through a screen, voice, chat, or other interface, the APIs empower extensions to securely integrate and expand Multiroom functionality across the hotel network.

Chapter 3. System Design

Traditionally, hotels operate on the basis of whether a room is sold or unsold to condition their guestrooms. This misses significant periods of time when guests are checked in but away from the room - sightseeing, attending meetings, dining, etc. Guest occupancy is a core feature of Multiroom System Manager, accurately capturing real-time occupancy states to automate room conditioning and share this intelligence with other hotel systems.

As each hotel is unique, specific behaviours can be customised and modified at any stage. This flexibility is achieved through software, firmware, and configuration updates to expand the system's functionality.

Depending on customer requirements, the system can provide customised automated behavior at different times of the day or year for guestrooms and public areas.

Entry and seating area
The guest presses the 'on' button, or enters a vacant room (detected). The system automatically recalls the daytime lighting scene to welcome the guest.

Windows
Blinds are automatically closed by the scheduled event to stop glare.

Bathroom
On entry, the lighting is automatically set to high intensity, removing any shadows from the natural daylight.

Automatic guestroom schedule change.

Windows
Blinds have been automatically opened, letting in the last of the daylight.

Automatic guestroom schedule change.

Bedroom
Lighting automatically responds to occupancy with a very low level of lighting suitable for nighttime eye sensitivity.

Bathroom
Automated lighting is now at a lower level which is more comfortable for the occupant upon entry, but still high enough to be functional.

Available natural light — Low — High

Bulb intensity — Low — High

Chapter 4. System Benefits

4.1. Distributed architecture

Unlike other solutions, the Dynalite system does not require a centralised processor for operation. Each room can operate autonomously, providing significant fault tolerance as well as extensive scalability.

4.2. Safety by design

Each room has emergency input capability allowing for emergency egress activation of room lighting. This emergency input overrides guest controls until the event clears. Additionally, all solutions allow for inputs from other sensing devices (e.g. overflow sensors, patio door sensors etc.) to trigger alert events.

4.3. Brand designable user interfaces

Award-winning user interfaces capable of unparalleled flexibility, simplicity in operation, aesthetics, and customisation for brand identity.

4.4. Scalable growth path

The Dynalite system accommodates growth in features over time, without reinvestment in changes to architecture. Moreover, the system's flexibility allows expansion beyond the guestroom, enabling brand expression, energy savings, and asset management throughout the entire built environment - lobbies/public space, dining, façades, parking, back of house, etc.

4.5. Open standards integration

While we offer a wide array of lighting fixture options, our load controllers offer compatibility with almost any lighting fixture on the market as well as switched blind motor control. Additionally, several software plug-ins have been created for direct integration (without the need for hardware gateways) to third-party systems.

4.6. Managed maintenance

Following initial installation, upgrades or alterations to rooms can be performed by Signify, or we can train property management teams, allowing self-service design changes and avoiding third-party expenses or vendor lock-in.

4.7. Global support

Signify offers project design assistance, regional project management, and service support via global support centers around the world. This commitment to pre- and post-sale assistance allows unparalleled worldwide customer care with localised personal knowledge of regional markets and practices.
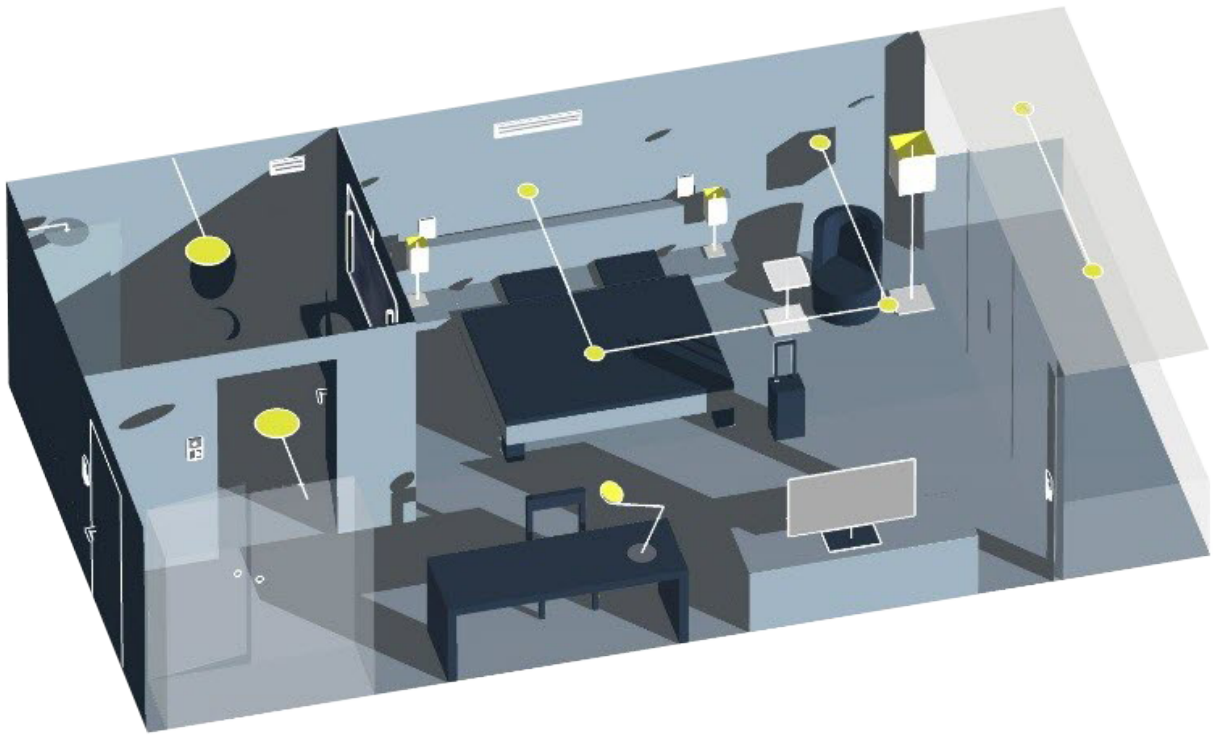
Chapter 5. System Architecture

Multiroom System Manager uses Dynalite controls with flexible controller outputs for lighting, power outlets, air conditioning, shades, fans, etc.

Room devices such as load controllers, user interfaces, sensors, and integrated devices form a room sub-network that is managed by the room controller.

The system can be scaled for different sized hotels, up to a maximum of 3200 rooms including guestrooms and public areas.

5.1. Scalability

5.1.1. DyNet addressing limitations

A single system supports a maximum of 65535 areas.

Area Distribution Example

Default Area Offset Multiplier = **20**

20 areas per room x 50 rooms per floor = **1,000 areas** per floor
1000 areas per floor x 64 floors = **64,000 areas** total

50 rooms per floor x 64 floors (or other combinations): **3,200 rooms**

5.1.2. IP routing limitations

Each guestroom can have a single or redundant connection to a Floor Ethernet Gateway:

- PDDEG-S routing can support up to 25 secure connections.

5.1.3. Power limitations

There is no limit to room size or room devices, on the condition that sufficient current is supplied on the DyNet control cable and the 2 Amp RS-485 cable limit is not exceeded.

5.2. Default Architecture

One ▭ Ethernet gateway per floor is connected via Ethernet/fibre to a ▭ DDRC-GRMS-E room controller, then via an RS-485 sub-network to the room devices.
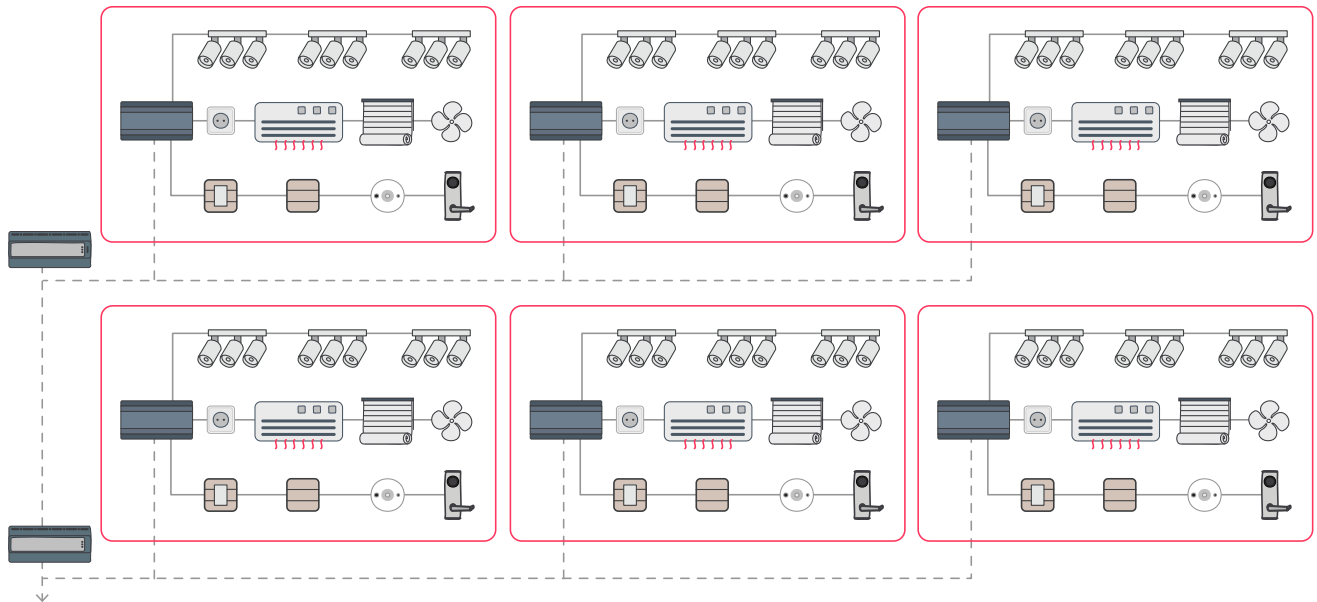
5.2.1. IP Connections to the Room

Room / Space

Lighting

Room Controller

Power Sockets

HVAC

Blinds / Curtains

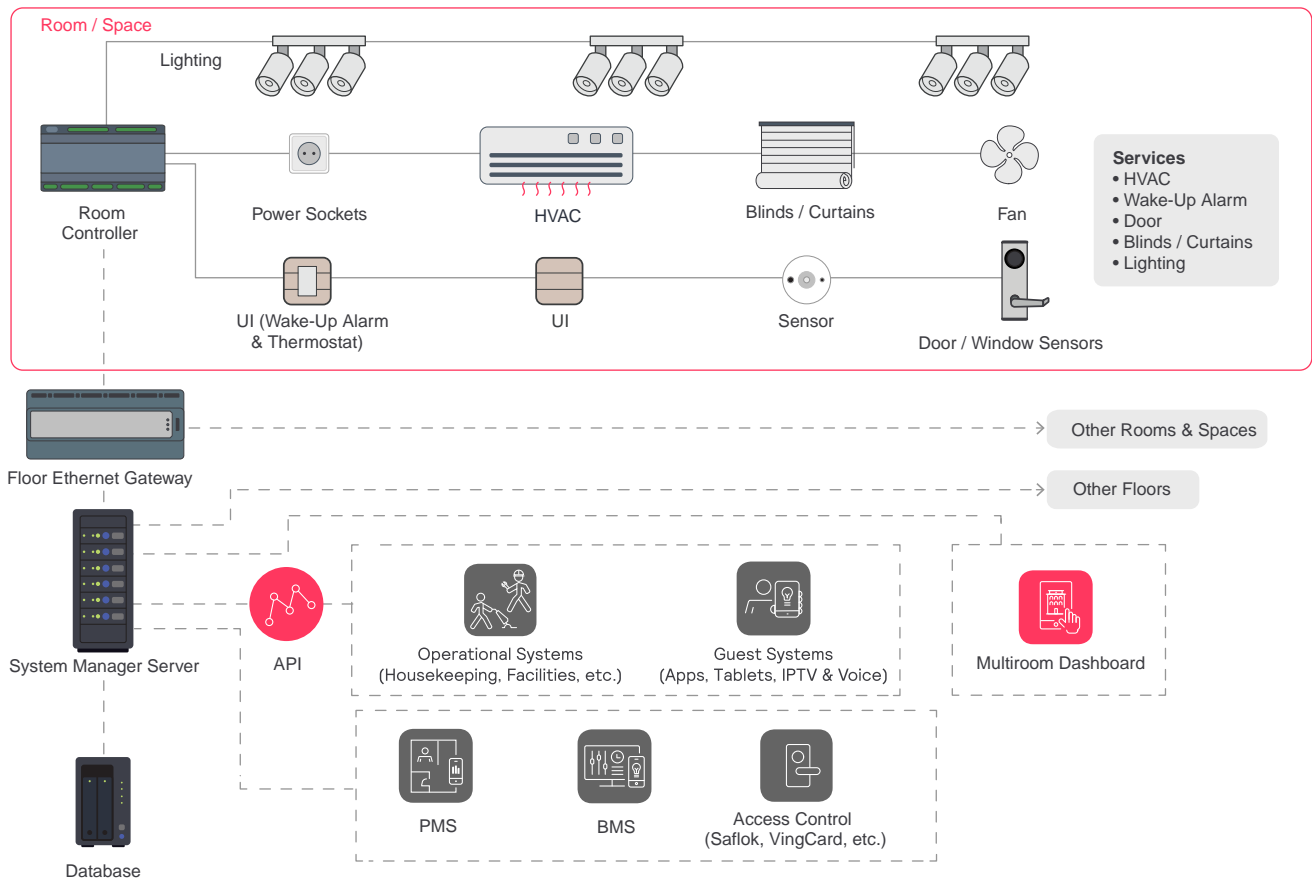Fan

Services
• HVAC
• Wake-Up Alarm
• Door
• Blinds / Curtains
• Lighting

UI (Wake-Up Alarm & Thermostat)

UI

Sensor

Door / Window Sensors

Floor Ethernet Gateway

Other Rooms & Spaces

Other Floors

System Manager Server

API

Operational Systems (Housekeeping, Facilities, etc.)

Guest Systems (Apps, Tablets, IPTV & Voice)

Multiroom Dashboard

Database

PMS

BMS

Access Control (Saflok, VingCard, etc.)

5.3. IP Network

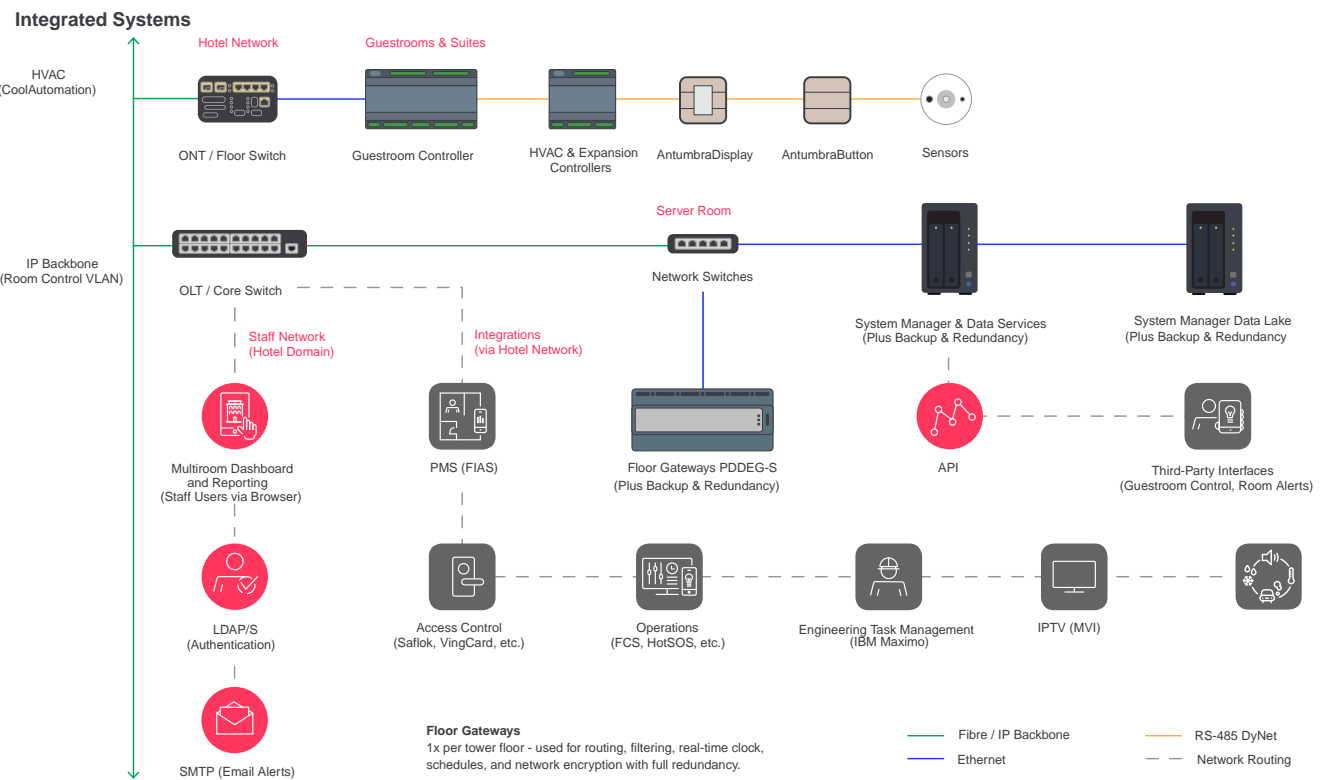All architectures rely on the same IP backbone over either Ethernet or optical fibre.

Depending on the choice of IP network, the IP backbone and underlying systems may be interconnected by means of twisted pair cables via switches or by optical fibre, where each room is equipped with an optical network terminal (ONT), after which twisted pair cables connect the room devices.

The System Manager server and database connect to the main network switch. Third-party systems are logically integrated on this server or via the server's Data Access API.

Distributed Logic

The system uses intelligent networked devices that operate independently of a central server. Room devices are only dependent on the room controller and the room sub-network to operate. This ensures that in the event of a device failure (other than the room controller itself), other devices in the room continue to operate normally. Similarly, all rooms operate independently of each other and of the floor network. Failures at the server level will affect the dashboard and integrated services, but rooms will continue to function independently.

In the event of a power failure, current settings are stored in non-volatile memory. When power is restored, the previous settings and user preferences are automatically restored as well.

Integrated Systems

HVAC (CoolAutomation)

Hotel Network | Guestrooms & Suites

ONT / Floor Switch | Guestroom Controller | HVAC & Expansion Controllers | AntumbraDisplay | AntumbraButton | Sensors

IP Backbone (Room Control VLAN)

Server Room

OLT / Core Switch | Network Switches | System Manager & Data Services (Plus Backup & Redundancy) | System Manager Data Lake (Plus Backup & Redundancy)

Staff Network (Hotel Domain) | Integrations (via Hotel Network)

Multiroom Dashboard and Reporting (Staff Users via Browser) | PMS (FIAS) | Floor Gateways PDDEG-S (Plus Backup & Redundancy) | API | Third-Party Interfaces (Guestroom Control, Room Alerts)

LDAP/S (Authentication) | Access Control (Saflok, VingCard, etc.) | Operations (FCS, HotSOS, etc.) | Engineering Task Management (IBM Maximo) | IPTV (MVI)

SMTP (Email Alerts)

Floor Gateways
1x per tower floor - used for routing, filtering, real-time clock, schedules, and network encryption with full redundancy.

Fibre / IP Backbone — RS-485 DyNet
Ethernet — Network Routing

Mandatory Criteria

.1. Connectivity

Guestrooms, suites, and public areas such as restaurants and function rooms must have a permanent connection to the server. IPv4/IPv6 is selected in the project design phase for each site with sufficient IP address ranges available for the system.

Each project uses the same basic architecture, which is scalable from a single guestroom floor up to a multi-tower hotel with numerous floors and function areas.

System Manager Server › PDDEG-S Floor Gateways › DDRC-GRMS-E Room Controllers

> A Floor Ethernet Gateway is required, regardless of hotel size, to ensure standardized configuration and network routing.

.2. Controllers

Each room must include a DDRC-GRMS-E. The DDRC-GRMS-E firmware supports all Multiroom features and statuses. In a single site, any room controller shall be swappable with a replacement using the same DIP switch settings. Other load controllers can be added to the room devices as required by the room design.

.3. Configuration

Room configurations must follow the predefined arrangement of areas and offsets as defined in the System Builder room mapping table - this enables connectivity, dashboard, and integrations. Each room's configuration file must be based on the STR Template Library for consistency, testing, and ongoing development and support. The room profile supports different types of rooms, enabling the dashboard to display specific information related to each room type.

.4. System Manager

Multiroom projects must include an instance of System Manager with Data Access and an Advanced or Enterprise hotel license. These license types enable the dashboard and system integrations, and provide the foundation for future upgrades. Without these licenses, system features can only be accessed during the 30-day trial period. Additionally, the Enterprise hotel license includes historical data reporting tools, insights, data export, and energy reporting.

Security

Securing the system at all points of connection is critical to installing technology across the hotel.

To mitigate threats, the system provides the following security measures:

- Physical and/or logical separation of the lighting network.
- Limited physical access to lighting equipment.
- Restricted physical access to control network devices.
- Encrypted database option when using Microsoft SQL.
- Secure communications to web-based dashboard and API.
- Secure communications between SM Server, Ethernet gateways, and guestrooms.
- Secure communications to VingCard access control system.
- Secure communications to Oracle Hospitality PMS (FIAS).
- User management tools using role-based access control.

There are several focus areas that shall be comprehensively secured:

.1. Firewall Protected Rooms

- A network firewall in each guestroom controller prevents even informed intruders from controlling or intercepting traffic from one room to another.
- Sitting between the controllers' room and building network ports, the firewall blocks, at the firmware level, any attempt to pass access or configuration commands out to the network.
- Only authorized status updates and measurements can be sent to our server and connected systems, ensuring that malicious traffic cannot be sent to affect any systems.
- An IP connection shall be closed locally to any user or engineer without a matching encryption certificate. This prevents remote configuration or reset attempts to guestroom devices.

.2. Building Network Encryption

- All traffic travelling from the guestroom to the server must be encrypted to prevent interception or unwanted injection of messages.
- Using Transport Layer Security (TLS 1.2), network traffic such as room statuses, sensor measurements, or control messages shall be encrypted using a 256-bit key. Hardware-accelerated encryption in the controller ensures that there is no impact to critical real-time data.
- This shall be in a client-to-server relationship from room controller to floor gateway or System Manager to floor gateway, ensuring that trusted links are initiated from the rooms or central system only.
- Combining network encryption and room controller firewalls provides comprehensive protection against system intrusion.

.3. Secure Interfaces

- All TCP/IP connected interfaces shall be encrypted with authentication for each connection.
- **Dashboard** - When providing hotel team members with access to the dashboard, the administrator

assigns a user profile to give each employee only the required level of access. This may be based on role and/or authorized areas.

- **Active Directory** - For easy and secure login and password management, Active Directory can provide user authentication before passing the user to match their profile for dashboard permissions.

- **API** - Third-party systems connecting via our API are authenticated with individual site-specific credentials. Once approved, data transfer over an encrypted connection ensures that data always remains secure.

.4. Additional Security Documentation

There are two documents that explain how Multiroom System Manager manages IT security.

1. A generic Product Security Statement on how we deal with security in Signify.

2. A product-specific security statement that describes:

   a. The security architecture of the proposition and implemented security features - in general terms, the measures (technical and process) that we have implemented. This includes a description of the secure connections between the DDRC-GRMS-E, PDDEG-S, and SM, as well as user access control on SM, authentication/authorization, etc.

   b. The explicit list of all security gaps that we still see in the proposition, including potential unprotected access to the RS-485 network, and recommended mitigation measures.

   c. The explicit list of all items that are part of the shared responsibility with the customer. This states all the security items that we consider the responsibility of the customer, including IT security measures on Ethernet connections and on the SM server.

   d. Statement of relevant penetration test results.

Chapter 6. Architecture STR Features

6.1. Occupancy

Feature Name	Description	Required Devices
Real-Time Occupancy	Determines occupancy of the entire guestroom or suite using sensors and door state (open/closed).	Motion Sensors (DUS360, DUS90, or DUS30) positioned where a guest may dwell. Mag switch on door, or door lock integration.
Guest Well-Being	Indicates that the room has remained occupied but no motion has been detected for the minimum elapsed time. Default = 24 hours.	Motion sensors and DDRC-GRMS-E with Motion Detected Counts metric.
Key Drop Occupancy	Determines occupancy of the room when a keycard is inserted/removed.	Card drop device; dry contact input (on load controller or DLLI8I8O).
Power Outlet Control	Turns off some outlets when room is unoccupied.	20 Amp relay on load controller.
Resume Guest Preferences	Resumes guest settings when changing from unoccupied to guest occupied.	DDRC-GRMS-E with STR Template Library.
Preset Scenes	Automatically recalls a lighting scene or sequence when the room changes between unoccupied and guest/staff occupied.	Occupancy sensors; door mag switch or door lock integration; time of day.

6.2. Room Status

Feature Name	Description	Required Devices
Do Not Disturb/Privacy	Requests that hotel staff refrain from entering the room.	DDRC-GRMS-E with STR Template Library and user interface with DND/Privacy button.
Make Up Room/Maid Service	Requests a room service attendant to clean the room.	DDRC-GRMS-E with STR Template Library and user interface with MUR/Maid Service button.
Laundry Pickup/Valet Service	Requests that hotel staff pick up laundry to be cleaned.	DDRC-GRMS-E with STR Template Library and user interface with LPU/Valet Service button.

Feature Name	Description	Required Devices
Service Pickup Request	Requests that hotel staff come to remove unwanted service items.	DDRC-GRMS-E with STR Template Library and user interface with Service button.
Corridor Panel Indicator	Indicates DND/MUR room status to staff outside the room.	DDRC-GRMS-E with STR Template Library; network panel or third-party indicator panel in corridor; dry contact outputs or feed-through relays.
Room Safe Status	Indicates to staff the status of the room safe.	Guestroom safe with dry contact output indicating status.
Balcony Door Status	Indicates that balcony door is open.	Dry contact input to HVAC direct or DDRC-GRMS-E input (logical channel level message).

6.3. HVAC

Feature Name	Description	Required Devices
Switched HVAC Control	Isolates power to HVAC unit when room is unoccupied.	20 Amp relay on load controller.
Fan Coil Unit HVAC Control	Full control of HVAC fan coil unit via fan coil unit controller (FCUC).	DDRC-GRMS-E; FCUC; AntumbraDisplay for thermostat.
VRV & VRF HVAC Control	Full control of VRV & VRF style HVAC multiroom units via BACnet or integrated via CoolMaster.	PDDEG-S; Access via LAN to the BACnet IP network or PDEG with CoolMaster gateway; thermostats or AntumbraDisplay; external air temperature reading.
PTAC/VTAC HVAC Control	Full control of VTAC or PTAC style HVAC systems. (Currently not available).	PTAC/VTAC interface (Currently not available).
CoolMaster HVAC Control	Full control of HVAC system via CoolMaster gateways and thermostats.	PDEG and CoolMaster gateway; CoolMaster thermostat.
Humidity Sensing	Measurement and reporting of humidity in guestrooms.	Humidity sensor
Guest-Selectable Fan Speed	Guest can adjust HVAC fan speed.	3-, 5-, or 10-speed fan and user interface buttons.
Temperature Aggregation	Measurement of temperature from various points in the guestroom depending on time of day.	AntumbraButton/AntumbraDisplay temperature sensors in room.

Feature Name	Description	Required Devices
Energy Holdover (Balcony/Window Monitoring)	Pause HVAC system when a window or balcony door is left open.	DDRC-GRMS-E with STR Template Library; mag switch on window/balcony door; dry contact input.
Green Mode	Guest-initiated automation of HVAC settings to optimize energy savings.	AntumbraDisplay as thermostat.

6.4. Customization

Feature Name	Description	Required Devices
VIP Mode	Disables automation for a guest for the duration of their stay.	DDRC-GRMS-E with STR Template Library.
Environmental Sensing	The system can detect a range of different environmental conditions such as water leak, humidity, filter dirty, drip tray, soil moisture, etc.	Project-specific environmental sensor or dry contact input.
Interconnected Rooms	Adjoining rooms can be dynamically interconnected from the dashboard to share a doorbell, occupancy, and room status.	Doorbell

6.5. Mechanical Integration

Feature Name	Description	Required Devices
Motorized Window Coverings (Direct)	Control of hardwired motorized window coverings that have 3 wires: Hot Up, Hot Down, Neutral.	Window covering motors (eg. Somfy); Double throw relays (DDRC-GRMS-E or DDRC810DT).
Motorized Window Coverings (RS-485)	Control of hardwired motorized window coverings that have an RS-485 bus.	Window covering motors (e.g. Somfy); DDNG485.
AV Control	Control of AV equipment via RS-232 commands.	DDNG232
Ceiling Fan Control	Control of hardwired ceiling fans.	DDRC-GRMS-E; DDMC802 with fan module (DGFM102) or 1-10V module (DGBM200).

6.6. Digital Integration

Feature Name	Description	Required Devices
Guestroom App	Enables guest to control room features from handheld device.	Hotel Integration API; custom app.
PMS Integration	Control of checked-in/out room state and guest language.	PMS integration via FIAS interface.
BMS Integration	Control temperature and fan over an integrated HVAC system.	PDDEG-S with BACnet license; LAN access to the BACnet IP network; manufacturer thermostats or PADPA.
Access Control Integration	Control and notify room access by staff or guest.	Integrated access control (door lock) system.

6.7. Lighting

Feature Name	Description	Required Devices
Scene Control	Set lighting levels in an area with preset scenes, and ramp lighting levels of dimmable lights.	DDRC-GRMS-E and/or expansion controller.
Switching Control	Switch lights on or off.	DDRC-GRMS-E and/or expansion controller.
Color Control	Adjust color of specific lights and/or run dynamic lighting transitions.	DDRC-GRMS-E and/or expansion controller.
Wake-Up Lighting	A dynamic light intensity and color temperature show triggered by the wake-up time setting.	Tunable white luminaires; AntumbraDisplay with Wake-Up Lighting task; PMS integration.
AntiStumble Nightlights	Create a lit pathway to the bathroom at night when leaving and returning to bed.	AntiStumble sensors at bedside left and bedside right; bathroom sensor; nightlights.
Scheduling	View and manage daily routines, plan an exception, or manually override for an impromptu event.	PDDEG-S

6.8. User Interfaces

Feature Name	Description	Required Devices
Multiple Language Support	When a guest checks in, we are able receive a guest language preference, via FIAS or from the dashboard, and set AntumbraDisplay panels accordingly.	PMS integration; AntumbraDisplay with available guest languages.

Feature Name	Description	Required Devices
Button Engraving	Buttons can be engraved with custom text, icons, and braille for intuitive guest operation.	Online configurator used to order user interface panels.
In-Room Wake-Up Alarm Settings	Enables the guest to set/cancel/snooze the wake-up alarm.	AntumbraDisplay with Wake-Up Alarm task; PMS integration.
Device Multiconfiguration	Enables a panel to replace any other panel by matching the DIP switch settings.	Dynalite Application Communication Module (DACM).

6.9. Alerts & Health

Feature Name	Description	Required Devices
Device Status	Indicates if there are any offline devices in a room.	Dashboard > Room View > Alerts & Health
Connection Status	Status of network connections and integrated system connections.	Dashboard > System Status
Alerts	Shows an indicator on the dashboard and can send notifications when room conditions are outside of specified parameters.	Dashboard; SMTP server for email notification.
Floor plans	Provides a floor plan view on a room's Monitor & Control page displaying an icon for each controllable service: lighting, HVAC, drapery, and doors. The floor plan also shows a view of the approximate location of light fixtures and sensors, with a selection filter.	Room profile configured with floor plan drawing and associated room devices and services.

6.10. Features for Guests
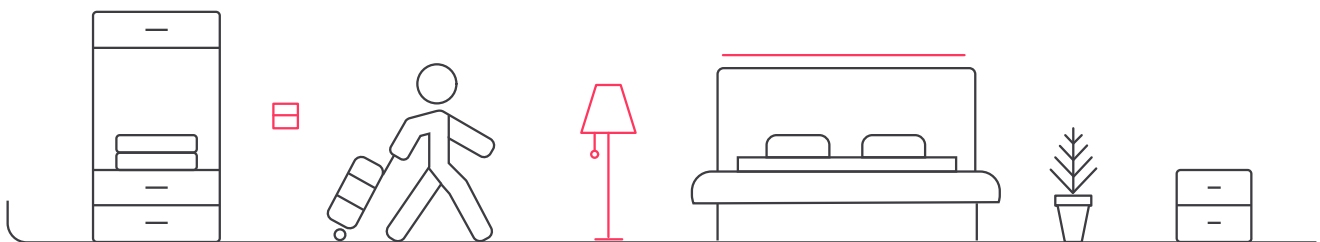
Multiroom System Manager is designed to meet the challenges of the modern-day hotel guest. It provides guests with effortless control while reducing technological complexity.

Multiroom System Manager helps you to deliver a seamless guest experience by providing direct control of room services including HVAC, curtains, room status requests, lighting scenes, AV devices, and wellness features in the guestroom.

Bio-adaptive lighting provides different levels of light intensity and color temperatures at different times of the day to support well-being, helping to energize guests in the morning and ensure a good night's sleep by supporting the body's natural circadian rhythm.

The Hotel Integration API enables you to integrate room control into your hotel app, empowering guests to change conditions in their room from their phone or tablet and personalise the lighting to suit their mood or activities.

Multiroom System Manager provides custom-tailored branding, feel, and functionality with unique guestroom designs and guest-friendly user interfaces.

Connected LED lighting and occupancy sensors deliver energy-efficient, mood-enhancing lighting scenes from the lobby, restaurants, and ballroom to the guestrooms. The system integrates seamlessly with hotel management systems, delivering efficiency and simplicity of operation. For guests, it provides a comfortable, intuitive experience - no more keycard drops, just beautiful welcome scenes to greet them as soon as the door opens.

Sensors and integrations with third-party systems enable various guestroom automation features. The system knows if a guest or an employee has opened the door to the room, and responds with appropriate lighting and climate settings. Occupancy sensors or the guest can control the lights in the bedroom or bathroom. AntiStumble sensors detect a guest getting out of bed at night and create a softly lit pathway to the bathroom. Other sensors detect if a balcony door is opened, so the climate control can switch off. These are just a few typical guestroom scenarios managed by the system.

6.11. Features for Hotel Operators
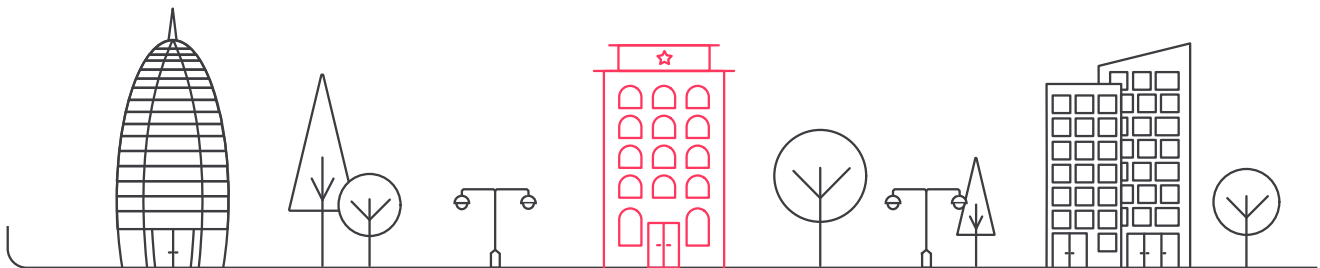
Interact includes the following features for the hotel operator:

- A modular approach to guestroom design providing security, redundancy, and distributed independent functionality.

- Operational visibility improving guest experience, staff efficiency, and energy savings.

- An integrated system allowing room status, lighting, temperature, shading, and hotel management systems to seamlessly interact, improving efficiency and simplicity of operation while reducing technological complexity.

- A branded approach allows a custom-tailored brand look, feel, and functionality for unique guestroom experiences through interior design and guest-friendly user interfaces.

- A scalable and distributed platform enables affordable deployment for any size hotel. The architecture supports the addition of new in-room or back-of-house features over the life of the guestroom, as well as refreshes or updates to rooms without heavy renovation cycles or rewiring.

- An internationally deployable system with full hospitality capability (guestrooms, lobbies/ public spaces, dining, façades, parking, back of house, etc.) backed by our international support network.

6.12. Features for Operations Staff
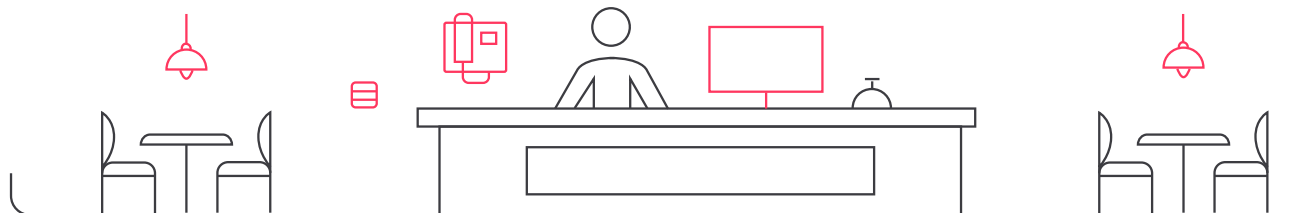
Multiroom System Manager delivers real-time operational transparency across your entire property, enabling the hotel to provide enhanced guest experiences while saving energy and improving staff efficiency. It provides energy-efficient, mood-enhancing lighting everywhere from the lobby to restaurants, ballrooms, and guestrooms.

Automate energy savings by turning down systems when rooms are unoccupied, setting heating or air conditioning to pause when a balcony door or window is open, and letting guests instantly set room status requests and personalise the room's environment.

The intuitive Multiroom Dashboard provides real-time visibility of your property's infrastructure, making it easy to streamline operations and improve guest services.

Permissions for Dashboard users and and API clients are easily configured from within the Dashboard itself.

The Dashboard also gives your management team visibility of guestroom status (including Do Not Disturb, Make Up Room and Laundry Pickup/Service requests, active lighting scenes, temperature settings, and humidity levels).

You can optimise task allocation, staff prioritisation, and staff movement to improve service delivery for guests.

By maximising the effectiveness and efficiency of staff, significant cost savings are achieved.

6.13. Features for Maintenance Staff

Multiroom System Manager's open API integrates with a variety of hotel systems, so that real-time data can be fed into everything from housekeeping to engineering systems, helping to make hotel operations more efficient.

Engineering and facilities systems can use real-time data from the API's guestroom control and

room/system alert features to notify staff when events and exceptions require their attention across the hotel.

The dashboard's detailed room view indicates when room conditions are outside of specified parameters, or if there are any offline devices in a room. The dashboard's system status summary provides an overview of network connections and integrated system connections.

Notifications can be automatically sent to appropriate staff members for any room or system alert.

6.14. Features for IT Staff
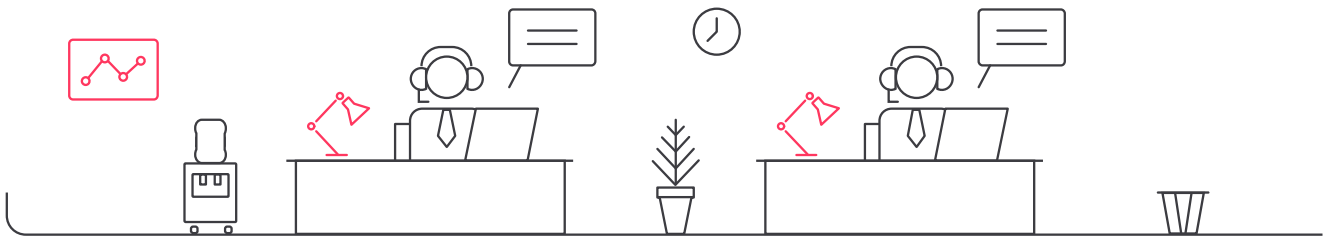
The Multiroom System Manager offering includes:

- A detailed /GIT/multiroom/build/multiroom/latest/index.html/multiroom/2.11/it_guide.html[IT, Network & Integrations Guide] and checklist.
- End-to-end (room-to-server) TLS network encryption.
- Continuous software updates with new features and improvements.
- Unlimited users (staff members).
- Unlimited client installations / PC locations.
- IT support for single sign-on via LDAP/S (Active Directory) and email.
- Notifications (SMTP required) for user management and room alerts.
- Certified integrations with third-party property management, access control, housekeeping, and operational hotel systems ensure the quality and stability of our systems on customer sites.
- A rich ecosystem of partner integrations via our API.

Chapter 7. Room Services

System Builder is used to create room profiles that set the properties for each room type:

- Room Features
- Areas
- Sensors
- Notional Energy
- User Interfaces
- Room Alerts
- Zones
- Services

7.1. Room Profiles

Room profiles allow you to select the room type and features to be displayed on the dashboard. Additionally, the dashboard identifies the sensors allocated for Guest Occupancy, Staff Occupancy, Leaving the Bed Nightlight, and Returning to Bed Nightlight.

The hotel room mapping lists each room location, room number, description, area range offset, room profile, and FIAS server. It also lists rooms that can be interconnected.

7.2. Room Alerts

Room alerts are displayed on the dashboard and passed to the API for third-party user interfaces. Room alerts are defined in the SB job and then added to the guestroom or zone within the guestroom.

7.2.1. Guestroom Alerts

| Room Alert	Description
Device Health	Indicates the online/offline status of room devices after the minimum elapsed time. Requires the Device Online Status metric. To exclude devices, set **Device Properties > Device Identification > Room device enabled** to *False*.
Entrance Door	Indicates when the entrance door has been left open for the minimum elapsed time. Requires a room controller or DLLI8I8O Entrance Door Dry Contact Input and/or Access Control System message.

Room Status	Indicates the current room status after the minimum elapsed time (requires a UI, Dashboard, or PMS to set the room status):
	   Do Not Disturb (Privacy)
	   Laundry Pick Up
	   Make Up Room
	   Service Pickup

Guest Well-Being	Indicates that the room has remained occupied but no-motion has been detected for the minimum elapsed time. Default = 24 hours.
Lamp Health	Indicates that a DALI driver or lamp is offline.

7.2.2. Zone Alerts

Room Alert	Description
Door Status	Indicates when a balcony door has been left open for the minimum elapsed time. Requires a Balcony Door Dry Contact Input.
FCUC Filter Dirty	Indicates the FCUC filter is dirty after the minimum elapsed time. Requires an FCUC Air Filter Dry Contact Input.
FCUC Drip Tray Full	Indicates the FCUC drip tray is full after the minimum elapsed time. Requires an FCUC Drip Tray Overflow Dry Contact Input.
Humidity	Indicates the humidity is below the Lower Threshold value or above the Upper Threshold value for the minimum elapsed time. Requires a Humidity Sensor.
Room Safe Closed	Indicates that the safe door is closed when guest checks in or out. Requires a room controller or DLLI8I8O Safe Door Dry Contact Input.

Room Alert	Description
🌱 **Soil Moisture**[1]	Indicates the soil moisture is below the Lower Threshold value or above the Upper Threshold value for the minimum elapsed time. Requires a Soil Moisture Sensor.
🌡 **Temperature**	Indicates the temperature is below the Lower Threshold value or above the Upper Threshold value for the minimum elapsed time. Requires a network user interface with temperature sensor.
Water Leak[1]	Indicates bathroom water leak. Requires a room controller or FCUC Bathroom Water Leak Dry Contact Input.

> ❗ DALI alerts (Channel offline, Driver/Ballast failure, Lamp failure) do not need to be configured in the **Room Alerts** editor. Once DALI channels are placed into zones, DALI alerts are automatically displayed in the dashboard. **Device Health** must be enabled.

7.3. Zones
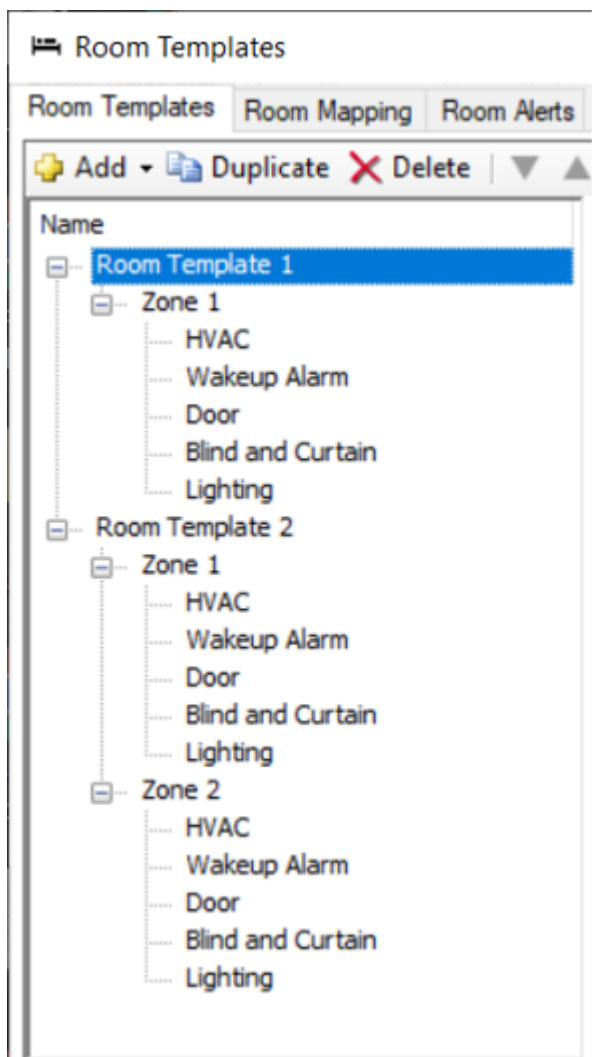
A standard guestroom typically only requires a single zone, whereas a suite may require multiple zones. Zones are intended primarily for suites, but can also be used to support separation in the UI and API if

required for applications such as guest apps and tablets.

To maximize clarity in the UIs, we recommend using as few zones as possible, e.g. only a Bedroom 1 zone and Bedroom 2 zone for a standard two-bedroom suite. Within each Bedroom zone you can then separate lighting for different spaces (e.g. a 'Corridor' lighting area for the corridor) in the nested lighting service.

7.4. Services

You can attach a service type to a zone. Some service types can process multiple similar services such as multiple lighting areas, multiple curtains, or multiple balcony doors.

Other service types such as Wake-Up Alarm and HVAC are limited to a single service within each zone. Where a single room requires more than one HVAC or Wake-Up Alarm service, multiple zones must be used.

Service type	Maximum number of services within a zone	Service features

HVAC	1	• Temperature
		• Temperature setpoint
		• Fan
		• Fan speed type
		    ⯀ Switched – 3 speed
		    ⯀ Variable – 5 speed
		    ⯀ Variable – 10 speed
		• Areas

Wake-Up Alarm	1	• Areas

Door	99	• Number of tiles (≤ 10)
		• Door type
		    ⯀ Balcony door
		    ⯀ Room safe

Blinds and Curtains	99	• Number of tiles (≤ 10)
		• Curtain type
		    ⯀ Curtain
		    ⯀ Blind
		    ⯀ Projector

Service type	Maximum number of services within a zone	Service features

Lighting	99	• Number of tiles (≤ 10)
		
		• Master lighting area
		
		• Icon type
		
		    ▫ On/off
		
		    ▫ Scenes
		
		    ▫ Nightlight
		
		• Lighting areas
		
		• Number of presets (≤ 99)
		
		• Number of channels (≤ 99)

7.5. Room States

Guestroom control functions are achieved by automatically moving the room between states in order to deliver three core system priorities:

1. Manage guest experience and comfort

2. Optimize energy and conserve room assets

3. Provide accurate real-time status for staff and operations

The system uses context from a range of sources to switch the room state:

- **Checked Out, Unoccupied**
- **Checked Out, Occupied (Staff Mode)**
- **Checked In, Unoccupied**
- **Checked In, Occupied**
    - ▫ Daytime
    - ▫ Evening
    - ▫ Green Mode
    - ▫ VIP Mode
- **Guest Preferences (Inter-stay)**

7.5.1. Sources of Context

The sources that provide this context and knowledge are within the system as well as through integration:

- **Real-time occupancy (source: system sensors)**
  Using passive infrared movement sensors and sensors on the entrance door, the system can use advanced logic to determine if a guest is present in the room.
  This is a core system feature used for energy management and staff optimization.

- **Real-time clock (source: system network)**
  The real-time clock used by welcome scenes and wake-up alarms (where present) to provide guests

with appropriate time-of-day lighting scenes and curtain logic. It is a standard feature, enabled by a combination of server application and network floor gateways.

- **Check-in/out events (source: PMS integration)**
Understanding if a room is currently rented/sold to a guest is core to guest experience and energy management. Receiving these status changes from the PMS is a key trigger to changing guestroom state and resetting guestrooms back to default behaviors.

- **Occupancy type - guest/staff (source: access control integration)**
Understanding if a guest or staff member is entering/occupying a room can help to both optimize room state and preserve guest preferences throughout their stay. Knowing that a staff member has been in the room can also allow for shorter timeout periods compared to guests when leaving the room to further boost energy savings.

7.6. Room Logic

7.6.1. Door events

A reed switch embedded in the entrance door frame triggers the sequence to start - it suggests that a guest is entering or leaving the room and that occupancy needs to be checked. The room immediately goes to Occupied state whilst this is verified.

7.6.2. Sensors

Occupancy sensors and other inputs are switched on to detect movement. They remain on until they detect movement, or for a chosen timeout (default = 15 minutes).

- Ceiling occupancy sensors
- Nightlight sensors
- Any button presses
- Proximity detection in our panels

7.6.3. Occupied

If any movement is detected after a door event, the sensors are switched off. The room is now fixed in Occupied state until the next entrance door event.

7.6.4. Unoccupied

If no movement is detected after a door event, the room is moved to Unoccupied state. Room conditions automatically adjust as defined.

7.6.5. Recovery

In the rare event that a guest leaves the room whilst another is sleeping and is not detected, recovery state ensures that they remain undisturbed, silently recovering the previous state as soon as they detect movement.

ℹ All room state values are configured to meet the hotel's preferences, either globally or by room type. They can be scheduled to update automatically from day to night and from season to season, and can be self-managed by authorized users via the dashboard's configuration page.

Flowchart

Legend:
- Checked in →
- Checked out →
- Staff in Room →
- Action ———
- Parallel Check - - - -

PMS — Is the Guestroom sold?

- **Yes** Check In
- **No** Check Out

Sold, Unoccupied
- Off
- On
- 24°C
- Auto
- Close

Unsold, Unoccupied
- Off
- On
- 24°C
- Auto
- Close

Balcony Open / Closed → Close Valve(s)

Balcony Open / Closed → Close Valve(s)

Door Opened

Door Opened

Staff mode
- Bright
- On
- 24°C
- Auto
- Open

Door Opened

Balcony Open / Closed → Close Valve(s)

Access Control — Which key type was used at the door lock to enter?
- Guest
- Staff

RCU Memory — Is this the first room entry since check-in?
- Yes
- No

Check occupancy

Real-Time Occupancy — Activate sensors, Panel Proximity, and AntiStumble to detect movement for **15 minutes**
- Movement detected
- No movement detected

Check occupancy

Retain state

Switch state

Sold, Occupied (Hotel Defaults)
- Bright Relax -
- On On -
- 23°C 23°C 25°C
- Auto Auto Auto
- Open Close -

Sold, Occupied (Inter-stay Guest Return)
- Restore Previous State (Unless Day>Night>Day is crossed, then use timed lighting & curtains)

Retain state

Switch state

Door Opened

Balcony Open / Closed → Close Valve(s) ← Balcony Open / Closed

Door Opened

Check occupancy

7.7. Energy Saving

Multiroom System Manager optimises energy usage in unoccupied and unused guestrooms. For example, you can manage in-room conditions including lighting, temperature levels, and open/close curtains. Energy savings are a key indicator of a system's performance, providing the most tangible metric of return on investment and ongoing value. There are several key areas in which the system enhances energy savings:

7.7.1. Automatic Room State Switching

- Combining check-in/out events and room logic, a room shall automatically condition itself to each different room state. This shall be configurable and change with seasonality across the year as required.

- Each state shall contain its own unique parameters for temperature setpoint, fan speed, socket power state, curtains/blinds, and lighting scenes.

- Throughout a stay (between check-in and check-out), guest preferences shall always be retained. While a room will move to a new state to conserve energy when the guest is not present, the guest's preferred setpoint and other customizations shall be immediately restored upon their return to the room.

- While they are away from the room, the system shall offer the hotel the option of:

    a. Moving to a state with fixed parameters (e.g. Checked-In, Unoccupied = 24°C)
       OR

    b. Moving the guest preferences by a relative offset to save energy while remaining close to their customization. For example, if a guest has their setpoint at 21°C, the system will allow this to be offset by a value, such as +2° to 23°C, or -2° to 19°C.

- Additionally, where door lock integration is available the conditions shall be configurable based on

the occupancy type - guest or staff - as well as ensuring that any changes made during staff occupancy do not affect the retention of guest preferences.

- External doors and windows (e.g. balcony) shall be linked to the system to directly influence behavior when opened. Either immediately, or after a predetermined delay, heating or cooling shall be disabled to conserve energy and prevent the buildup of condensation, humidity, etc. This shall be configurable to allow just the heating or cooling elements to be disabled while retaining the fan for air circulation if preferred by the hotel.

7.7.2. Green & VIP Modes

- A one-touch Green Mode button on the thermostat shall provide sustainably minded guests with an easy way to help conserve energy during their stay.

- Pressing the Green Mode button shall move the setpoint in the room to a value defined by the hotel and the thermostat should display suitable messaging such as "Green Mode - Thank you for helping to save energy".

- The use of Green Mode shall be remotely visible via the dashboard and tracked for use in trending and analytics databases. The hotel may also wish to use this data within their loyalty program, rewarding guests for their sustainability contributions with additional points or incentives.

- Conversely, the system shall also support a VIP Mode to temporarily disable room automation where the hotel determines that guest comfort or happiness could be disturbed. VIP Mode can be enabled from the dashboard to prevent the room state changing, irrespective of real-time occupancy. This preference shall be retained until check-out or it is cancelled by the guest, at which point the room is returned to its standard automated behavior.

7.7.3. Multi Temperature Reading Aggregation

A single temperature reading from one thermostat location often fails to accurately represent overall guestroom conditions. Due to airflow and thermostat placement, active heating/cooling can result in temperatures varying by as much as 3-4°C across a room.

This variation often results in overheating or overcooling, as the thermostat is unable to provide a representative temperature for the entire room.

To overcome this:

- Every panel in the guestroom (entrance, bedsides, desk, curtains, etc.) includes an embedded temperature sensor that provides the system with multiple reading points.

- Depending on the current time or room status, the panels considered in this processing shall be configurable - for example, taking only the bedside panel readings when Occupied at night to optimize conditions for the part of the room the guest is actively using.

- The RCU shall locally process all these readings and provide a truly representative average temperature to the HVAC controller, reducing energy waste and enabling more accurate heating and cooling adjustments.

7.7.4. Room-Specific Calibration/PID Logic

- Upon installation, the HVAC/FCU controller shall be capable, in conjunction with the connected sensors and panels, of running a PID or calibration process. This shall create a room-specific configuration of dead band mapping to maximize guest comfort and system efficacy.

- By automatically heating/cooling the room to its limits and measuring the time it takes to achieve the change, a more specific configuration shall be automatically created.

- This calibration process ensures that the unique aspects of the room are taken into account, rather than using the same dead band settings across the hotel.

- Intended as a part of the initial setup, this calibration process can also be triggered to repeat and update at a later date if changes are made to central systems (e.g. chilled water) which may affect system efficacy.

7.7.5. Usage Analysis & Updating of Defaults

The system shall anonymously monitor and report guest behaviors with regards to temperature setpoint changes. This enables the hotel to make informed decisions based on actual guest patterns, providing the basis to adjust default setpoints for future stays.

7.8. Room State Retention

It is essential that the system provides guests with immediate feedback to confirm their actions and any automatic room functions. This should not be affected by power or network loss. To achieve this, the room controller's onboard logic is able to fully and independently operate a room or suite of any size on a local basis.

In the case of power loss, the room controller must be able to fully restore the room state, including guest preferences such as temperature setpoint. Recovery of room state must be done immediately on power-up, without any dependency on network or server access. The room state shall therefore be continually stored to the local controller memory, so that it can be recovered without loss at any time.

For example, it would be unacceptable that an overnight power loss, either for maintenance or unplanned, was in any way noticeable by guests. Upon power-up, the controller therefore needs to know that the room is Checked-In, Occupied, with lights off, curtains closed, and a temperature setpoint of 23°C.
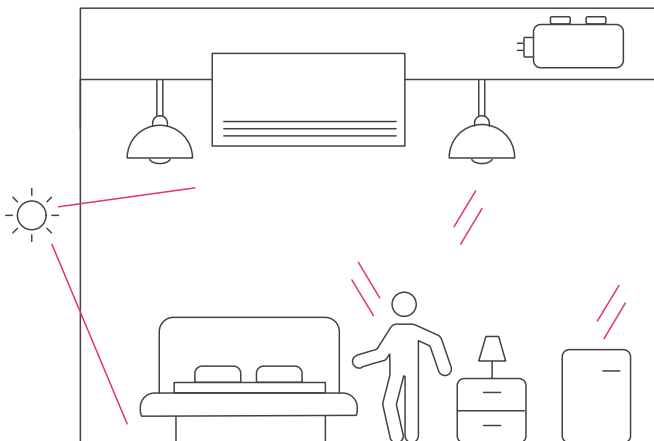
[1] Not available to all markets. Contact your Interact representative for more information.

Chapter 8. System Builder

The System Builder software enables the commissioning engineer to build a Multiroom system with both standard and custom features. Guestroom configurations within a room profile are automatically replicated to make the process of commissioning a model room, deploying the whole project, and upgrading in the future as trouble-free and cost-effective as possible.

8.1. STR Template Library

The mandatory STR task library for the DDRC-GRMS-E covers all standard Multiroom features, saving time on implementation.

The library contains a mix of mandatory and optional components within a System Builder job file. This includes all the tasking code to facilitate project programming in a standardized format for guestroom controls using Dynalite products.

The STR Template Library provides:
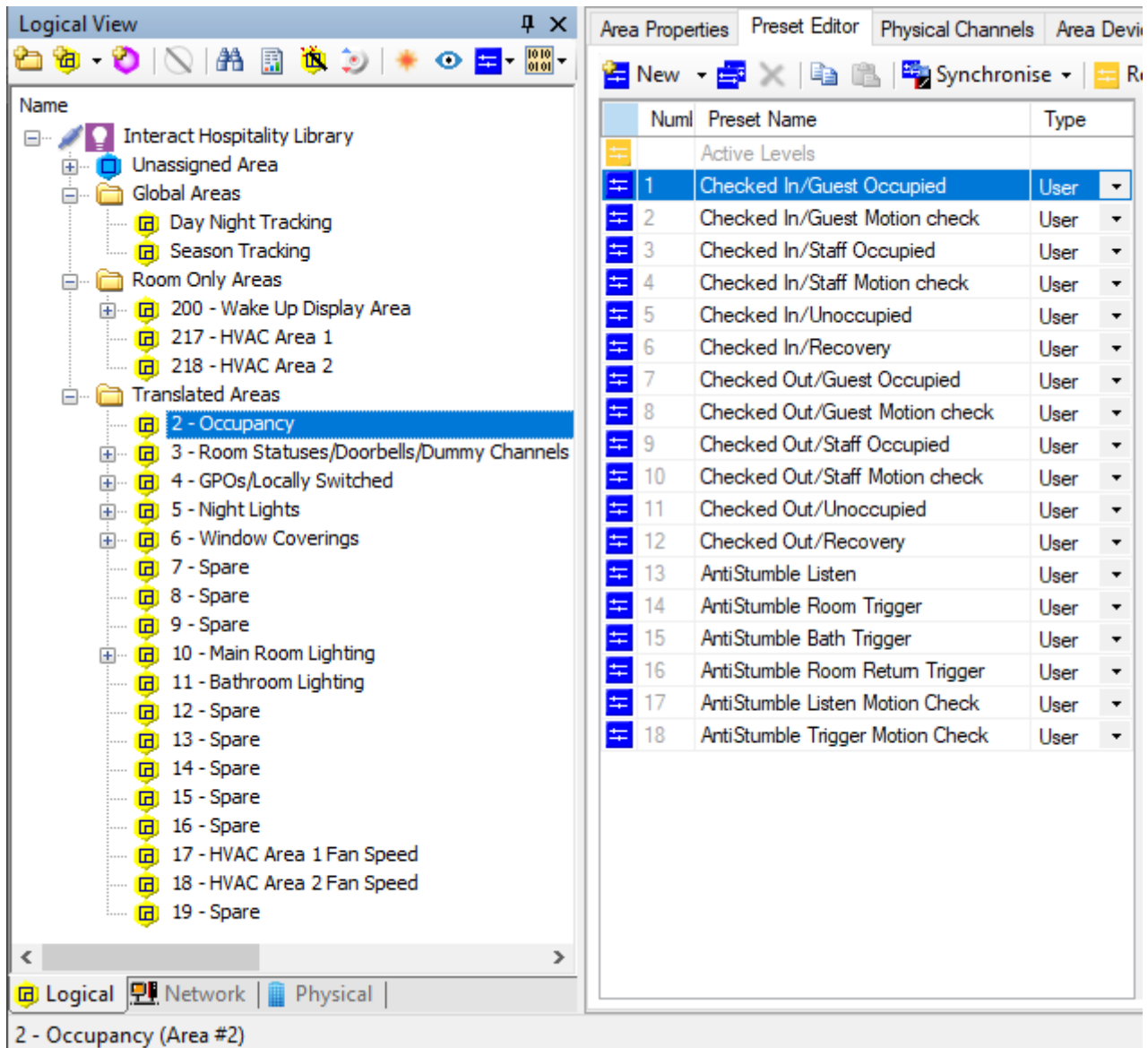
- Faster installation, commissioning, and deployment

- Standardized structure for easy upgrades

- Standardized structure for swift support

- Documentation to reduce knowledge burden

8.2. Logical Areas

Predefined areas with channels and preset scenes deliver a reliable framework that saves configuration time and ensures compatibility with tasking.

8.3. Room Profiles

A room profile is created for each different room type, containing the configuration for all preprogrammed devices in a guestroom. You can create a mini guestroom system within a room profile, and then create a map of the number of copies required.

The configuration is then propagated throughout the project to create the master hotel configuration. The two advantages of this approach are that it enables editing of all copies of a room type at one time, and automatically creates the matching room tiles in the dashboard.

Chapter 9. System Manager Server

Multiroom System Manager is connected to all control devices in the building, enabling automatic reporting of each room's status to the central server. This allows system messages to be captured, including preset state, channel levels, and room status indications. The System Manager server can monitor the status of all connected rooms and is automatically informed if the system detects a fault within the network.

System Manager provides a software gateway for integrated third-party systems and the APIs for:

- Multiroom Dashboard
- Guestroom control apps
- Room and system alert apps

The System Manager Configuration tool enables you to:

- Run Quickstart to set up your site
- Configure site settings
- Manage users
- Manage databases
- Request and apply the data access and hotel license
- Monitor system messages
- Select languages
- Configure PMS connections
- Configure access control connections

System Manager Configuration

Client Version: 0.1.4816.9319
Server Version: 0.1.4816.9319

Language   Logout

Job Name:	📁✓	My Project
Network Status	⚠️	Connected - 5 / 6 TCP Connection
Job Database	✓	.\EMSERVER\Hotel_Simulation
Trending Database	✓	.\EMSERVER\Hotel_Simulation_Trend
Alarms & Events Database	✓	.\EMSERVER\Hotel_Simulation_Alarms
Reports Database	✓	.\EMSERVER\Hotel_Simulation_Reports

Run Quickstart

Site Settings   Manage Users   Manage DB's

System Manager Service Status   Running
Logger Service Status   Running
NetworkProvider Service Status   Running
Data Access Service Status   Running

License Information   Selling Partner Information

Features: Interact Hospitality, Web API and System Dashboard, OPC Service
Gateway Connection Count: Unlimited
Maximum OPC UA Point Count: Unlimited
Project Name: ███
TimeZone: (UTC+10:00) Canberra, Melbourne, Sydney
Machine specific license

Request License

Apply License

Monitor System

Chapter 10. Multiroom Dashboard

ℹ️ This section provides an overview of the Multiroom Dashboard's features and functionality. For more detailed information, refer to the /GIT/multiroom/build/multiroom/latest/index.html/multiroom/2.11/dashboard_guide/getting_started.html[Multiroom Dashboard Guide].

The Multiroom Dashboard provides the following sections:

- **Pulse** - Real-time overview, analytics, and insights.
- **Control Centre** - Guestroom monitoring, control, history & performance, alerts & health.
- **Reporting** - Create management, environmental, and room status/condition reports.
- **Configuration** - Modify room profile default settings and monitor deployments.
- **User Management** - User setup, user profile permissions, and session logging.

10.1. Pulse

Pulse is a real-time overview with predefined analytical stories to help you fine-tune the system in line with guest behaviors. Insight cards are updated daily to provide detailed trending patterns and recommendations across the full range of system parameters and controlled services.

For example, by analyzing guests' customization of temperature setpoints after check-in, we can make actionable recommendations for default system behaviors that better reflect guest comfort, or by monitoring the usage of Green Mode, we can provide a report to help you reward guests with additional loyalty points.

Insight cards are co-created in partnership with the hotel to precisely match the needs of relevant departments and stakeholders.
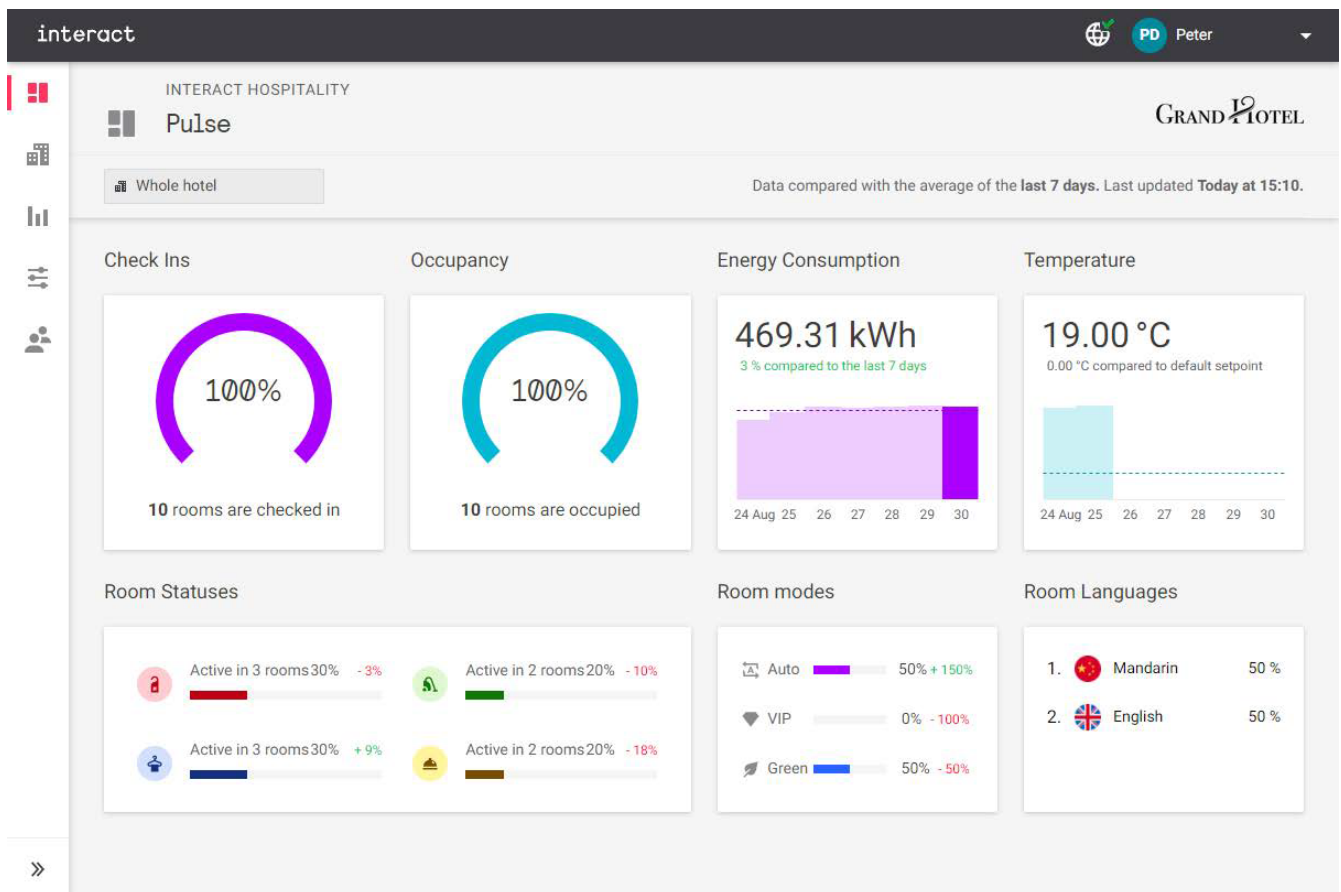
10.2. Control Center

10.2.1. Floor and Room View

The ability to support guests and staff with remote changes and system status monitoring is a key requirement for modern hotels to deliver exceptional service at scale.

To achieve this, the Control Centre provides visibility and control of all hotel spaces, and their full range of statuses, in real time. With fast, easy access to room monitoring, this is a central tool for daily workflows such as check-in and check-out, as well as for operational teams.

The Control Centre has two main views:

1. **Floor View** – shows floor navigation, room information, and filters.
2. **Room View** - enables you to control and monitor statuses, services, and alerts for the selected room.

The dashboard follows these guidelines:

- The dashboard shall natively represent the true physical layout of the hotel and its guestrooms and suites.
- The structure starts with the building, wing, or tower, followed by the floor that the room is located on. All rooms are identified by room number, both in the dashboard and through all other interfaces such as the API.
- Interconnected rooms shall be identified by a link icon.
- Larger rooms and suites shall be subdivided to represent the physical spaces within. Below the room number, the dashboard shall clearly display the room zones, such as Bedroom, Living Room, Bathroom, and Balcony.

- Each zone shall display its available services such as Lighting, HVAC, and Curtains, as well as the status of key elements such as balcony doors and the room safe. Similar services are displayed separately in each zone as required, for example where the living room and bedroom each have their own HVAC zones.

- Where the user profile grants such permissions, controls to allow remote change of services shall be displayed. For users without permissions, these shall be hidden or presented in read-only mode.
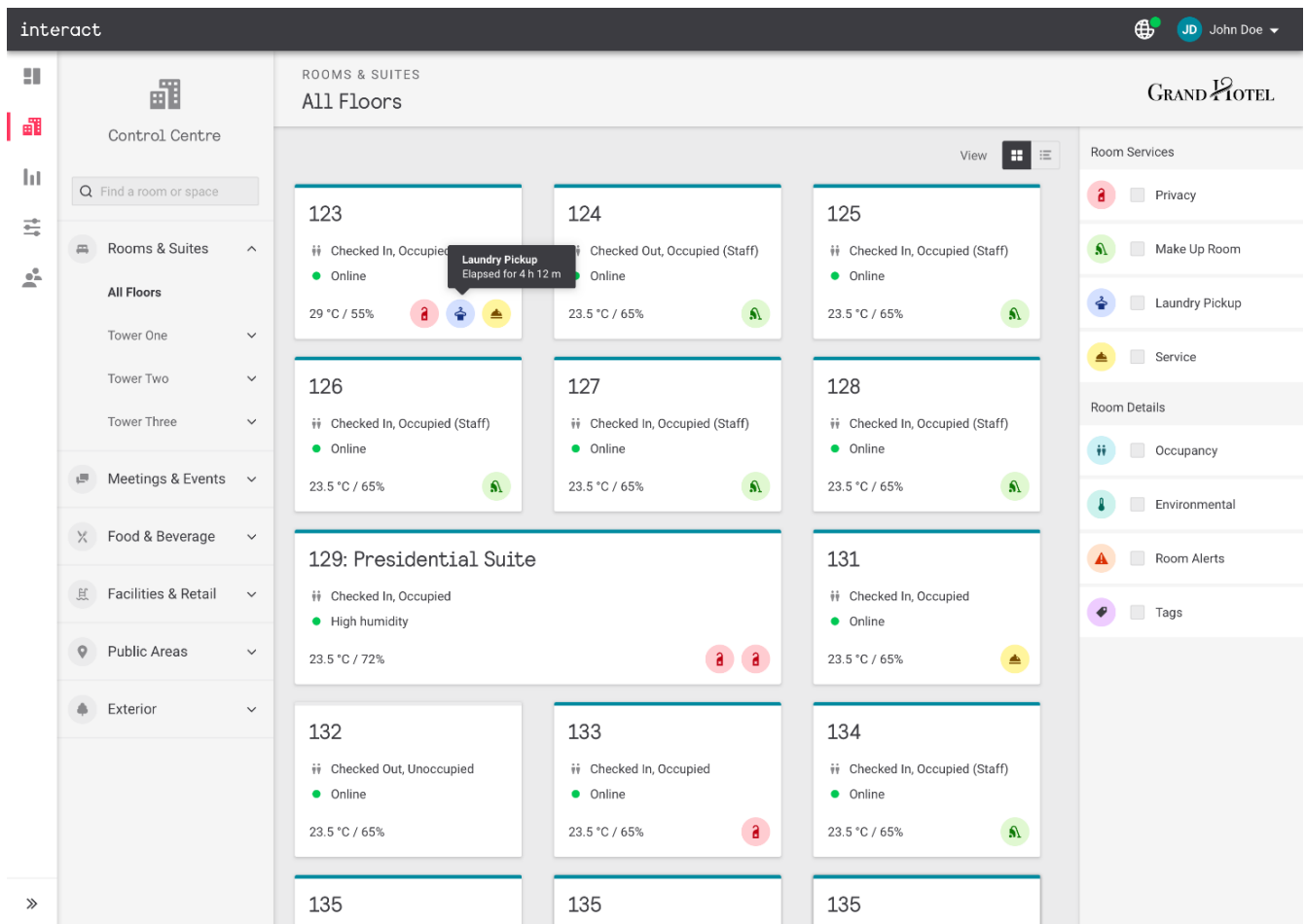
10.2.2. Monitor & Control

Room Statuses and Requests

Room statuses and guest requests shall be shown on the dashboard, including:

- **Occupancy** - A room can be checked-in/out and occupied/unoccupied in real-time.

- **Room Mode** - The room can operate in one of three modes:

  - ▢ **Auto** - Following the room logic detailed herein as customized by the hotel.

  - ▢ **Green** - This mode instructs room services to run with more energy-conserving settings, and can be selected by the guest on the thermostat or by staff on the dashboard.

  - ▢ **VIP** - For guests with special sensitivity or preference against changes, this mode sets the room to full manual control by the guest with no automatic adjustments to any parameter. Upon check-out, the room mode reverts to Auto.

- **Guest Language** - The language used to display messaging and controls on thermostats and any other displays in the room can be chosen or reset from a list of the languages installed in the project.

  - ▢ If the local PMS passes guest language as part of the Check-In (GI) event, the language will be

automatically set.

⬡ Language choice is reset to the hotel default upon check-out.

- **Statuses and Requests** - The room supports a range of guest-initiated statuses, which are shown with their elapsed time if active. Authorized users can reset the status if a requested task such as laundry or housekeeping is complete, or as requested by the guest.

- **Privacy / Do Not Disturb** - Indicates that the guest does not wish to be disturbed.

- **Make Up Room** - Indicates a request from the guest for their room to be cleaned.

- **Laundry Pickup** - Indicates that the guest has garments to be collected for cleaning, pressing, or shoeshine.

- **Service** - Can be used to indicate a request for collection of a guest's room service tray/trolley, or for assistance from their butler.

> **ℹ** **Privacy** and **Make Up Room** are mutually exclusive. Requesting one when the other is active will automatically toggle the other off.

> **Coming Soon - Room Tags** - In addition to room status, room tags allow the selection of rooms with metadata such as special features for accessibility, business, physical aspects, assigned housekeeping teams, etc.
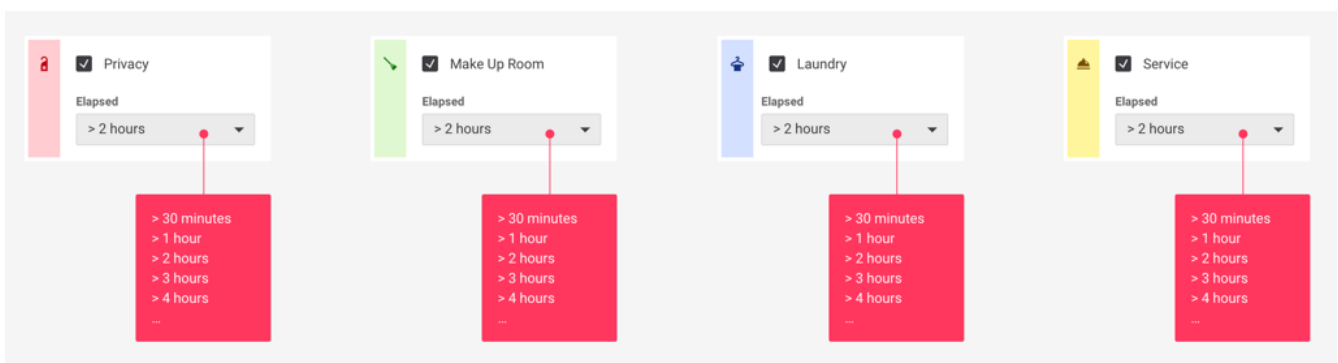
Services

Within a room and its zones, each service displays its current status in real time on the dashboard, with all relevant parameters for authorized users' remote control. Services can be repeated as required across multiple zones to reflect the physical arrangement of the room. The service tiles are grouped by zone. A room usually has one zone, but a suite can contain multiple zones.

Lighting - There are four types of lighting statuses and remote control provided:

- **Room Master** - Controlling a full room or suite.

- **Lighting Scenes** - Recalling a predefined lighting scene within a room or zone (bedroom, bathroom etc.), such as Bright, Relax, or Work.

- **Lighting Circuits** - Directly controlling a specific lighting circuit, including on/off, dimming, and color control.

- **AntiStumble** - Nightlights operate by default in fully automatic mode, activating when detecting guest movement at night to illuminate their path. To suit guest preference, for example when travelling with small children or if they have impaired night vision, this feature can be set to Always On or Always Off. This setting reverts to Auto upon check-out.

HVAC - Includes air conditioning and/or heating, as well as the current environmental conditions. The

service tile in the room displays temperature information and, for authorized users, provides remote control of:

- **Current Temperature** - As read and aggregated from the range of sources in that zone or room (see Multi Temperature Reading Aggregation)

- **Setpoint** - The temperature as set by the guest, or as per the default template set for this room mode (see Room Logic) shall be displayed and can be controlled.

- **Fan Speed** - The current fan speed, either as level (Off, Auto, High, Medium, Low) or percentage, shall be displayed and can be controlled.

- **Humidity** - Where sensors are present, the current humidity shall be shown.

- **HVAC Mode** - The current mode shall be shown as Heating or Cooling whenever actively occurring in the space.

Blinds & Curtain - Includes the current status of the curtain (open/closed), blinds (raised/lowered) or projector screen (raised/lowered). Authorized users can remotely open/close or raise/lower to support guest requests.

Door - Includes the current status of the balcony doors or room safe door (open/closed) and a timestamp of the last change (e.g. "Since 15/01/2022 at 13:56").

Wake-Up Alarm - Where used for the wake-up lighting sunrise sequence, the current status of a room's wakeup alarm is shown. Authorized users can remotely set and cancel alarms to respond to guest requests.

10.2.3. History & Performance

Historical data provides valuable insights to help you serve guests better, understand and fine-tune services, and plan for the future with a deeper understanding of guest behavior patterns.

Historical data is organized into categories, and can be filtered using the options at the top of the page:

1. **Per Stay** - In this mode, we use Check-In/Out events to automatically define 'stays'.

   - ⯍ Automatically grouping the data in the report to match the room's recent guests, this view provides fast and convenient access when investigating customer enquiries.

   - ⯍ When 'per stay' is selected, the dropdown menu presents the last 60 guest stays - simply choose one and the graphs will update to match.

2. **Date Range** - In this mode you have the freedom to select either any recent range (today, last 2 days, last week etc.) or a free selection of from-and-to dates. This can be further refined with a from-and-to time if required.

3. **Real time** - This mode displays the last hour of data, updated once per minute, to help live diagnose or monitor the room conditions.

Outside of the live view, the granularity of data in these graphs depends on the length of the time period selected. For a more detailed view, you can zoom in to a shorter time period:

- **>12 hrs** - 5 minute intervals
- **12 to 24 hrs** - 10 minute intervals
- **24 to 48 hrs** - 30 minute intervals
- **48 hrs to 4 days** - hourly intervals
- **4 days to 1 week** - 6 hour intervals
- **>1 week** - daily intervals

Environmental

- **Real-Time Occupancy** - Shown in the light blue background bars, real-time occupancy is shown to help relate the changes to room usage.
- **Set Temperature** - As set automatically by the room logic, or customized by the guest, the setpoint is shown by the blue line.
- **Actual Temperature** - The aggregated temperature of the room (or zone for suites) is shown on the magenta line.
- **Humidity** - The room's humidity is shown here using the right hand axis, with data displayed in the green line.
- **Fan Speed** - When you hover over any data point, the fan speed is shown in the tooltip.

> Where a room or suite has multiple HVAC zones, you can select which to view in the top right corner.

> The data shown can be downloaded by clicking on the download button on the graph. Data is exported in .csv format for analysis in applications such as Microsoft Excel.

Room Statuses and Requests

- **Real-Time Occupancy** - As in environmental, occupancy is shown in the light blue background bars to assist with relating events to room usage.
- **Room Statuses** - Each available status for the room has a separate row, with colored bars indicating the periods for which they were active.

- **Detail View** - When you hover over any bar, a tooltip shows details of the room status event including the start and finish time.

Event Timeline

- The event timeline shows all of the events that happen in the guestroom for the selected time period, in chronological order.

- Every event is time- and date-stamped, along with how that event was initiated - in the guestroom ('Room') or via the dashboard ('Server').

- Events shown here include:

  ▫ Check-In / Check-Out

  ▫ The room being determined as Occupied or Unoccupied

  ▫ Entrance door opening

  ▫ Balcony door opening

  ▫ Temperature setpoint and/or fan speed being changed

  ▫ The room mode being changed (Auto, Green, or VIP)

  ▫ A request room status being switched on or off (Privacy, Make up Room, Laundry Pickup, or Service)
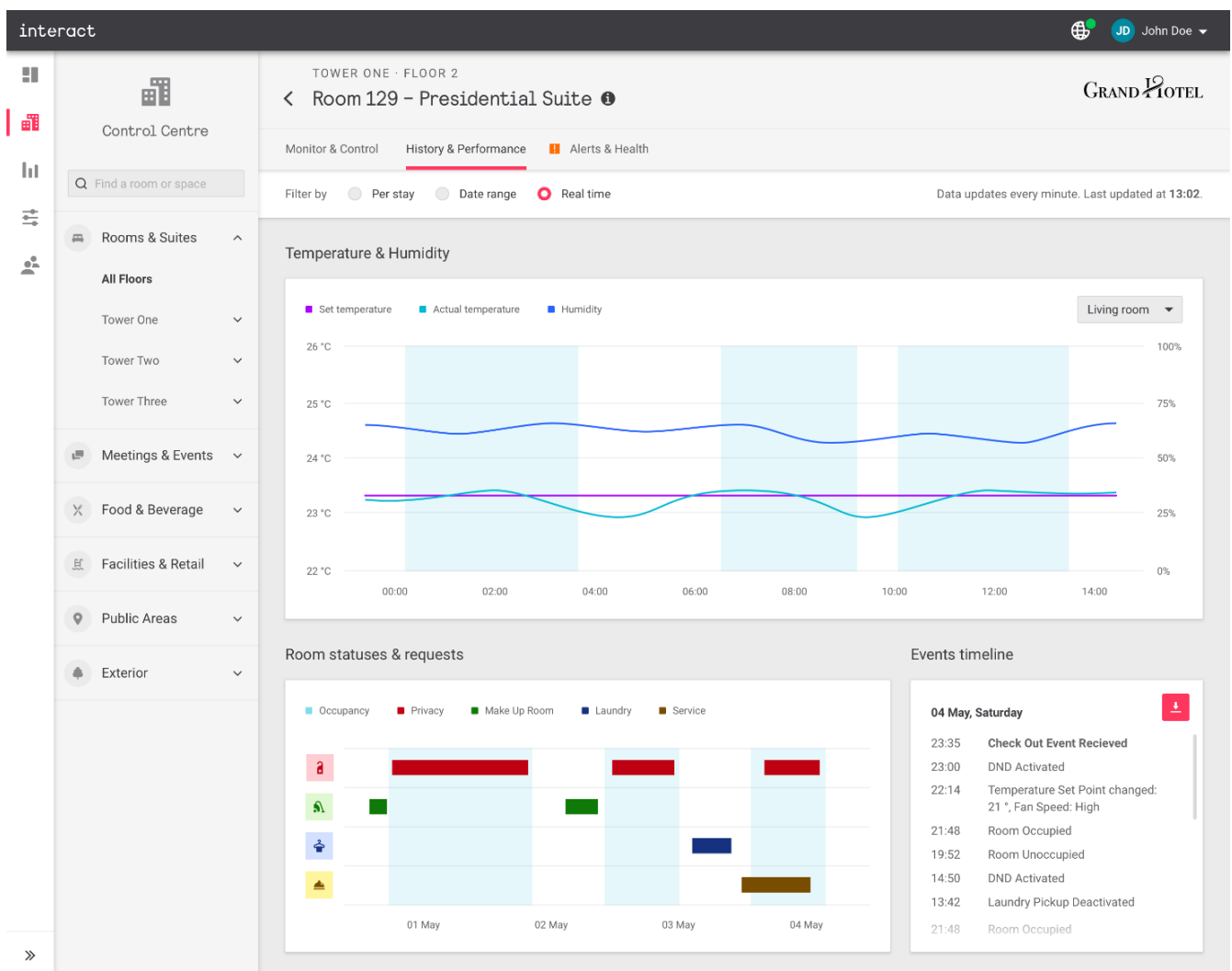
The event timeline can be downloaded by clicking the ⬇ **Download** button. Data is

10.2.4. Alerts & Health

In addition to statuses and services, the room view contains detailed information about alerts and system health of devices located within the room.

Alerts - A wide range of alert types can be monitored within rooms and suites. Like services, room alerts are arranged by zone to help identify and locate issues or devices requiring attention - e.g. excessive humidity within the living room of a suite, or a balcony door left open for a prolonged period in the bedroom.

Health - As well as the alert notification that a device is offline, you can view the real-time status of all devices (controllers, panels, and sensors) in the room, also arranged by zone. This information shall be included in the alert detail, but this view is important to check when responding to guest enquiries or diagnosing unexpected events.

Overall system connection status can be viewed by clicking the System Status icon in the top right corner of the screen.
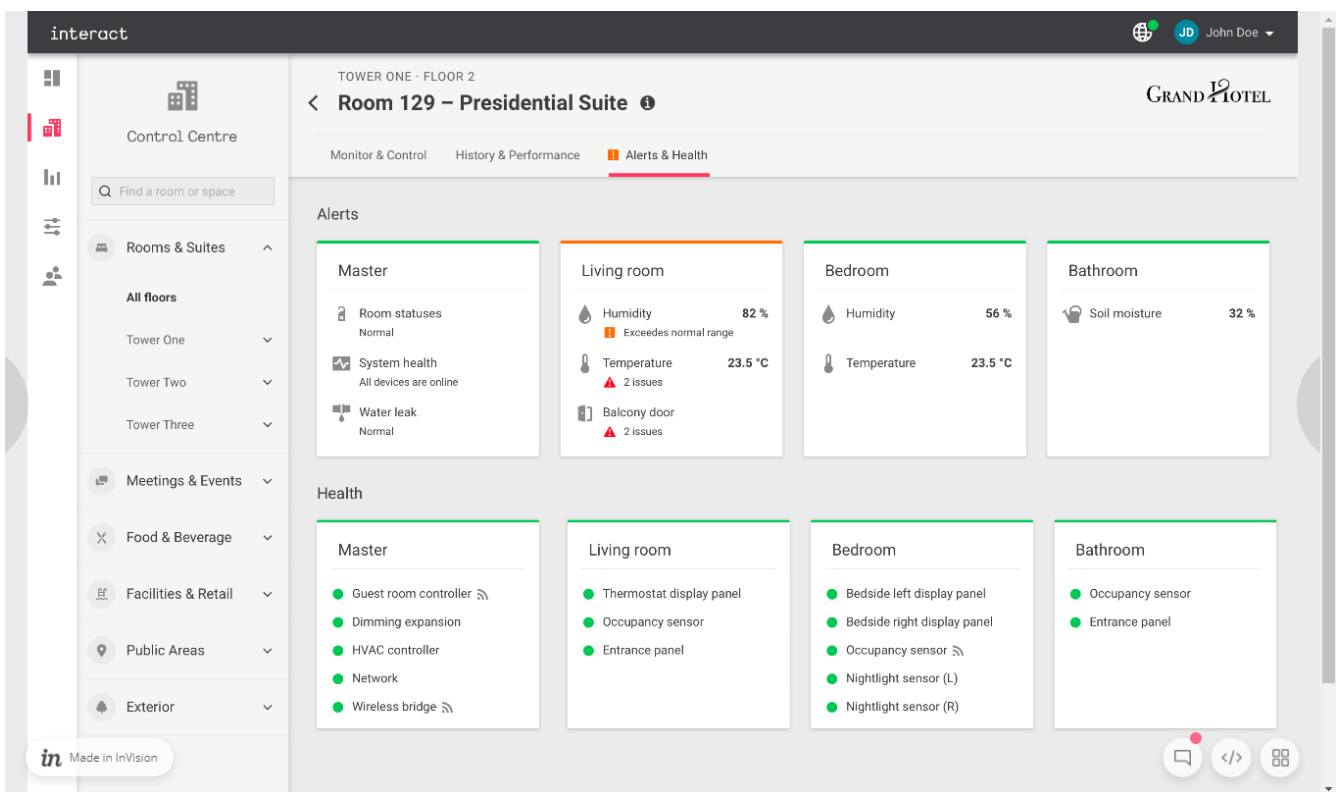
Proactive Alerts

Proactive alerts of anomalies or exceptions inside the guestroom are critical to the hotel operationally managing assets, ensuring security, and assisting guests.

The system shall continually monitor a range of room parameters against acceptable ranges defined by the hotel. When a room exceeds these, the appropriate hotel staff shall be notified with information to assist them in quickly isolating and resolving the issue.

Throughout, the status of alerts shall be easily visible with a simple traffic light indication of state:

- **Green** - Within normal parameters

- **Amber** – Warning - exceeding normal range but no immediate risk
- **Red** - Critical Alert, requires immediate attention

Alert signaling and notifications

When an alert is generated, it shall be displayed and communicated clearly to allow staff to plan the required action.

1. **On the dashboard:**

   a. Rooms with active alerts shall be able to be filtered or isolated with a single click.

   b. The type, severity and current alert level shall be shown on the Floor View for immediate visibility.

   c. Clicking into a room shall show further details, such as the exact location/zone, current level/percentage, and what time the alert was first generated.

2. **Via email:**

   a. Alerts should be sent to a person, list of people, or a distribution list.

   b. Each alert type shall be sent to an appropriate person(s), depending on how it needs to be handled (e.g. engineering, IT, housekeeping, etc.)

3. Emails shall include the type of alert, severity level, relevant device, and timestamp.

4. **To integrated systems via API:**

   a. The system shall support integration with service ticketing systems such as FCS Connect & Engineering

   b. When the third-party system receives an alert via the API, it should automatically create a ticket and allocate it to the most appropriate person(s) based on type, severity, and location within the hotel (tower/wing etc.)

Alerts shall be present if the status still exceeds parameters after a defined time period, configurable per alert type. For example, if humidity is still high 24 hours after first exceeding the defined range, the alert will be sent again. This repeats until the parameter is back within the normal range.

There shall be a range of room alerts available to give the hotel flexibility and choice in what they wish to monitor and how it is communicated to them.

All parameters are configurable to the preference of the hotel and can be adjusted as required to fine-tune the sensitivity of alerts in practice.

Room status alerts

Room statuses are alerted on an elapsed time basis, for example if DND is left on for more than 24 hours, or a guest is waiting for a laundry pickup request for more than 2 hours:

- **Privacy / DND**
- **Make Up Room**
- **Laundry Pickup**
- **Tray Pickup / Service**

Door event alerts

Door event alerts indicate if an entrance or balcony door is left open for a prolonged period. The room safe alert indicates if the door is left closed (locked) upon check-out.

- **Door Ajar** - Entrance door left open
- **Balcony Ajar** - Balcony door left open
- **Room Safe** - Left closed at check-out

Environmental alerts

Environmental alerts monitor conditions within a defined 'normal' range with high and low thresholds, as well as elapsed time. For example, if the temperature remains outside the normal range (e.g. 18-26°C) for longer than the elapsed time (e.g. 1 hour), an alert is generated.

- **Actual Temperature**
- **Humidity**
- **FCU Filter Dirty**[1]
- **FCU Drip Tray Full**[1]

Monitoring alerts

Monitoring alerts compare the measured conditions to a defined 'normal' range which may include high/low thresholds and elapsed time. For example, a water leak generates an immediate alert, whereas soil moisture will only alert if the reading is below a certain level (e.g. <25%) for longer than the elapsed time (e.g. 24 hours).

These alerts require dedicated sensors for each monitored location:

- **Water Leak**
- **Soil Moisture**

System health alerts

System health alerts monitor the heartbeat, connectivity, or integration of sensors, panels, controllers, network devices, and system integrations. They have an online/offline state and an elapsed time to avoid false alerts due to actions like power-cycling.

For example, if a room device such as a panel is offline for more than 10 minutes, or our connection to Oracle Opera is offline for more than 5 minutes, an alert is generated.

- **Room Devices** - System Health
- **Network Devices** - Floor Gateways
- **Integrated Systems** - FIAS Connection

10.3. Reporting

As well as per-room reports, the Report Builder provides the ability to generate reports on historical data across a range of rooms and floors, using a selection of time and datatype parameters chosen by the user.
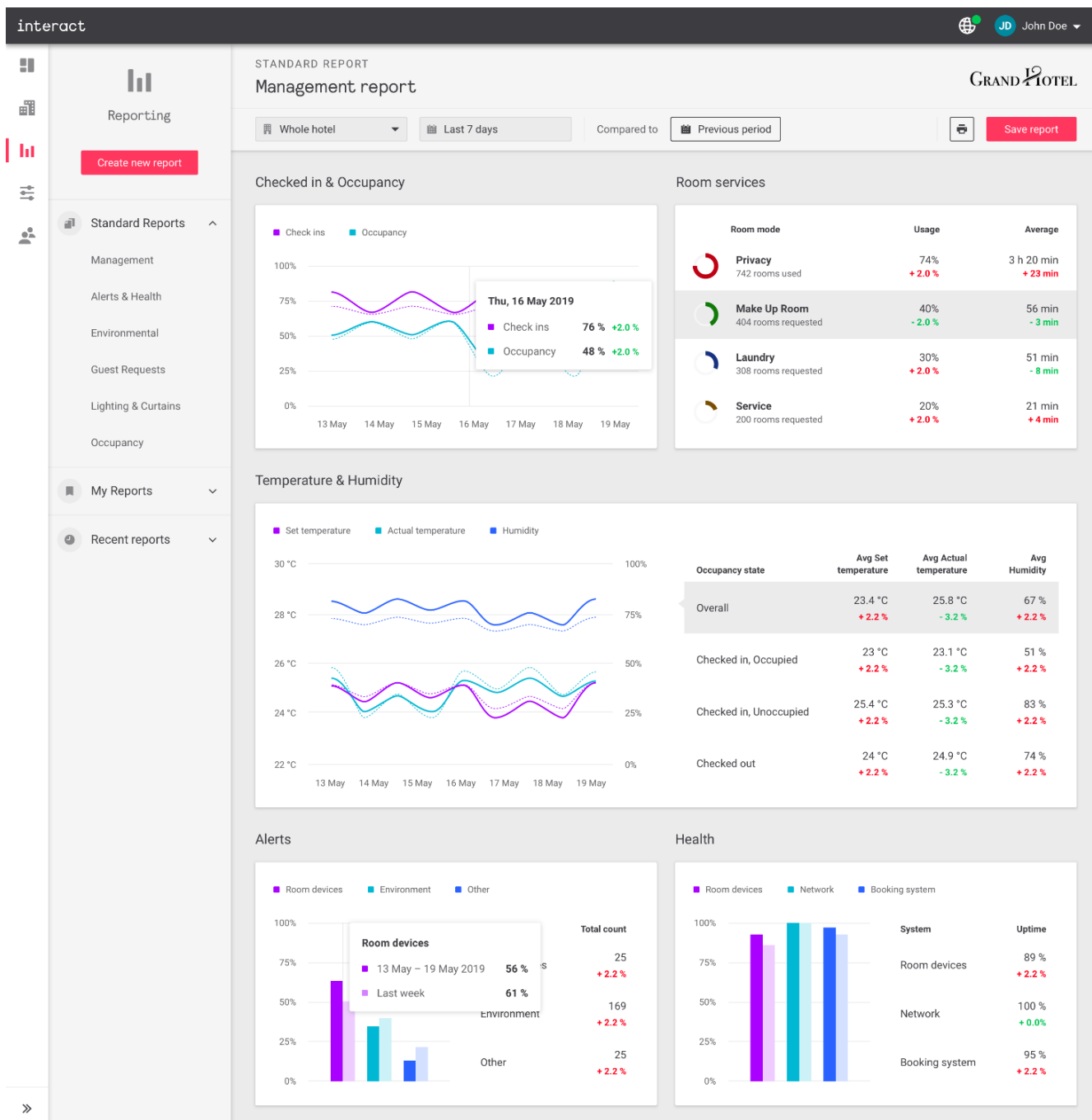
10.4. Configuration

The configuration section allows you to modify each room profile's default settings, monitor update deployment status, configure seasonality, and adjust day and night settings. This section also contains API integration and general dashboard settings.

10.5. User Management

User Management offers a range of configurable user profiles and permissions, allowing individuals the appropriate level of control and access while removing unnecessary or restricted information from the

interface. It also provides session settings and logging of user activity.

[1] Requires compatible FCU hardware or additional sensors.

Chapter 11. Building Connectivity Devices

11.1. PDDEG-S

System Manager uses gateway devices as building blocks for each floor.

Ethernet Gateway Supervisor (per floor or per group of rooms)

Secure multipurpose Ethernet connection between the control system and head-end software. It provides timeclock and scheduling functions as well as gateway services between Ethernet and DyNet devices.

ℹ Philips Dynalite also offers a range of integration gateways for BACnet, KNX, CoolMaster, Somfy, Modbus, and other Ethernet, RS-232, and RS-485 based systems.

11.2. DDRC-GRMS-E

This room controller is ideally suited to hotels looking for guestroom automation to help achieve greater energy efficiency and outstanding guest experiences by providing industry-leading control solutions.

The DDRC-GRMS-E is a compact DIN rail multi-protocol switching room controller suitable for field installation into each guestroom. The controller is a self-contained unit with internal power supply, relays, and processor. It is a network device able to communicate over Ethernet and RS-485 with software and other devices. It enables switching of multiple lighting groups, HVAC, power outlets, and

blinds using third-party or Philips Dynalite user interfaces. It provides up to 300 mA @ 12 VDC to the DyNet bus.
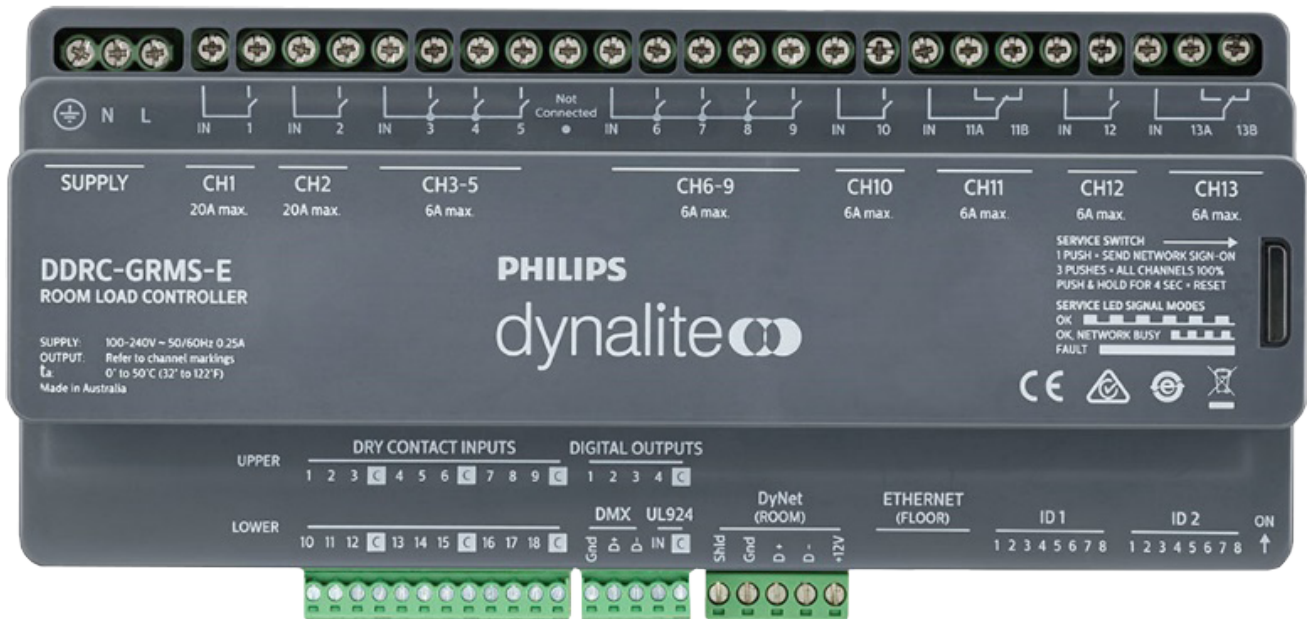
The DDRC-GRMS-E includes the following features:

- **2 x power channels (GPO and HVAC)**

  ▪ Channel 1 is intended for driving the room's general-purpose outlets for standby power management.

  ▪ Channel 2 controls HVAC or other power switching.

  ▪ Each output is limited to 16 Amps, and can drive external contactors if high switching capacity is required.

- **7 x lighting channels**

  ▪ Channels 3-9 are intended for switched lighting circuits.

  ▪ Each output channel is individually rated up to 4 Amps.

  ▪ Each channel group (3-5 and 6-9) has a separate supply with a max shared current of 6 Amps total per group.

- **2 x single-throw and 2 x double-throw blind motor control relays**

  ▪ Channels 10, 11a, 11b and 12, 13a, 13b provide directional motor control for blind/curtain integration.

- **64-channel DMX output**

  ▪ Adds color and dimming control for light shows.

- **UL924 input**

  ▪ Integrates seamlessly with compatible emergency systems.

- **18 x dry contact inputs**

  ▪ Available for third-party user interfaces (as an alternative to Dynalite network user interfaces).

  ▪ Can be used with other dry contact room inputs such as door and window switches.

- **4 x 12 V digital outputs**

  ▪ Designed to drive room status indicator LEDs in common cathode configuration and trigger

additional devices such as doorbells.

- **1 x RS-485 DyNet port**

  ▪ The DyNet port enables network communication and power between the controller and room devices.

  ▪ The DyNet spur is isolated from the floor network, eliminating interruptions to in-room system operation.

- **Ethernet port**

  ▪ Connecting directly to a site's Ethernet LAN, the device can securely pass network messages and report its status.

- **Unique LAN addressing**

  ▪ Two banks of DIP switches allow the installer to manually set the controller's network identification, box number, and a logical/physical address offset for the devices in the room.

Chapter 12. Room Devices

The room sub-network (spur) consists of FCUC controllers, expansion controllers, sensors, dry contact input devices, integrated devices, and user interfaces.

> ℹ️ Refer to each device's Specification Sheet for detailed information (including load ratings and limitations) BEFORE making final selections.

12.1. DDFCUC

- **Fan Coil Unit Controller**
  - ⬚ 1 x Direct HVAC control
  - ⬚ Fan speed and Hot/Cold valve adjust
  - ⬚ Compatible with 0-10V and 24VAC valves
  - ⬚ 4 x configurable inputs

12.2. DDMC802

- **Multipurpose Controller**
  - ⬚ 8 x Modular output channels compatible with the following modules:
    - ⬚ DGCM102 - 1 x Motorized curtain/blind control
    - ⬚ DGFM102 - 1 x Fan control (CE only)
    - ⬚ DGRM204 - 2 x Relay control
    - ⬚ DGBM200 - 2 x Signal dimming control (1-10V / DSI / DALI Broadcast)
    - ⬚ DGTM104 - 1 x Trailing-edge dimming control
    - ⬚ DGTM202 - 2 x Trailing-edge dimming control
    - ⬚ DGTM402 - 4 x Trailing-edge dimming control
    - ⬚ DGLM105 - 1 x Leading-edge dimming control
    - ⬚ DGLM202 - 2 x Leading-edge dimming control

◐ DGLM402 - 4 x Leading-edge dimming control

◐ 8 x Dry contact inputs

12.3. DDRC420FR

- **Relay Controller**

  ◐ 4 x High-power feed-through relay outputs

12.4. DDRC1220FR-GL

- **Relay Controller**

- 12 x High-power feed-through relay outputs

12.5. DDBC120-DALI

- **Single-Universe DALI-2 Controller**

- 1 x DALI-2 addressable output (DALI 209)

- 1 x Switched power relay eliminates wasted standby consumption by cutting power when all lights are dimmed to 0%

12.6. DDNP1501

- **12 VDC Network Power Supply**

12.7. DMNP24040-P-NA

- **24 VDC Network Power Supply**

12.8. DUS360CR, DUS180WR, DUS90CS

- **Multifunction Sensor**
  - ⬜ 1 x PIR occupancy sensor
  - ⬜ 1 x Light sensor
  - ⬜ 1 x Infrared sensor (RC5 compatible)
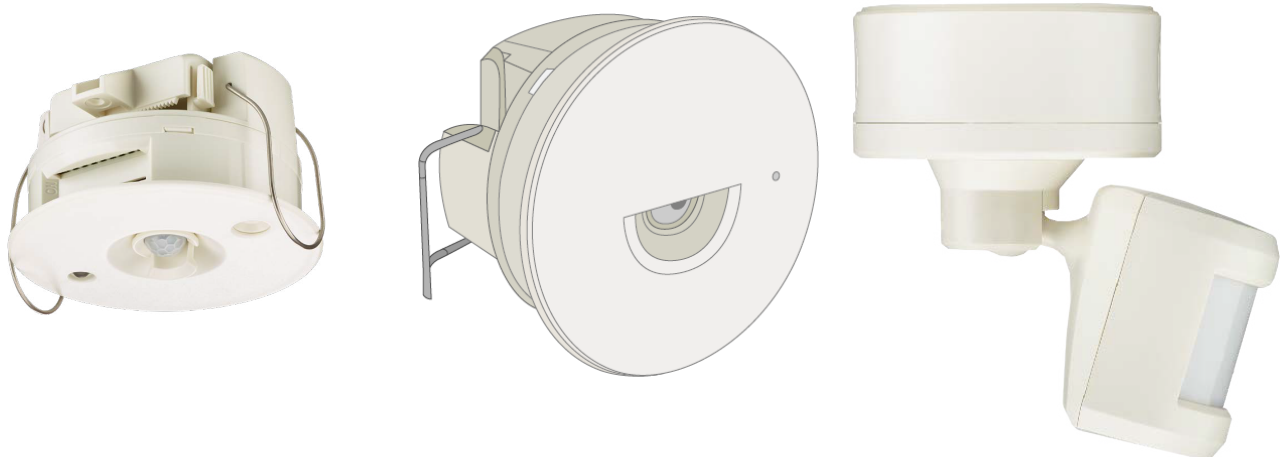
12.9. DUS804CS-UP

- **Multifunction Sensor**
  - ⬜ 1 x Ultrasonic occupancy sensor
  - ⬜ 1 x PIR occupancy sensor
  - ⬜ 1 x Light sensor

1 x Infrared sensor (NEC IR remote control)

12.10. DLLI8I8O

- **Dry Contact Interface**
   - 8 x Dry contact inputs
   - 8 x Indicator drivers

12.11. RS-WS-N01-8-DyNet

- **Network Humidity Sensor**

12.12. Antumbra – PAxBPA, PAxBPE, PADPA, PADPE

- **User Interface**
   - 2/4/6-button AntumbraButton
   - 6-button AntumbraDisplay
   - Range of colors and finishes
   - Custom icons/text
   - Wall-wash light effect

- ⬚ 1 x Proximity sensor
- ⬚ 1 x Temperature sensor
- ⬚ 1 x Ambient light sensor
- ⬚ Online configurator

image::sg/DYN_PA6BPE.png[]　　　　　　　　**image::sg/DYN_PADPE.png[]**

12.13. Revolution - PDRxE

- **User Interface**
    - ⬚ 2/4/8-button
    - ⬚ RGB-backlit buttons
    - ⬚ Range of colors and finishes
    - ⬚ Custom icons/text
    - ⬚ 1 x Proximity sensor
    - ⬚ 1 x Temperature sensor
    - ⬚ 1 x Humidity sensor
    - ⬚ 1 x Ambient light sensor
    - ⬚ Online configurator

Chapter 13. Integrations

System integration facilitates two-way communication for integrated, sitewide intelligence with third-party network systems to exchange commands and data about hotel operation. Popular hotel systems are seamlessly integrated with Multiroom System Manager via a gateway device or the System Manager Server itself. Both hardware and software gateways are highly flexible and based on industry communication standards, enabling a wide array of interconnectivity.

The following integrations are available:

- **PMS**
    - ⬚ Oracle Hospitality
    - ⬚ Infor
- **HVAC**
    - ⬚ CoolMaster
- **Access Control**
    - ⬚ dormakaba Saflok
    - ⬚ ASSA ABLOY VingCard
- **BMS**
    - ⬚ BACnet
- **API & Ecosystem**
    - ⬚ FCS eHousekeeping & Connect
    - ⬚ Amadeus HOTSOS/Rex
    - ⬚ Tablets/Apps (API)
    - ⬚ SMTP/Email Server

For more information refer to the /GIT/multiroom/build/multiroom/latest/index.html/multiroom/2.11/it_guide/integrations.html[IT, Network & Integrations Guide].

Chapter 14. Installation and Maintenance

14.1. Fast Deployment

Factory preprograming makes deployment and maintenance simple.

It may require a longer lead time to assess the ETO request, but enables shorter on-site commissioning time as devices are preprogrammed.

Ordering follows the standard ETO process. The system engineer sends an Interact Hospitality ETO request with attached files to the Dynalite International Order Desk at dynalite.sales@signify.com to start the ETO process.

The commissioning engineer sends the following files to Dynalite:

- Mockup room sign-off sheet (release for manufacturing) courtesy copy[1]
- Hotel job file
- Device hex files
- Room profile Hardware BOQ[2]
- User Interface labeling artwork[2]
- Notional energy load sign-off sheet
- Room IP address table
- Floor Gateway IP address table
- Site private key text file (must be kept secure)

Preconfigured products are issued a unique 12NC (ordering code). 12NCs are raised by the factory based on the BOQ and project requirements.

The factory preprograms all floor gateways and room devices (controllers, dry contact inputs, sensors, user interfaces) and ships the finished products to the job site.

14.2. On-site programming

This may have a shorter lead time as devices are ordered directly from Dynalite, with longer on-site commissioning time as devices are not preprogrammed.

Ordering follows the standard Dynalite product ordering process. The commissioning engineer programs devices on-site using the hotel job file master configuration and saves the configuration to each device.

- **DDRC-GRMS-E** - Box numbers and gateway mapping are set by DIP switches.
- **Antumbra multiconfiguration** - Initial box number set by SB, then configuration selected by DIP switches.
- **Other room devices** - Box numbers set by SB.

14.3. Maintenance & Replacement

Automatic system health monitoring provides instant alerts and notification of any issues, enabling

quick response and proactive maintenance. Replacement devices are easily programmed from the room configuration, or set by DIP switches on the device.

Although devices have an extremely low failure rate, we recommended that clients add additional spare devices (1-10%) to their initial order. This provides them with readily available spares to cover accidental damage.

For technical support, see /GIT/multiroom/build/multiroom/latest/index.html/multiroom/2.11/support.html[Support & Resources]

[1] Release for Manufacturing document is to verify the agreement between Sales and the Customer.
[2] Hardware BOQ (SAP) and User Interface artwork (via online configurator) follows existing process.