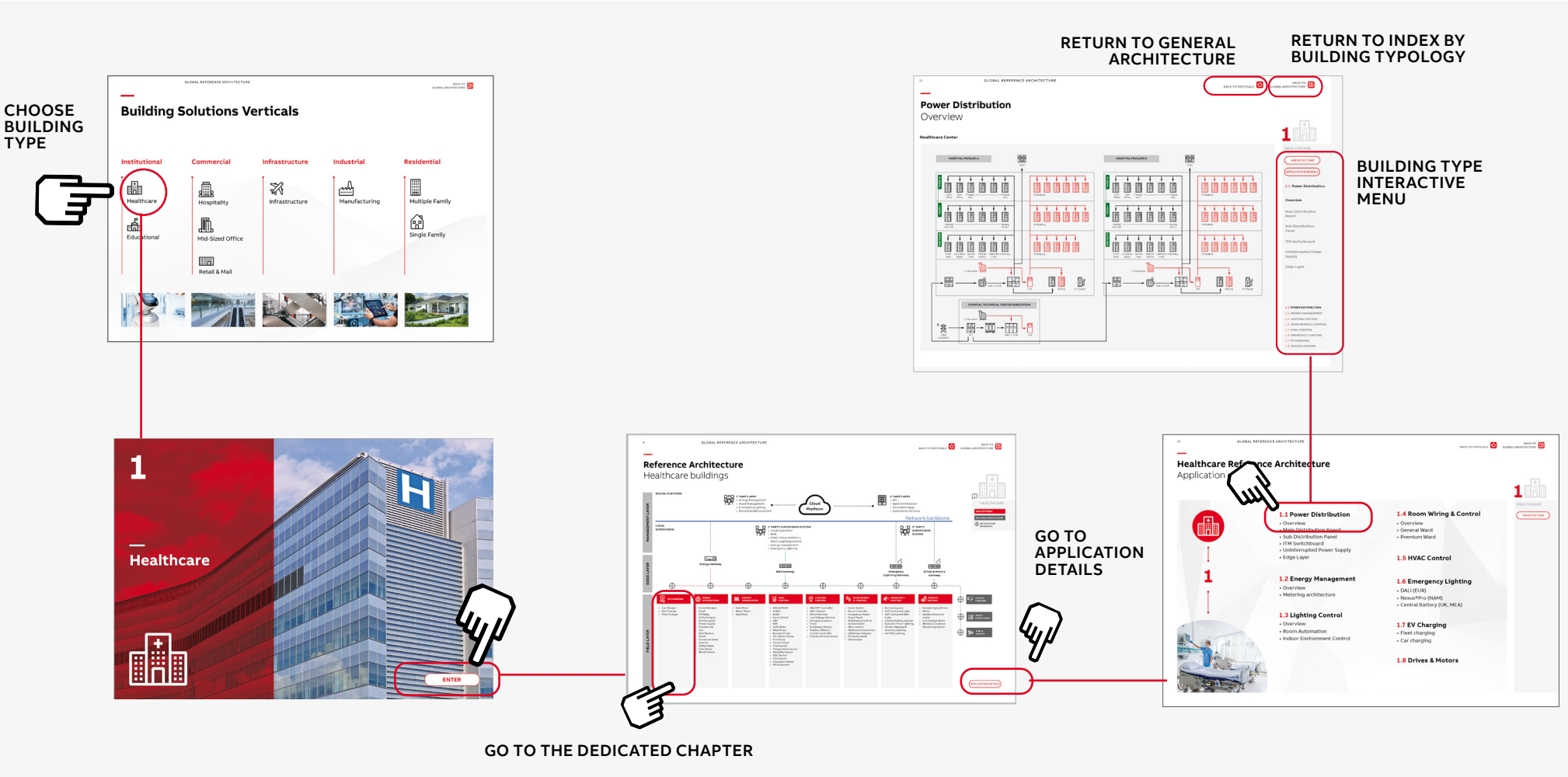
ABB BUILDING SOLUTIONS

Global Reference Architecture

START

Tool purpose and navigation

Reference Architecture tool allows ABB salespeople and customers interested in ABB technology to easily navigate the ABB Building Solutions according to the desired level of detail, from the high-level definition of the solution, all the way down to showcasing typical use cases for our extensive product offering.



Building Solutions Framework

Building Solutions

Pre-configured and pre-engineered integration of products, services and digital applications across ABB technology expertise, designed for specific subsegments that fulfil business specific requirements

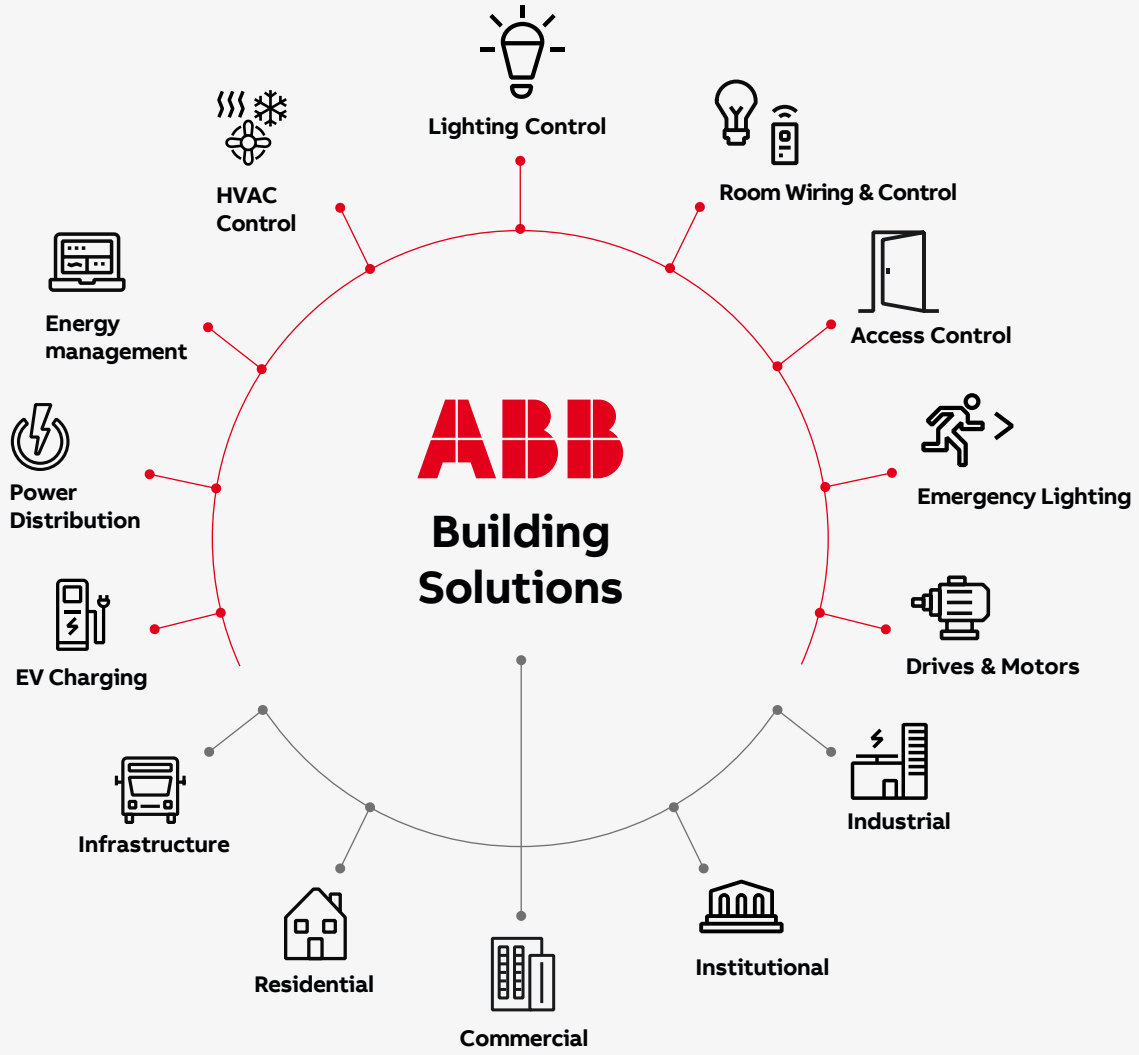
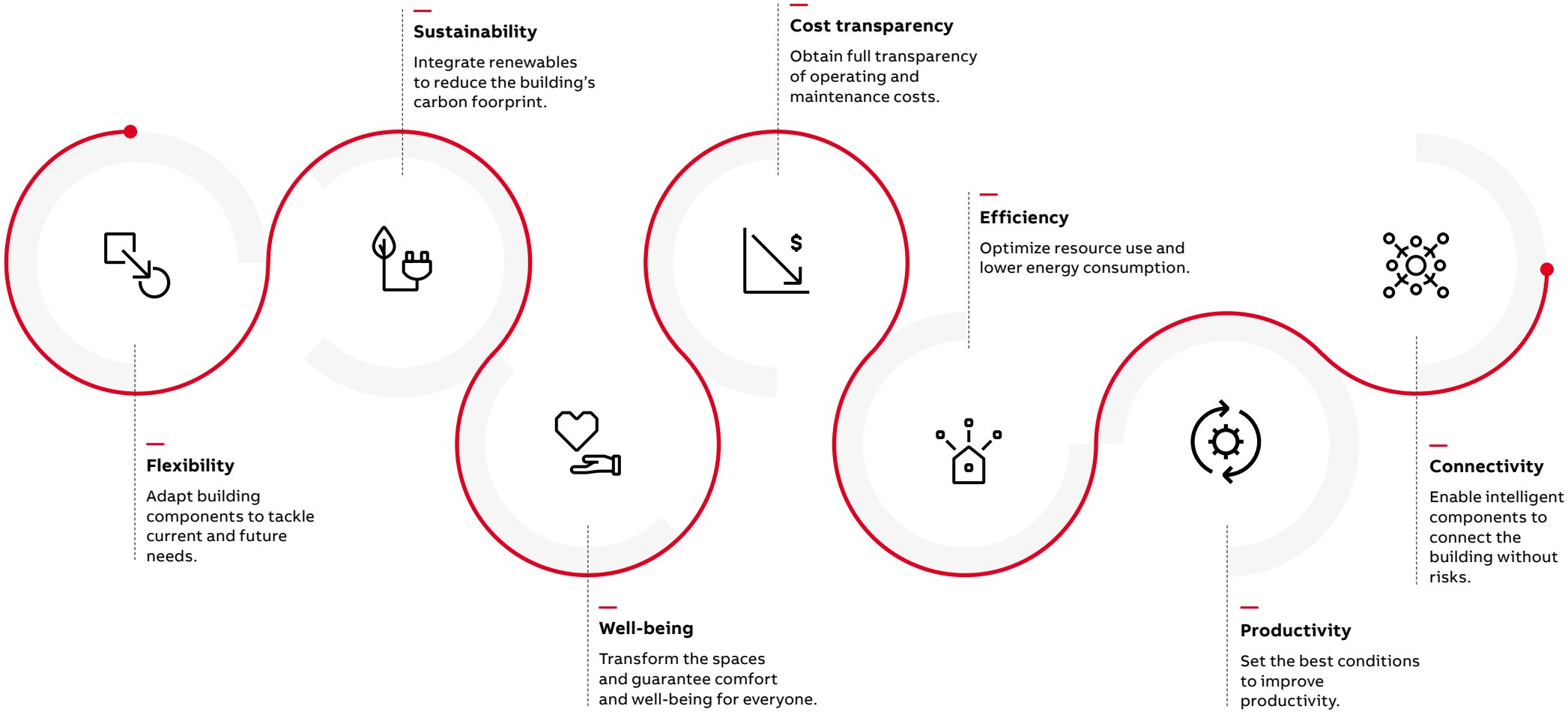


ABB Building Solutions Benefits

The 7 building performance exists to ensure that the solutions implemented in a building are holistic and meet the fundamental needs of the stakeholders involved. In other words, this is a people & planet first approach, and the careful selection of ABB construction technology serves the purpose of enabling performance to meet our common goals.



Solutions Reference Architecture

Layers and applications

Our comprehensive solution is structured across three layers to serve every building need across 14 different applications

MANAGEMENT LAYER

MANAGEMENT LAYER

Leveraging onsite management systems or cloud platforms for advanced analysis,
the management layer is where decisions are taken for optimal building operation.

EDGE LAYER

EDGE LAYER

Large sets of complex data are gathered from multiple sources such as building controllers, connected sensors or online databases. Within the edge layer, data is normalized, stored and shared across to the management layer.

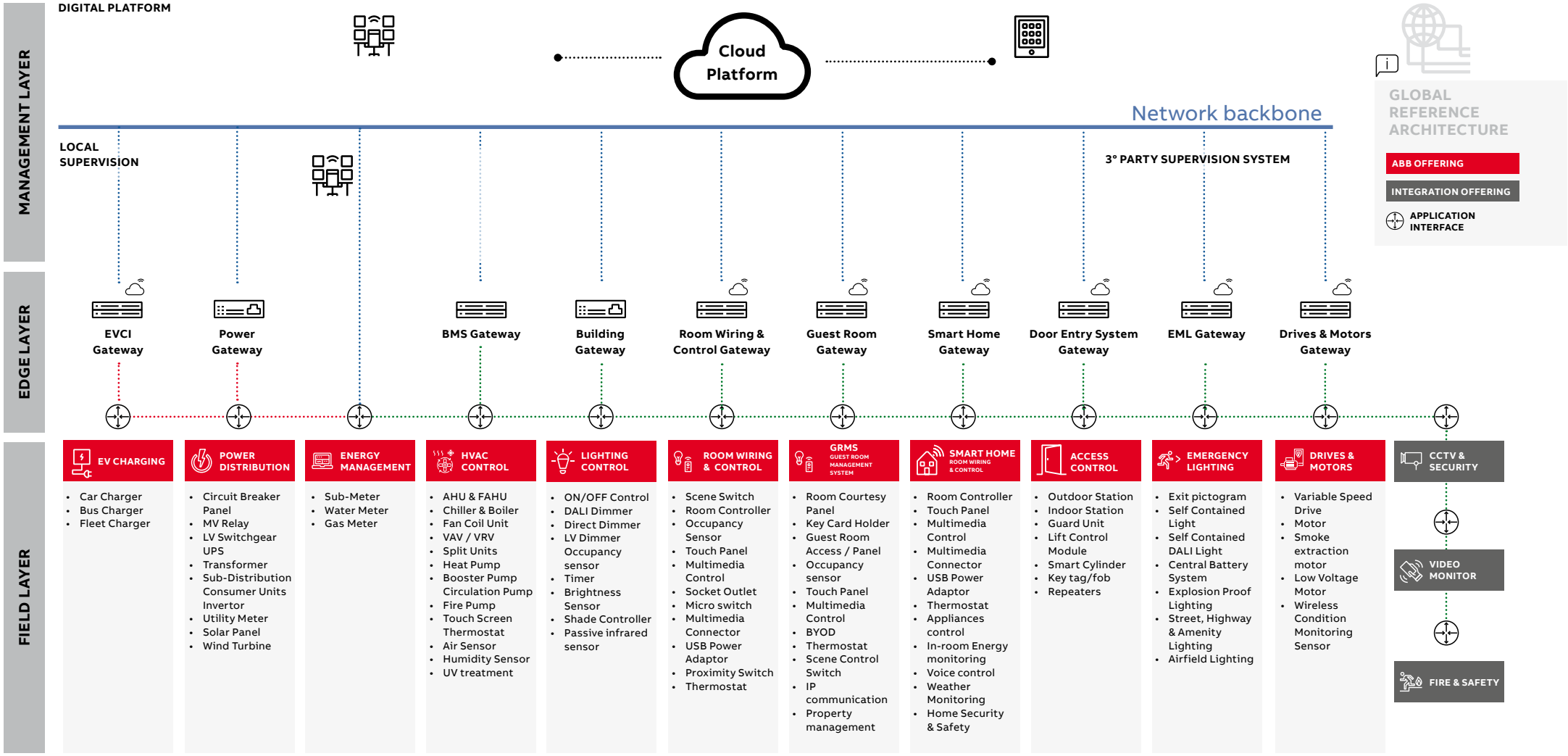
FIELD LAYER

FIELD LAYER

This is where most end-user interactions occur.
The physical devices perform assigned duties to deliver building services,
and data is generated by various sensors to enable granular building controls.

Global Reference Architecture

Optimized pre-configured and pre-engineered integration of products, services and digital applications from any ABB divisions, designed for specific subsegments or verticals, that fulfil customers' business specific requirements.



Building Solutions Verticals

Commercial

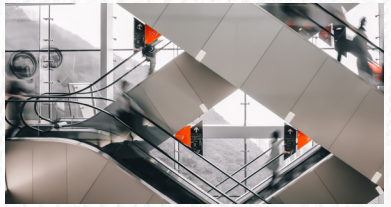
- Hospitality
- Office
- Retail & Mall

Institutional

- Healthcare
- Educational

Infrastructure

- Infrastructure



Industrial

- Manufacturing

Residential

- Multiple Family
- Single Family

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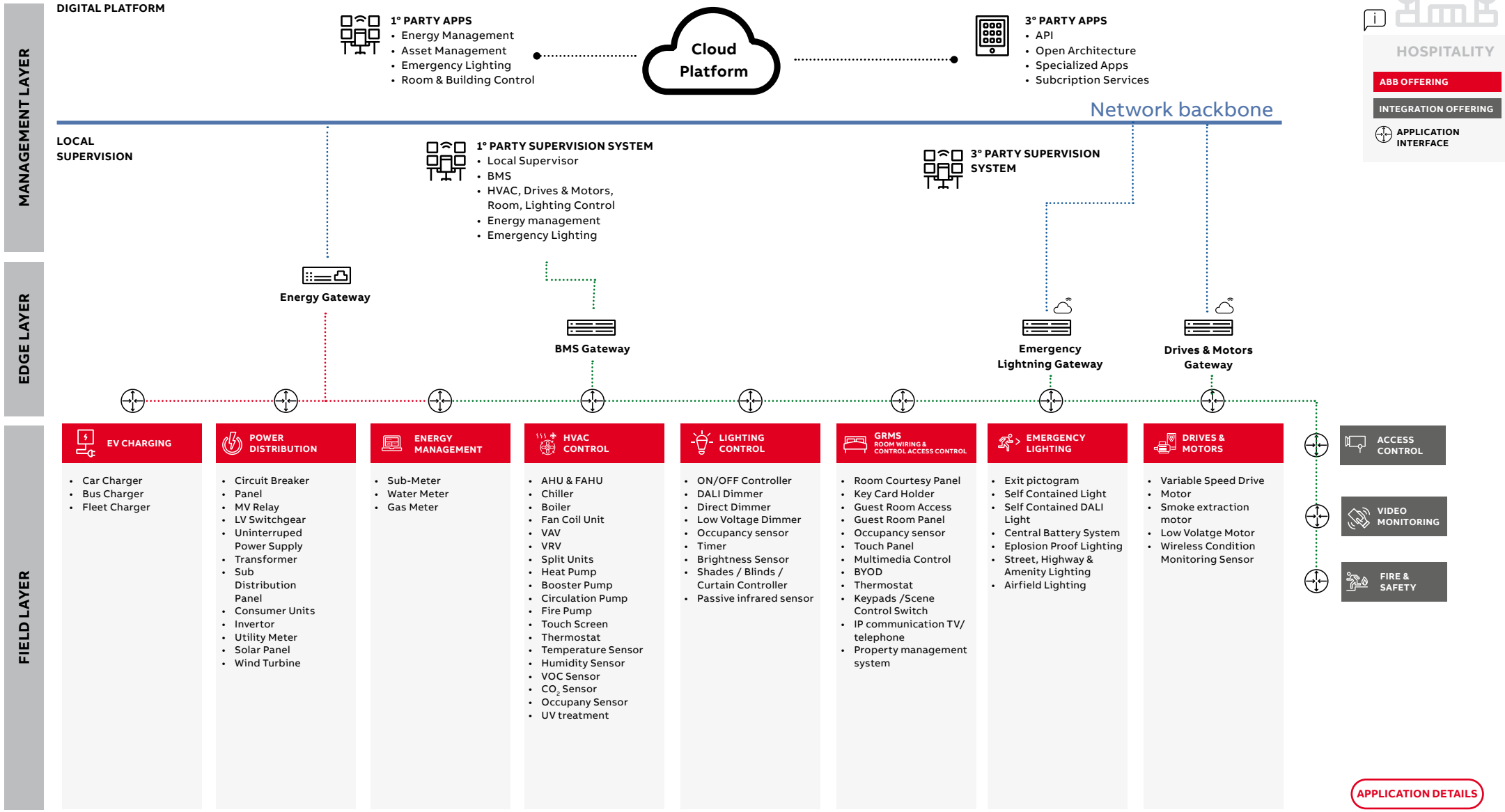
Hospitality

ENTER

Reference Architecture
Hospitality buildings



APPLICATION DETAILS

Hospitality Reference Architecture
Application details

1

1.1 Power Distribution
- Overview
- Sub Distribution Board
- Consumer Unit
- Edge Layer

1.2 Energy Management
- Overview
- Metering architecture

1.3 Lighting Control
- Overview
- Room Automation
- Indoor Environment Control

1.4 Guest Room Management System
- Overview
- In-room
- Room Layout
- Access Control
- Security
- Third party integration

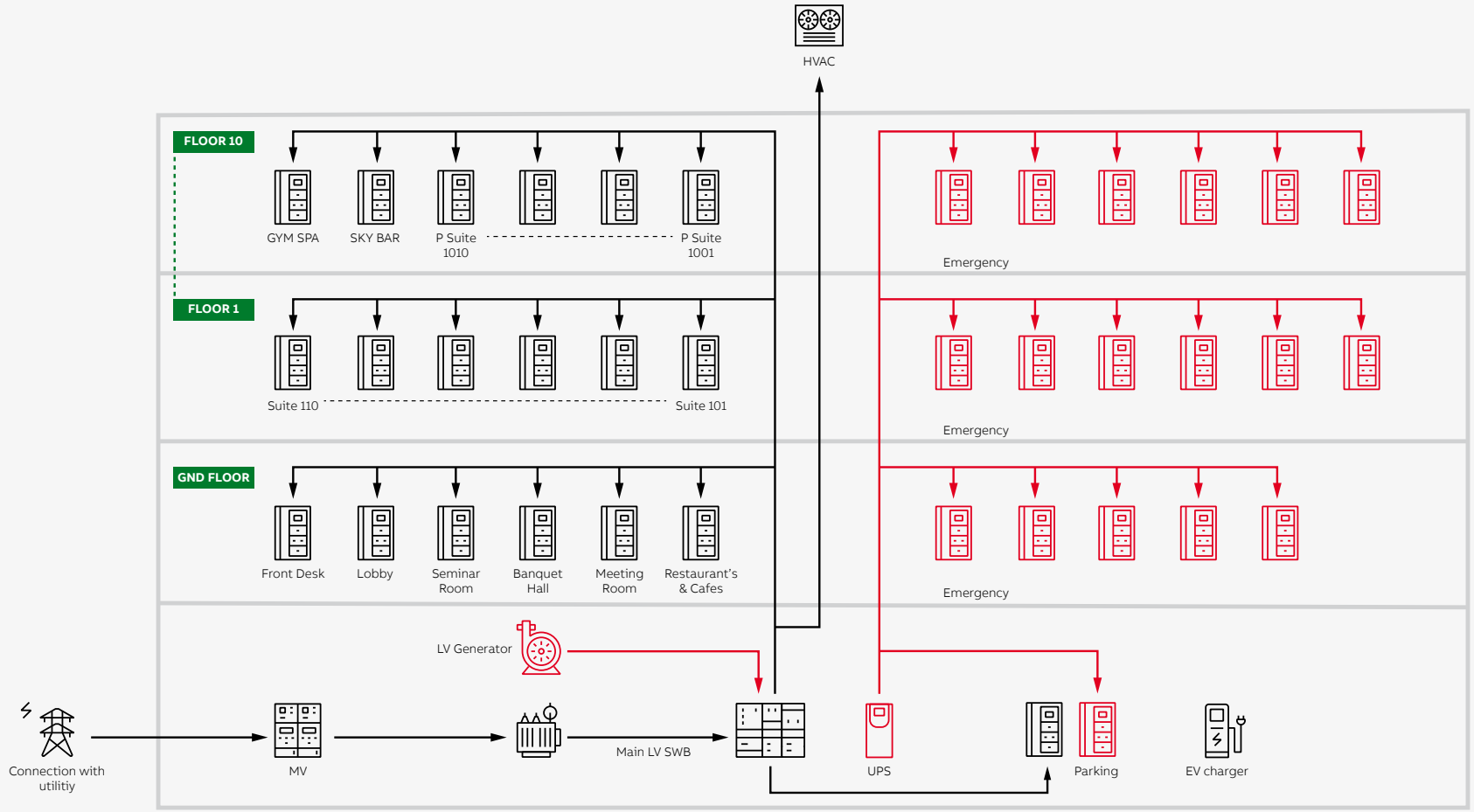
1.5 HVAC Control

1.6 Emergency Lighting
- DALI (EUR)
- Nexus®Pro (NAM)
- Central Battery (UK, MEA)

1.7 EV Charging

1.8 Drives & Motors

Power Distribution
Overview



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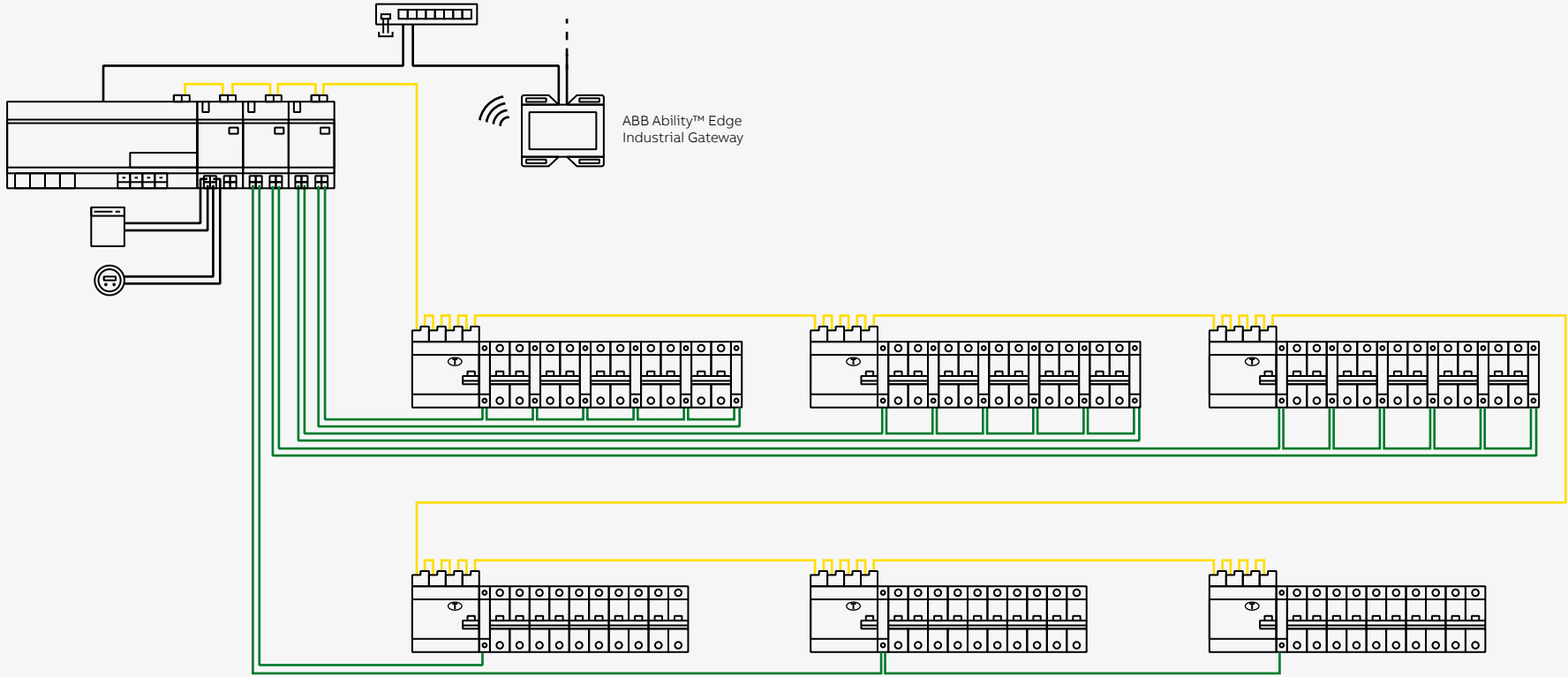
Power Distribution
Sub-distribution Board



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HOSPITALITY

ARCHITECTURE

APPLICATION DETAILS

1.1 Power Distribution

Overview

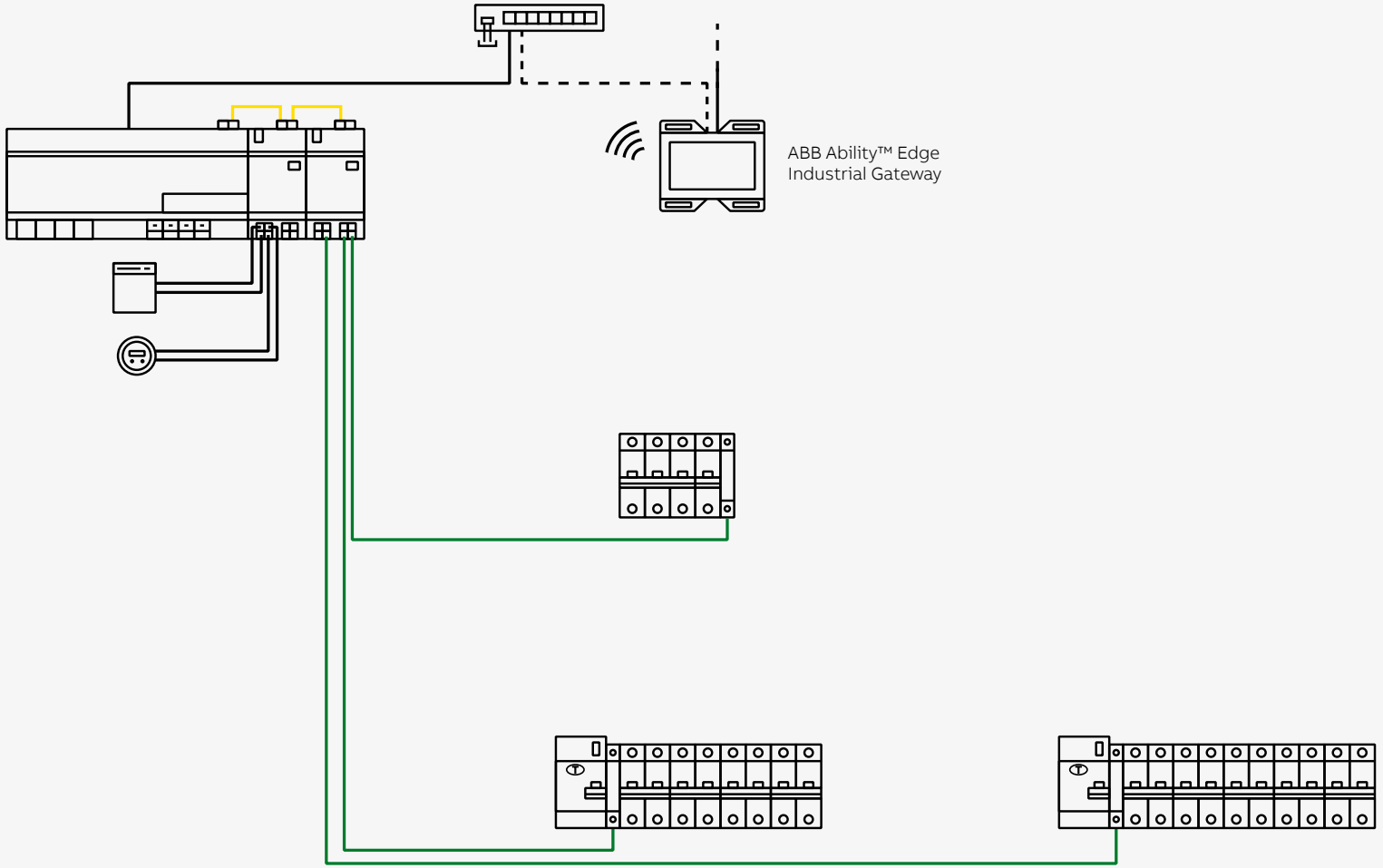
Sub Distribution Board

Consumer Unit

Edge Layer

1.1 POWER DISTRIBUTION
1.2 ENERGY MANAGEMENT
1.3 LIGHTING CONTROL
1.4 GUEST ROOM MANAGEMENT SYSTEM
1.5 HVAC CONTROL
1.6 EMERGENCY LIGHTING
1.7 EV CHARGING
1.8 DRIVES & MOTORS

Power Distribution
Consumer Units



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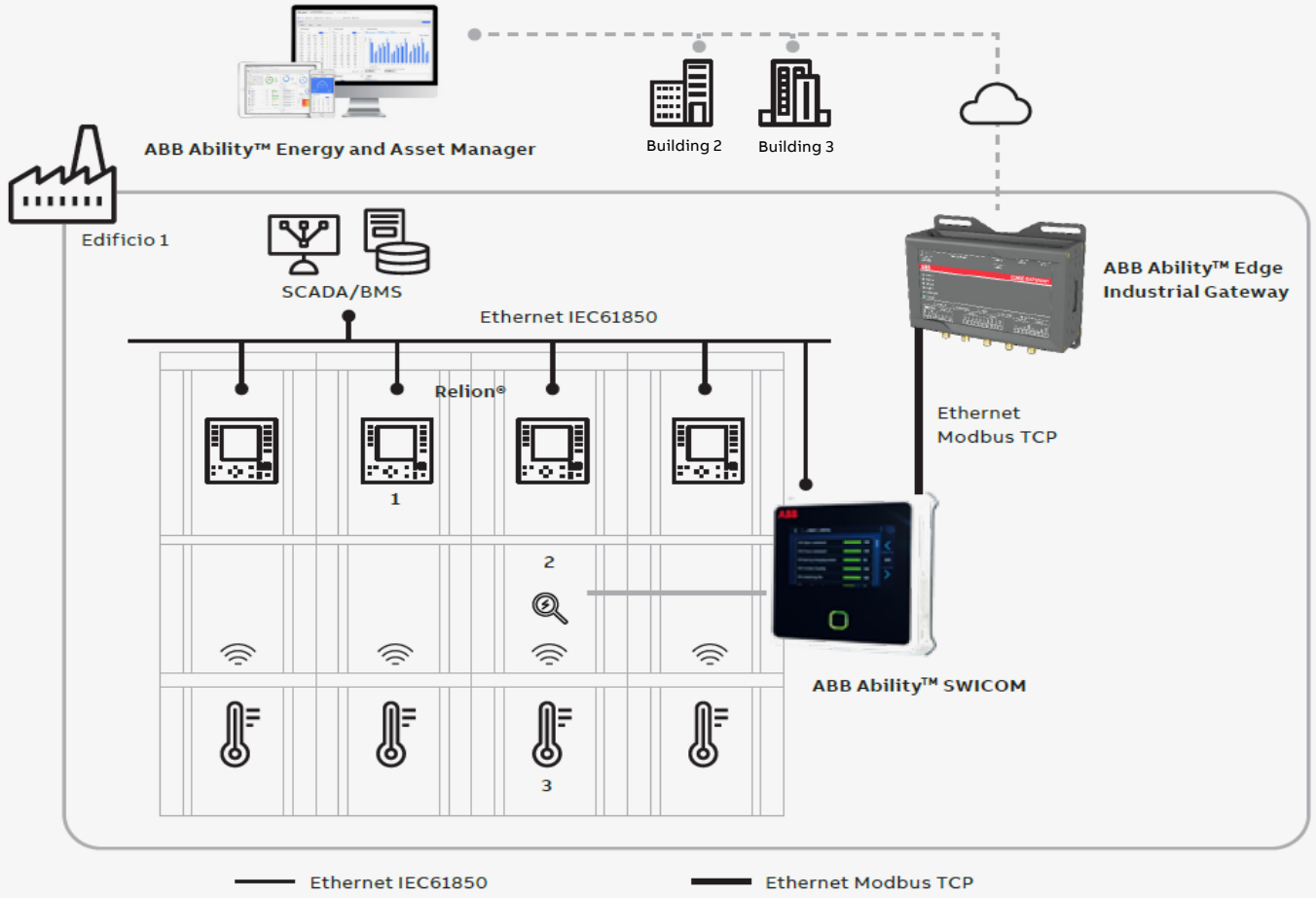
Power Distribution
Edge Layer

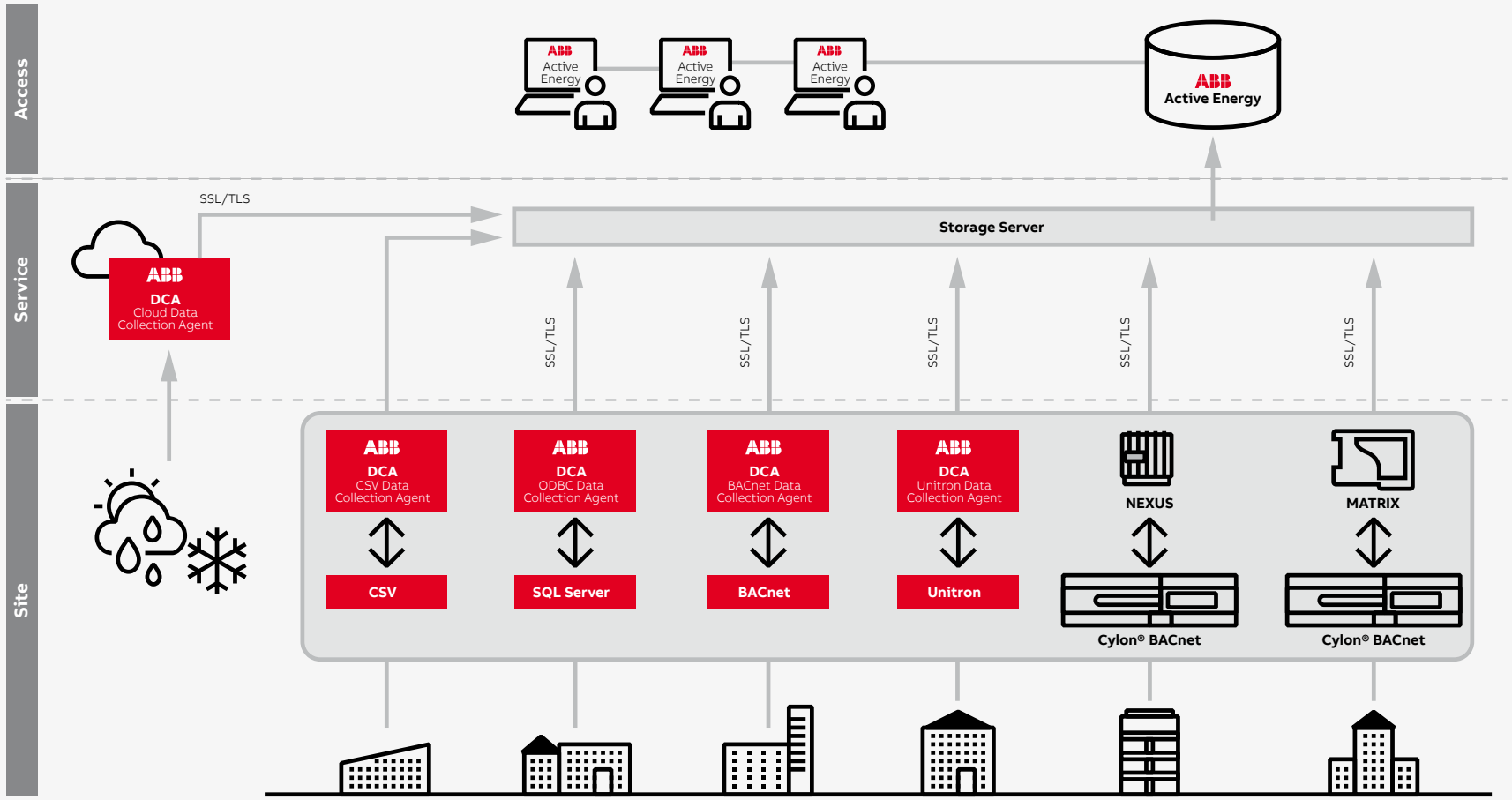


1. Relion MV ABB relay series
2. PDCOM partial discharge sensor
3. Wireless temperature sensors

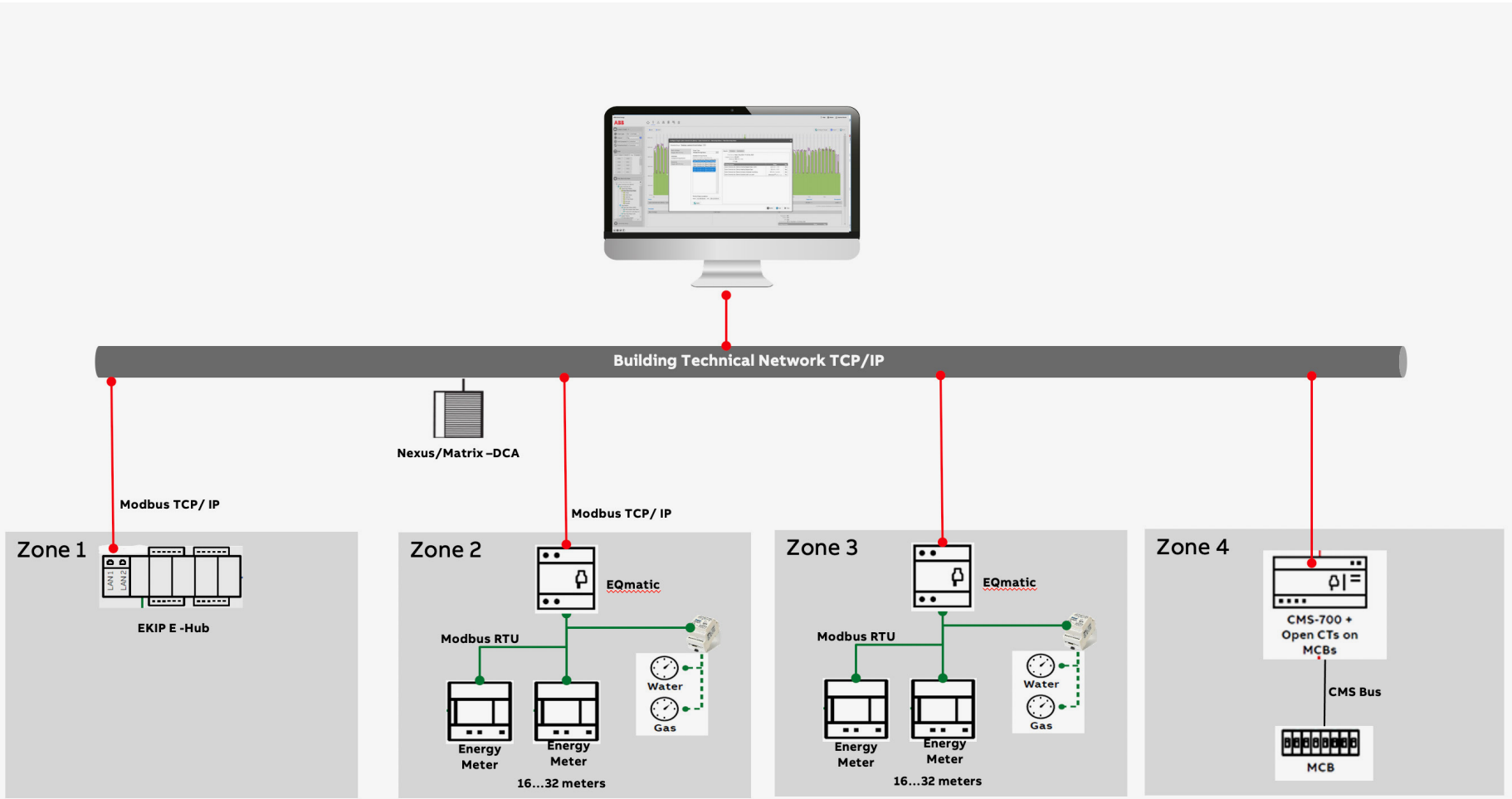
1

Energy Management
Overview

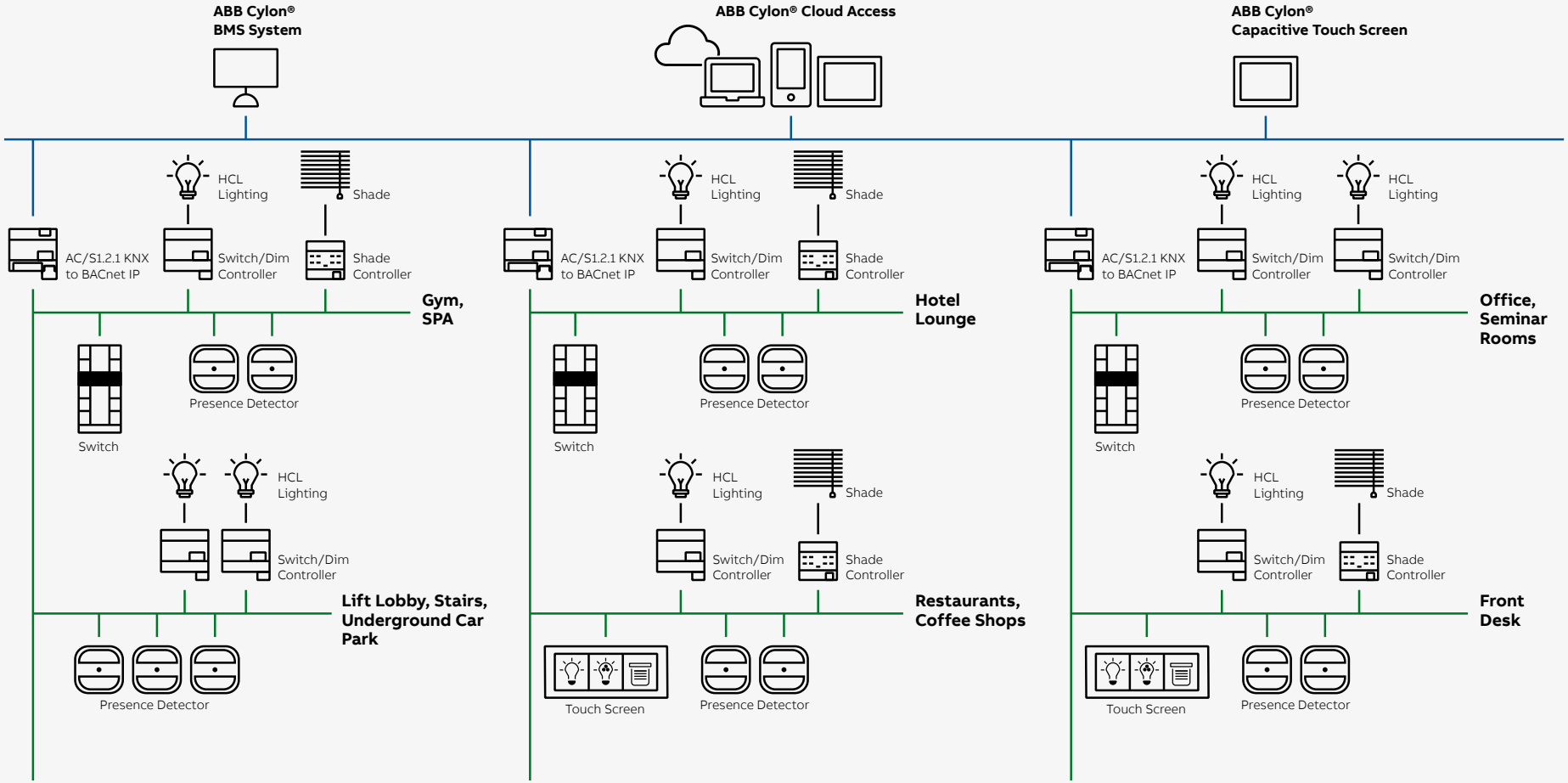
Active Energy (NAM)



Energy Management
Metering architecture

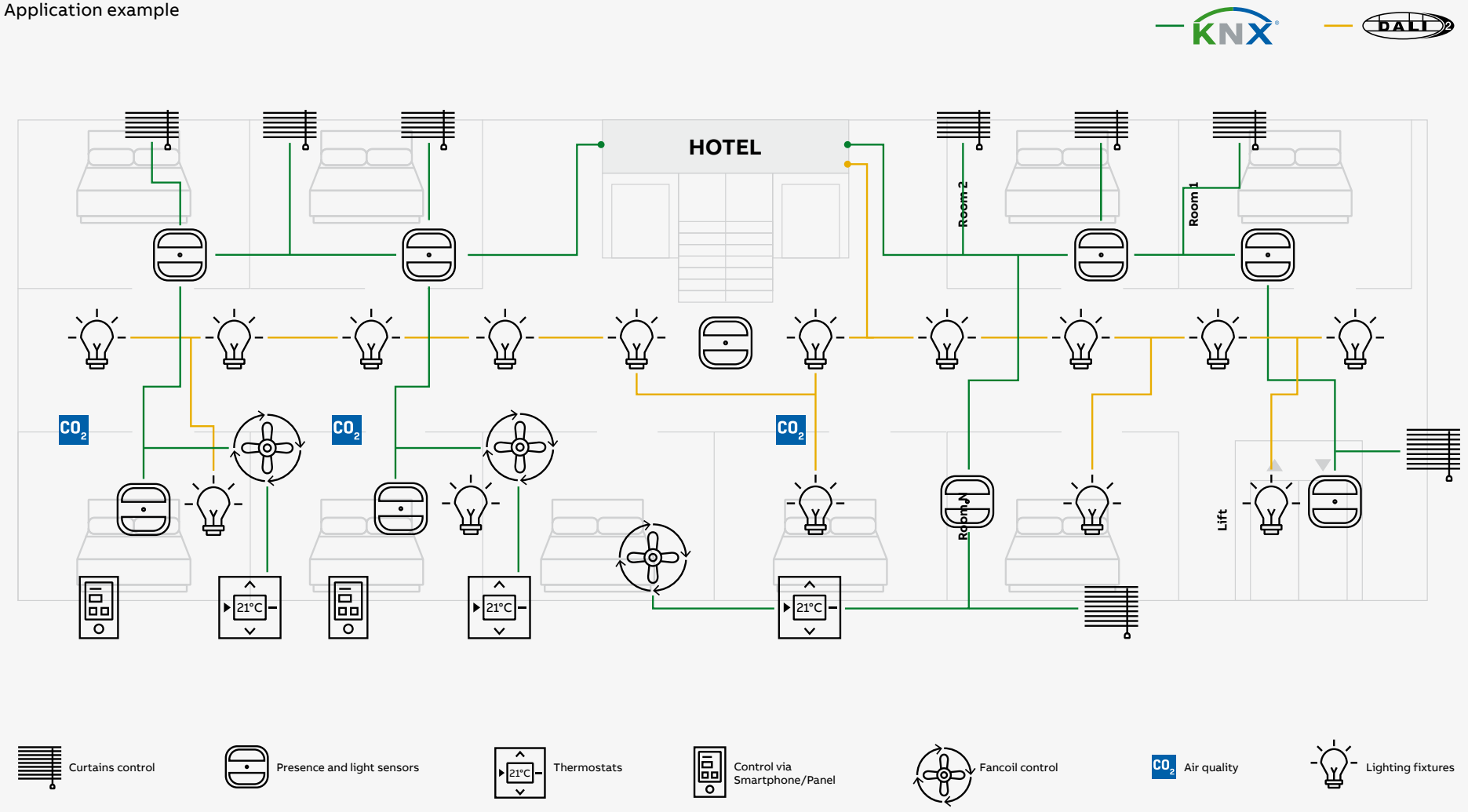


Lighting Control
Overview

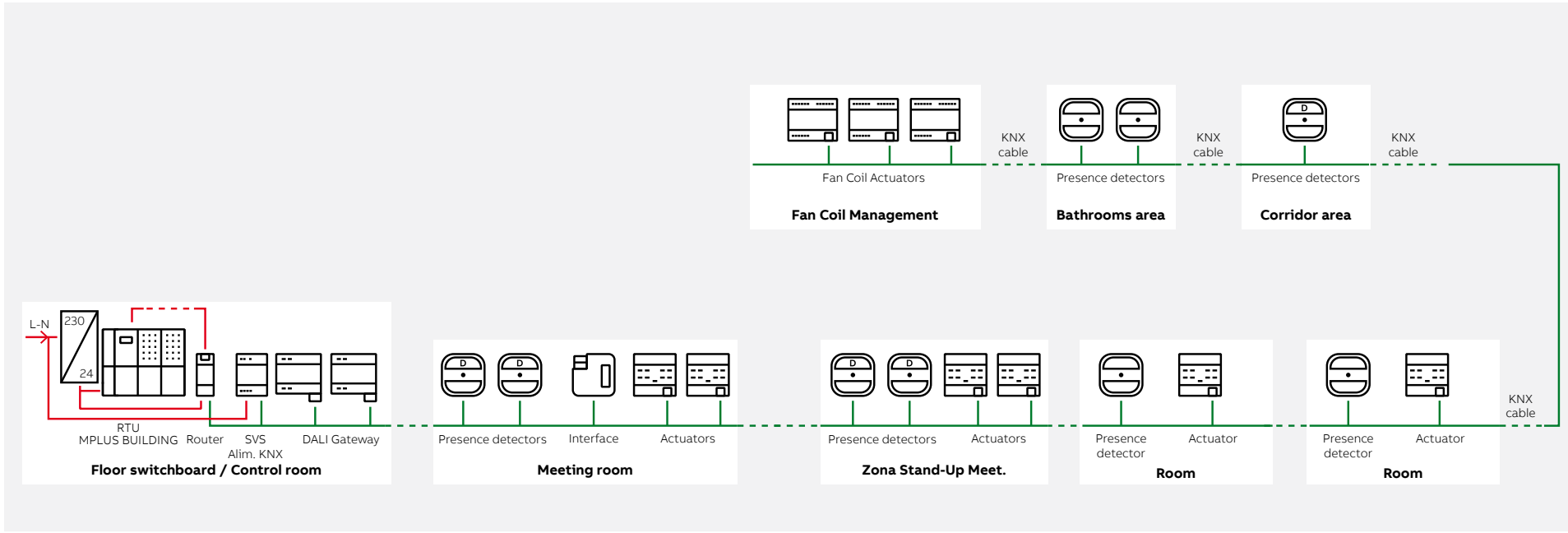


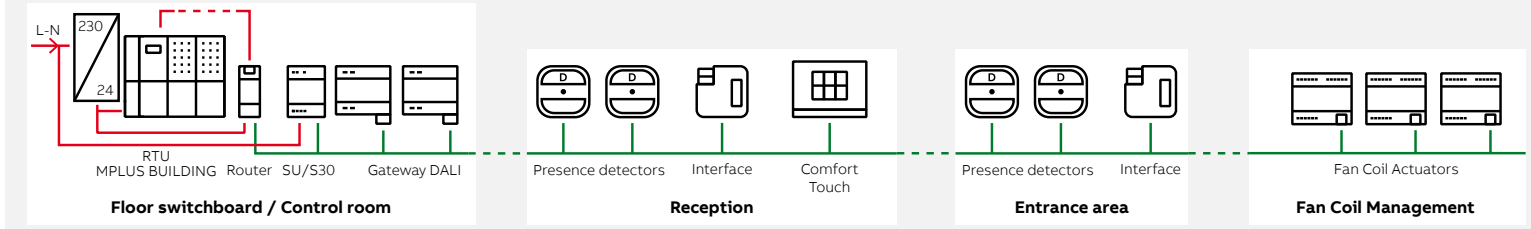
Lighting Control
Room Automation

Application example



Lighting Control
Indoor Environment Control





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HOSPITALITY

ARCHITECTURE

APPLICATION DETAILS

1.3 Lighting Control

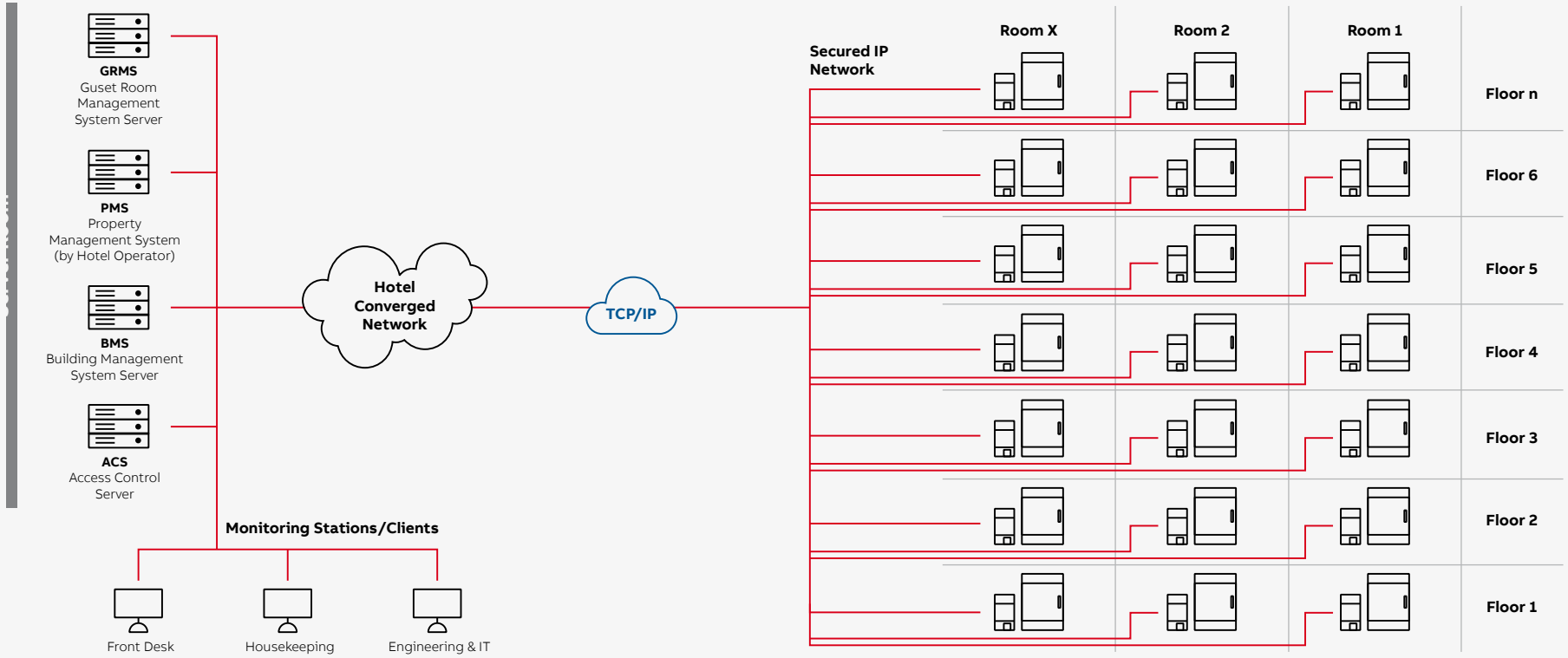
Overview

Room Automation

Indoor Environment Control

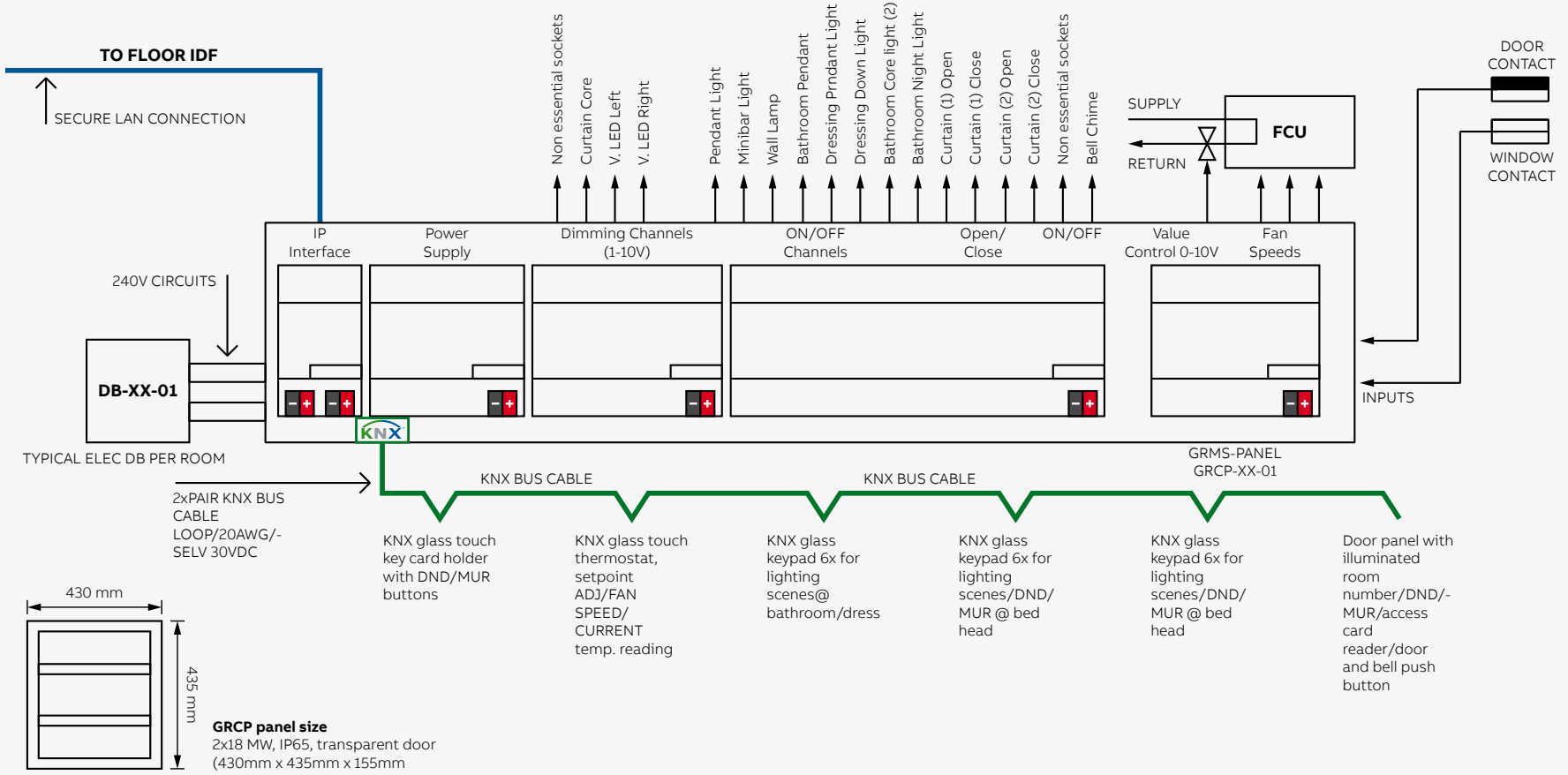
1.1 POWER DISTRIBUTION
1.2 ENERGY MANAGEMENT
1.3 LIGHTING CONTROL
1.4 GUEST ROOM MANAGEMENT SYSTEM
1.5 HVAC CONTROL
1.6 EMERGENCY LIGHTING
1.7 EV CHARGING
1.8 DRIVES & MOTORS

Guest Room Management System
Overview



Guest Room Management System

In-room



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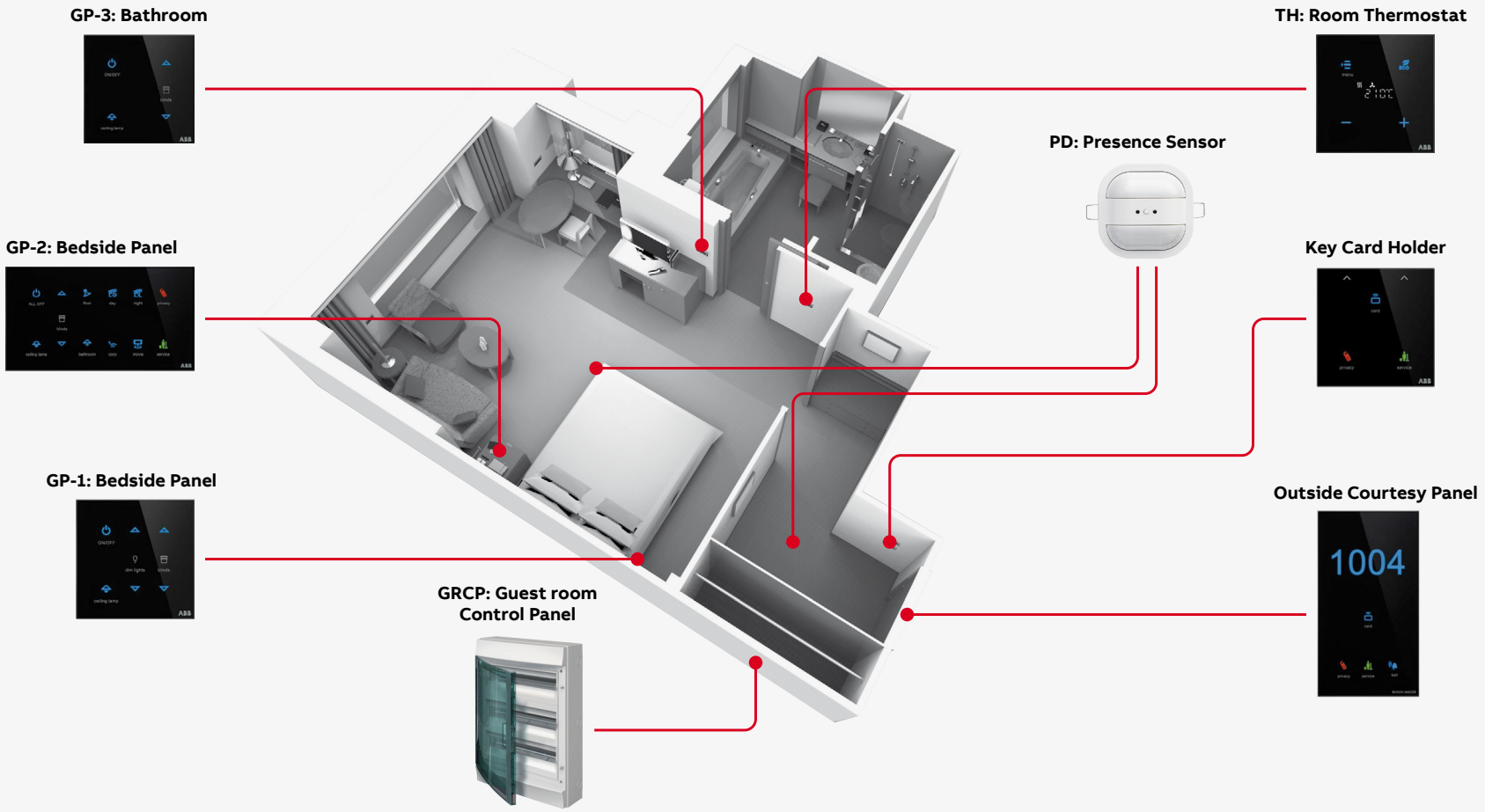
HOSPITALITY

ARCHITECTURE

APPLICATION DETAILS

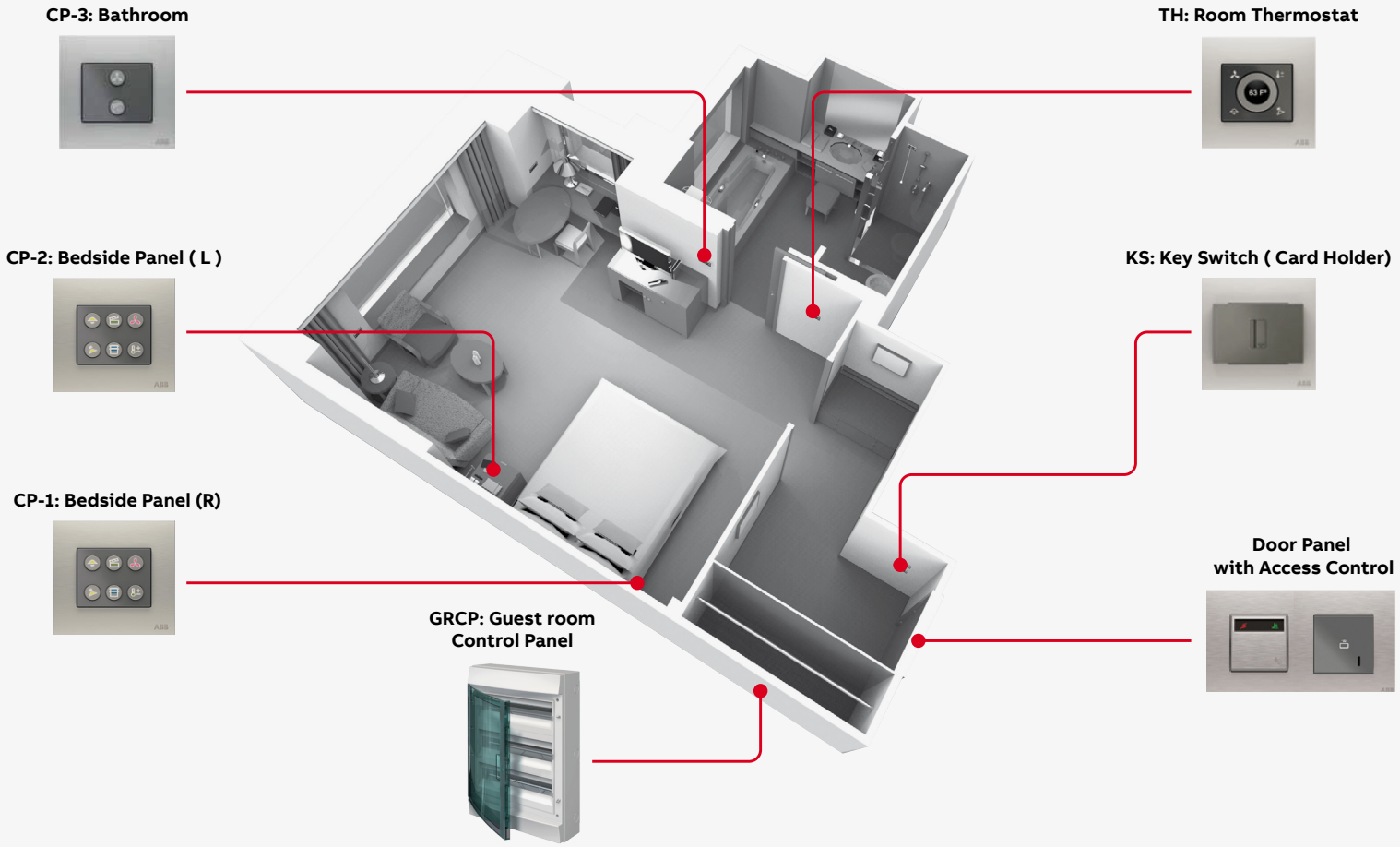
Guest Room Management System
Room Layout

Room Layout with Tacteo



Guest Room Management System
Room Layout

Room Layout Millenium



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HOSPITALITY

ARCHITECTURE

APPLICATION DETAILS

1.4 Guest Room Management System

Overview

In-room

Room Layout

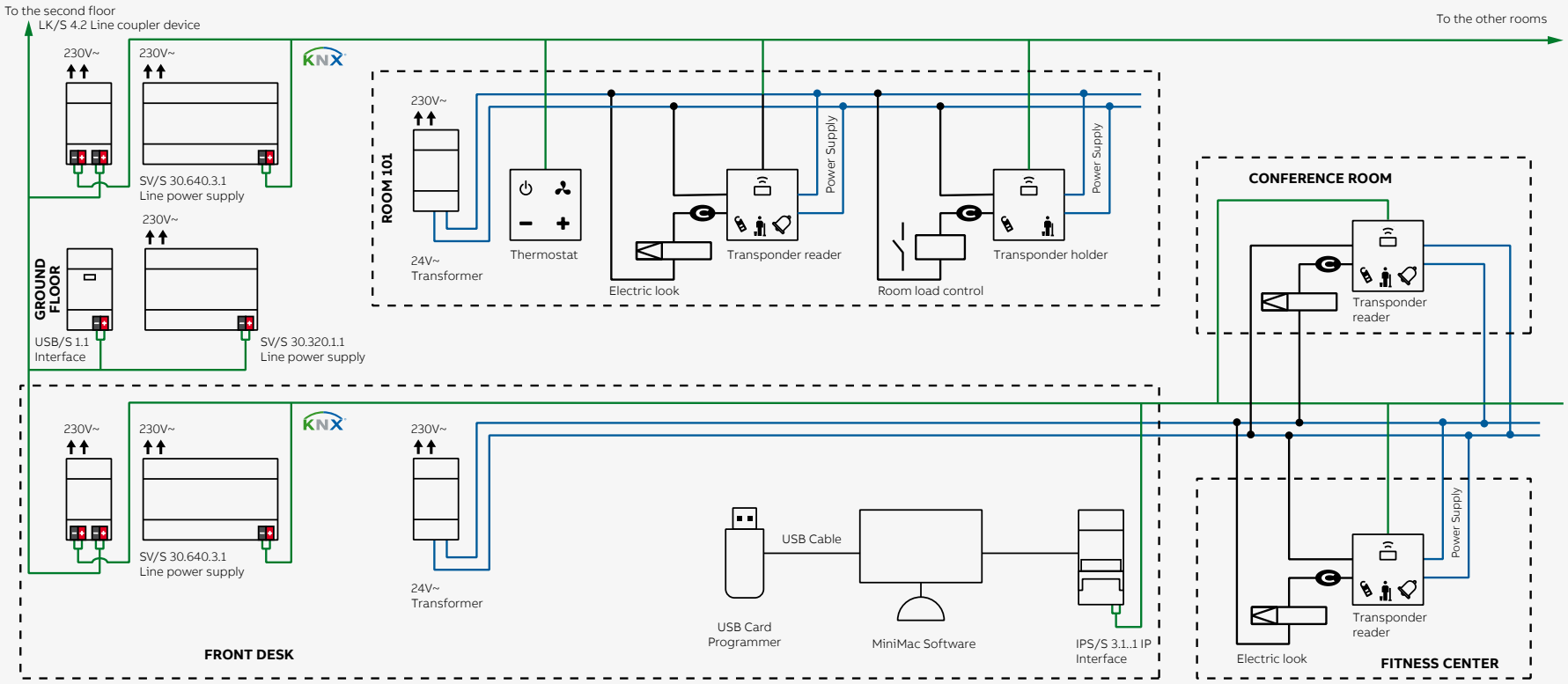
Access Control

Security

Third party integration

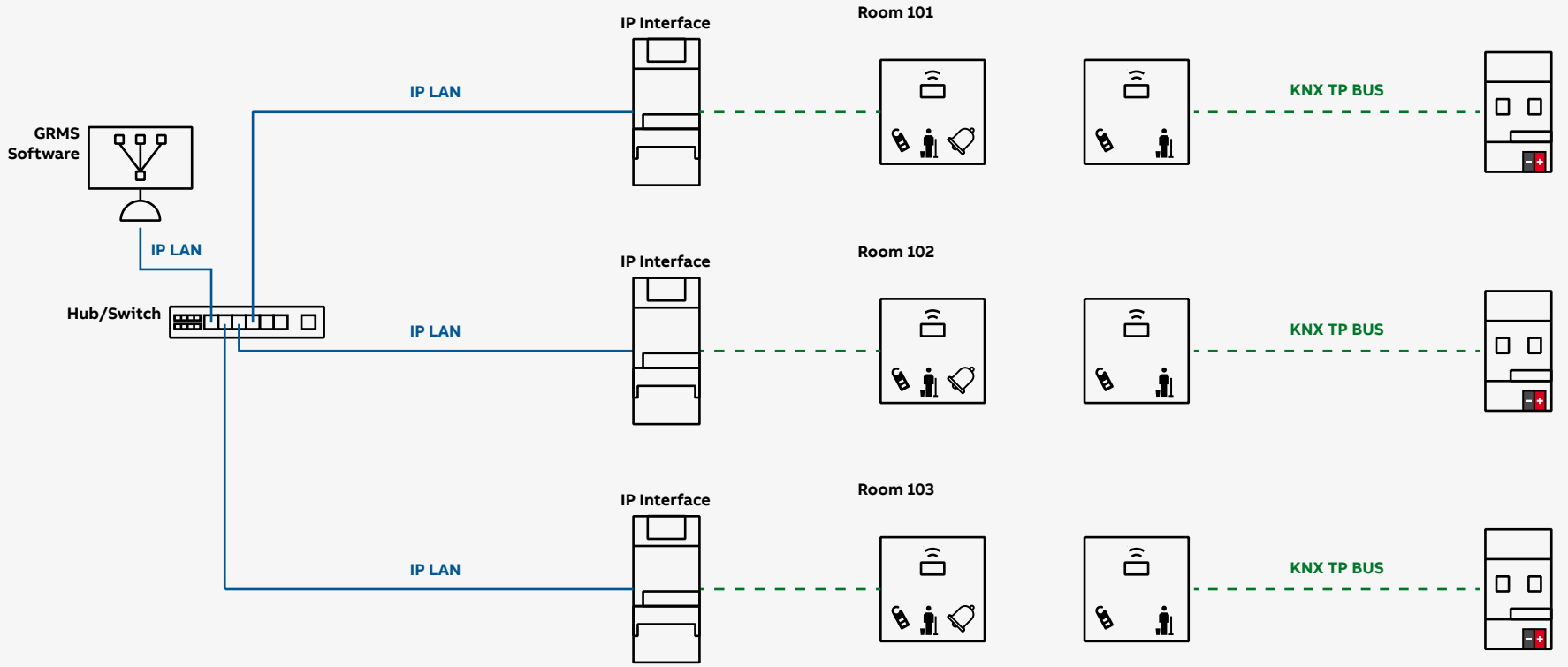
1.1 POWER DISTRIBUTION
1.2 ENERGY MANAGEMENT
1.3 LIGHTING CONTROL
1.4 GUEST ROOM MANAGEMENT SYSTEM
1.5 HVAC CONTROL
1.6 EMERGENCY LIGHTING
1.7 EV CHARGING
1.8 DRIVES & MOTORS

Guest Room Management System
Access Control



Guest Room Management System
Access Control

Access Control Option 1 (IP Room-Room)



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HOSPITALITY

ARCHITECTURE

APPLICATION DETAILS

1.4 Guest Room Management System

Overview

In-room

Room Layout

Access Control

Security

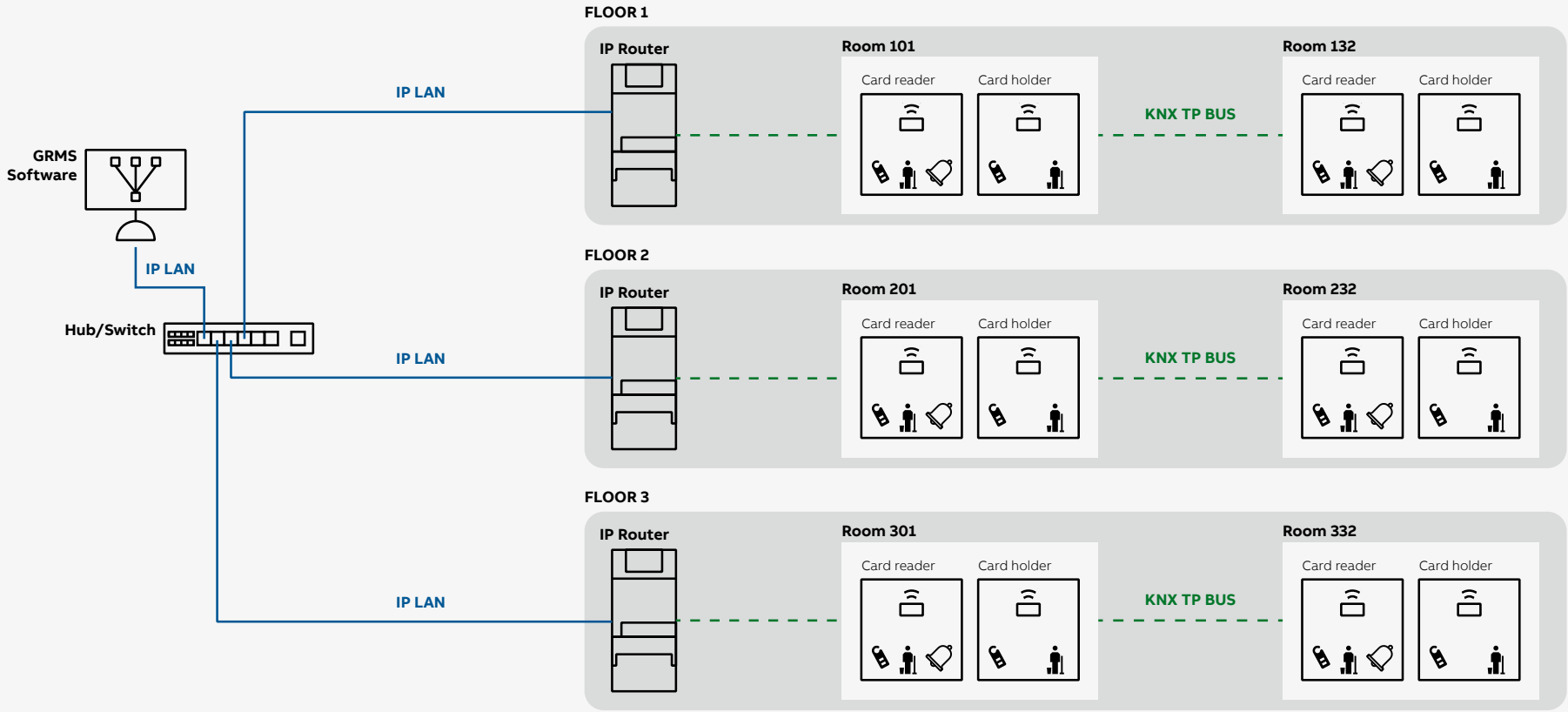
Third party integration

1.1 POWER DISTRIBUTION
1.2 ENERGY MANAGEMENT
1.3 LIGHTING CONTROL
1.4 GUEST ROOM MANAGEMENT SYSTEM
1.5 HVAC CONTROL
1.6 EMERGENCY LIGHTING
1.7 EV CHARGING
1.8 DRIVES & MOTORS

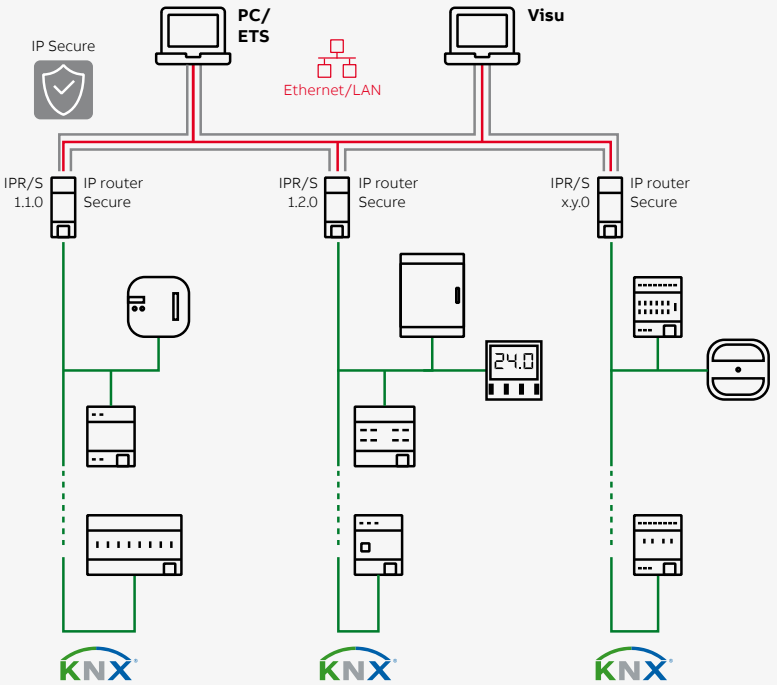
NEXT

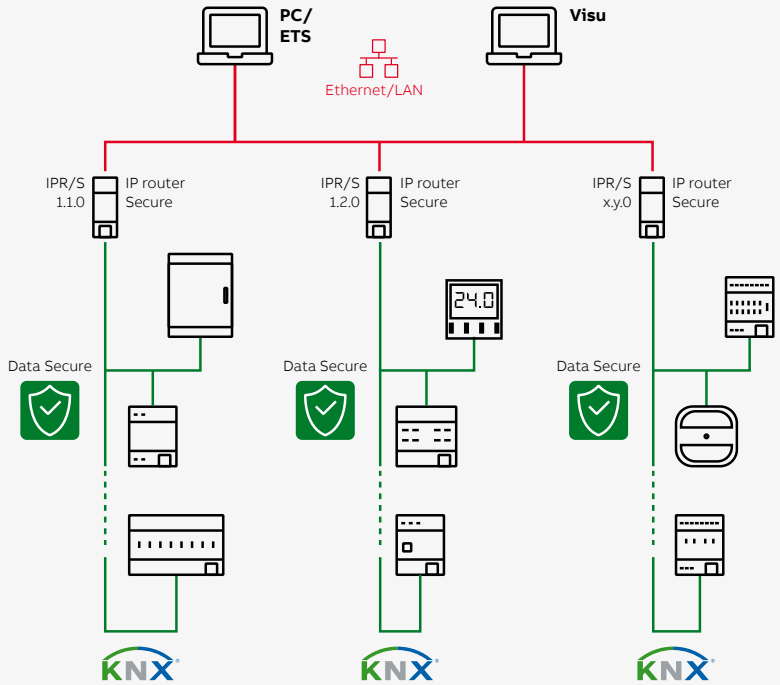
Guest Room Management System
Access Control

Access Control Option 2 (IP Floor Level)



Guest Room Management System
Security

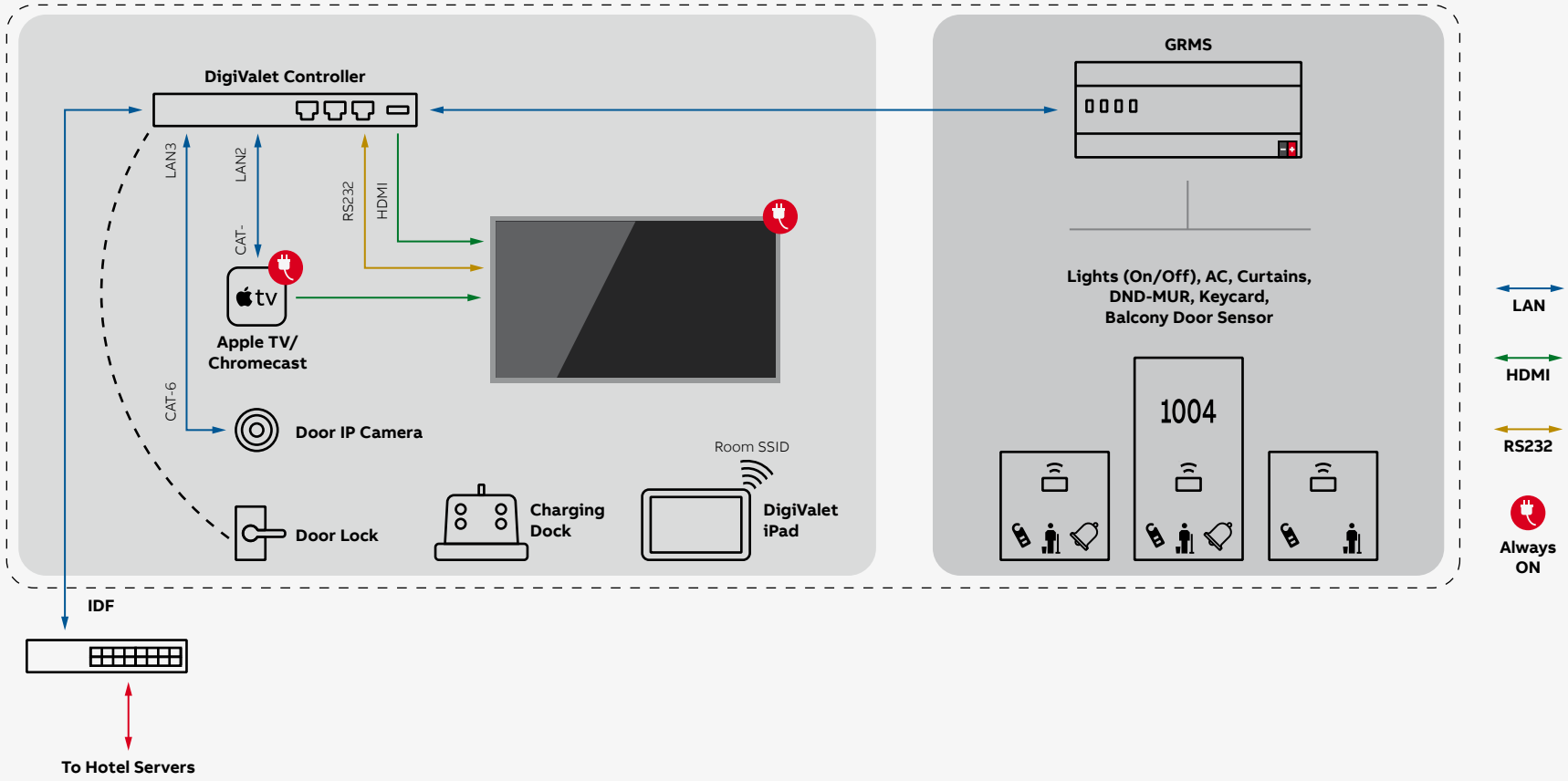




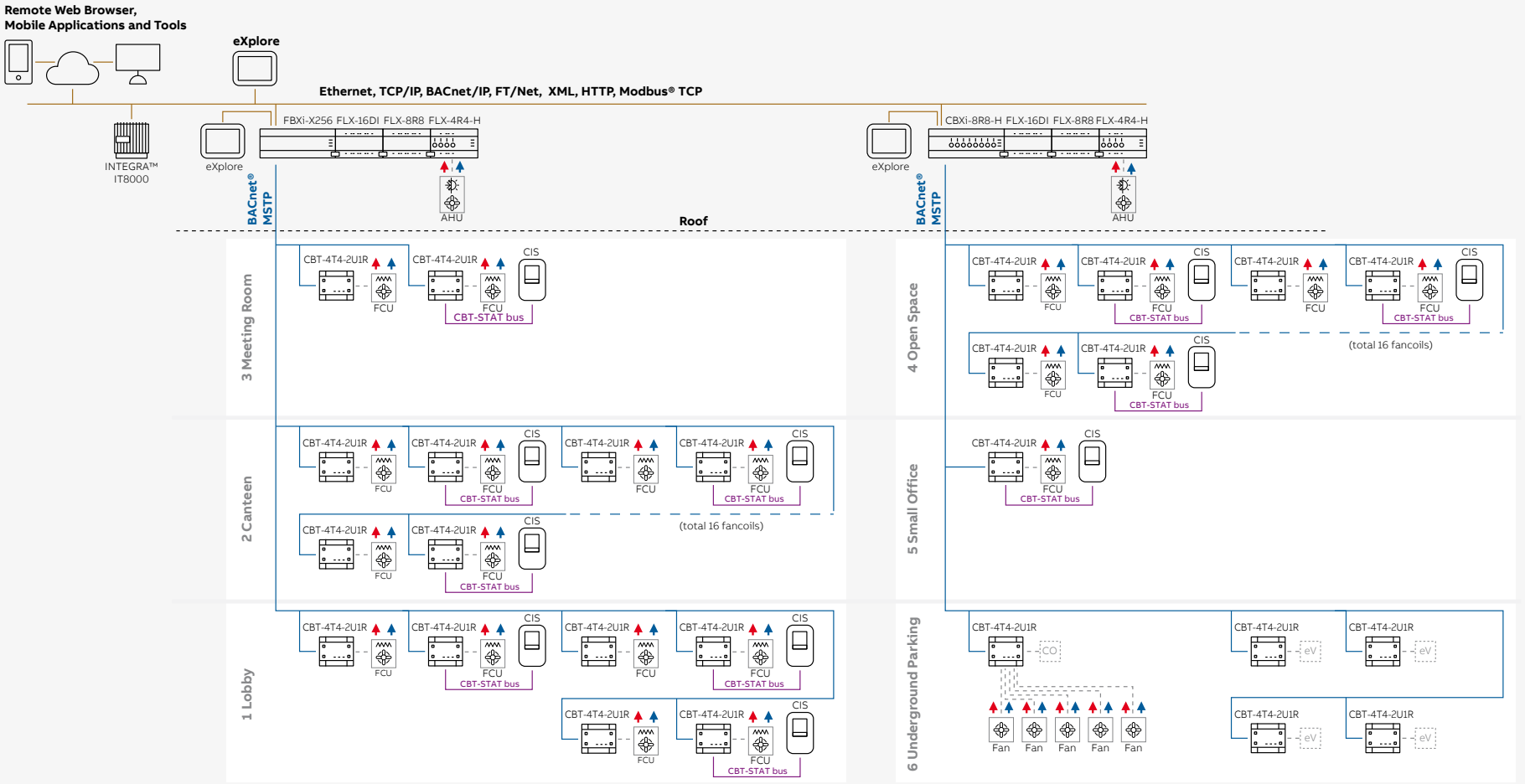
Guest Room Management System

Third party integration

DigiValet integration



HVAC Control



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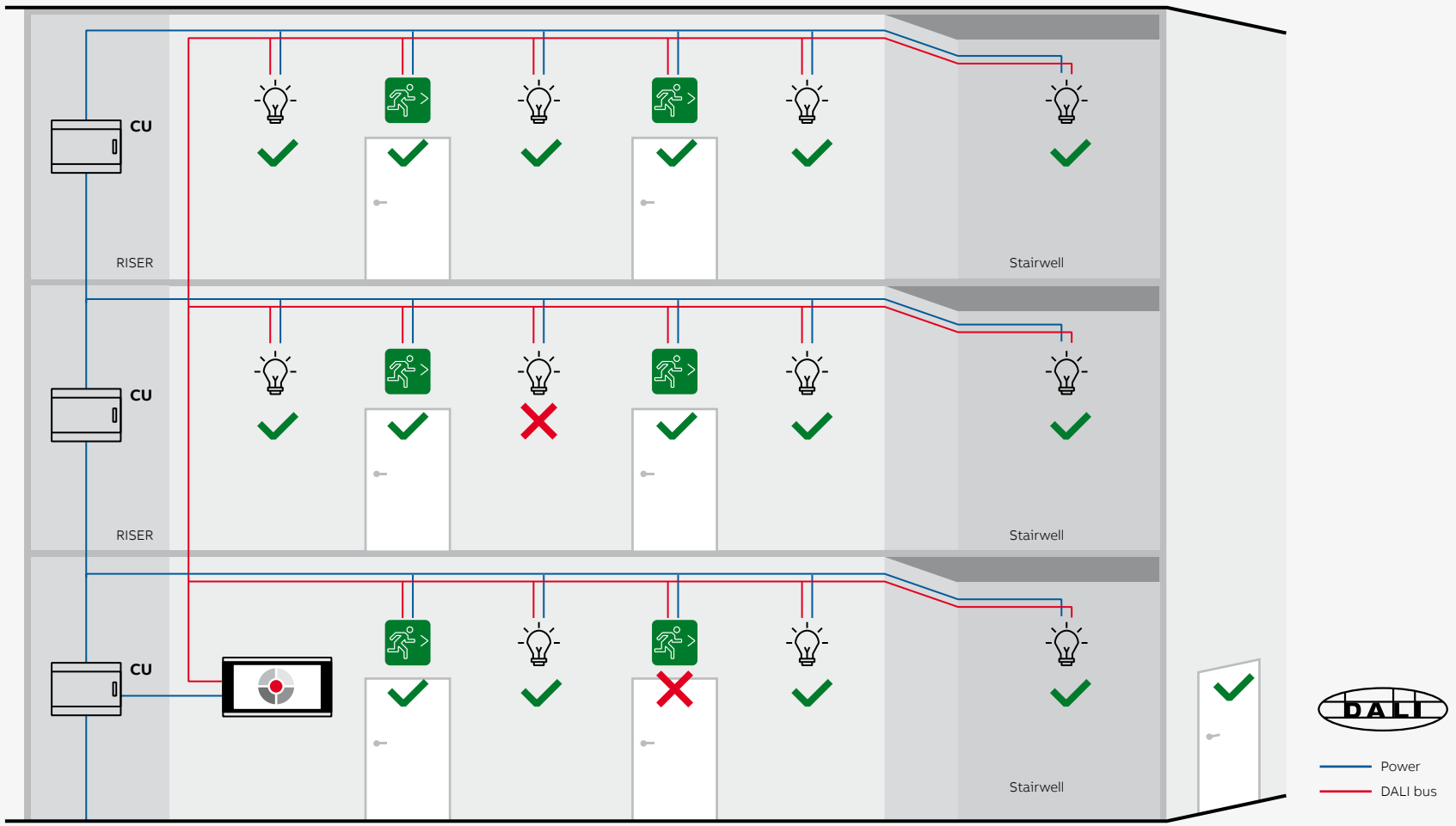
HOSPITALITY

ARCHITECTURE

APPLICATION DETAILS

1.5 HVAC Control

Emergency Lighting
DALI (EUR)



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HOSPITALITY

ARCHITECTURE

APPLICATION DETAILS

1.6 Emergency Lighting

DALI (EUR)

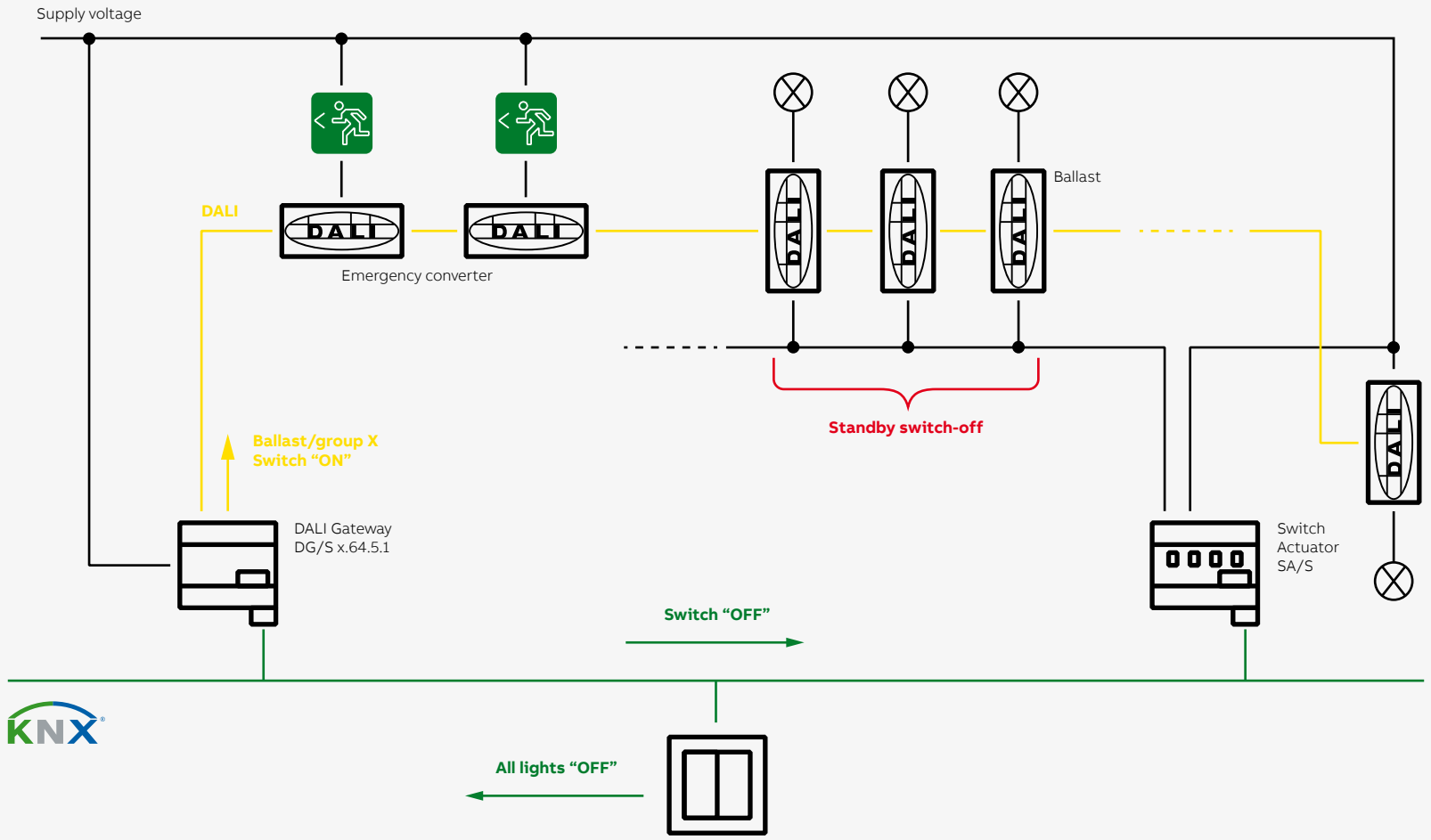
Nexus®Pro (NAM)

Central Battery (UK, MEA)

NEXT

Emergency Lighting
DALI (EUR)

DALI Emergency Lighting with “Standby switch-off”



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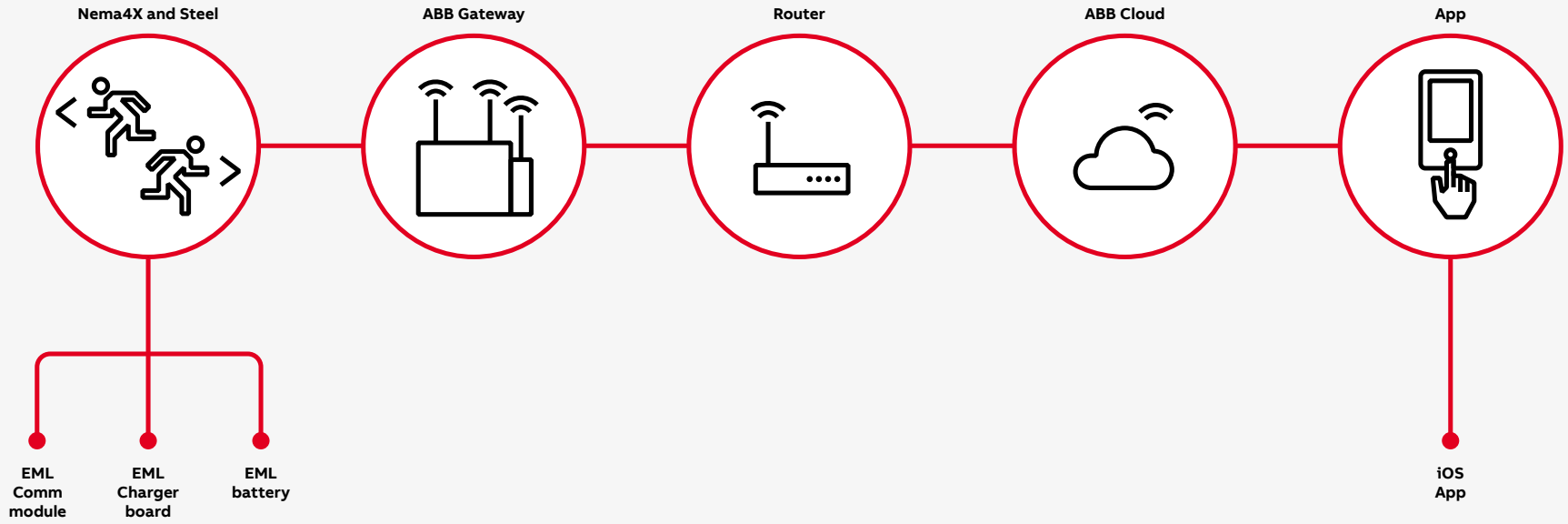
Emergency Lighting
Nexus®Pro (NAM)



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HOSPITALITY

ARCHITECTURE

APPLICATION DETAILS

1.6 Emergency Lighting

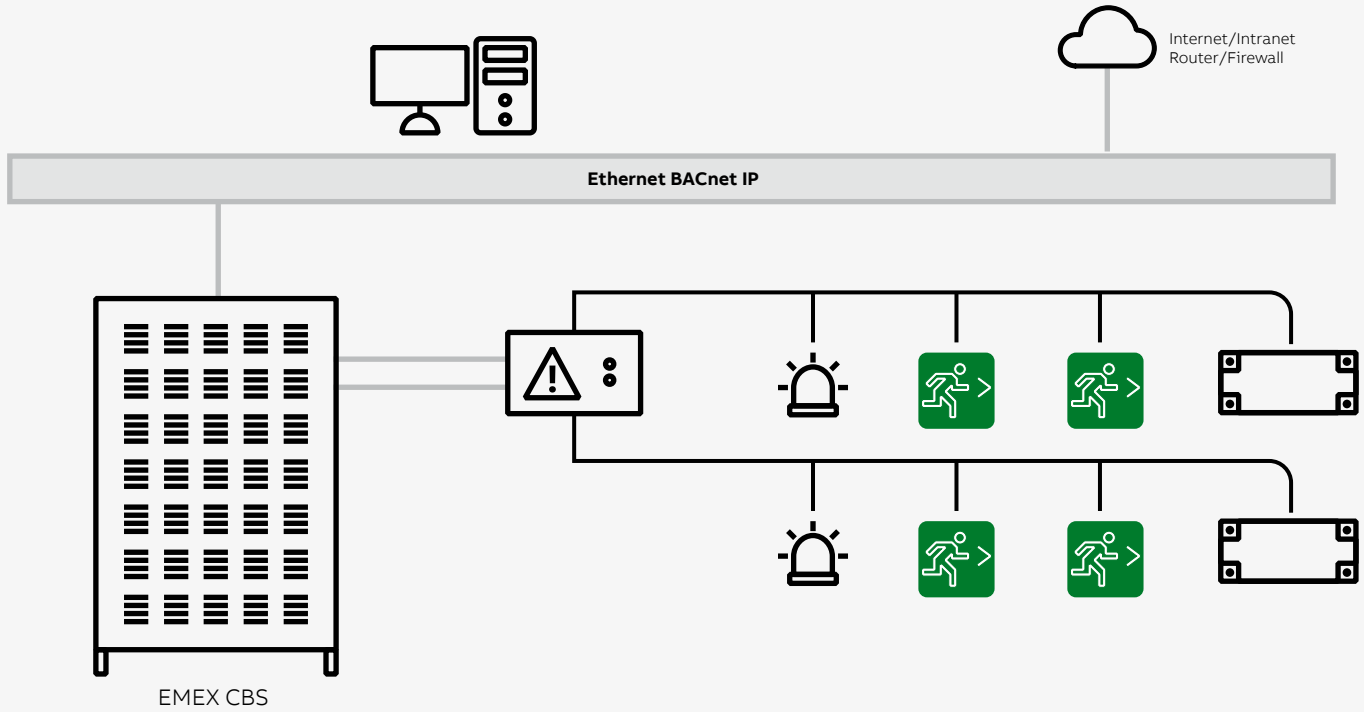
DALI (EUR)

Nexus®Pro (NAM)

Central Battery (UK, MEA)

1.1 POWER DISTRIBUTION
1.2 ENERGY MANAGEMENT
1.3 LIGHTING CONTROL
1.4 GUEST ROOM MANAGEMENT SYSTEM
1.5 HVAC CONTROL
1.6 EMERGENCY LIGHTING
1.7 EV CHARGING
1.8 DRIVES & MOTORS

Emergency Lighting
Central Battery (UK, MEA)



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HOSPITALITY

ARCHITECTURE

APPLICATION DETAILS

1.6 Emergency Lighting

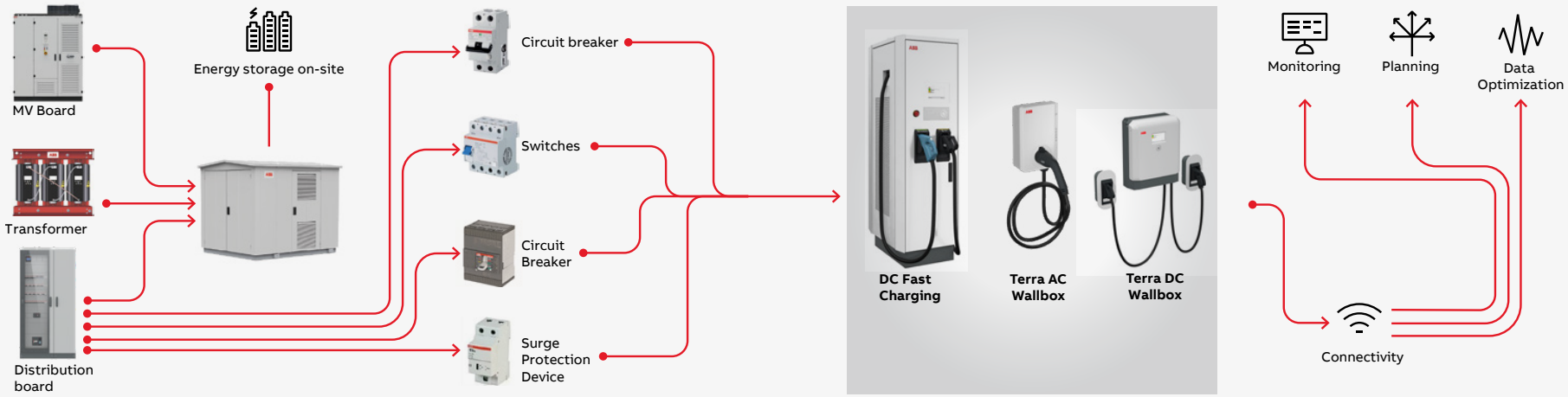
DALI (EUR)

Nexus®Pro (NAM)

Central Battery (UK, MEA)

1.1 POWER DISTRIBUTION
1.2 ENERGY MANAGEMENT
1.3 LIGHTING CONTROL
1.4 GUEST ROOM MANAGEMENT SYSTEM
1.5 HVAC CONTROL
1.6 EMERGENCY LIGHTING
1.7 EV CHARGING
1.8 DRIVES & MOTORS

EV Charging



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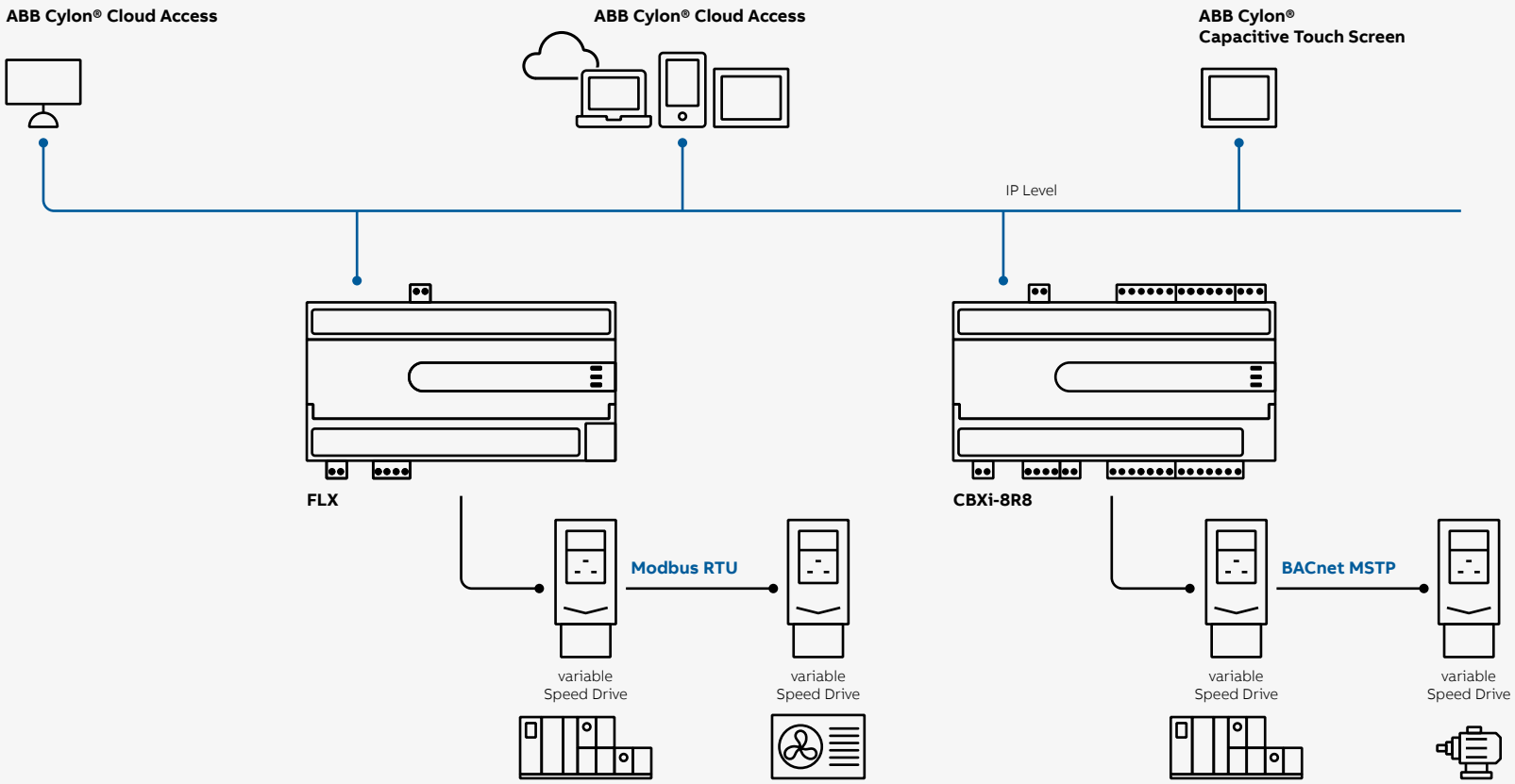
Drives & Motors

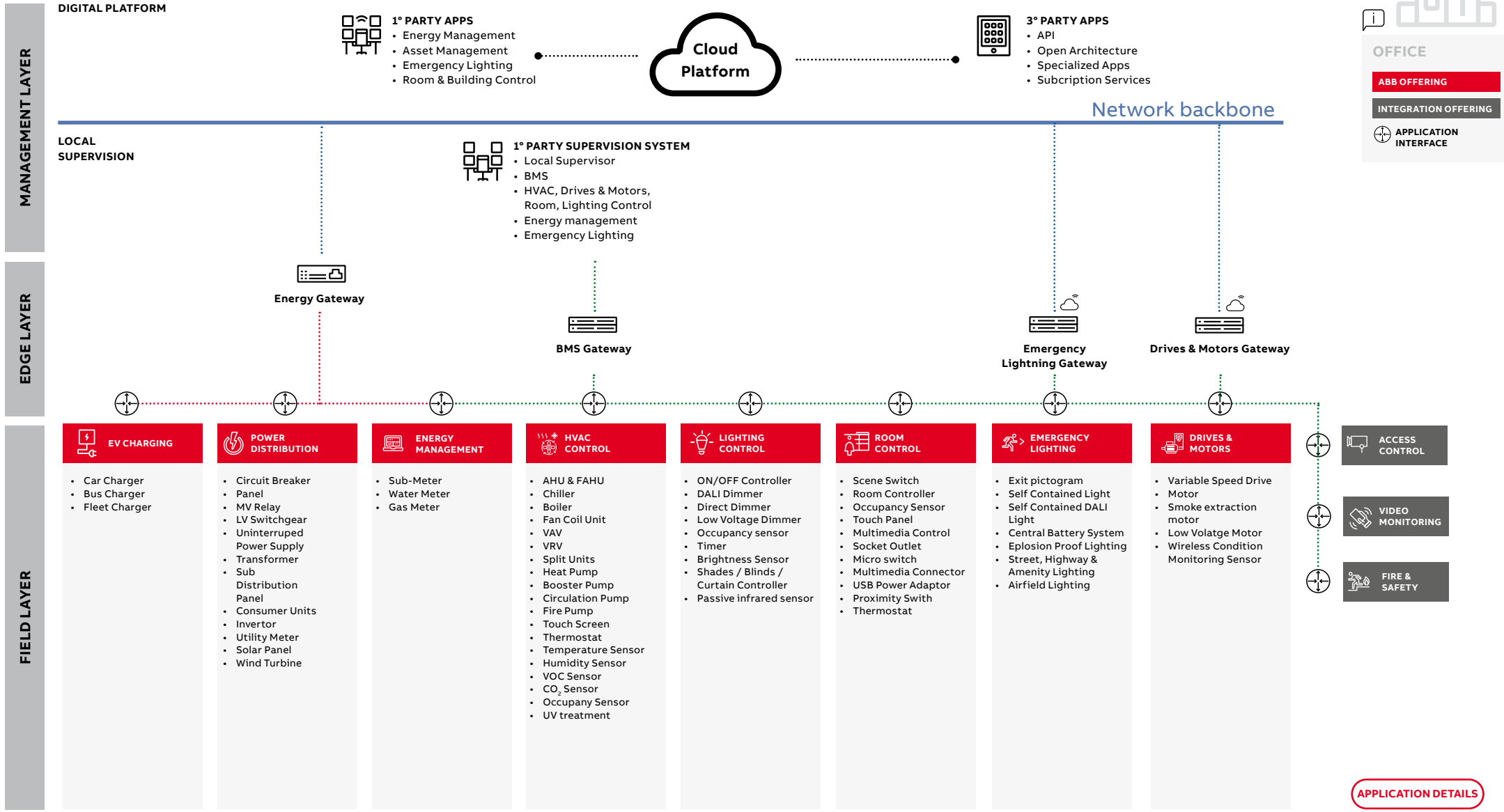


2

Office

ENTER

Reference Architecture
Office



APPLICATION DETAILS

Office Reference Architecture
Application details

2

OFFICE

ARCHITECTURE

2

2.1 Power Distribution
- Overview
- Electrical Distribution system
- Main Distribution Board
- Motor starting and protection for HVAC Chiller
- Motor starting and protection
- UPS Digital Architecture

2.2 Energy Management
- Overview
- Building Analyzer
- Energy Manager

2.3 Lighting Control
- Overview
- Control, automation and supervision of the enviroment

2.4 Room control

2.5 HVAC Control

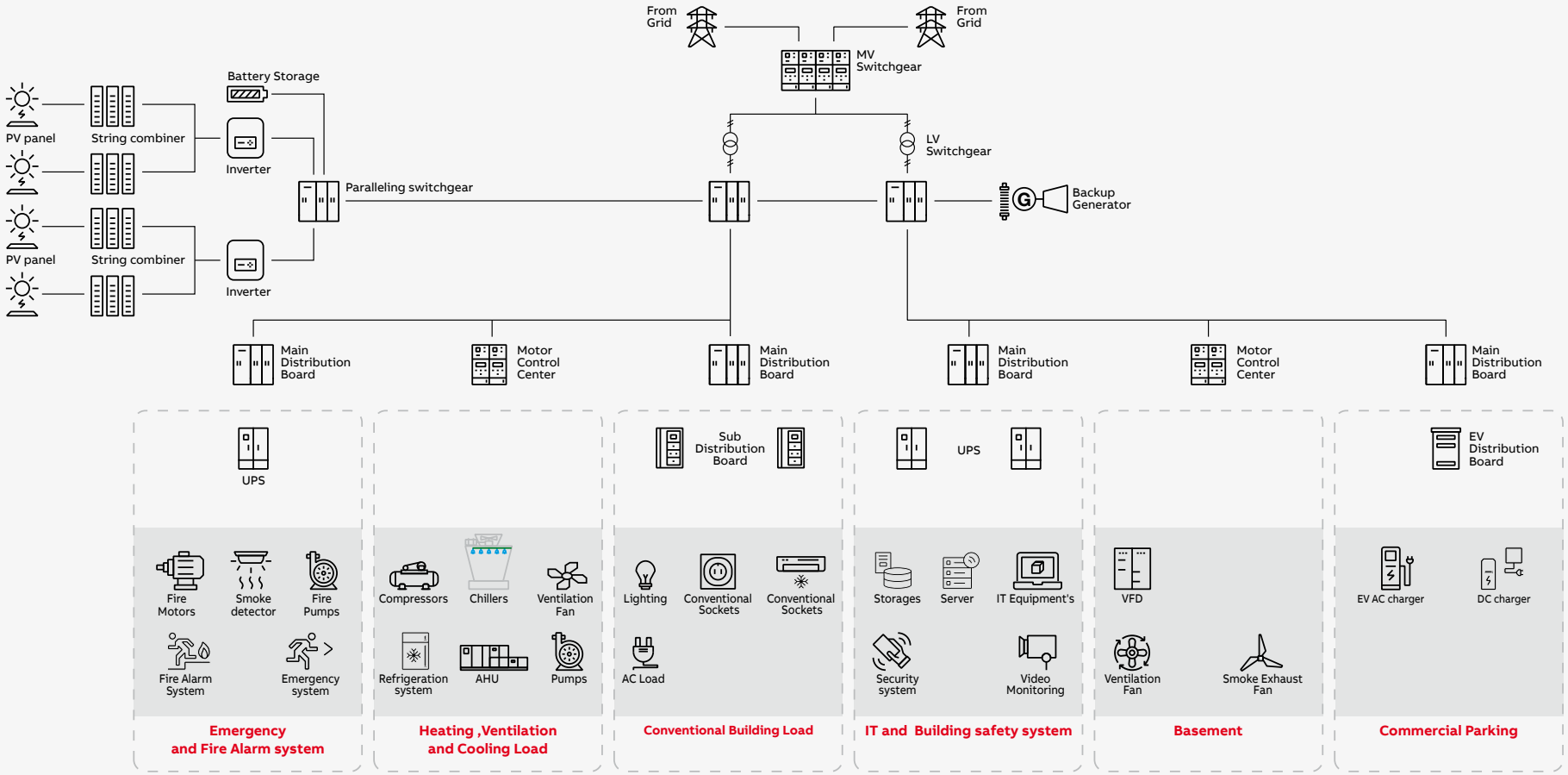
2.6 Emergency Lighting
- DALI Emergency Lighting (Europe)
- Nexus®Pro (NAM)
- Central Battery Emergency Lighting (UK, MEA)

2.7 EV Charging

2.8 Drives & Motors

Power Distribution
Overview

General Architecture with MV and LV Switchgear



2

OFFICE

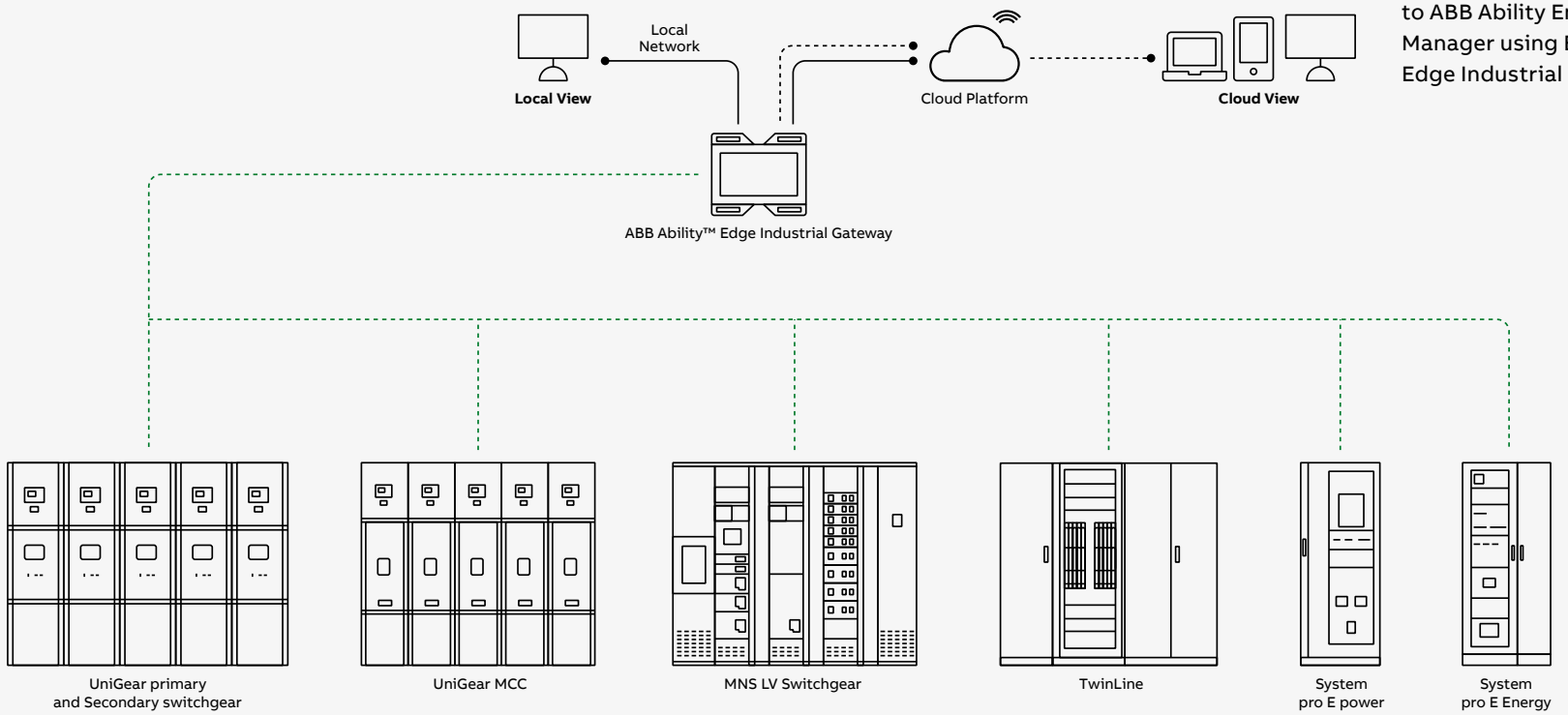
ARCHITECTURE

APPLICATION DETAILS

Power Distribution

Electrical Distribution system

Digital Solution of Electrical Distribution system - Europe /EMEA



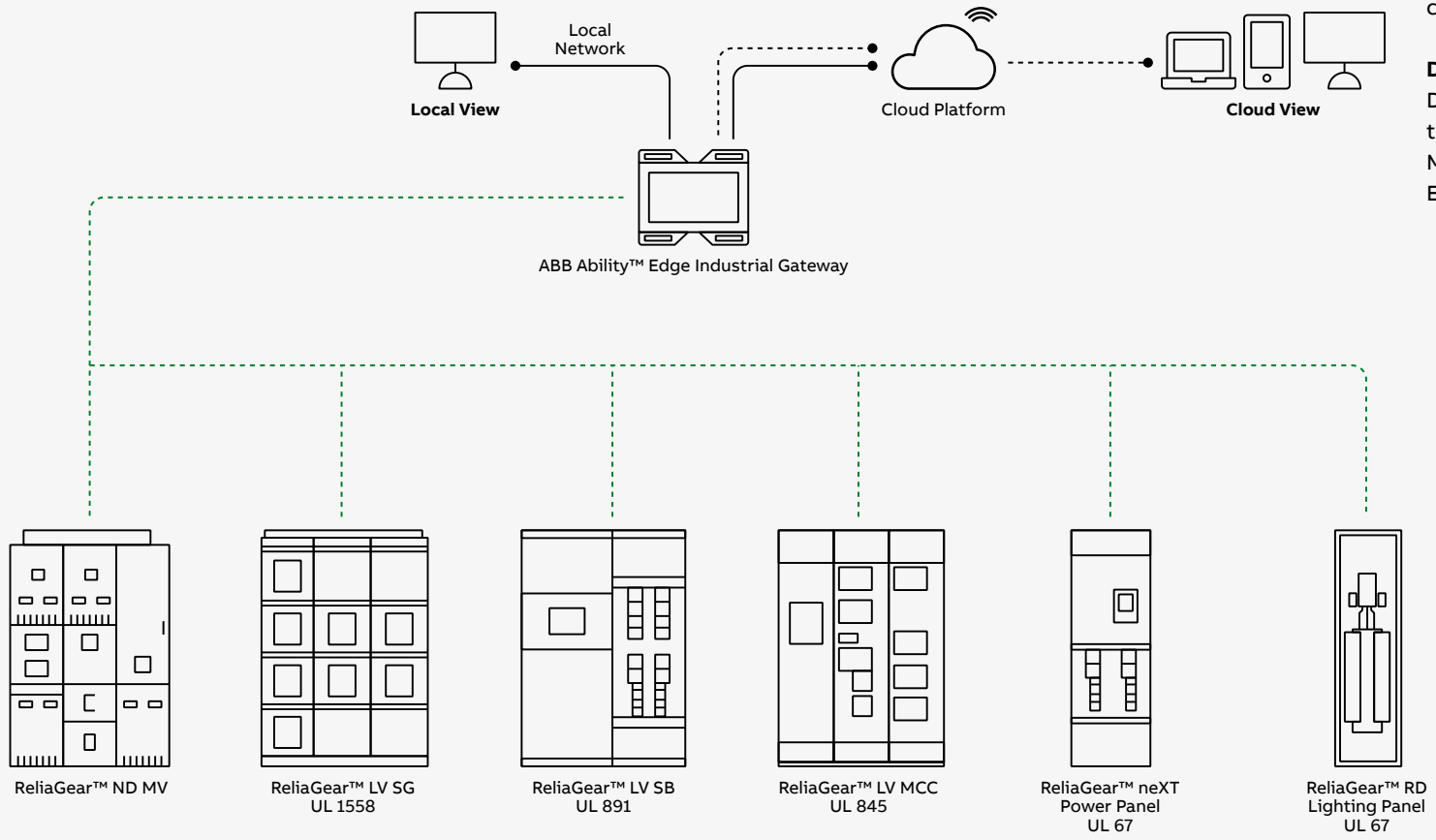
Digitally Enabled:
Devices which have connectivity over a field bus (built-in communication).

Digital Core:
Devices which can be connected to ABB Ability Energy and Asset Manager using Ekip Com Hub or Edge Industrial Gateway

Power Distribution

Electrical Distribution system

Digital Solution of Electrical Distribution system - North America



Digitally Enabled:
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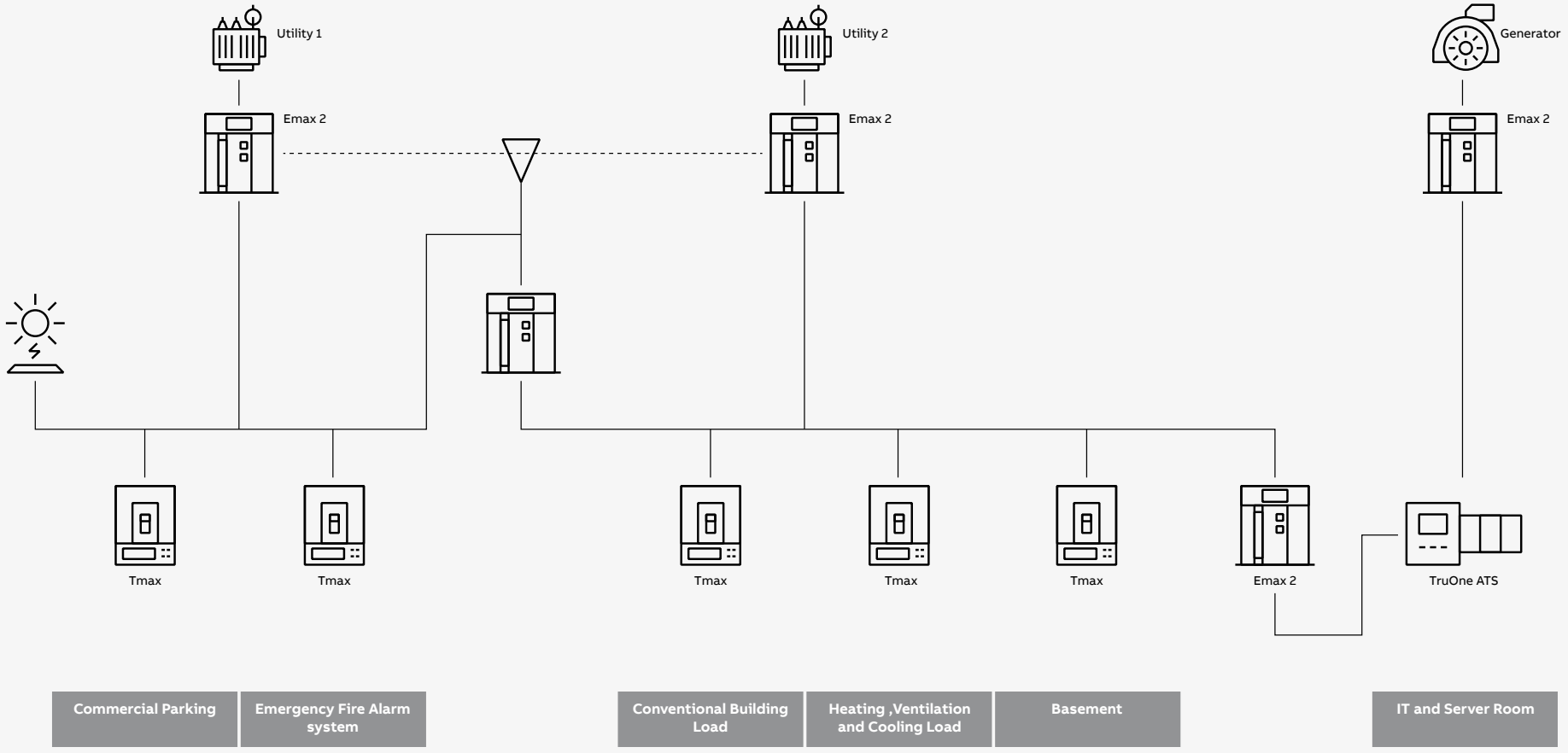
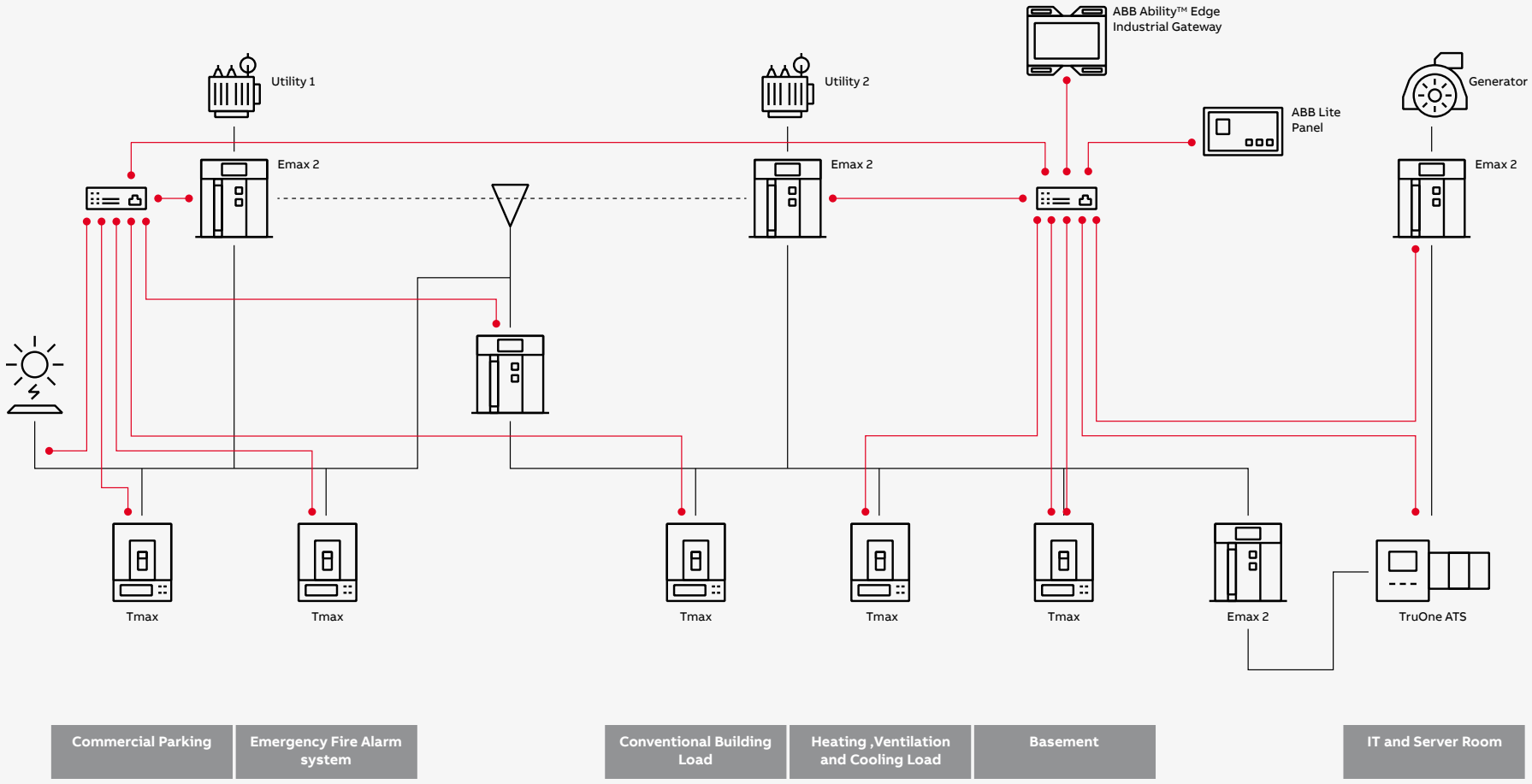
Power Distribution
Main Distribution Board



Power Distribution

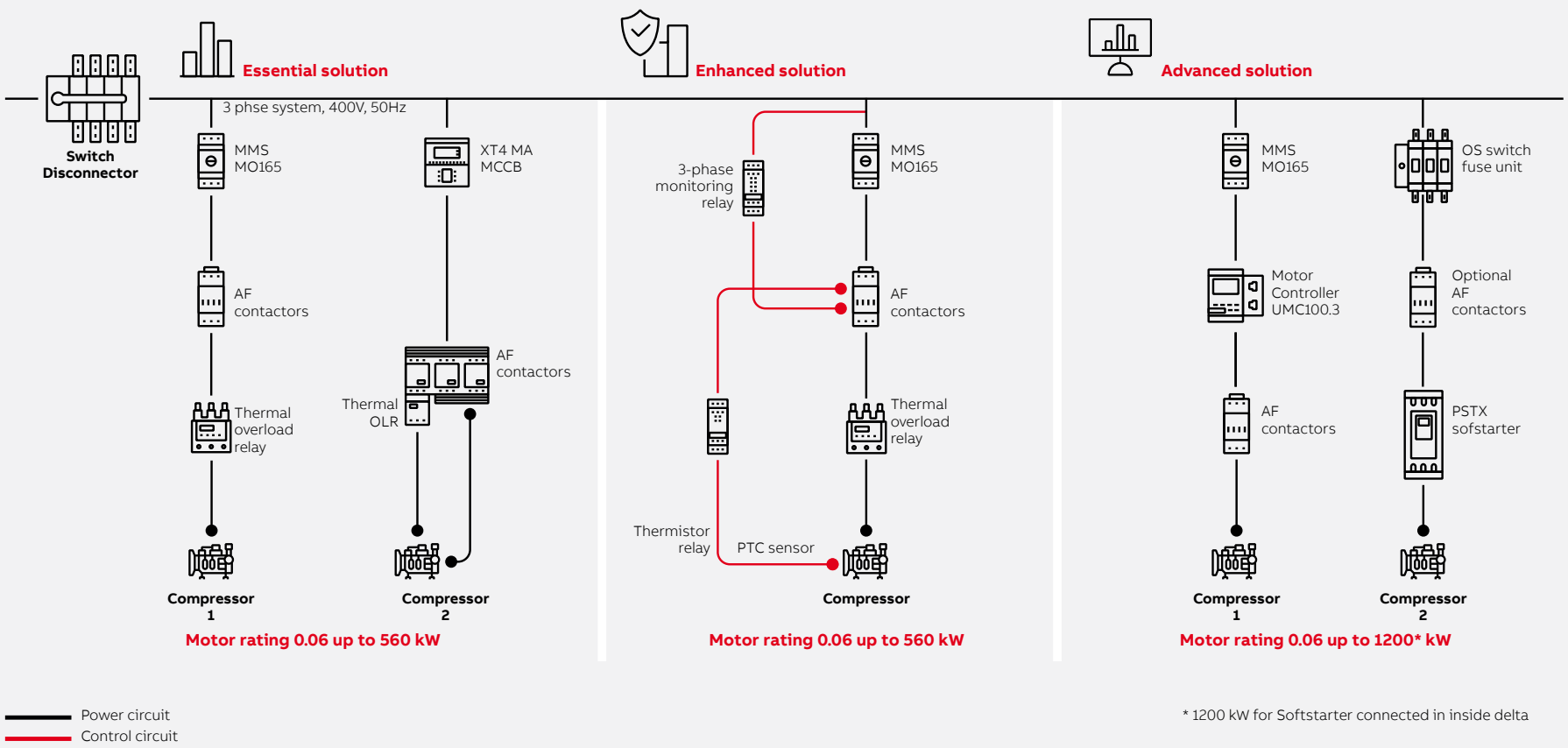
Main Distribution Board



Power Distribution

Motor starting and protection for HVAC Chiller

Water Cooled Chillers



2

OFFICE

ARCHITECTURE

APPLICATION DETAILS

2.1 Power Distribution

Overview

Electrical Distribution system

Main Distribution Board

Motor starting and protection for HVAC Chiller

Motor starting and protection

UPS Digital Architecture

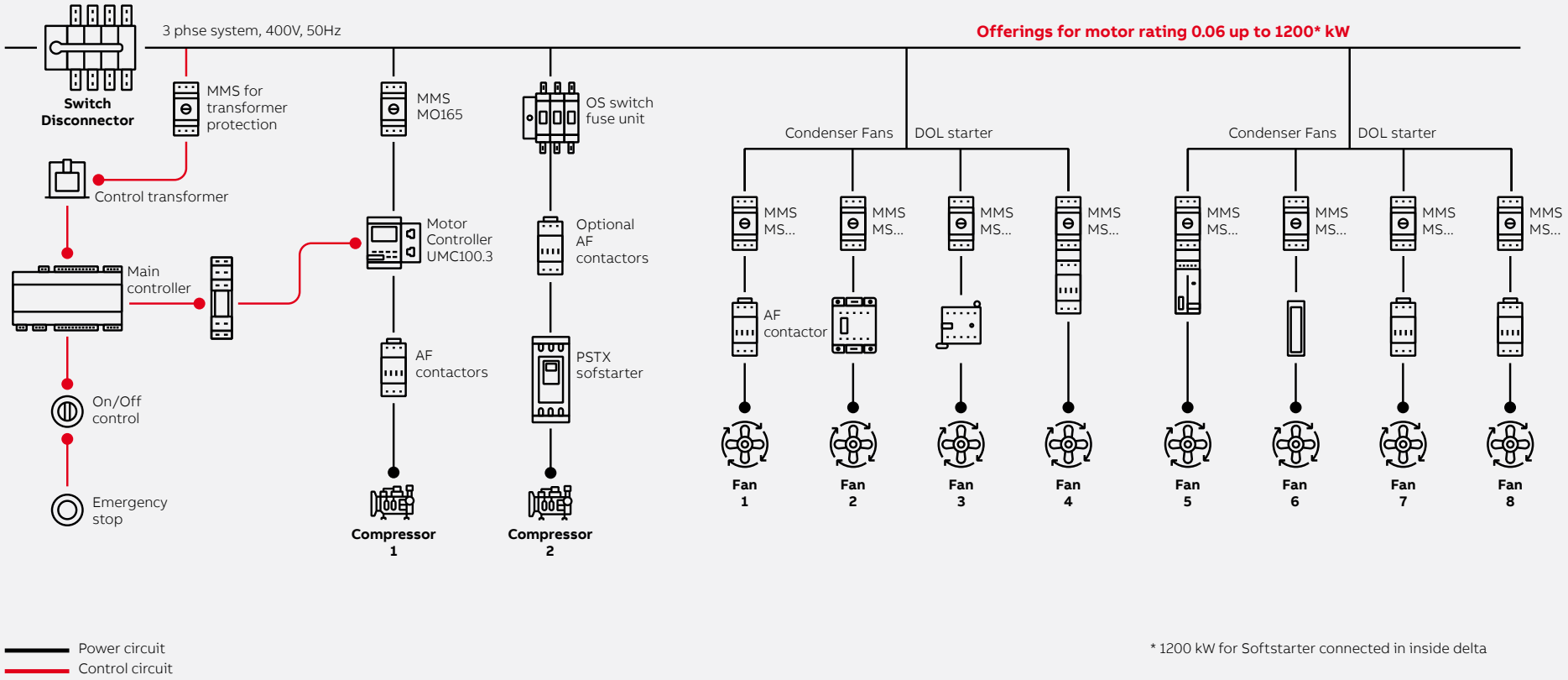
2.1 POWER DISTRIBUTION
2.2 ENERGY MANAGEMENT
2.3 LIGHTING CONTROL
2.4 ROOM CONTROL
2.5 HVAC CONTROL
2.6 EMERGENCY LIGHTING
2.7 EV CHARGING
2.8 DRIVES & MOTORS

NEXT

Power Distribution

Motor starting and protection for HVAC Chiller

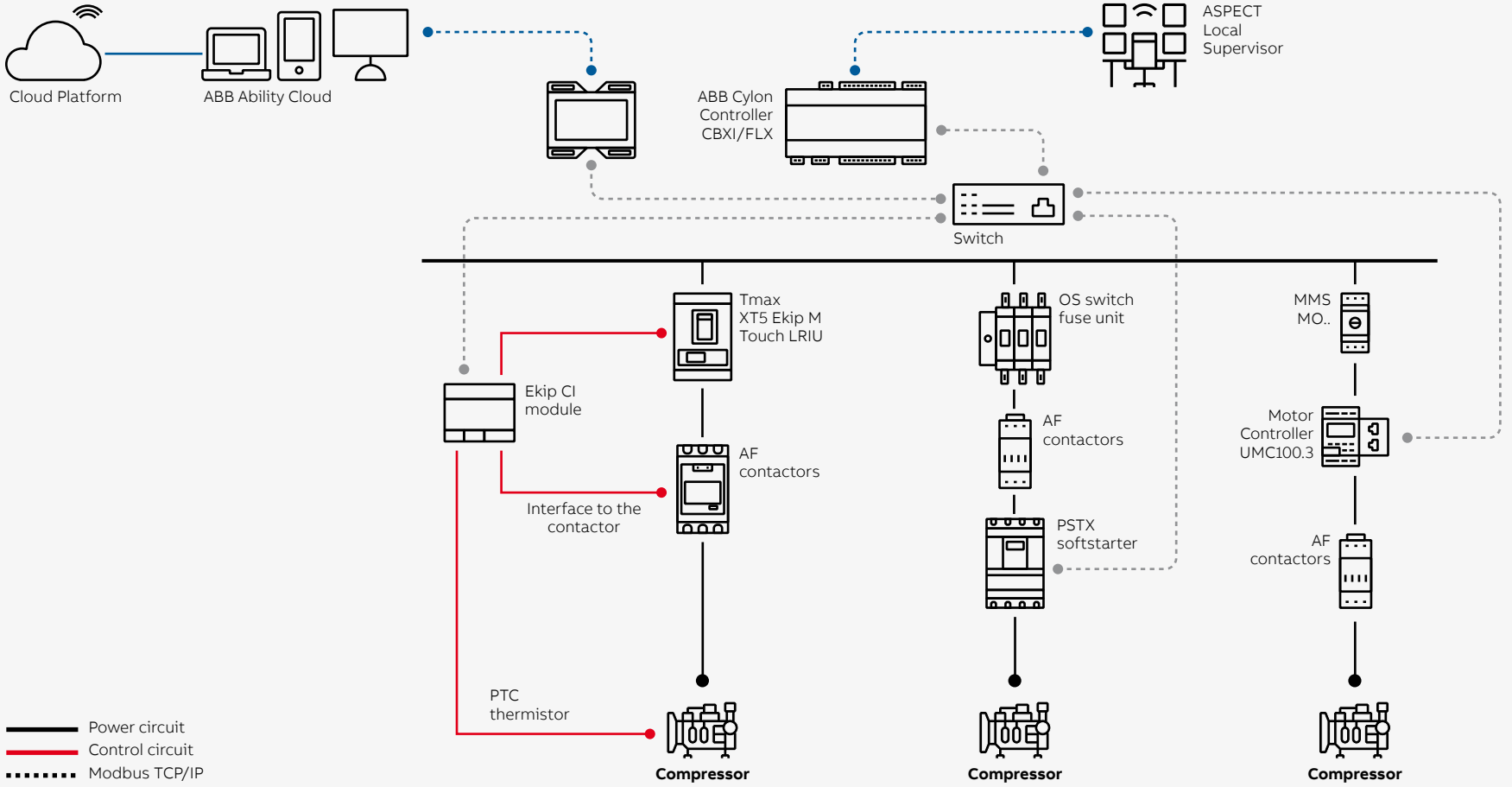
Air Cooled Chillers



Power Distribution

Motor starting and protection

Digital Architecture



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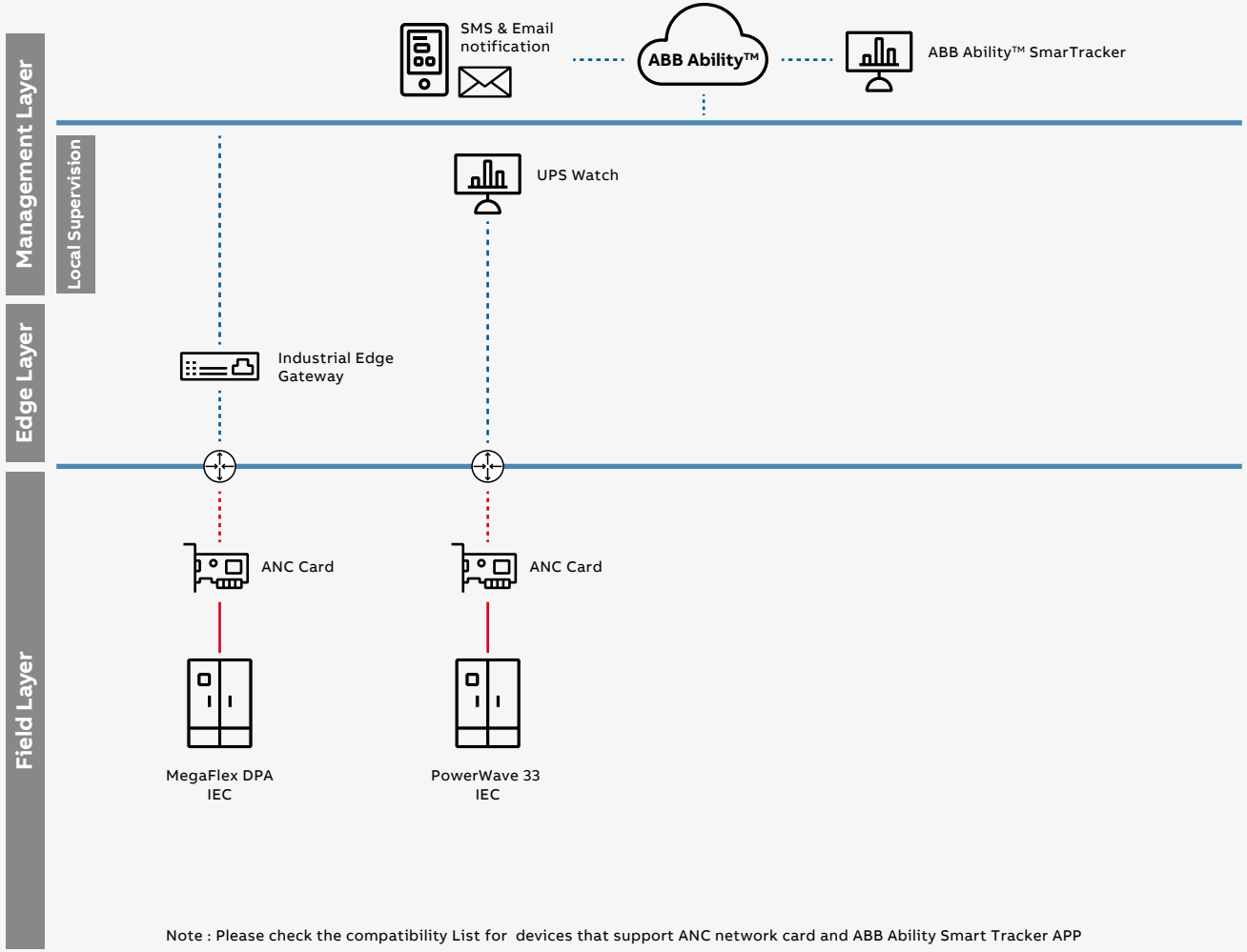
OFFICE

ARCHITECTURE

APPLICATION DETAILS

Power Distribution
UPS Digital Architecture

Digital Architecture



Note : Please check the compatibility List for devices that support ANC network card and ABB Ability Smart Tracker APP

2

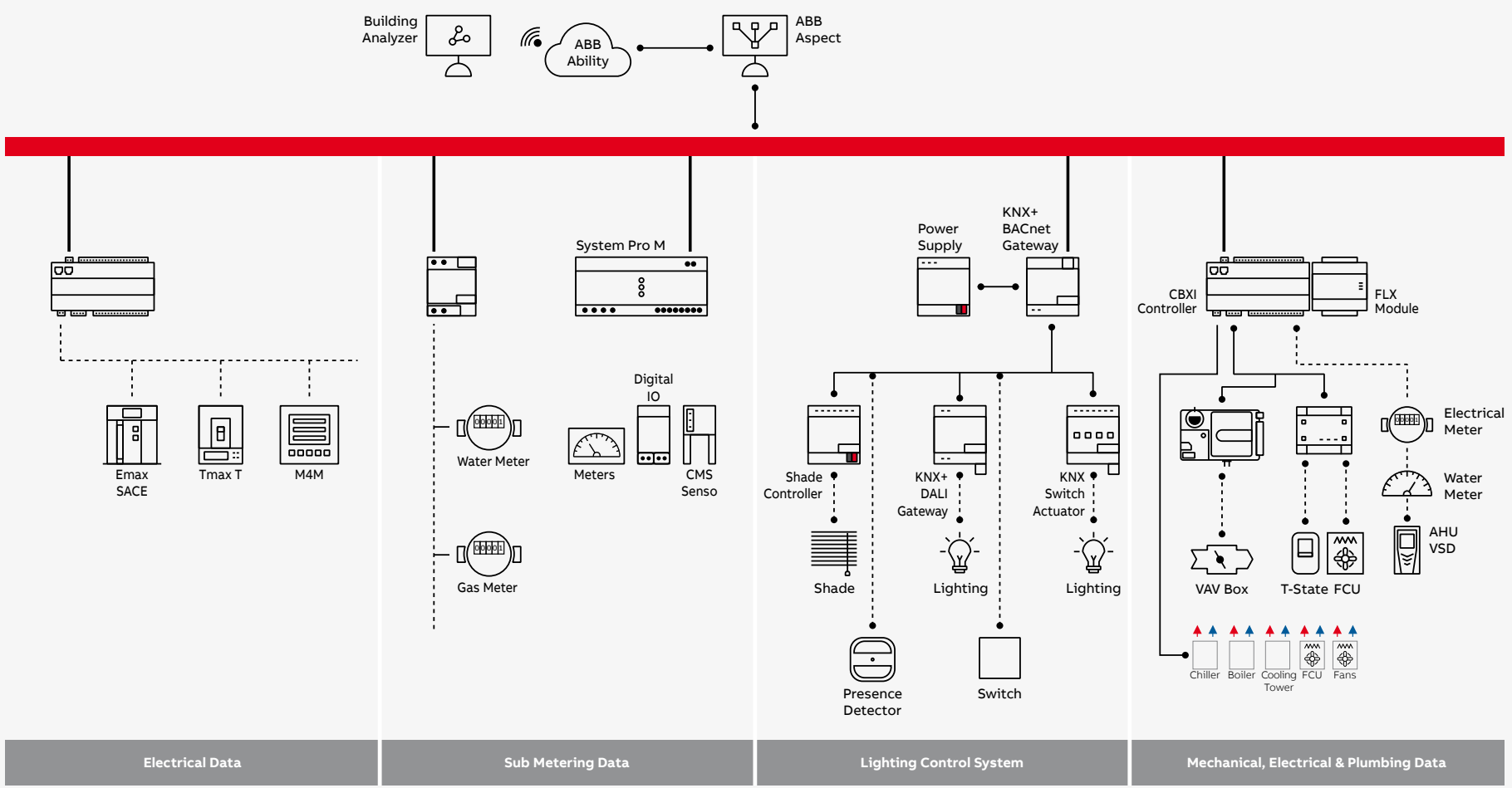
OFFICE

ARCHITECTURE

APPLICATION DETAILS

Energy Management
Overview

Standard Architecture



2

OFFICE

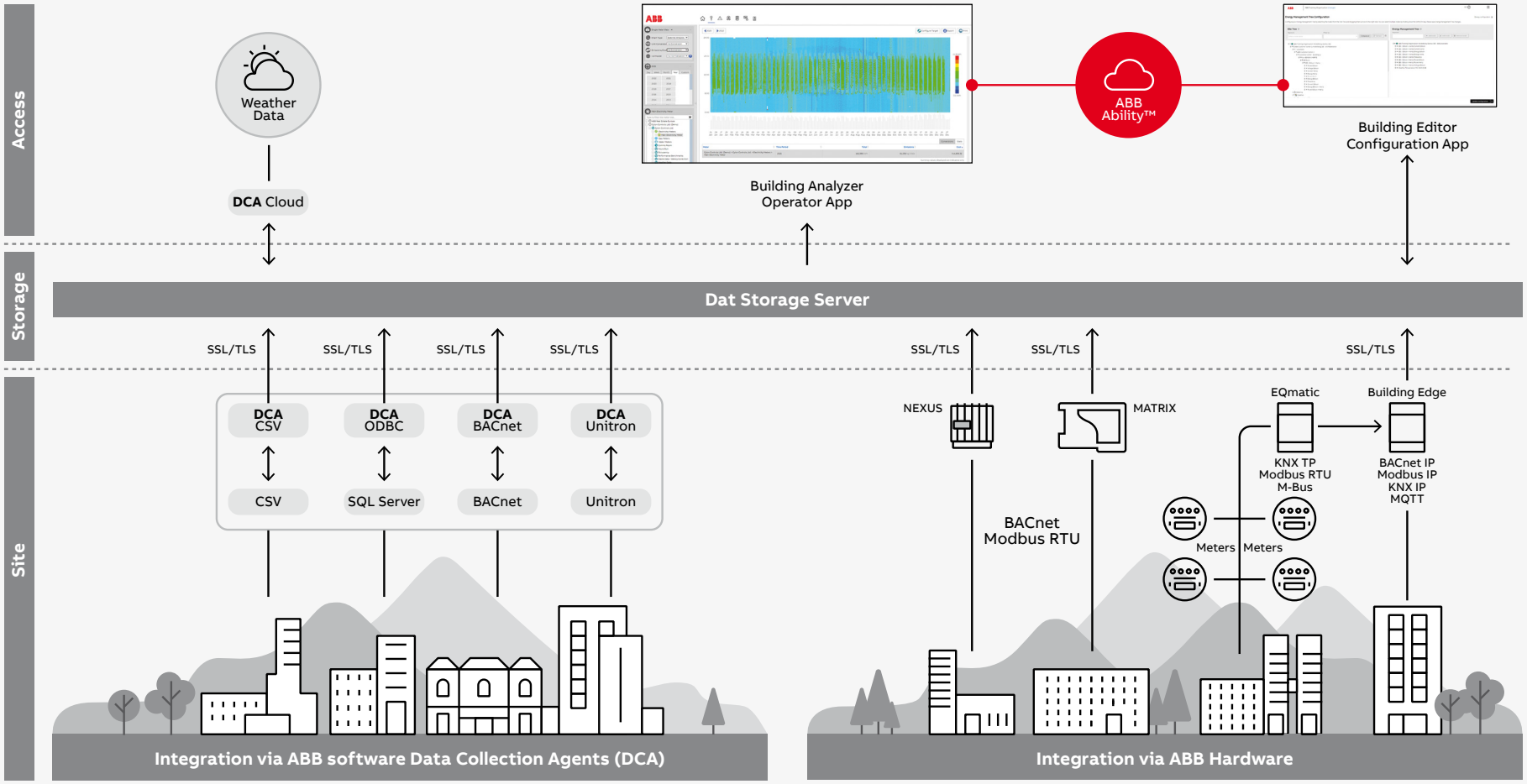
ARCHITECTURE

APPLICATION DETAILS

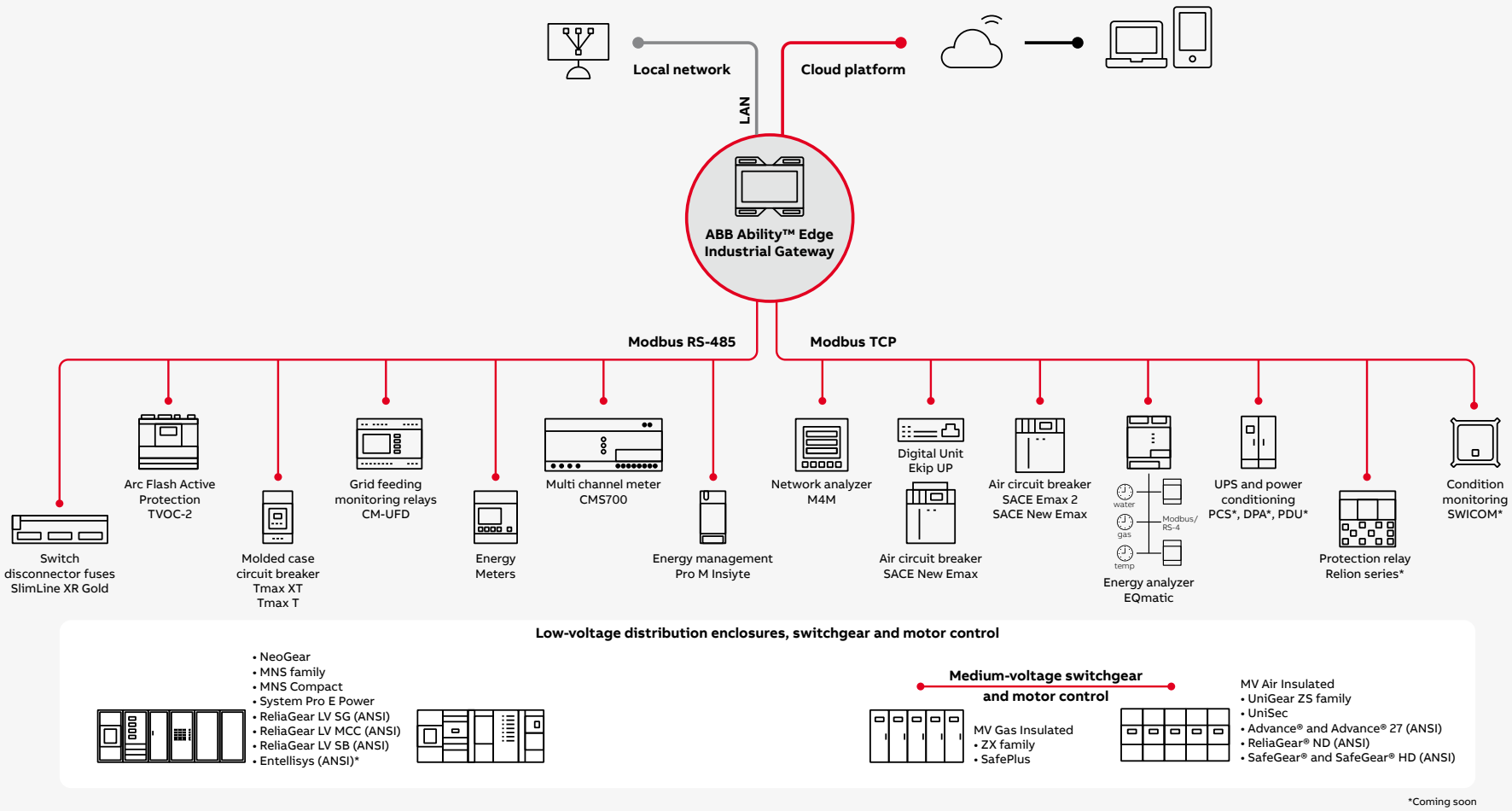
Energy Management
Building Analyzer

2

Standard Architecture



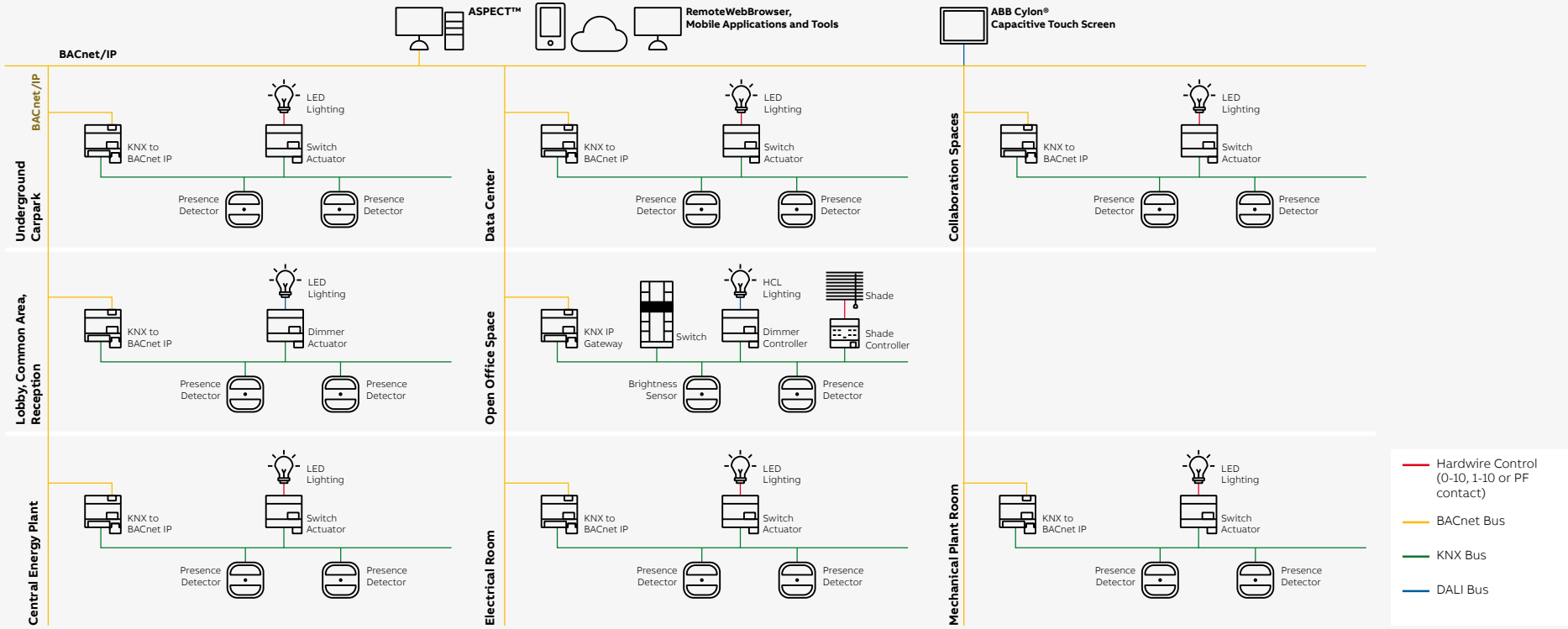
Energy Management
Energy Manager



*Coming soon

Lighting Control
Overview

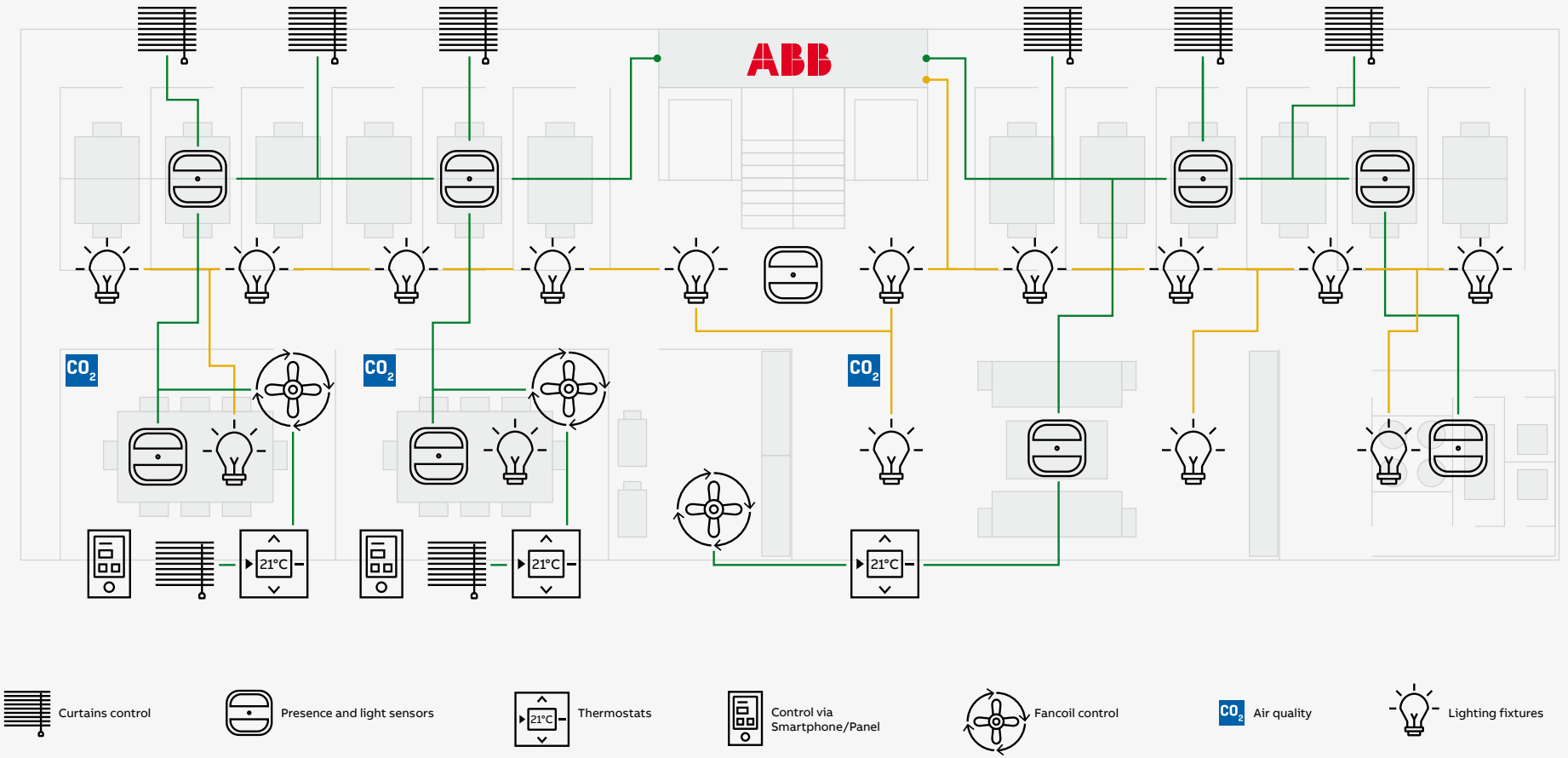
Reference Architecture



Lighting Control

Control, automation and supervision of the enviroment

Application example



2

OFFICE

ARCHITECTURE

APPLICATION DETAILS

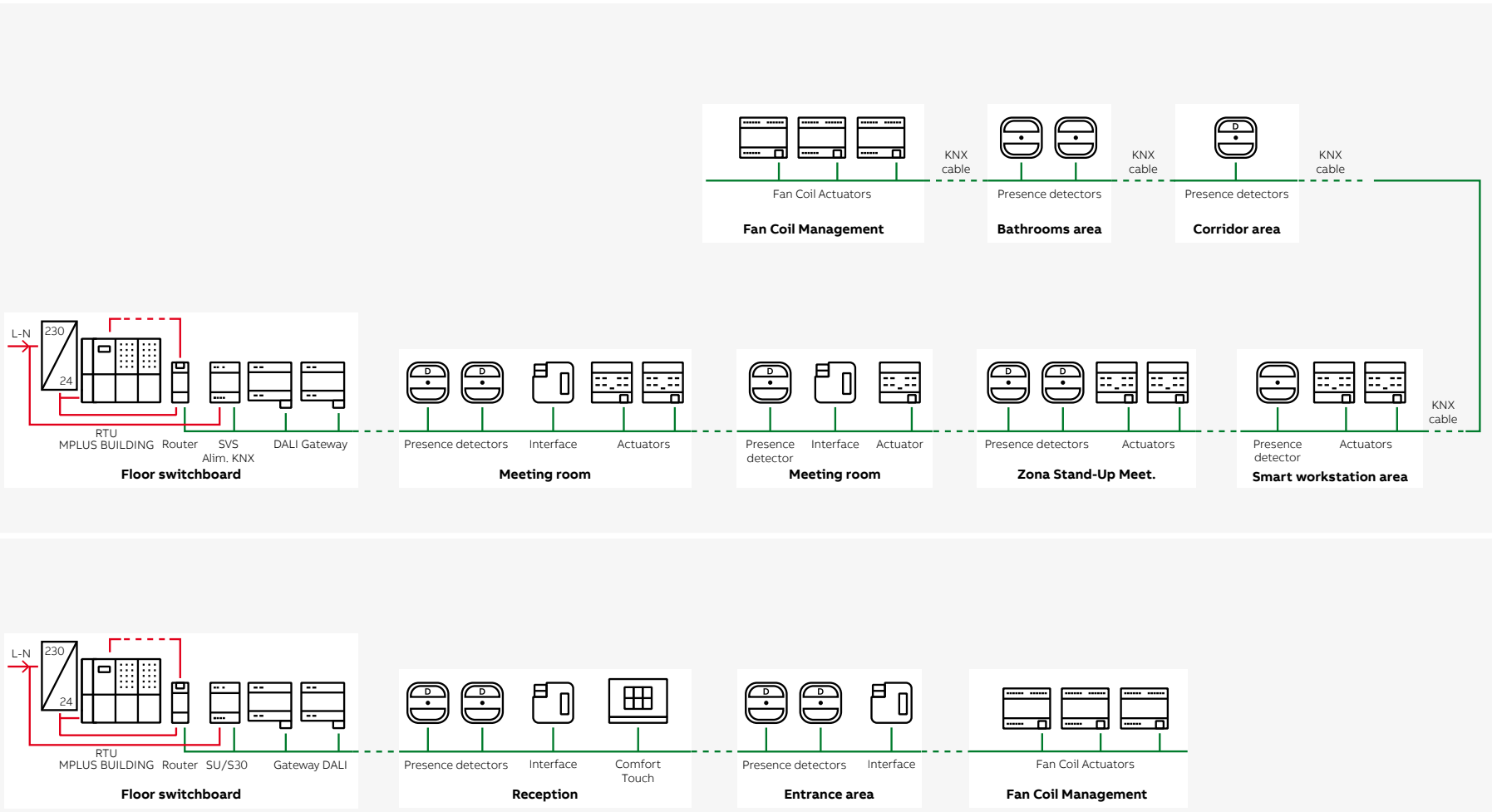
2.3 Lighting Control

Overview

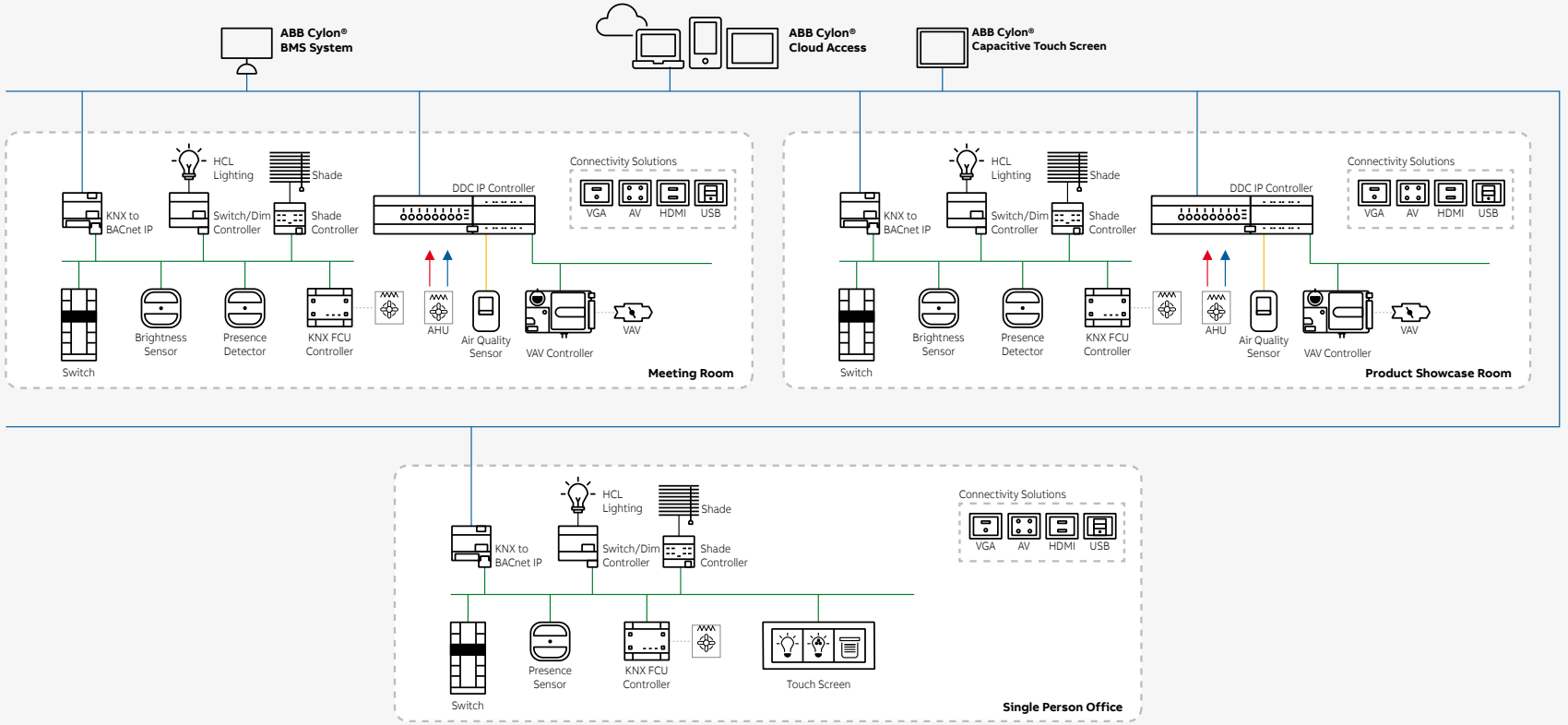
Control, automation and supervision of the enviroment

Lighting Control

Control, automation and supervision of the enviroment



Room Control



2

OFFICE

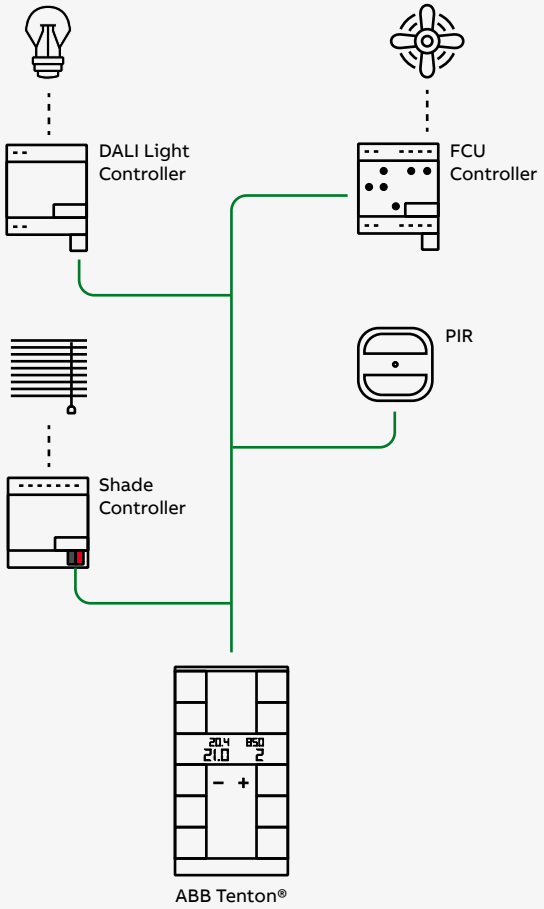
ARCHITECTURE

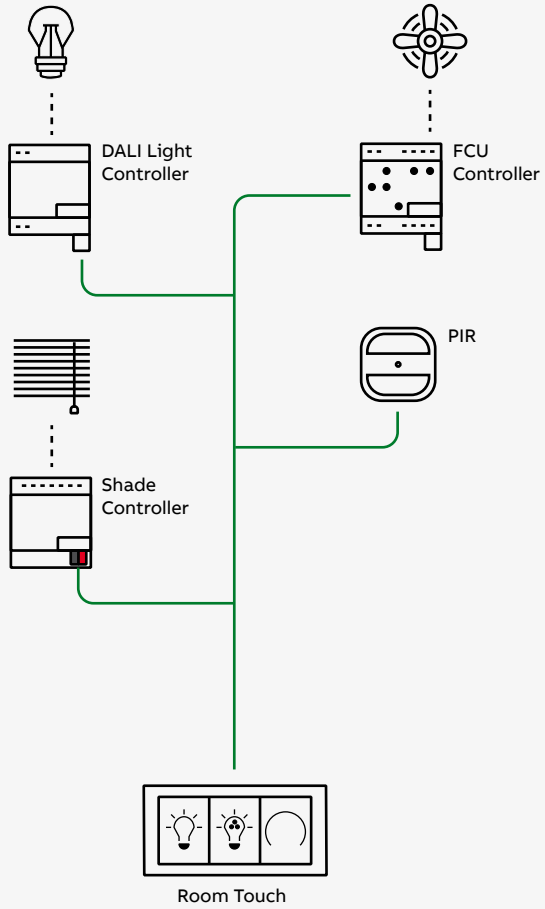
APPLICATION DETAILS

2.4 Room Control

NEXT

Room Control





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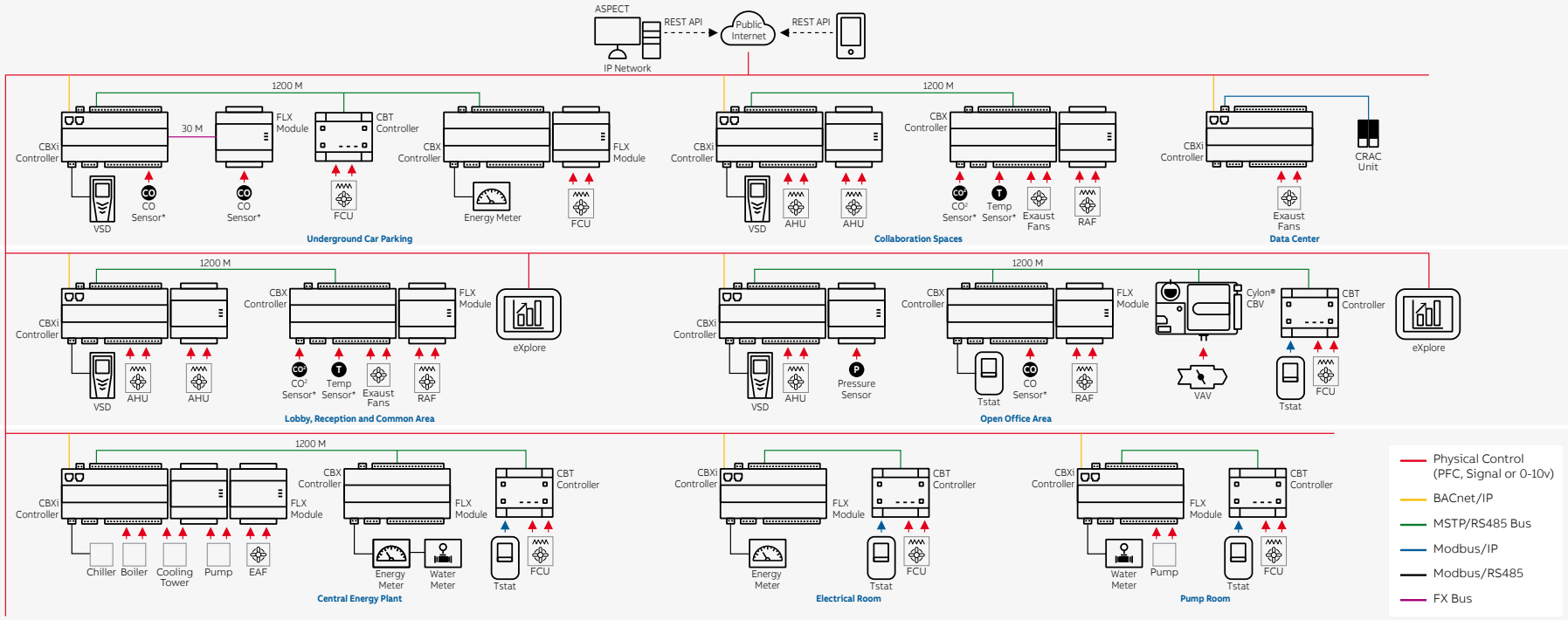
HVAC Control



2

OFFICE

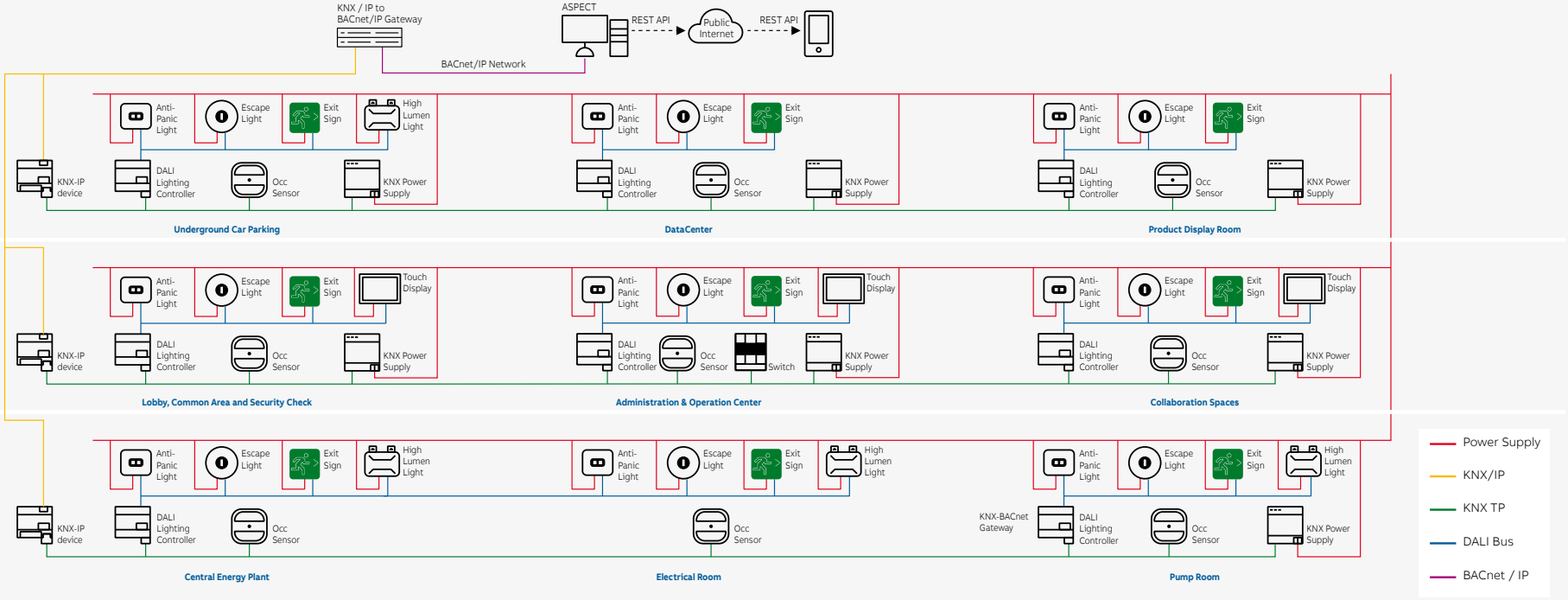
ARCHITECTURE

APPLICATION DETAILS

2.5 HVAC Control

Emergency Lighting

DALI Emergency Lighting (Europe)



2

OFFICE

ARCHITECTURE

APPLICATION DETAILS

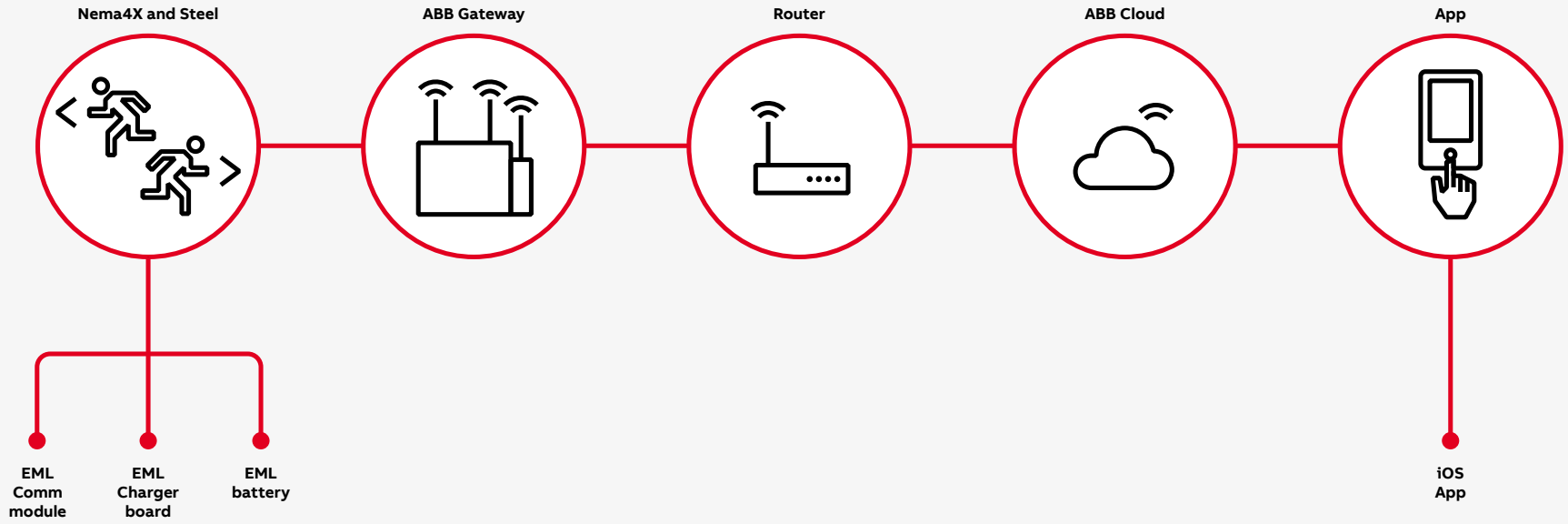
2.6 Emergency Lighting

DALI Emergency Lighting (Europe)

Nexus®Pro (NAM)

Central Battery Emergency Lighting (UK, MEA)

Emergency Lighting
Nexus®Pro (NAM)



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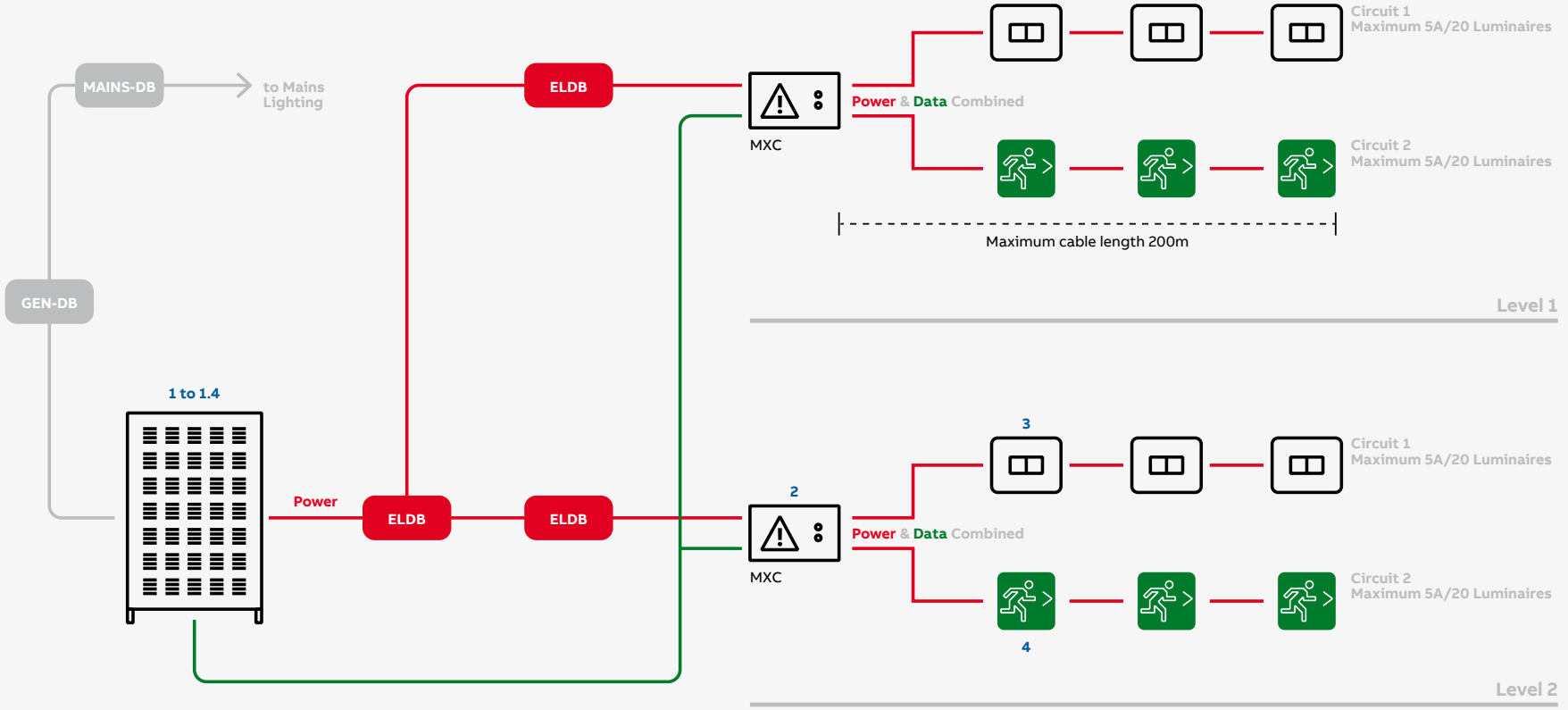
Emergency Lighting

Central Battery Emergency Lighting (UK, MEA)

EMEX Power - Solution



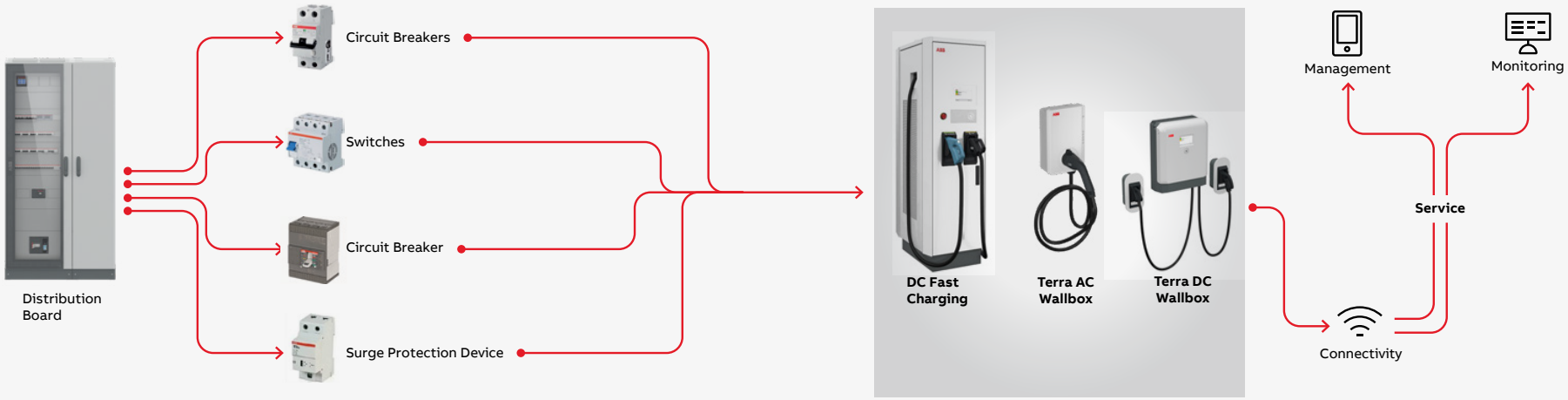
2

OFFICE

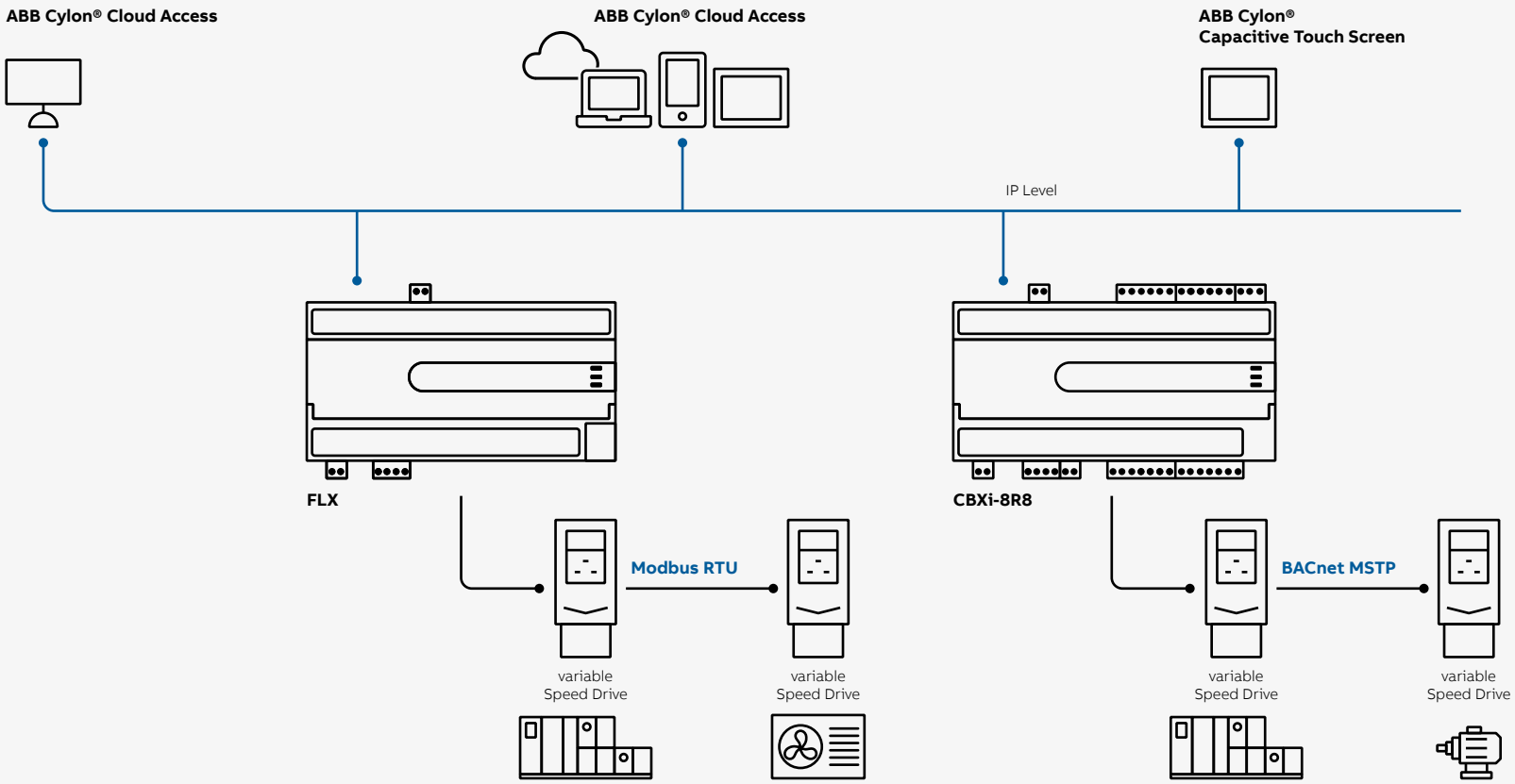
ARCHITECTURE

APPLICATION DETAILS

EV Charging

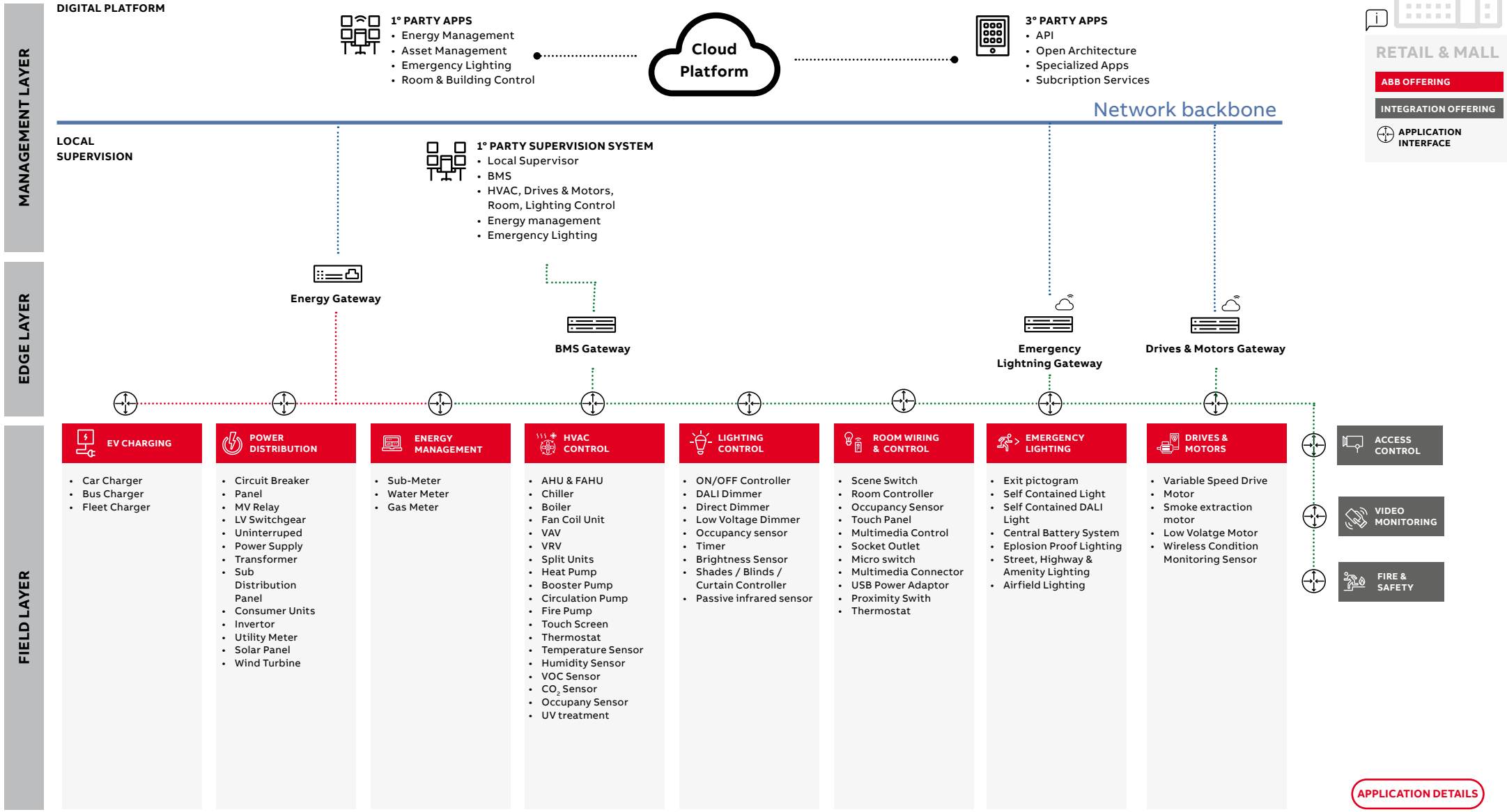


Drives & Motors




3
Retail & Mall
ENTER

Reference Architecture
Retail & Mall



APPLICATION DETAILS

Retail & Mall Reference Architecture
Application details

3

3.1 Power Distribution
- Overview
- MV Distribution with Renewables
- LV Main Distribution
- Sub Distribution
- Edge Layer
- Power Management

3.2 Energy Management
- Overview
- Multi Store Mgmt
- Metering architecture

3.3 Lighting Control
- Overview
- Room Automation
- Indoor Environment Control

3.4 Room Wiring & Control
- Overview (EMEA, APAC)
- Overview (North-America)
- Audio integration

3.5 HVAC Control

3.6 Emergency Lighting
- DALI (EUR)
- Nexus®Pro (NAM)
- Central Battery (UK, MEA)

3.7 EV Charging
- Overview
- Fleet charging

3.8 Drives & Motors
- Overview
- Sensors and Variable Speed Drives

Power Distribution
Overview

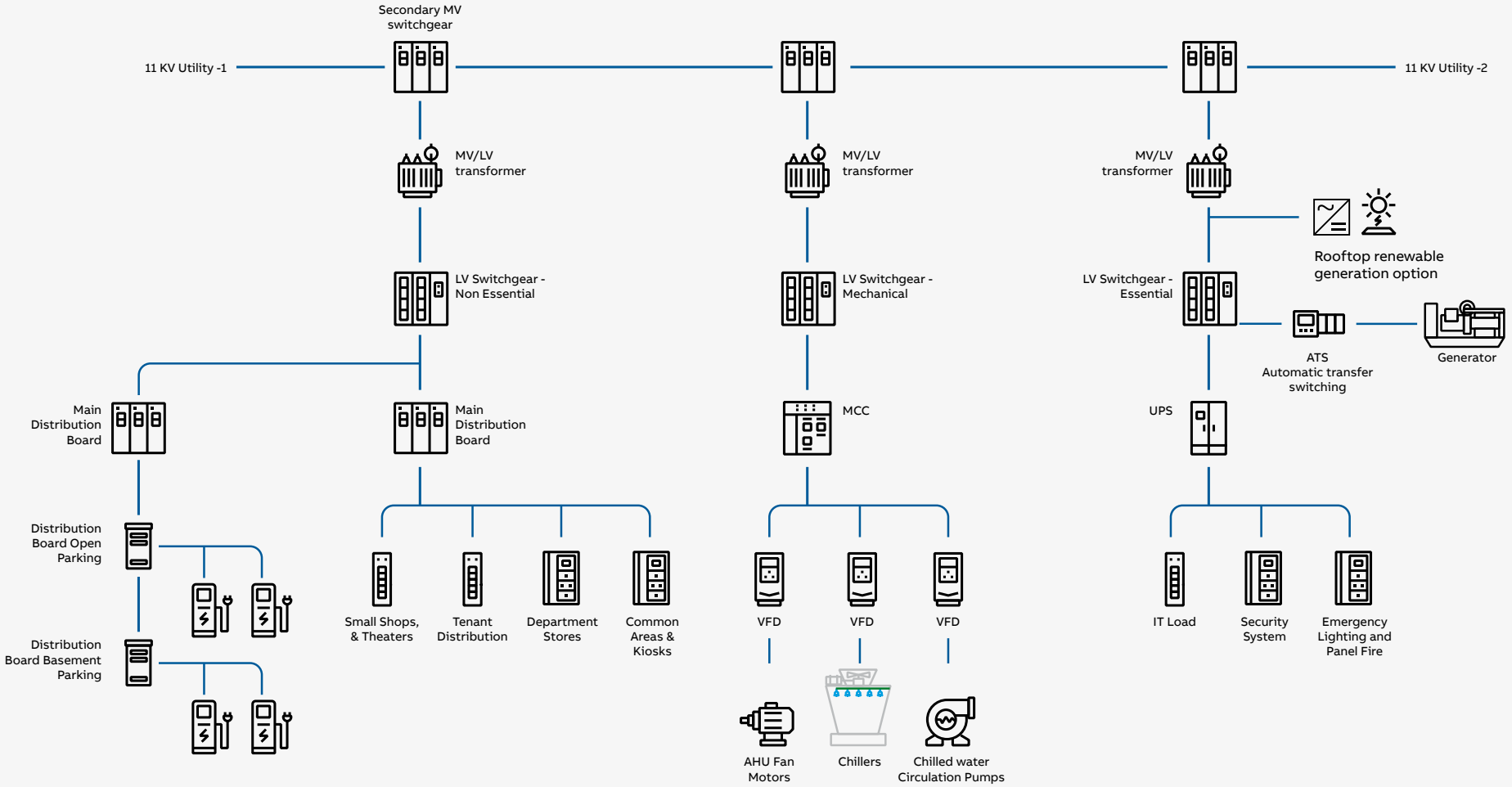
3

RETAIL & MALL

ARCHITECTURE

APPLICATION DETAILS

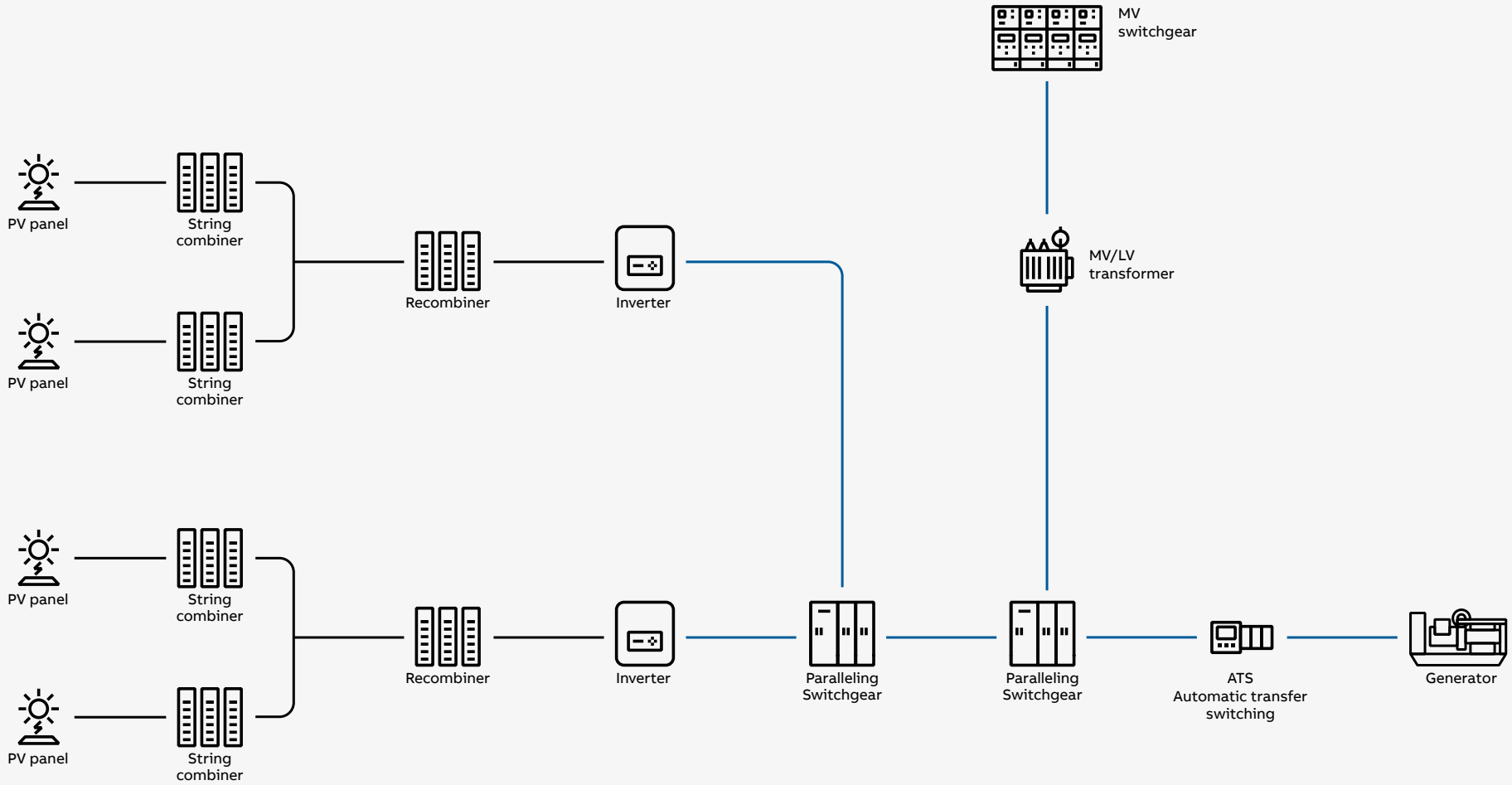
Reference Architecture



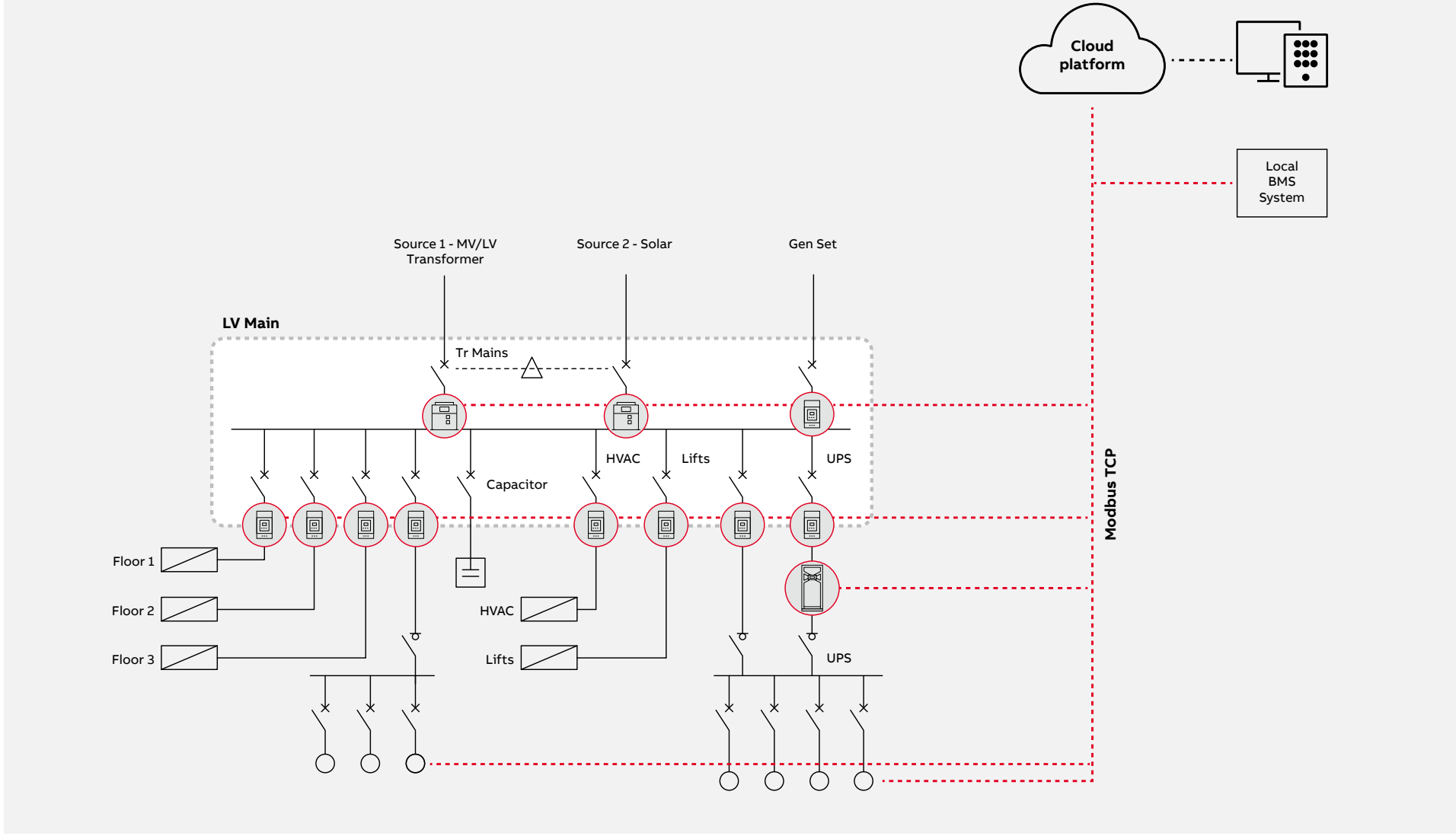
Power Distribution

MV Distribution with Renewables

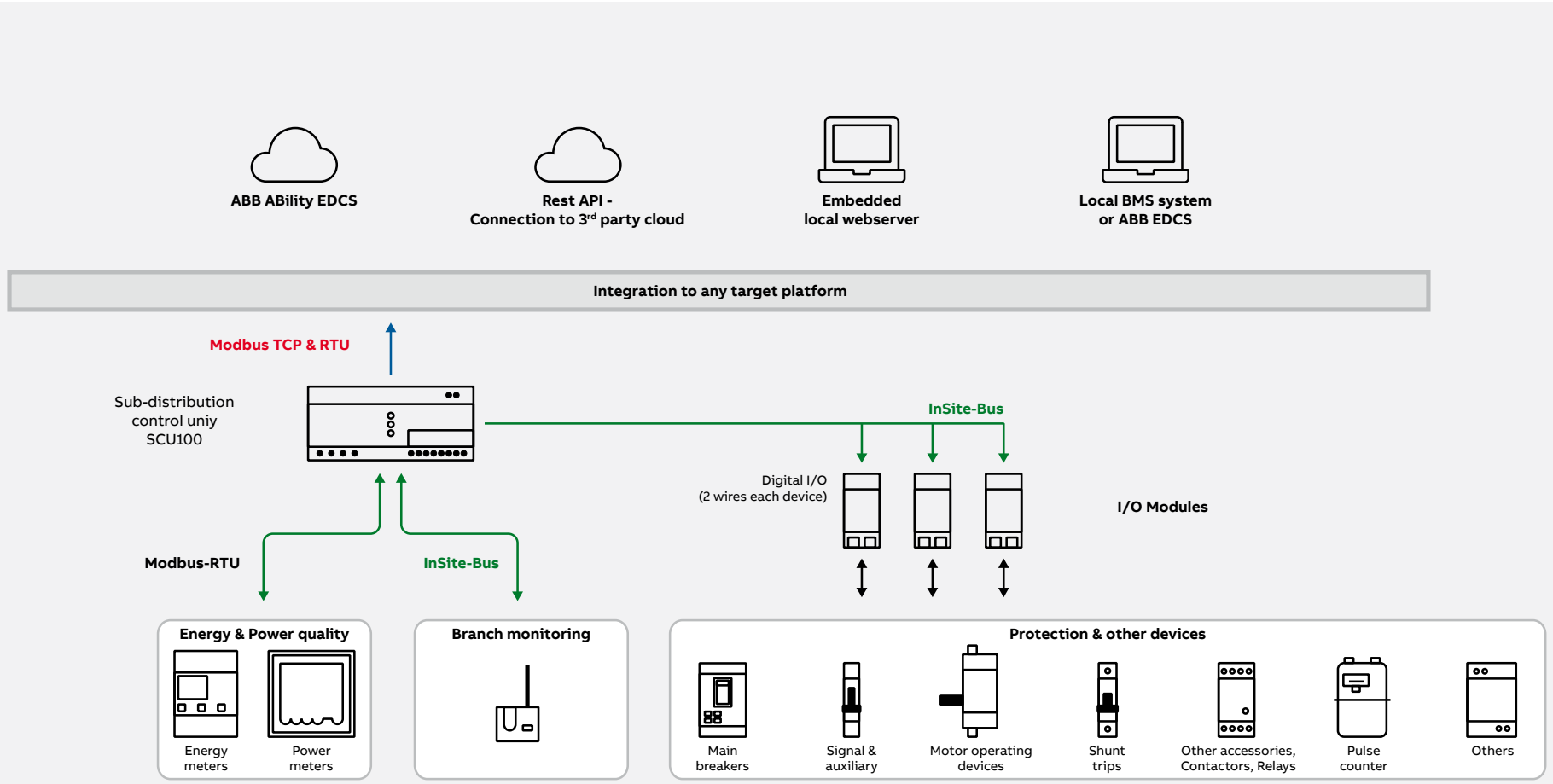
Reference Architecture with Renewables and ATS



Power Distribution
LV Main Distribution

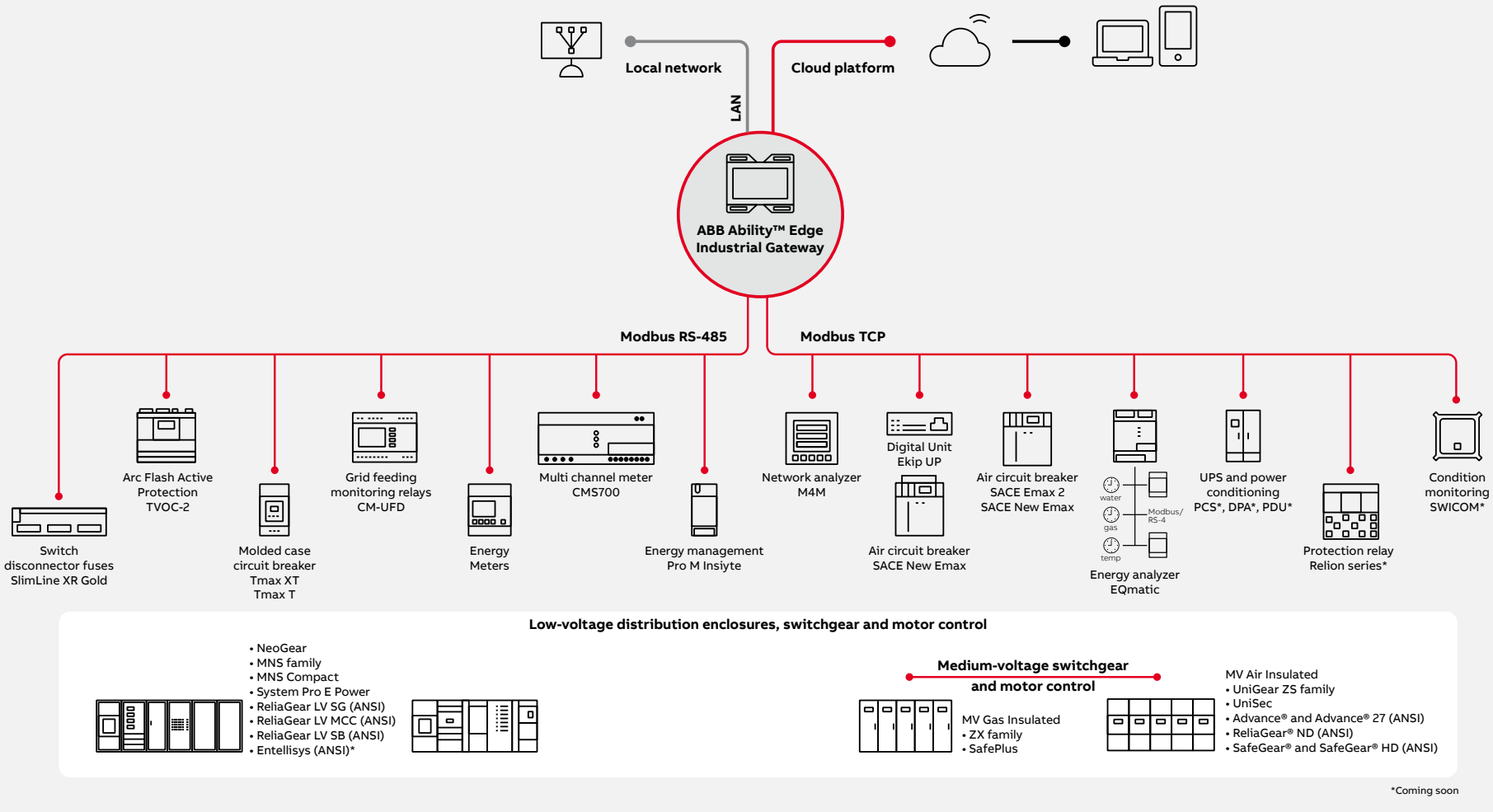


Power Distribution
Sub distribution



Power Distribution

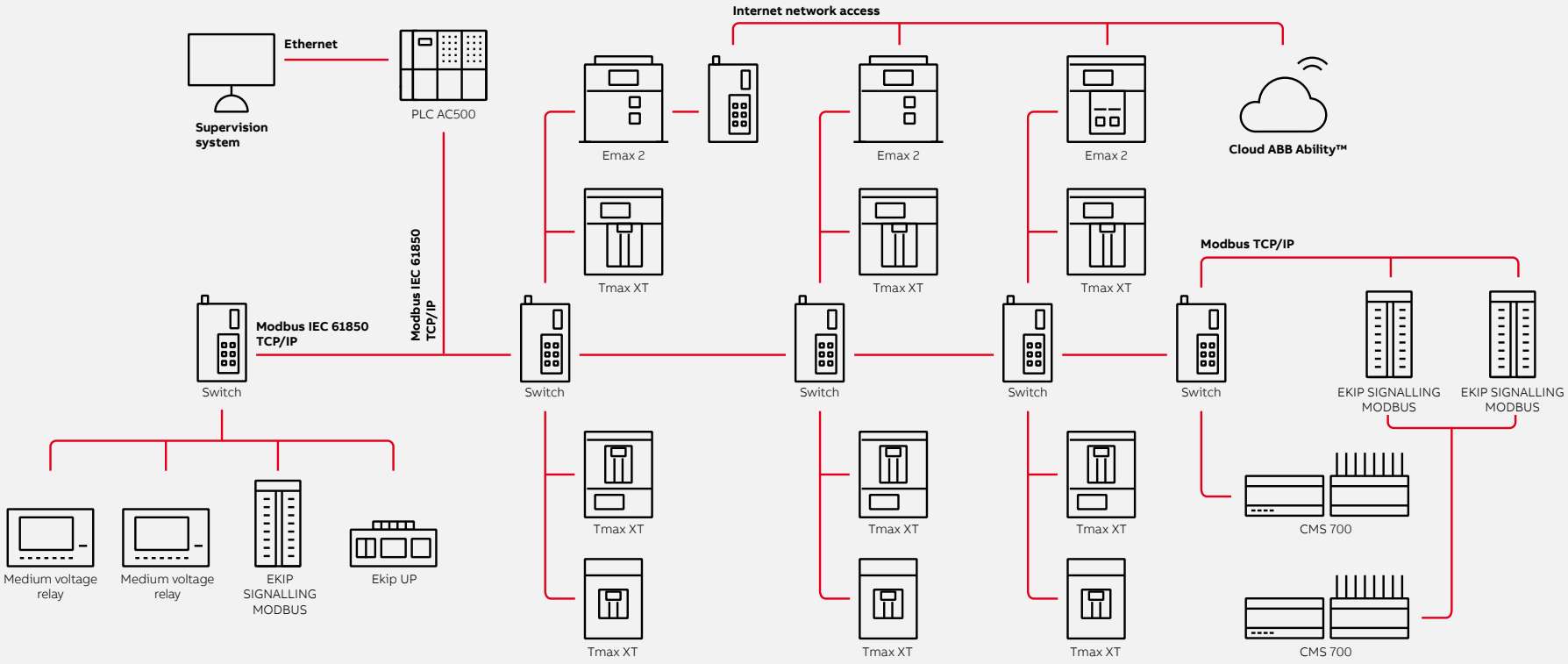
Edge Layer



Power Distribution
Power Management

3

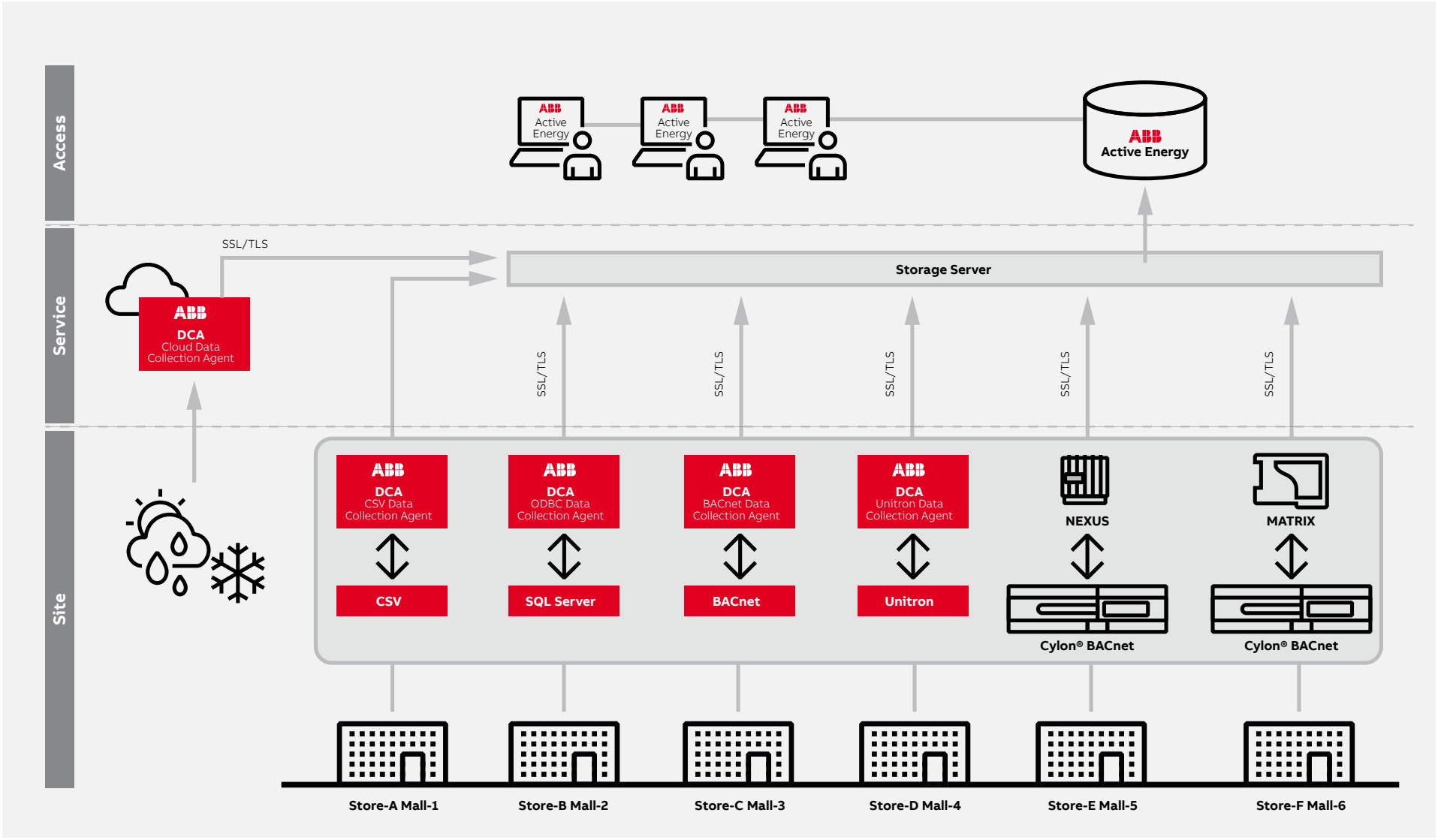
Scheme of the energy management system



Energy Management
Overview

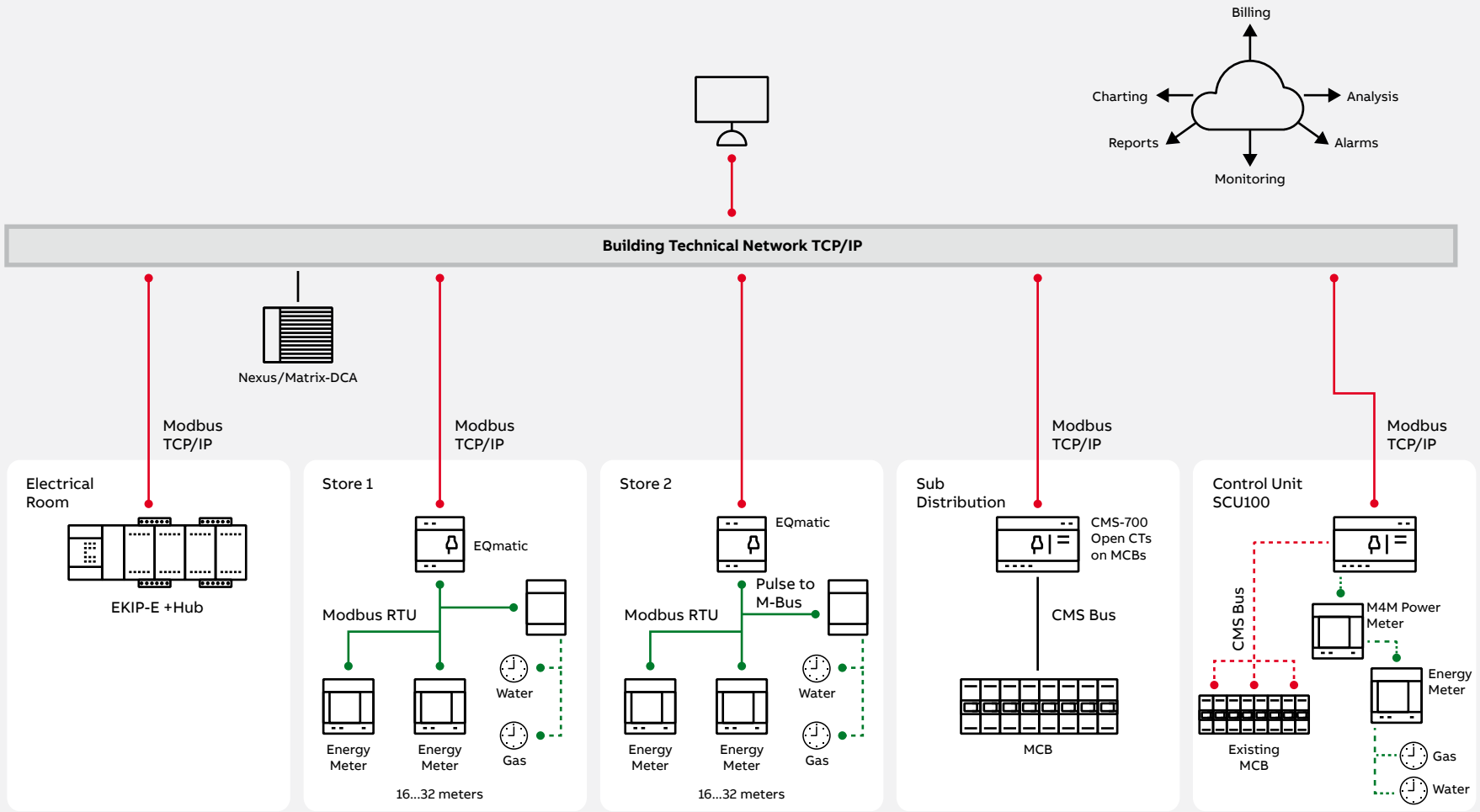
3

Active Energy Manager (for NAM)

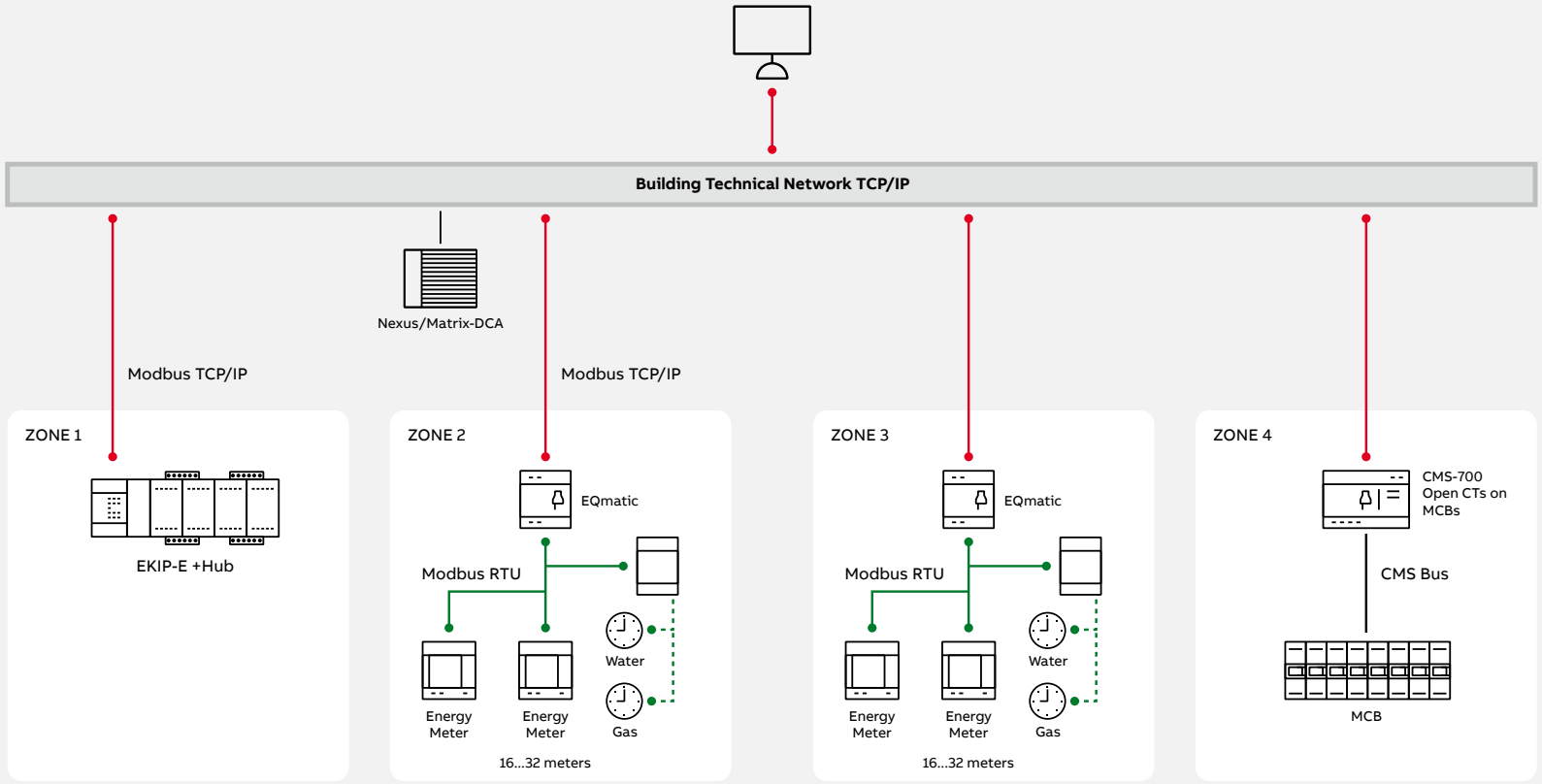


Energy Management
Multi Store Mgmt

Active Energy Manager (for NAM)

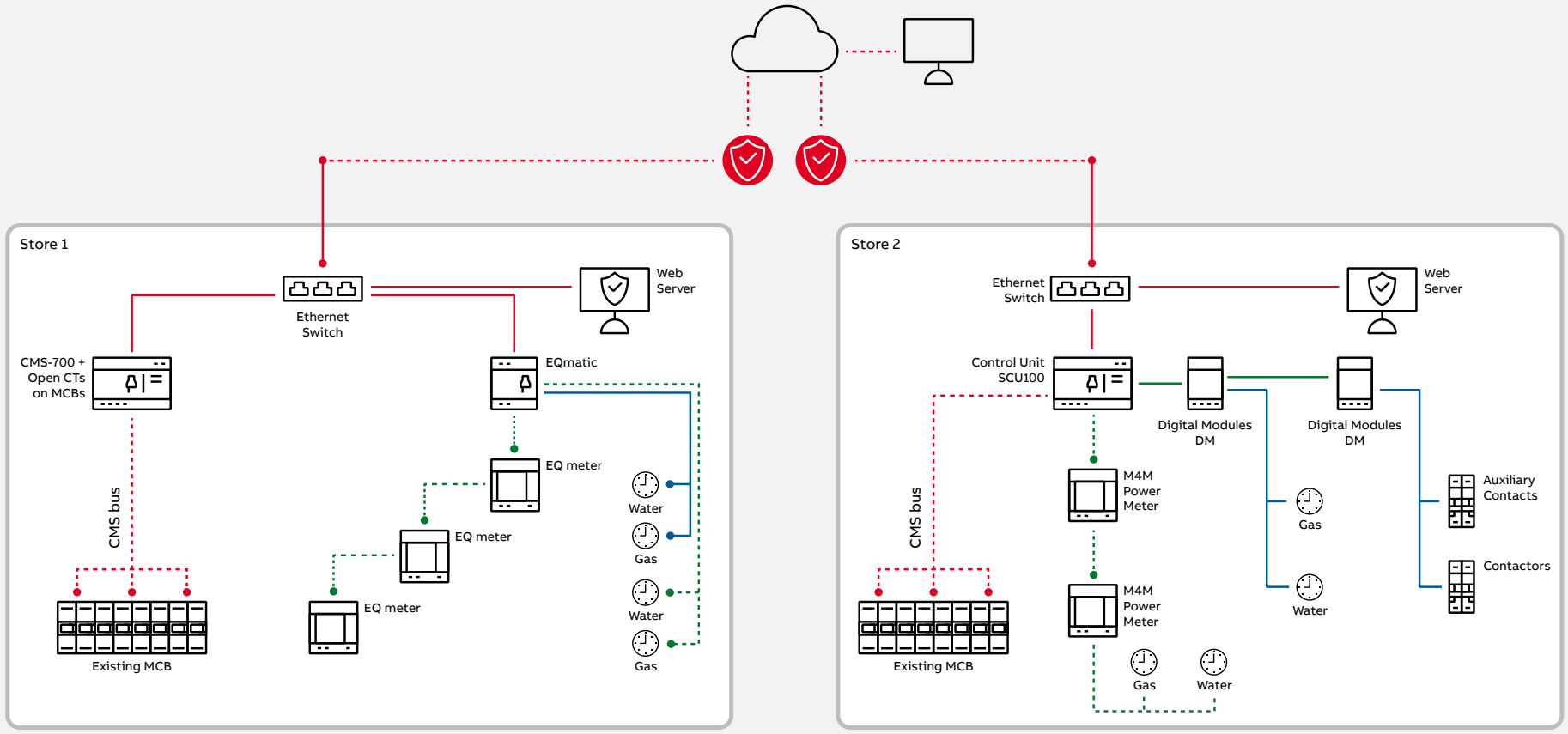


Energy Management
Metering architecture



Energy Management
Metering architecture

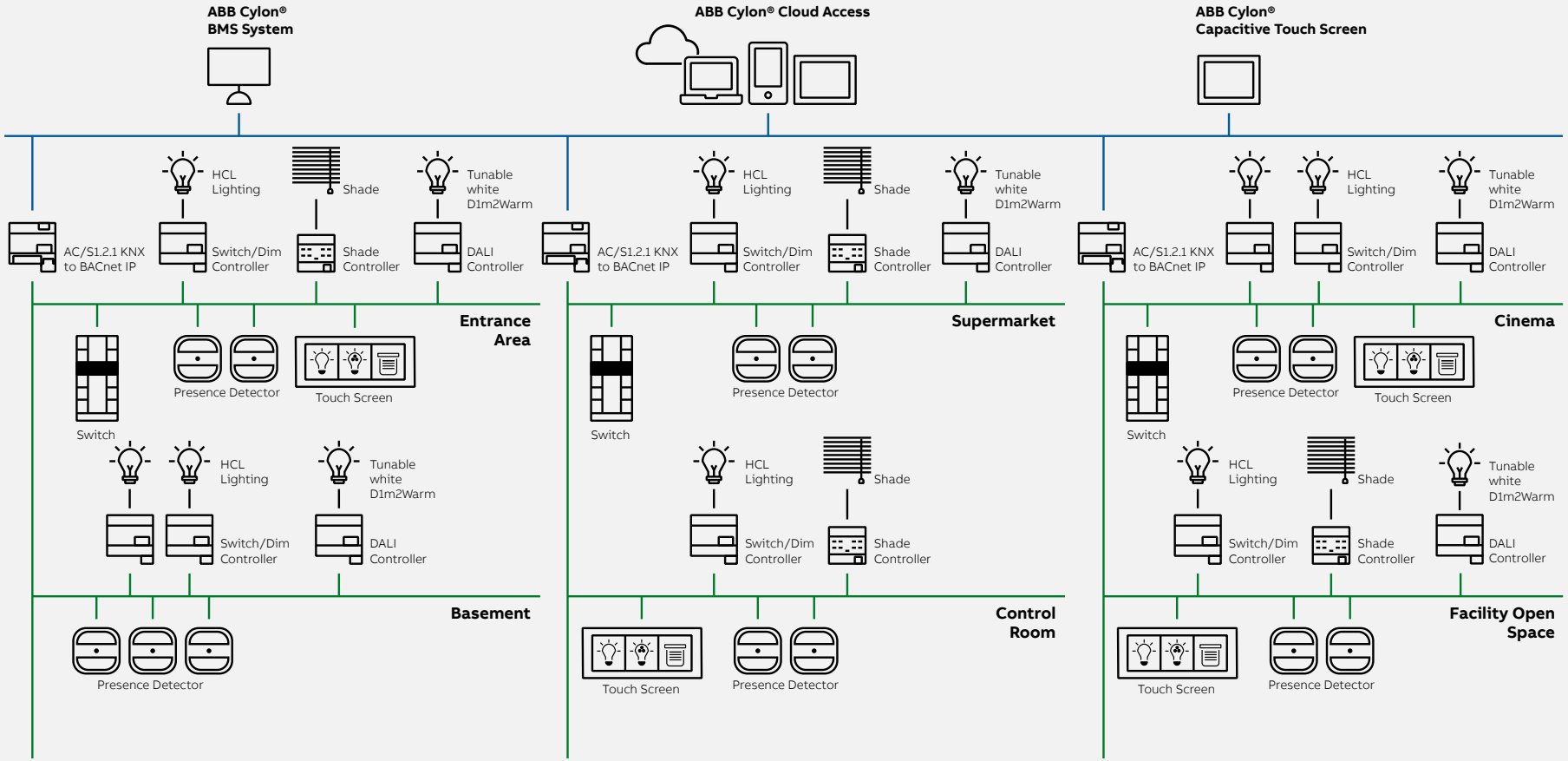
Metering architecture 2



3

Lighting Control
Overview

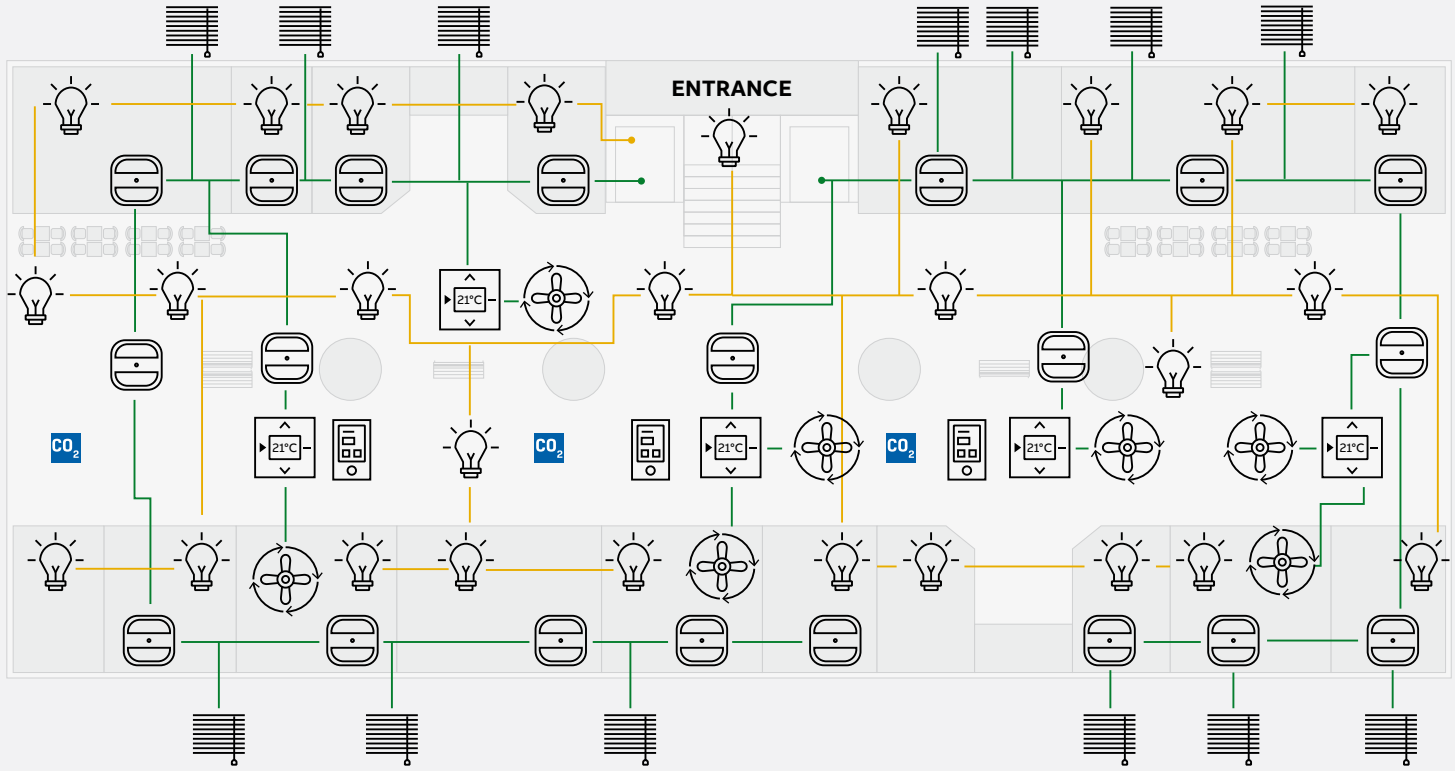
Reference Architecture



Lighting Control
Room Automation

3

Application example

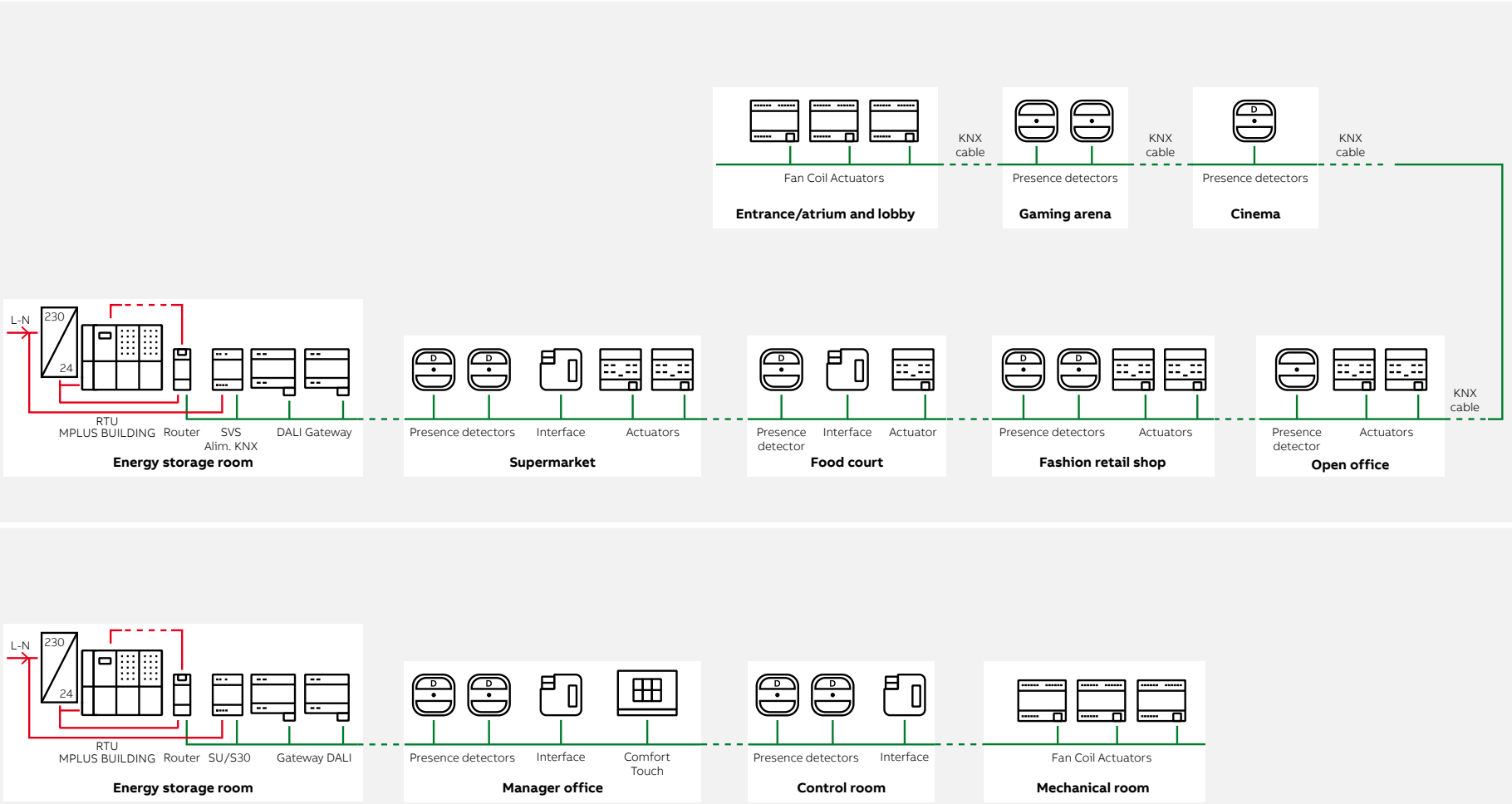


Curtains control
Presence and light sensors
Thermostats
Control via Smartphone/Panel
Fancoil control
Air quality
Lighting fixtures

Lighting Control
Indoor Environment Control

3

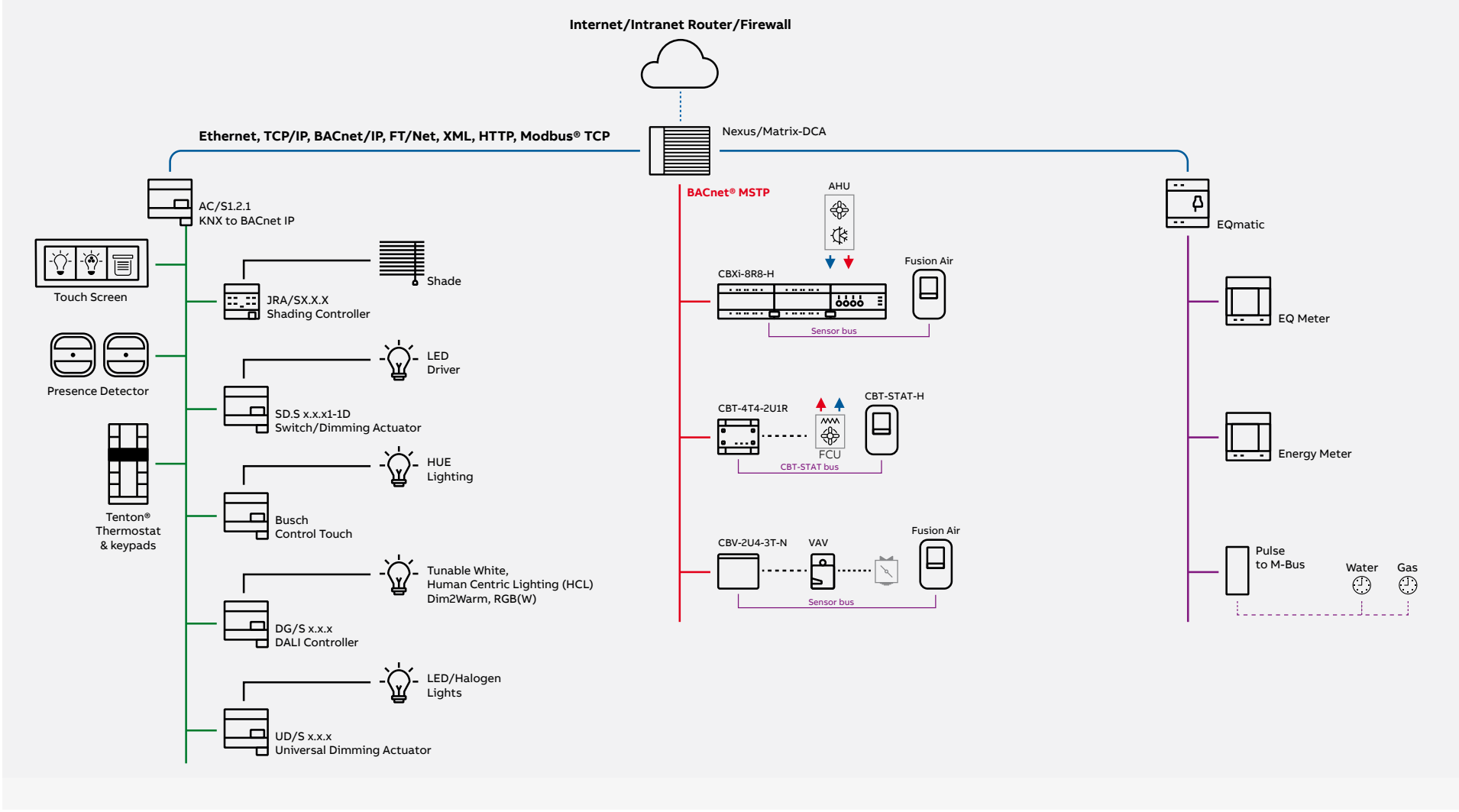
Control, automation and supervision of the enviroment



Room Wiring & Control
Overview (EMEA, APAC)

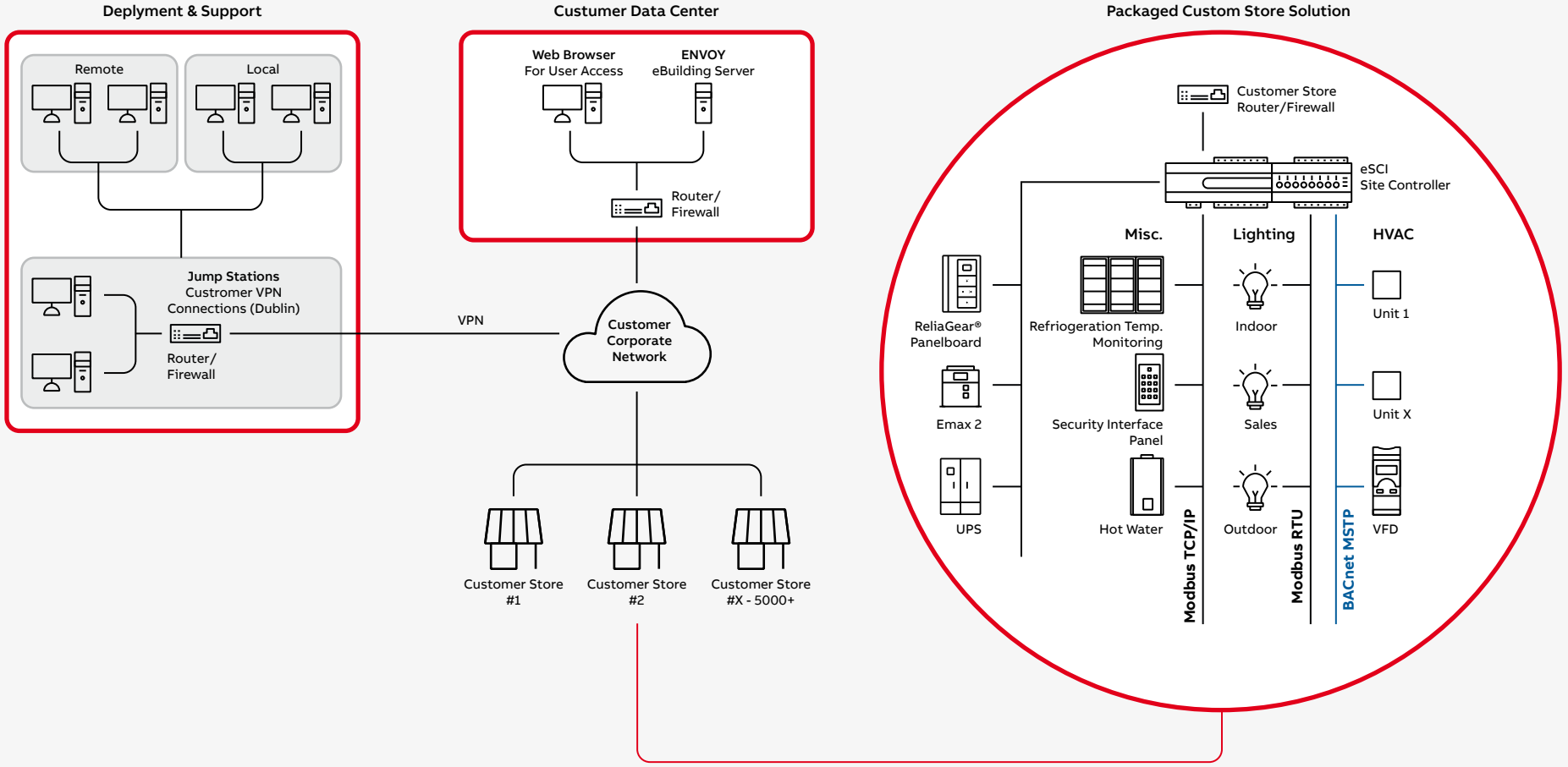
3

Architecture for Multistore and Shop – EU, MEA and Asia



Room Wiring & Control
Overview (North-America)

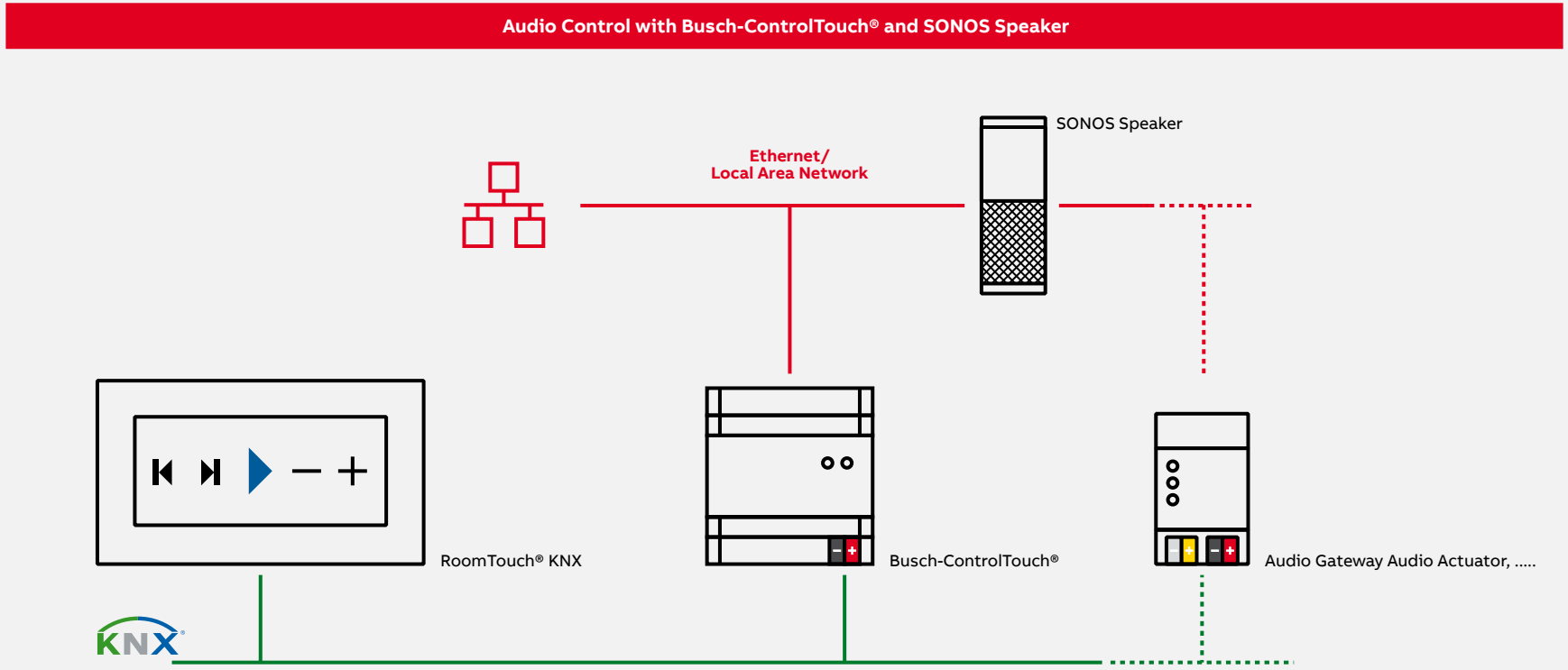
Architecture for Multistore and Shop – North America



Room Wiring & Control
Audio integration

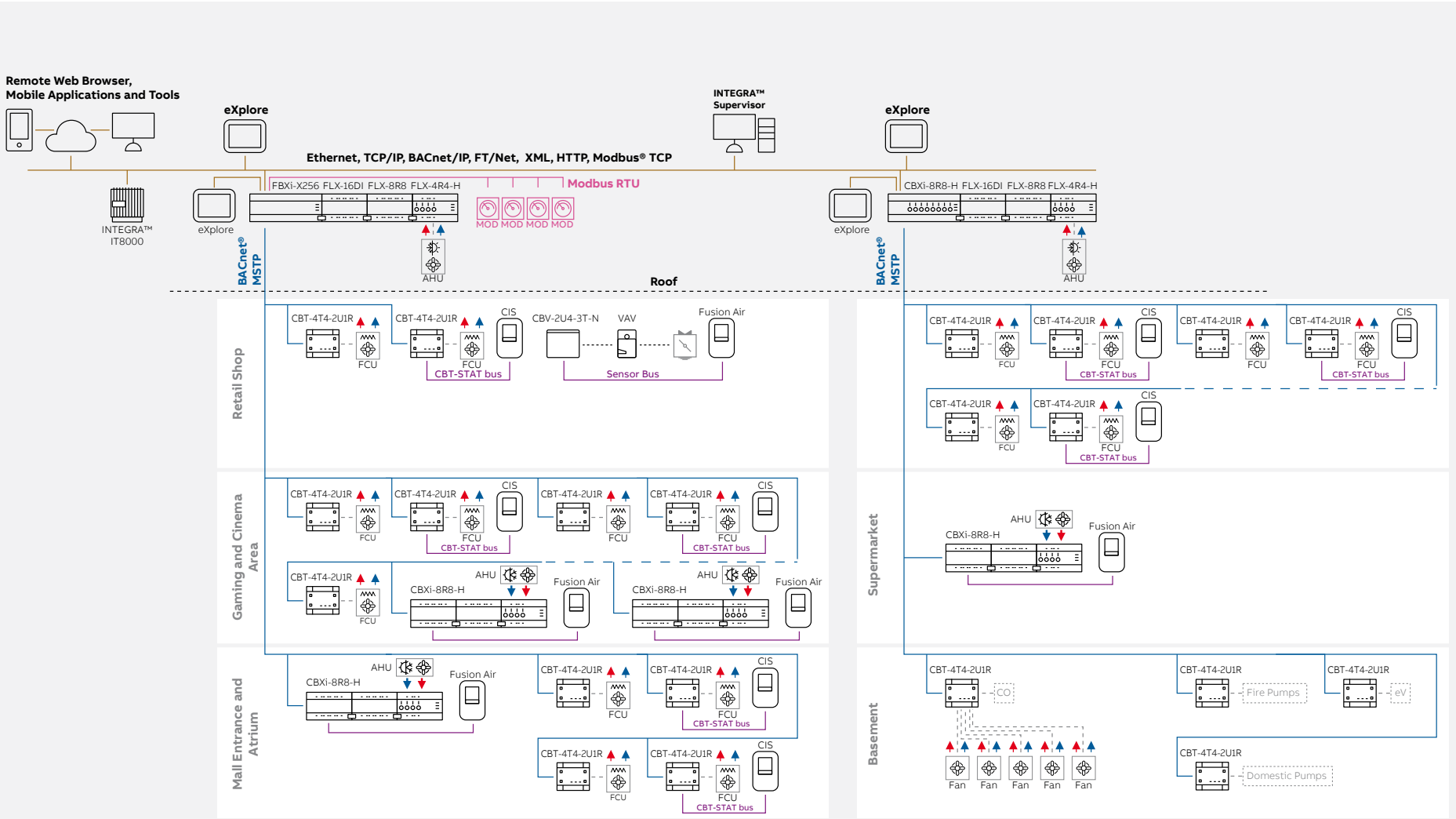
3

Audio Control with Busch-ControlTouch® and SONOS Speaker



HVAC Control

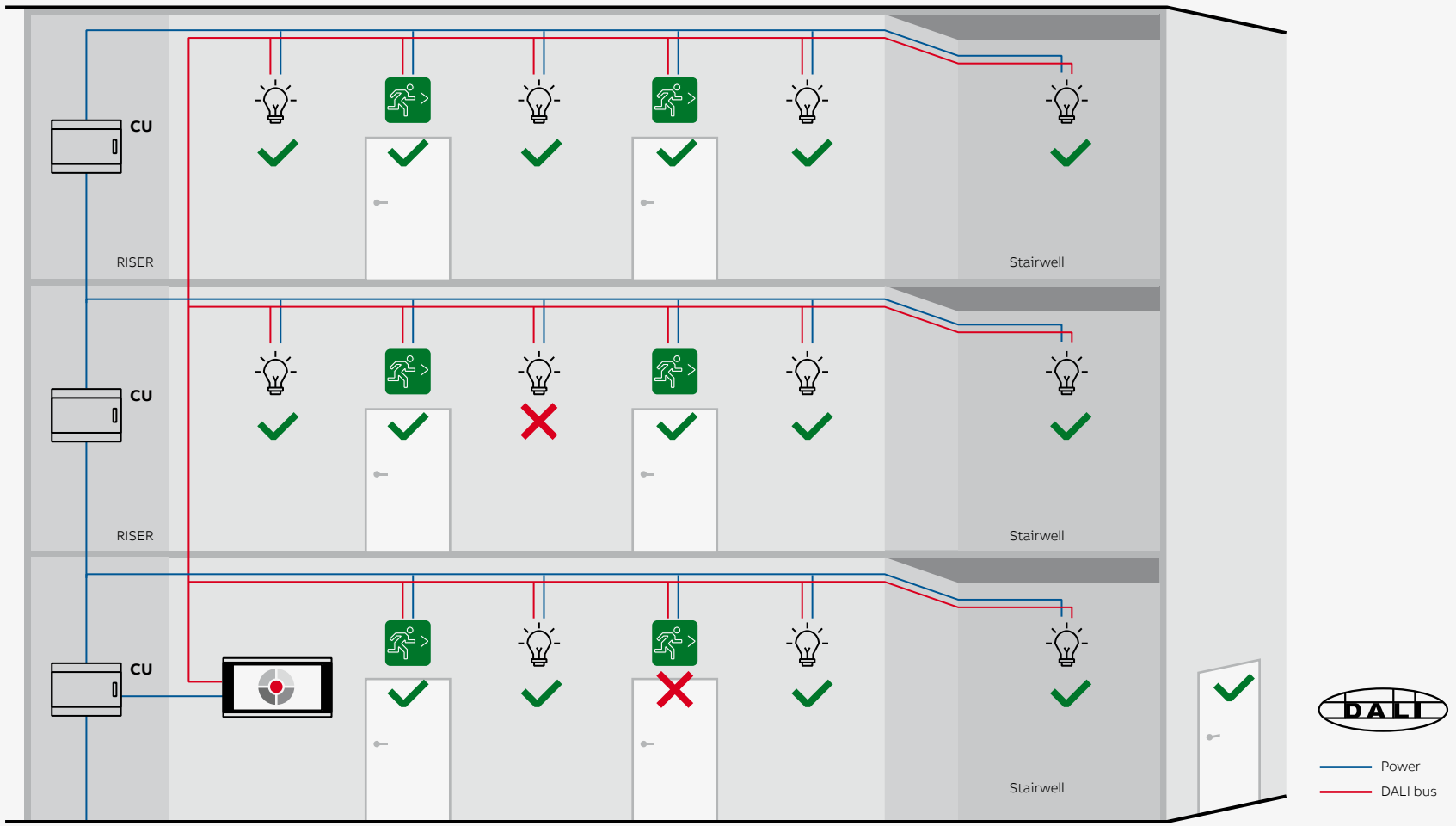
Reference Architecture



Emergency Lighting
DALI (EUR)

3

Reference Architecture



RETAIL & MALL

ARCHITECTURE

APPLICATION DETAILS

3.6 Emergency Lighting

DALI (EUR)

Nexus®Pro (NAM)

Central Battery (UK, MEA)

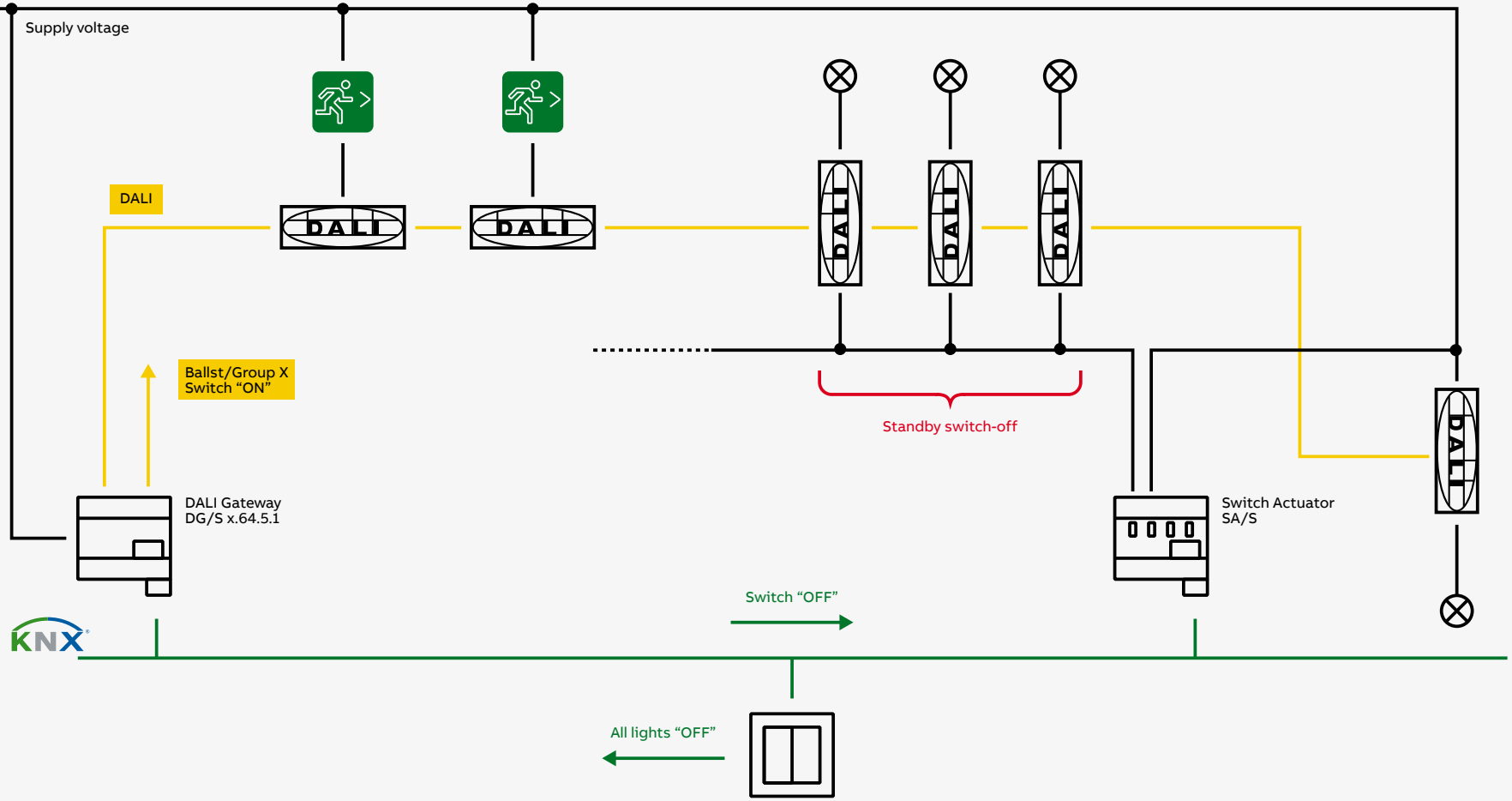
3.1 POWER DISTRIBUTION
3.2 ENERGY MANAGEMENT
3.3 LIGHTING CONTROL
3.4 ROOM WIRING & CONTROL
3.5 HVAC CONTROL
3.6 EMERGENCY LIGHTING
3.7 EV CHARGING
3.8 DRIVES & MOTORS

NEXT

Emergency Lighting
DALI (EUR)

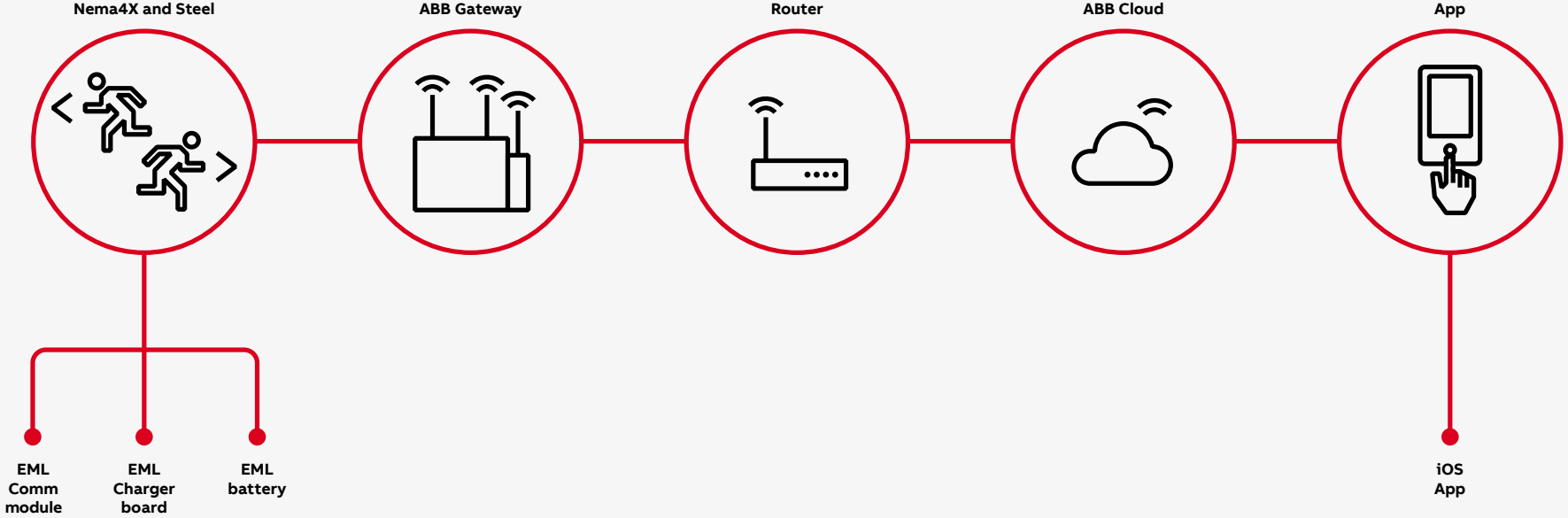
3

Reference Architecture



Emergency Lighting
Nexus®Pro (NAM)

Reference Architecture



3

RETAIL & MALL

ARCHITECTURE

APPLICATION DETAILS

3.6 Emergency Lighting

DALI (EUR)

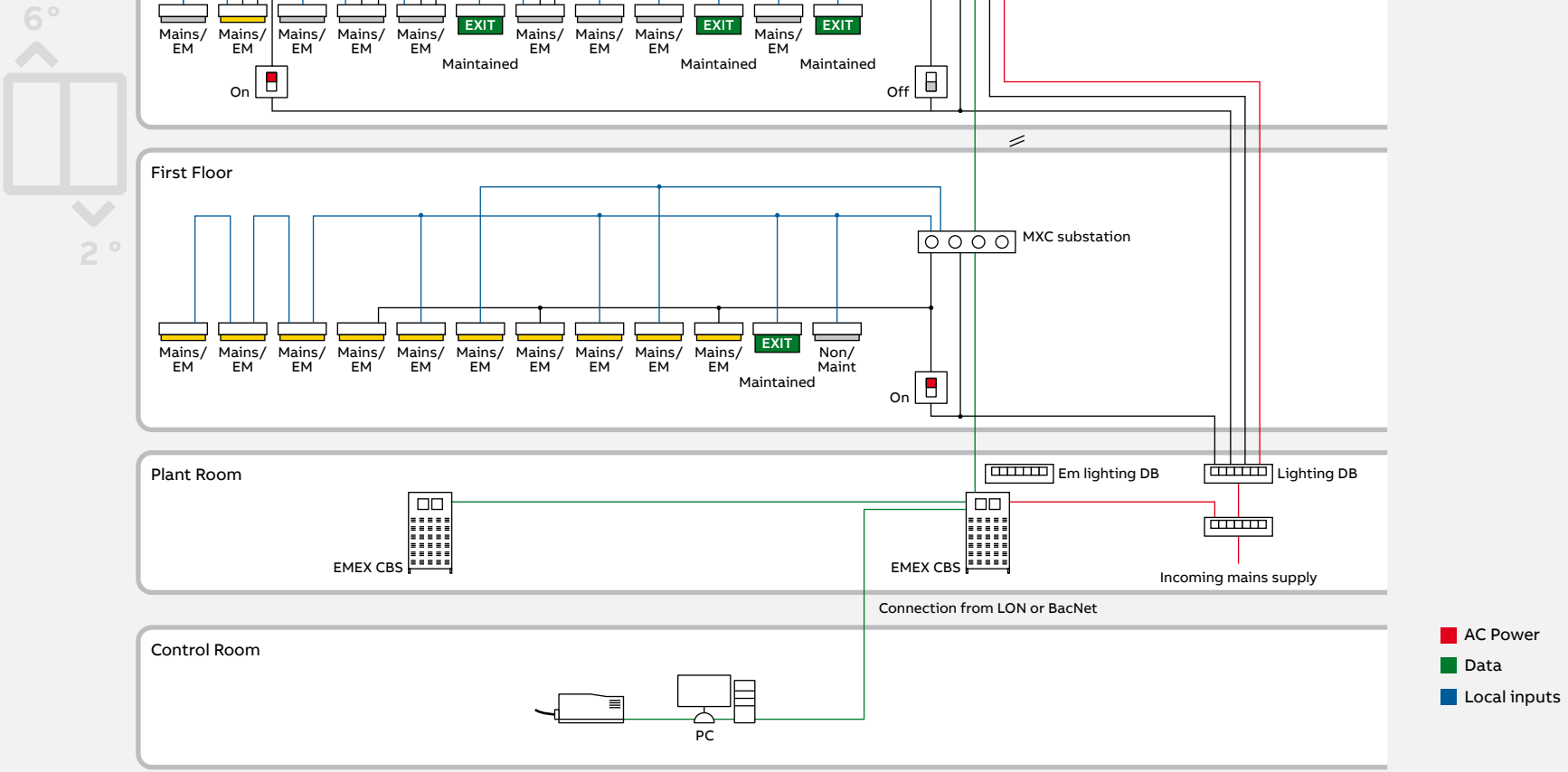
Nexus®Pro (NAM)

Central Battery (UK, MEA)

3.1 POWER DISTRIBUTION
3.2 ENERGY MANAGEMENT
3.3 LIGHTING CONTROL
3.4 ROOM WIRING & CONTROL
3.5 HVAC CONTROL
3.6 EMERGENCY LIGHTING
3.7 EV CHARGING
3.8 DRIVES & MOTORS

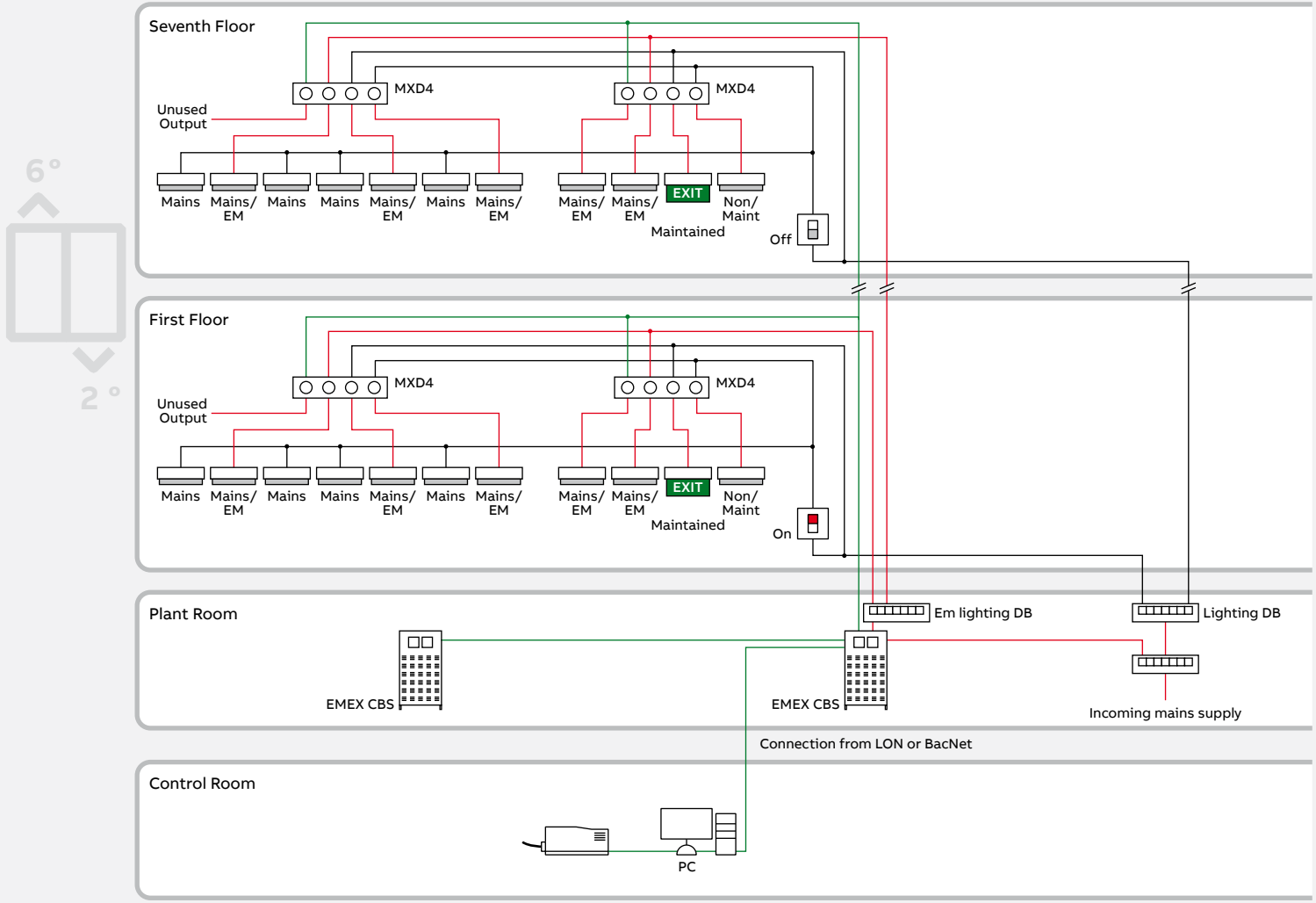
Emergency Lighting
Central Battery (UK, MEA)

Layout schematic - MXD4 substations



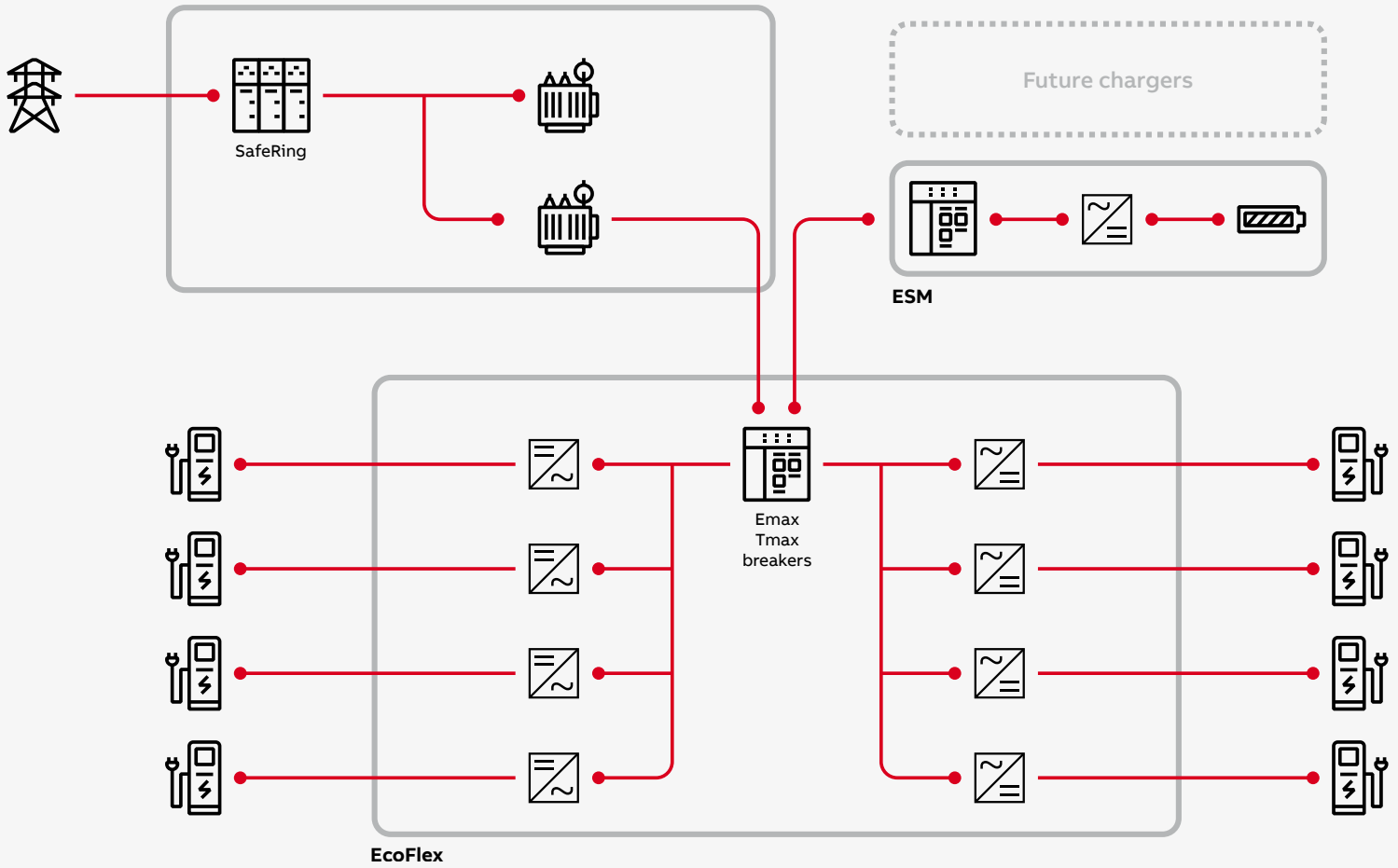
Emergency Lighting
Central Battery (UK, MEA)

Layout schematic - MXC substations



EV Charging
Overview

Fleet Charging Ecoflex



EV Charging
Fleet charging

3

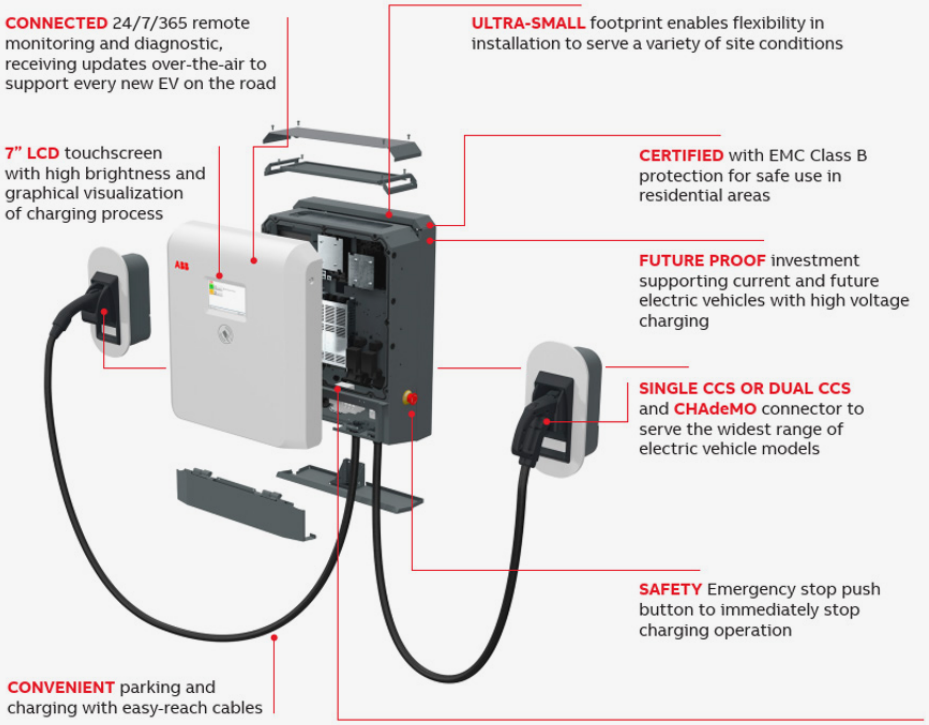
Destination DC offers a faster charging level than what AC chargers can typically achieve, but has a lower power, footprint, installation and investment cost than higher power DC fast charging systems often seen around metro regions and across highways.

Destination DC chargers usually offer 20-24kW in power rating, which falls efficiently between the typical 7-11kW charging power delivered by an AC charger yet below the 50kW to 350kW provided by public DC fast charging stations.

Terra DC wallbox is a futureproof investment supporting current and future EVs with high voltage charging, applicable to a wide variety of use cases, in an ultra-compact footprint, that is safe and reliable.

Main benefit

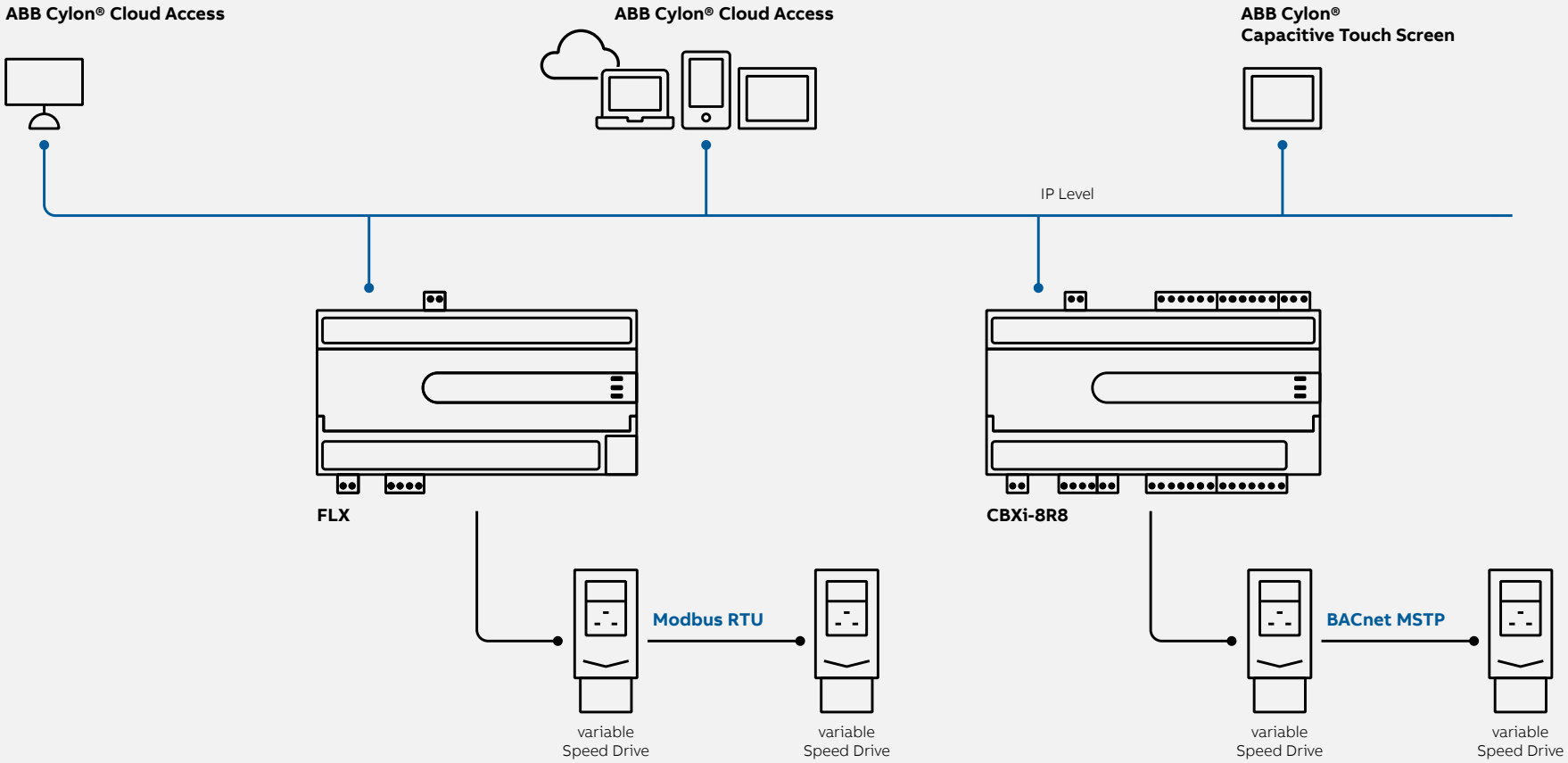
- Futureproof investment supporting current and future EVs with high voltage charging
- Space-savings with easy-to-install design
- Broad range of connectivity options
- Remote software updates



Drives & Motors
Overview

3

Reference Architecture

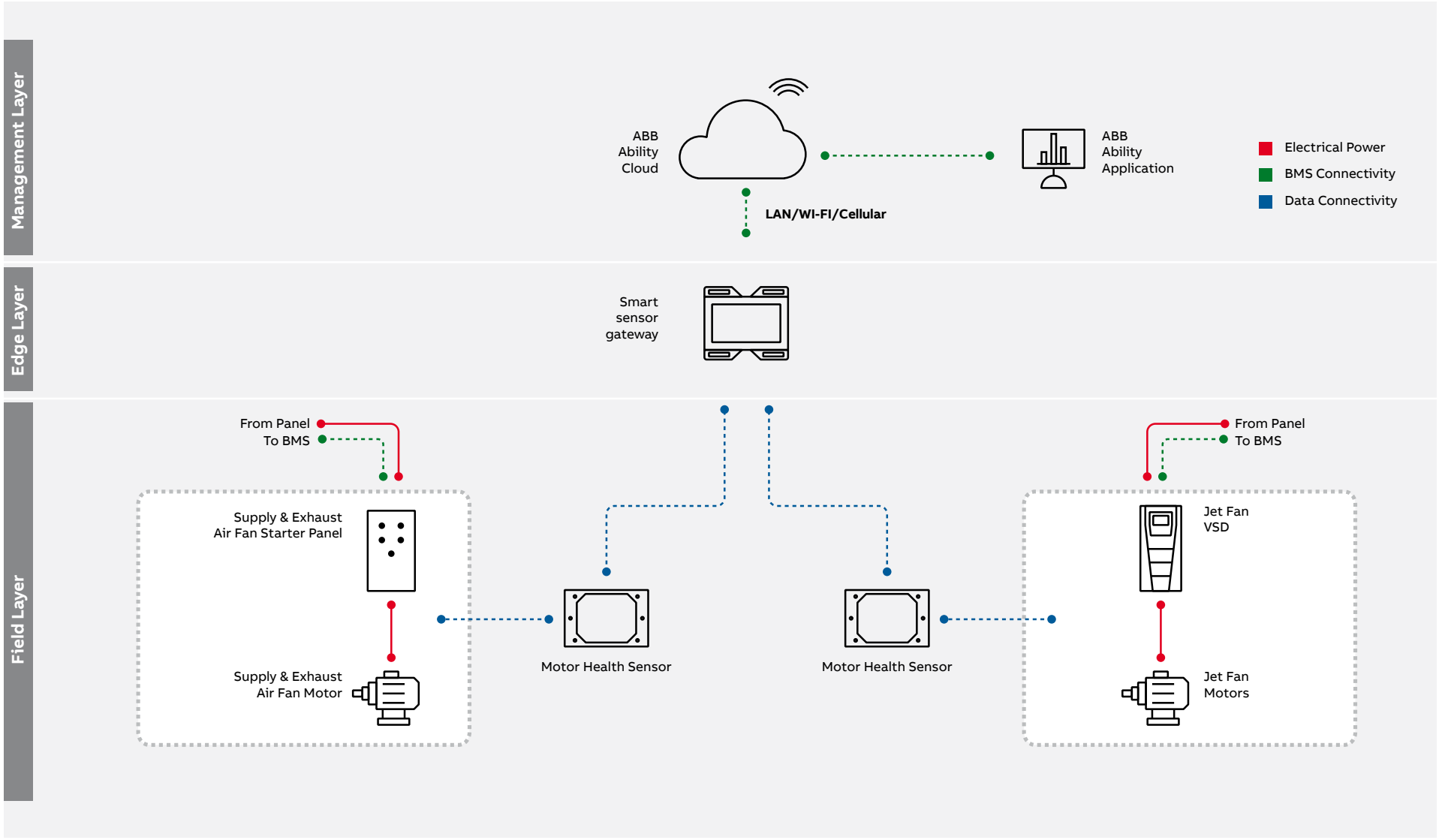


Drives & Motors

Sensors and Variable Speed Drives

3

Reference Architecture with Smart Sensors and VFD

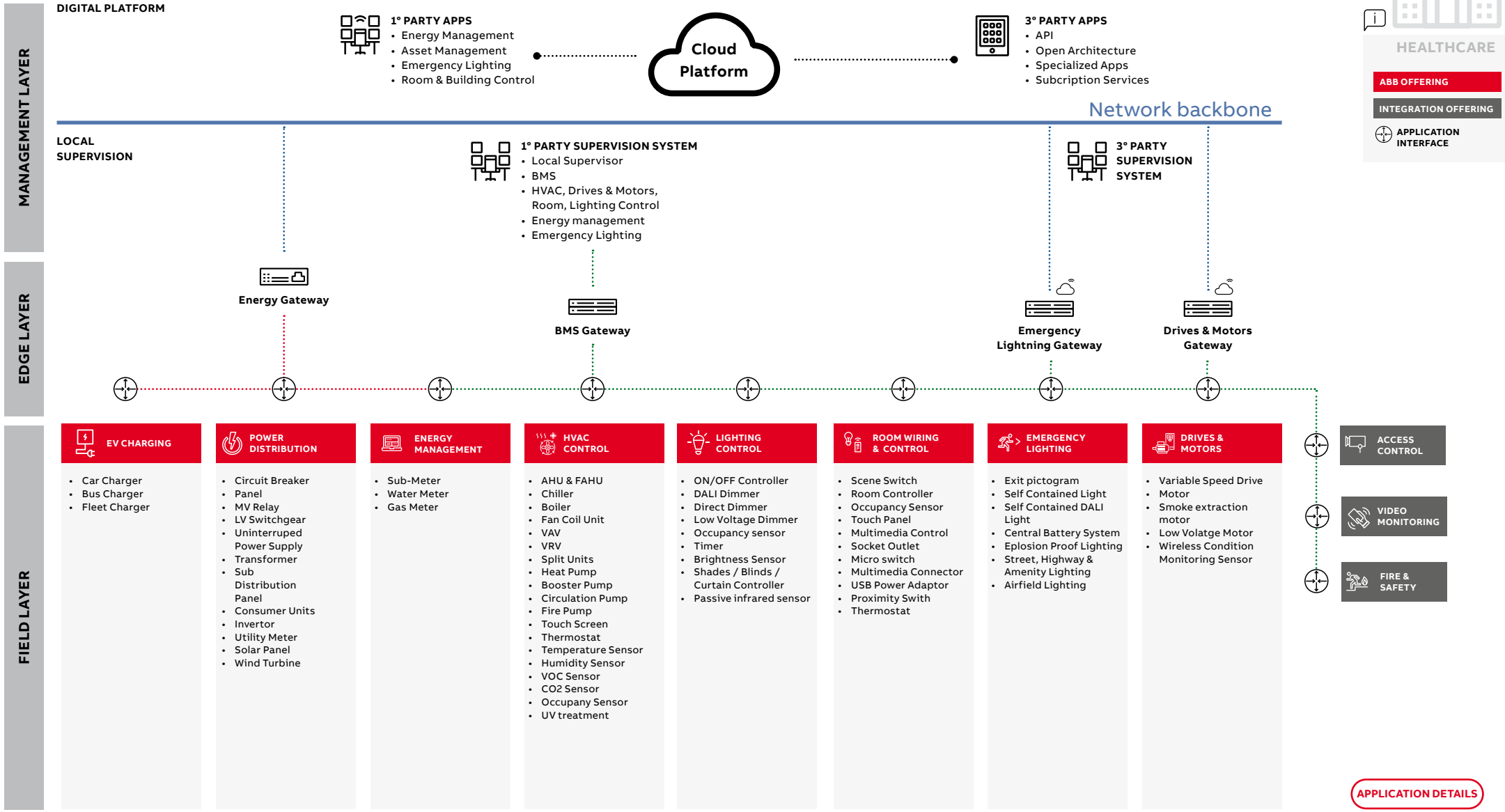


4

Healthcare

ENTER

Reference Architecture
Healthcare buildings



APPLICATION DETAILS

Healthcare Reference Architecture
Application details

4

4.1 Power Distribution
- Overview
- Main Distribution Board
- Sub Distribution Panel
- ITM Switchboard
- Uninterrupted Power Supply
- Edge Layer

4.2 Energy Management
- Overview
- Metering architecture

4.3 Lighting Control
- Overview
- Room Automation
- Indoor Environment Control

4.4 Room Wiring & Control
- Overview
- General Ward
- Premium Ward

4.5 HVAC Control

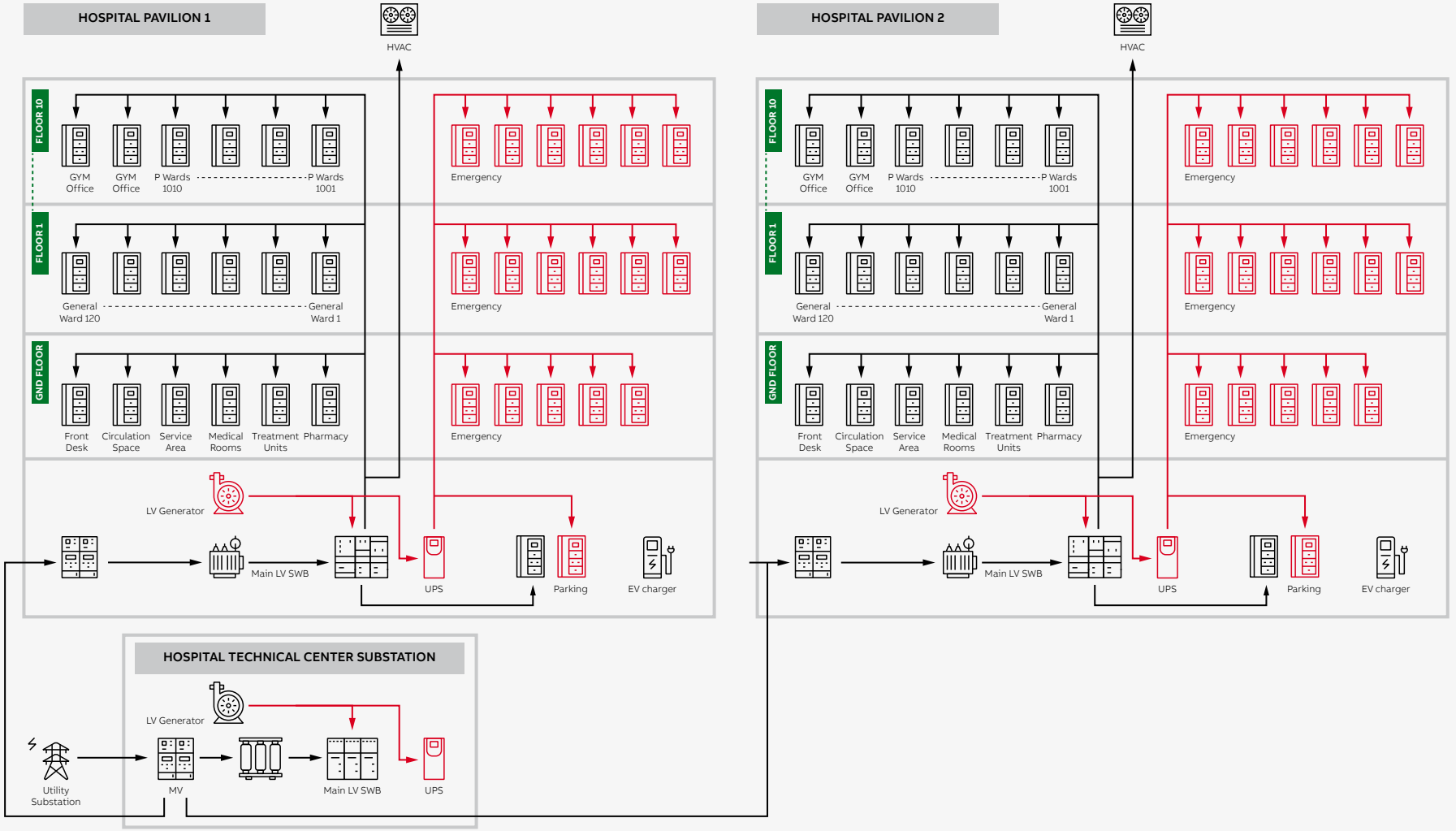
4.6 Emergency Lighting
- DALI (EUR)
- Nexus®Pro (NAM)
- Central Battery (UK, MEA)

4.7 EV Charging
- Fleet charging
- Car charging

4.8 Drives & Motors

Power Distribution
Overview

Healthcare Center



4

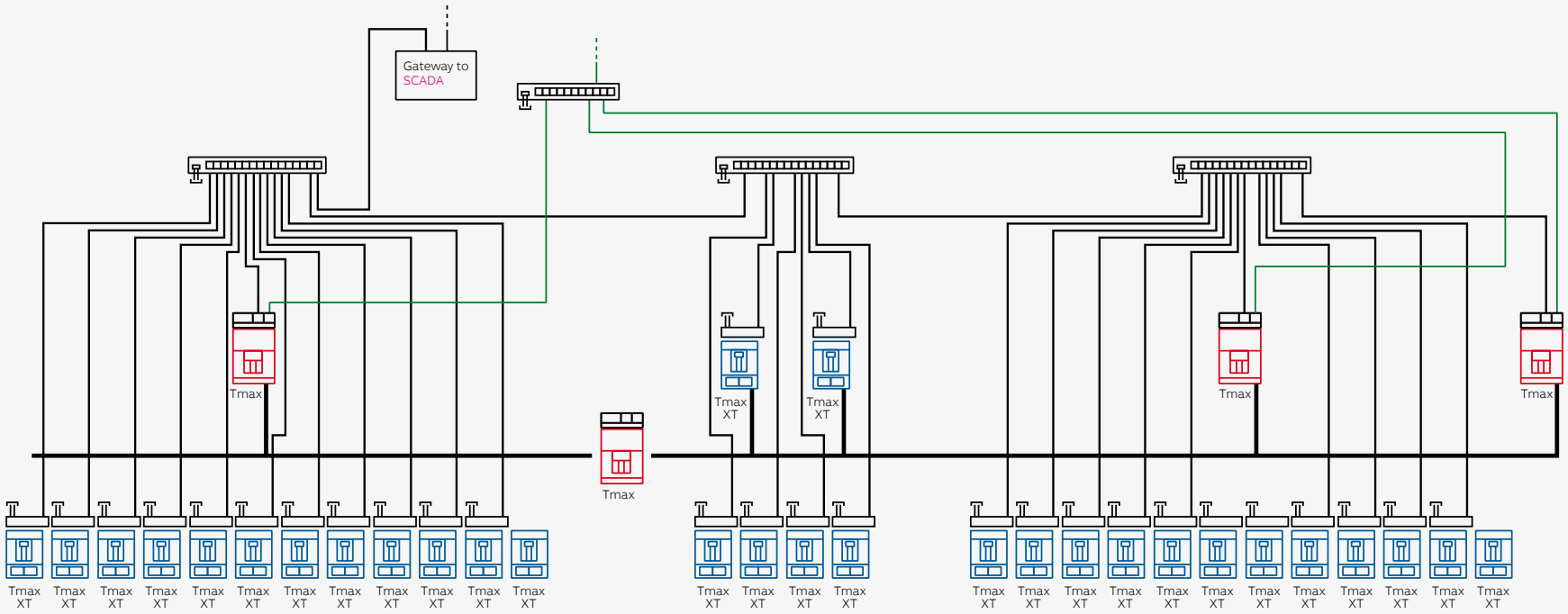
HEALTHCARE

ARCHITECTURE

APPLICATION DETAILS

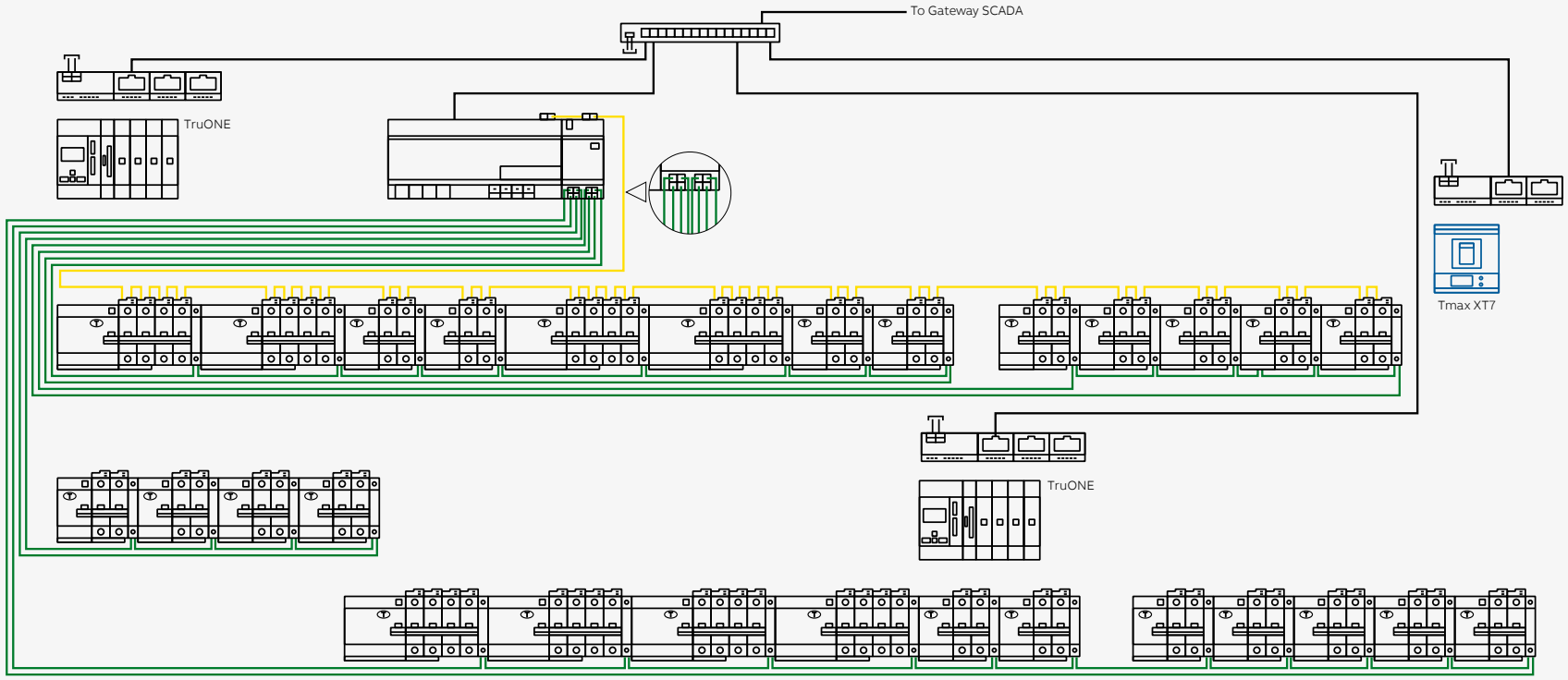
Power Distribution
Main Distribution Board

LV Switch Gear



4 HEALTHCARE

Power Distribution
Sub distribution Panel



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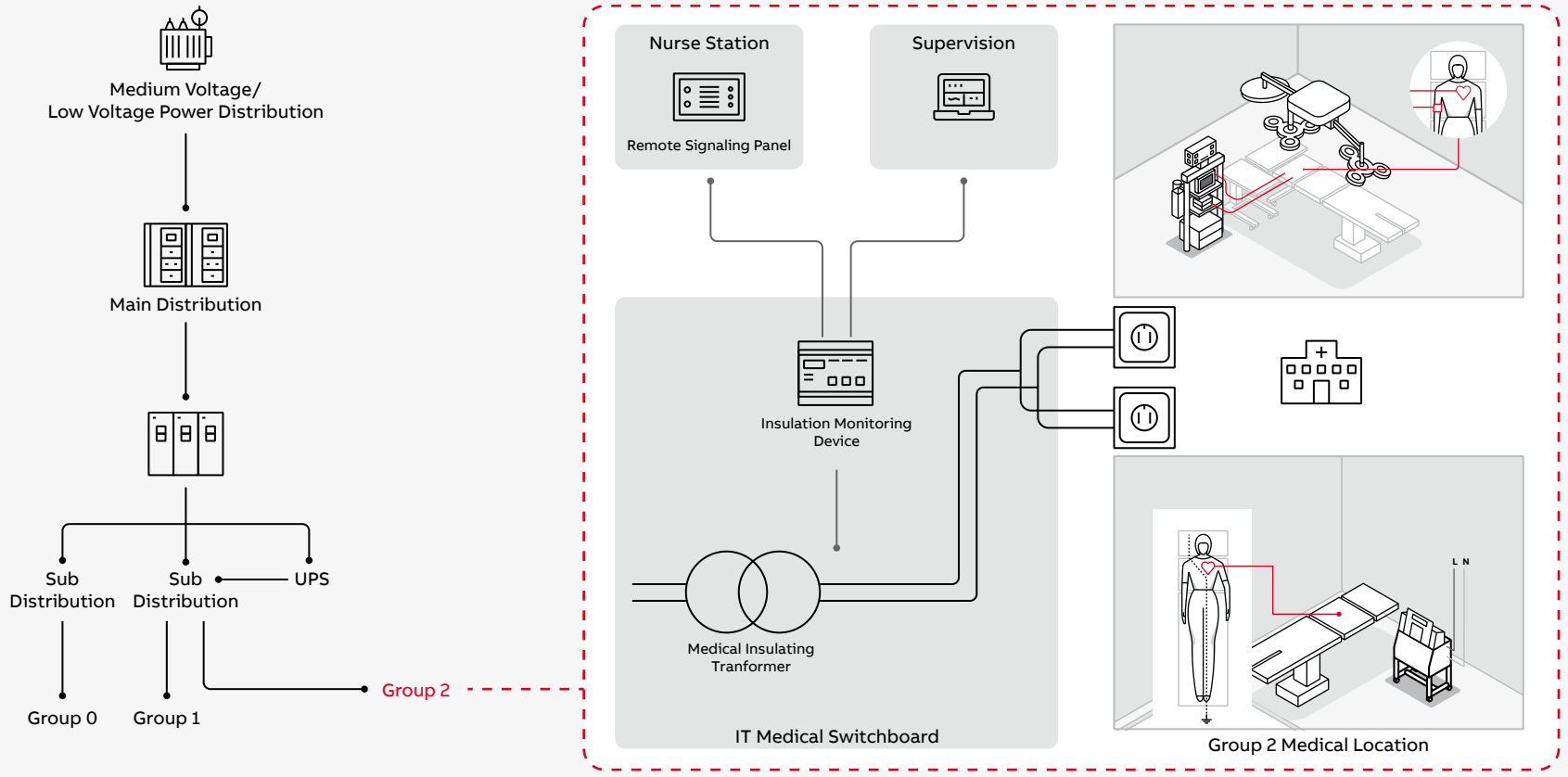
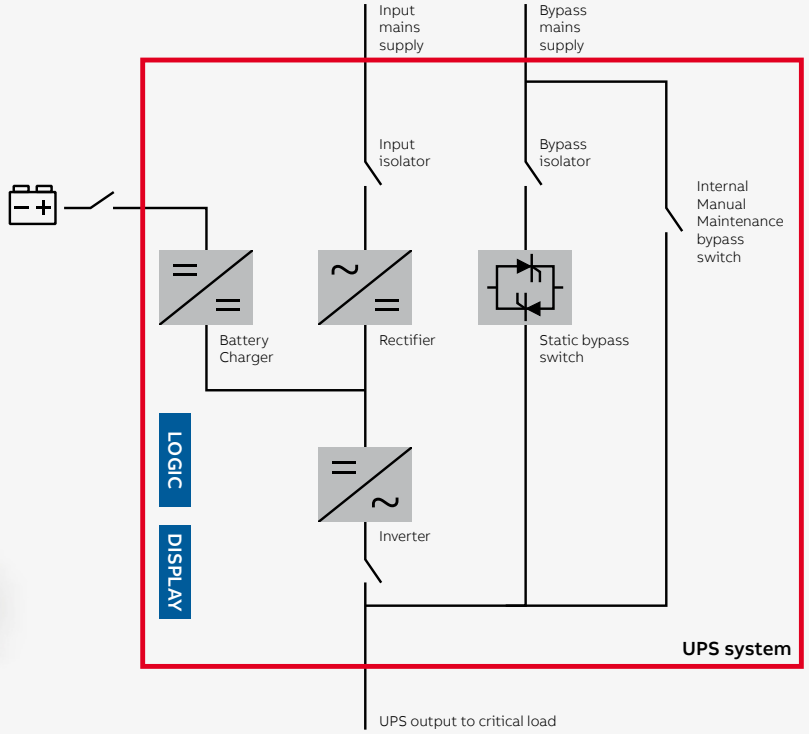
Power Distribution
ITM Switchboard



Power Distribution
Uninterrupted Power Supply



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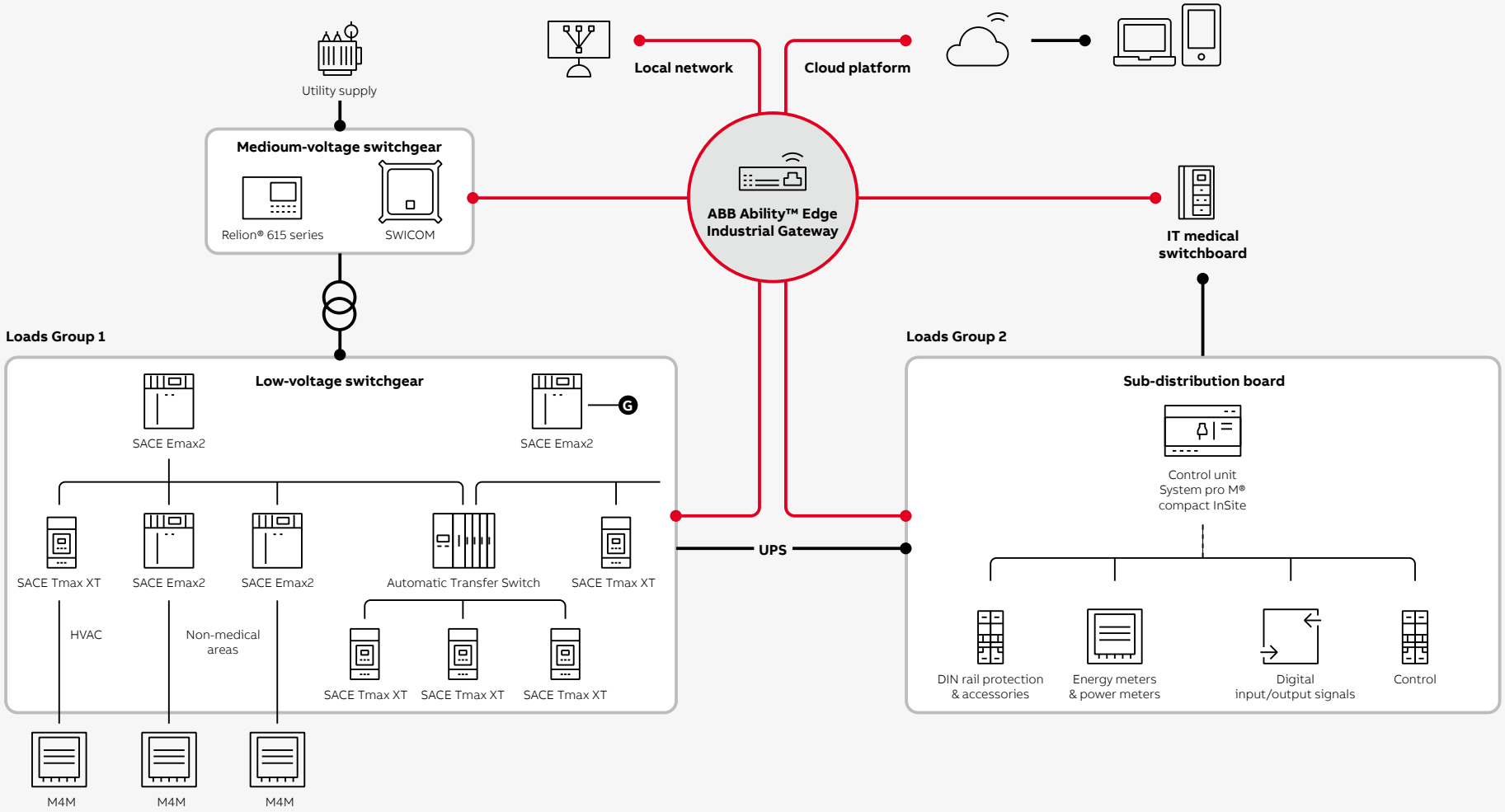
Power Distribution
Edge Layer

Industrial Edge Gateway



4

HEALTHCARE

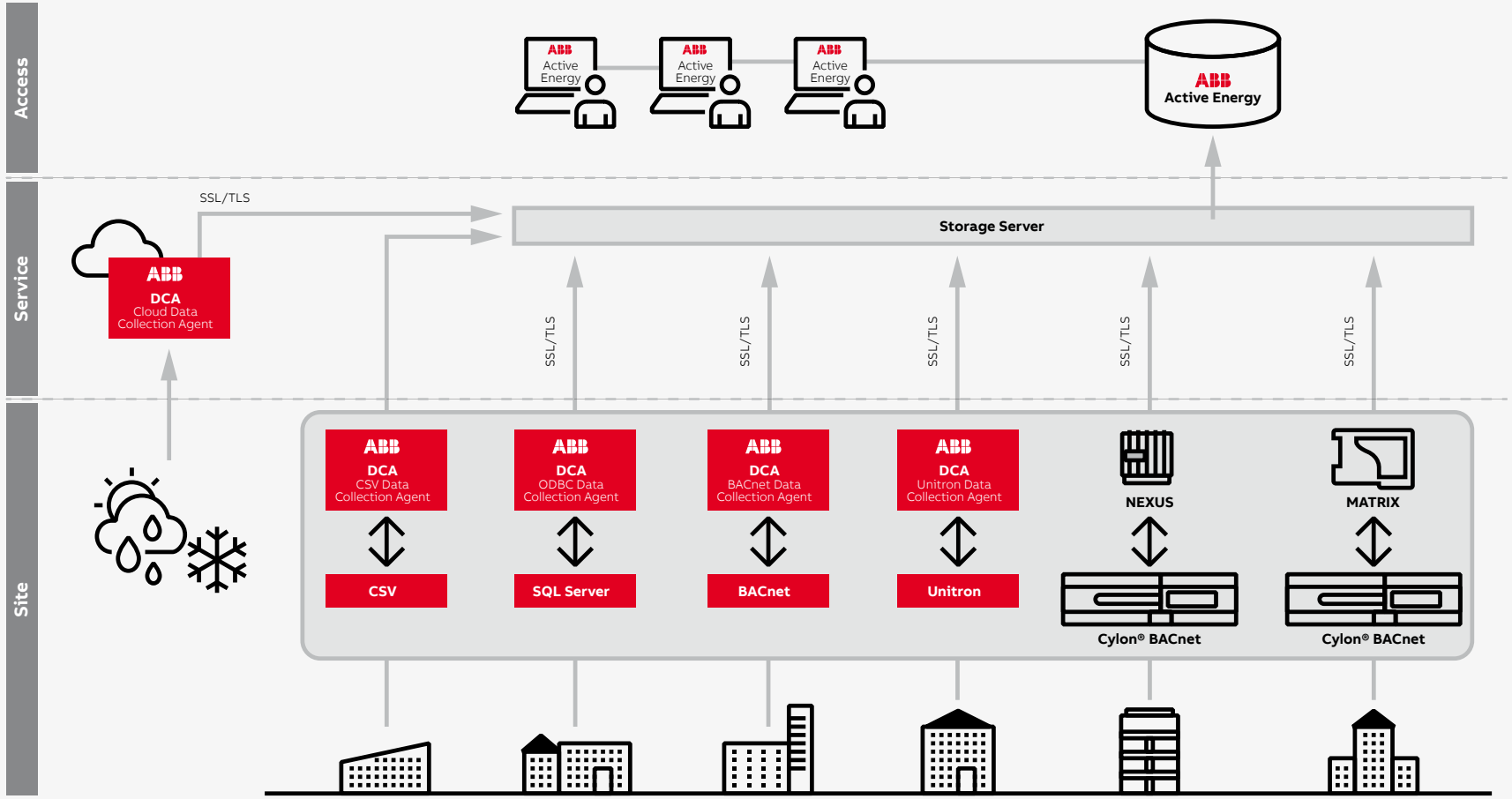
ARCHITECTURE

APPLICATION DETAILS

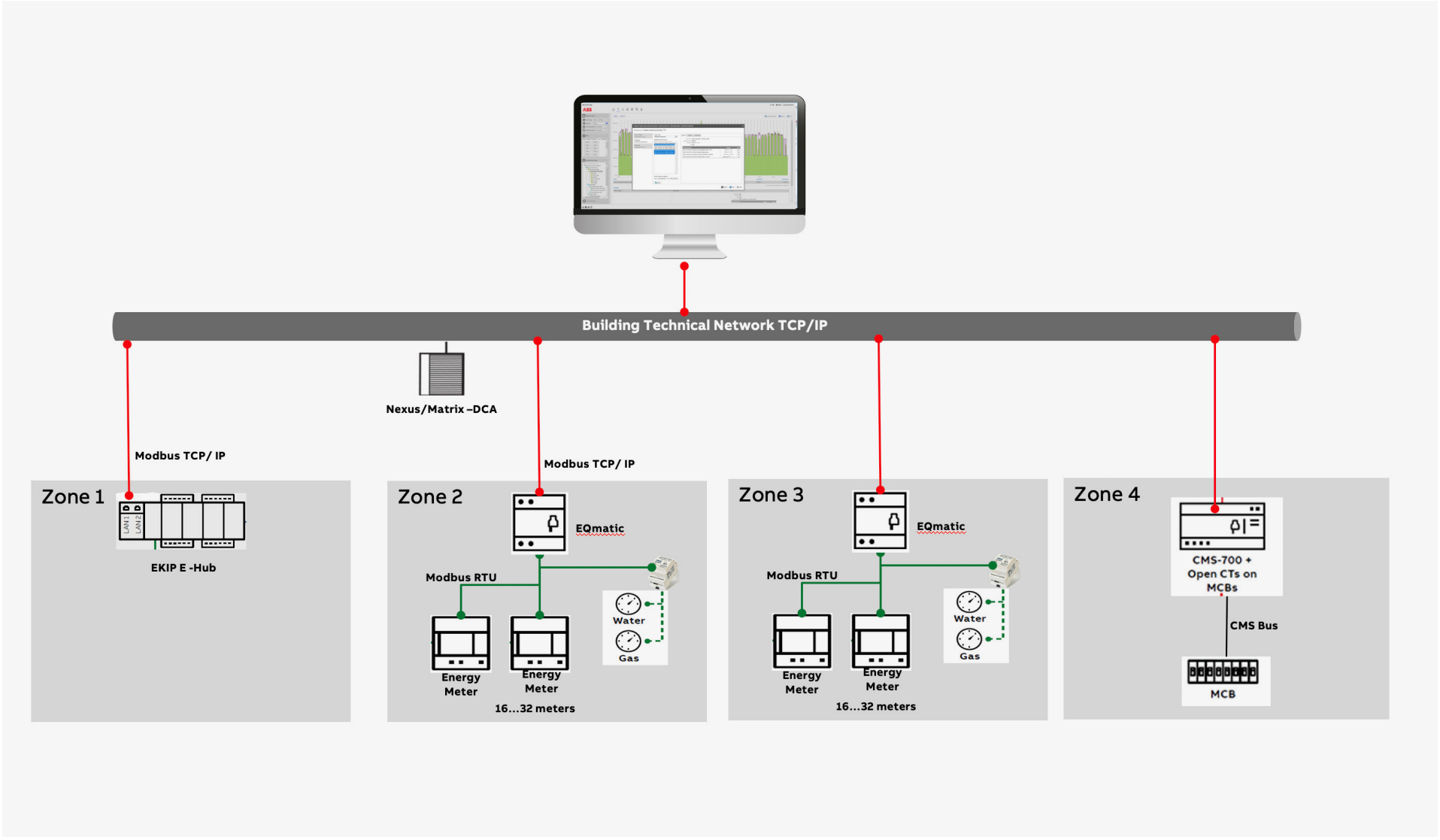
Energy Management
Overview

4

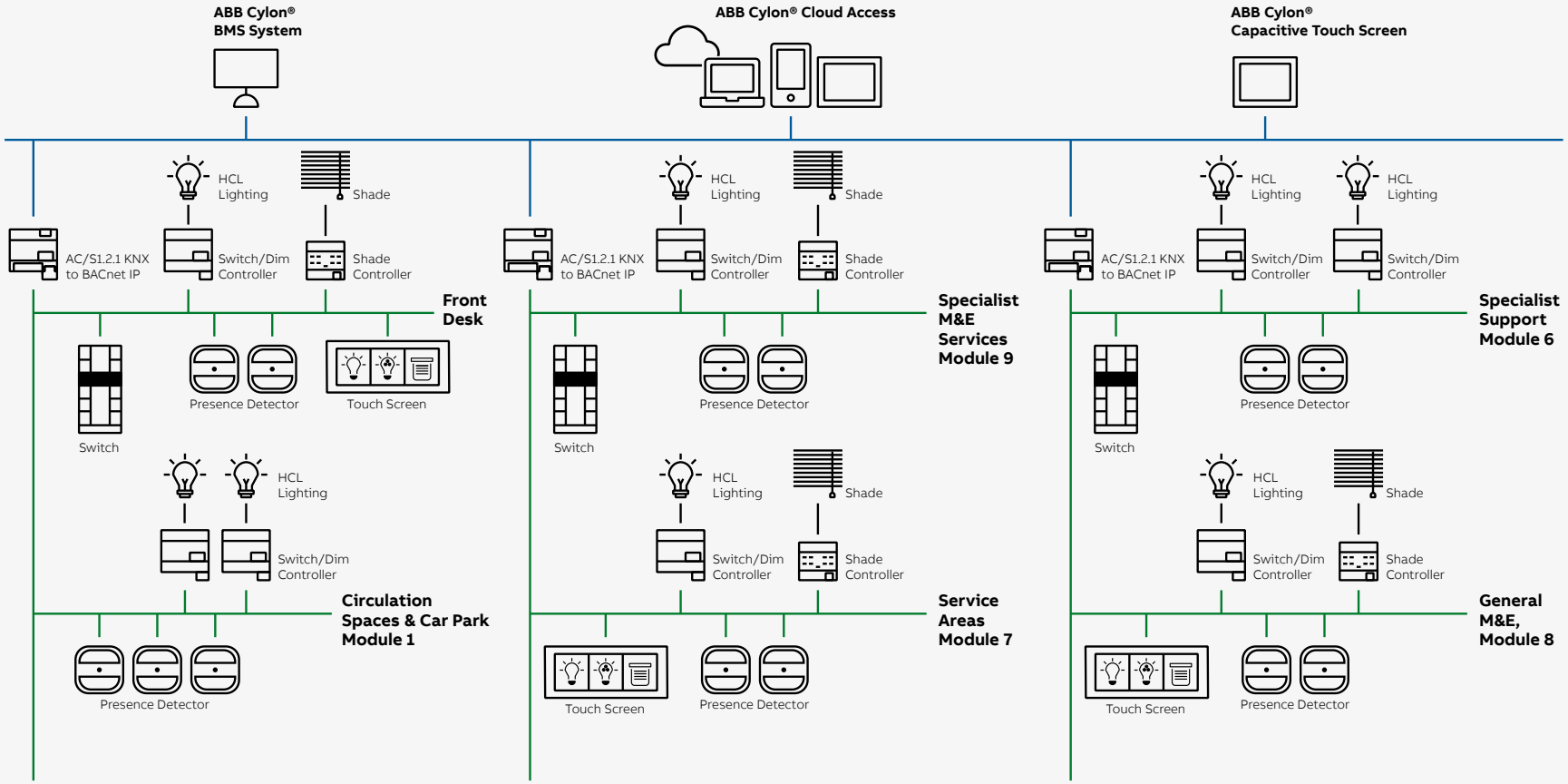
Overall scheme



Energy Management
Metering architecture

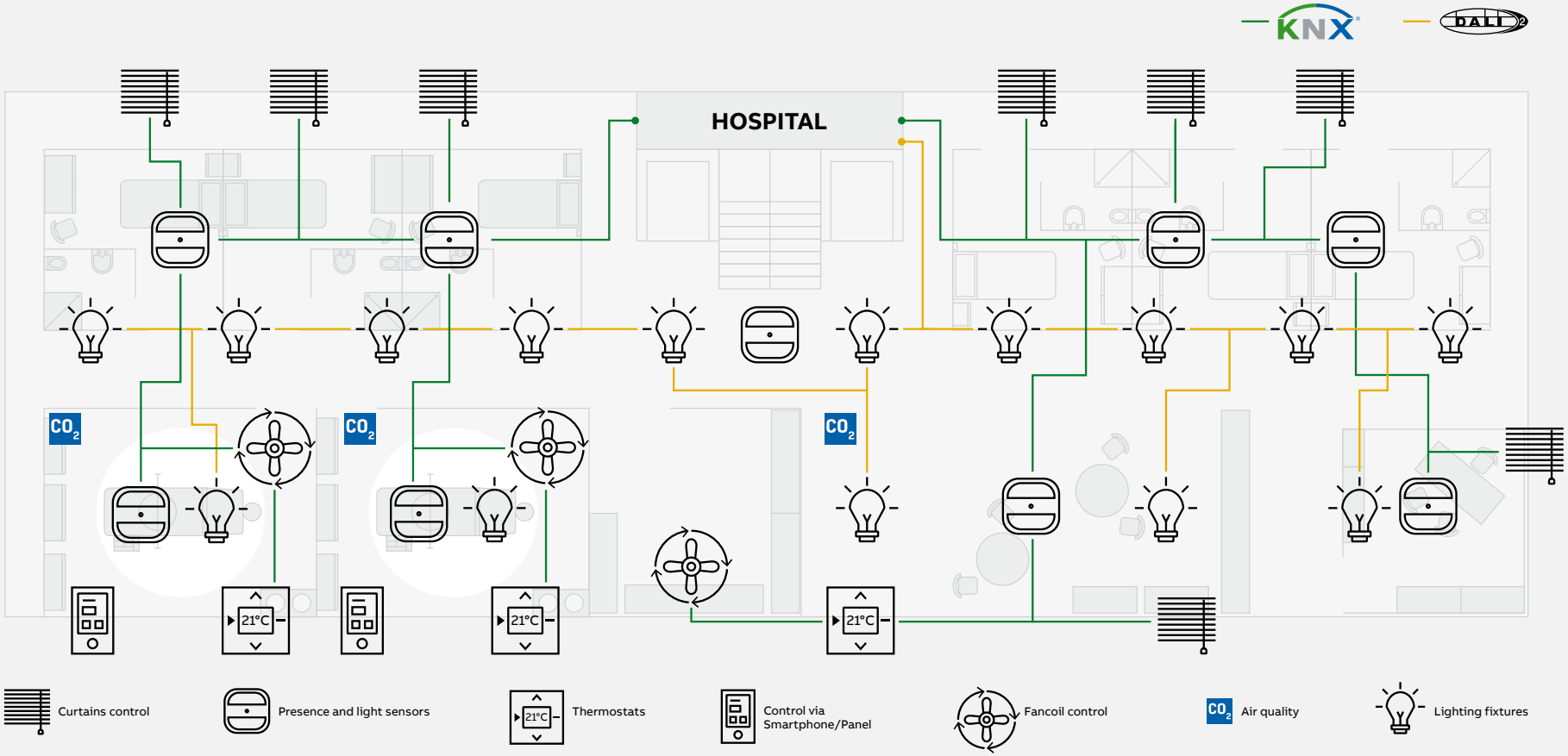


Lighting Control
Overview



Lighting Control
Room Automation

Application example



4

HEALTHCARE

ARCHITECTURE

APPLICATION DETAILS

4.3 Lighting Control

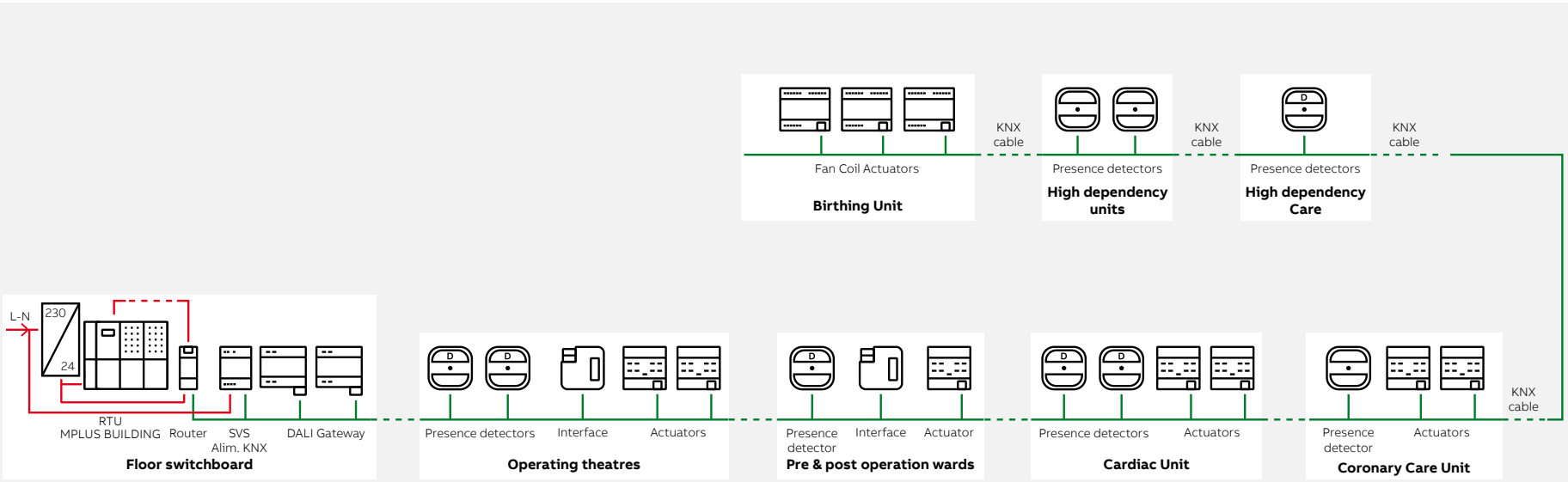
Overview

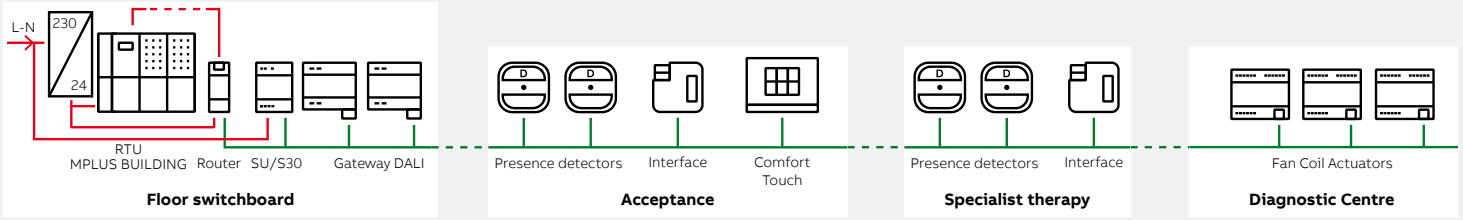
Room Automation

Indor Environment Control

4.1 POWER DISTRIBUTION
4.2 ENERGY MANAGEMENT
4.3 LIGHTING CONTROL
4.4 ROOM WIRING & CONTROL
4.5 HVAC CONTROL
4.6 EMERGENCY LIGHTING
4.7 EV CHARGING
4.8 DRIVES & MOTORS

Lighting Control
Indor Environment Control





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HEALTHCARE

ARCHITECTURE

APPLICATION DETAILS

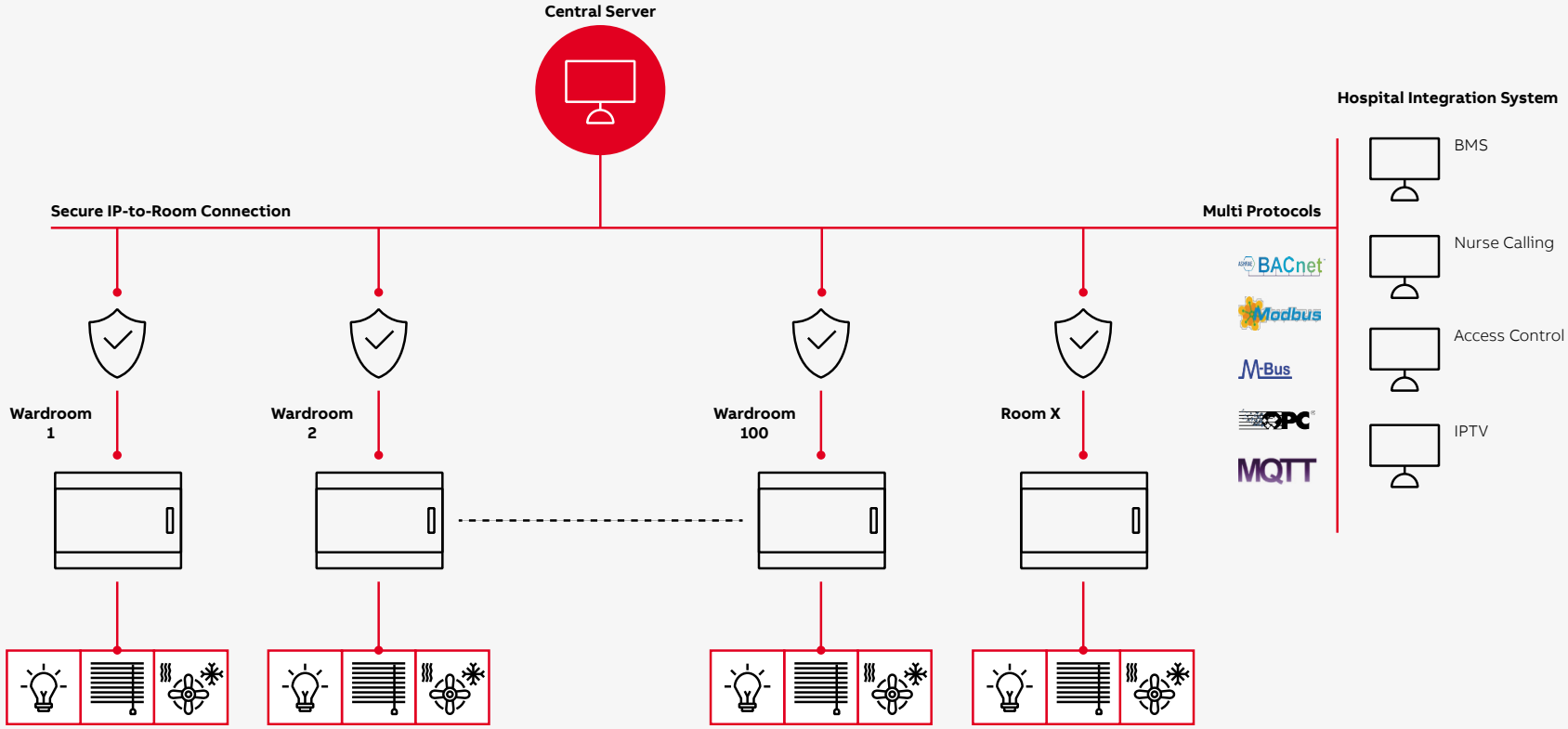
4.3 Lighting Control

Overview

Room Automation

Indor Environment Control

Room Wiring & Control
Overview



4

HEALTHCARE

ARCHITECTURE

APPLICATION DETAILS

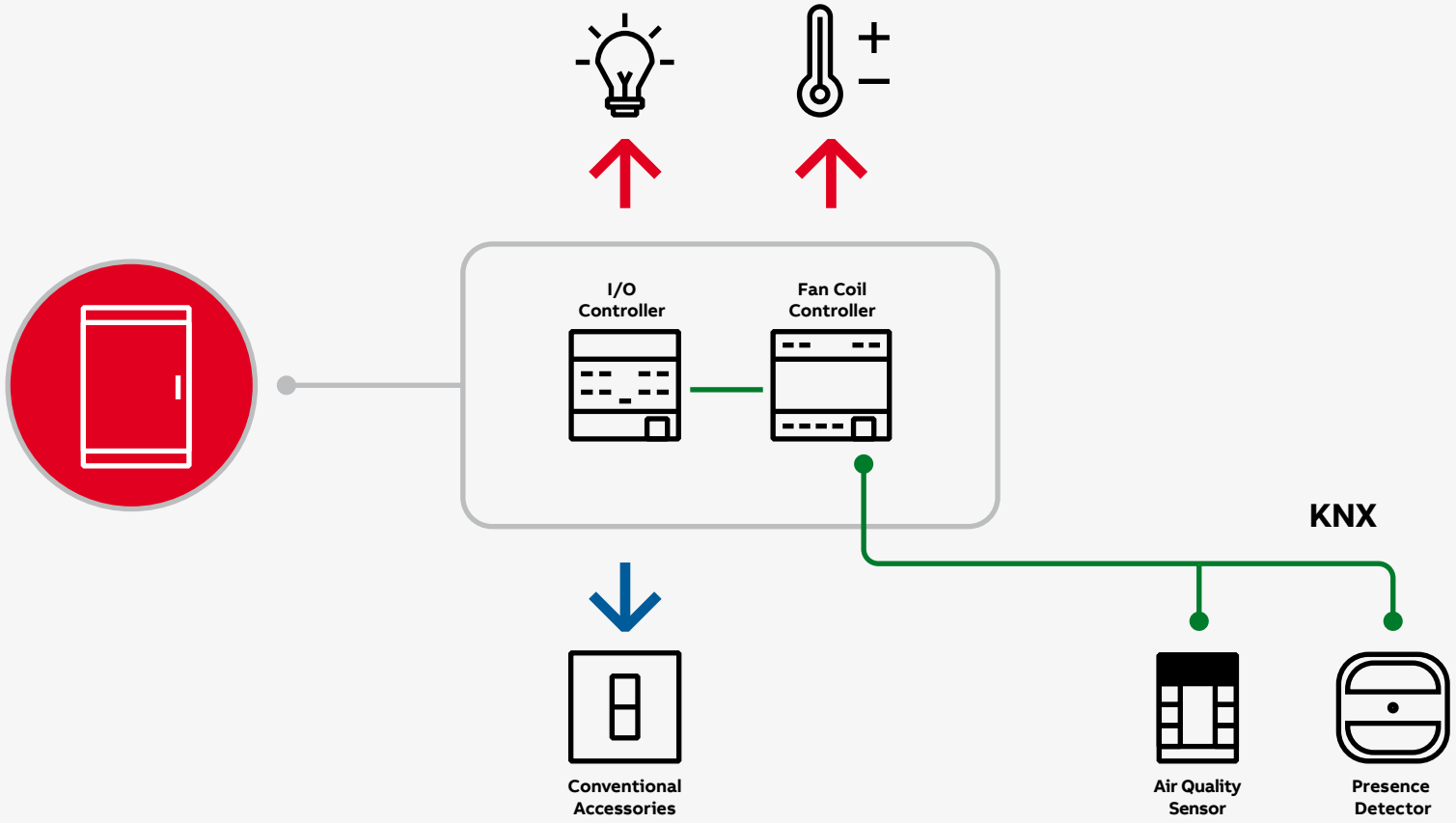
4.4 Room Wiring & Control

Overview

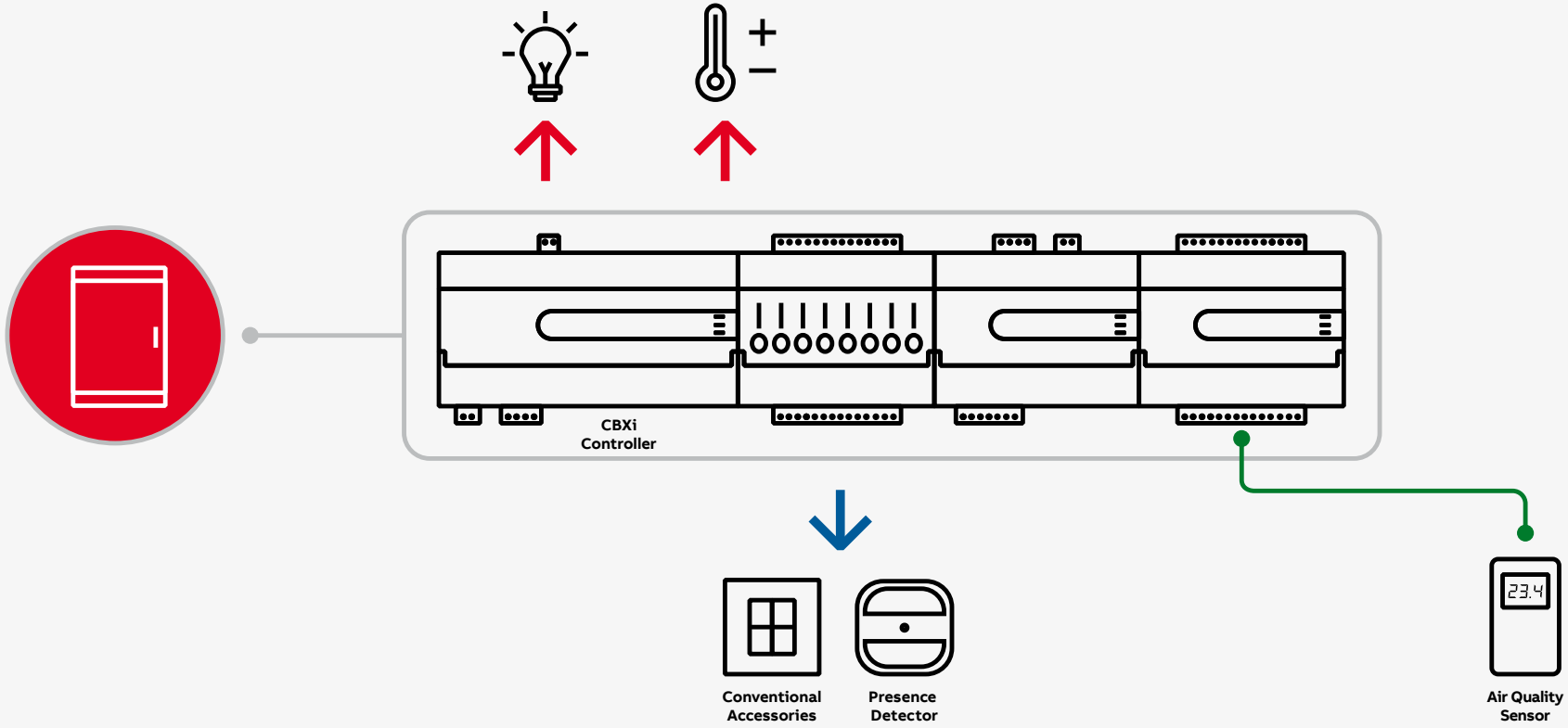
General Ward

Premium Ward

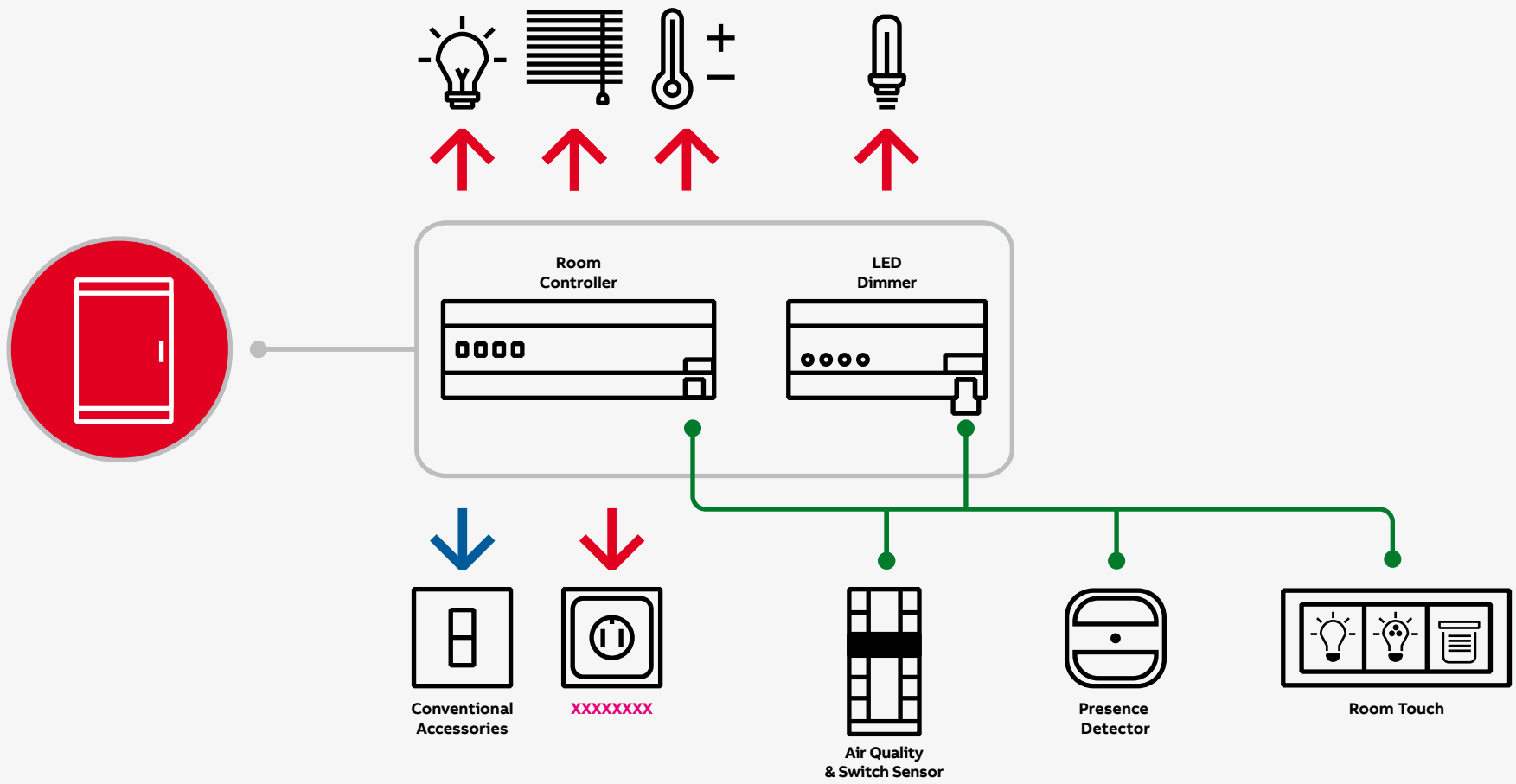
Room Wiring & Control
General Ward



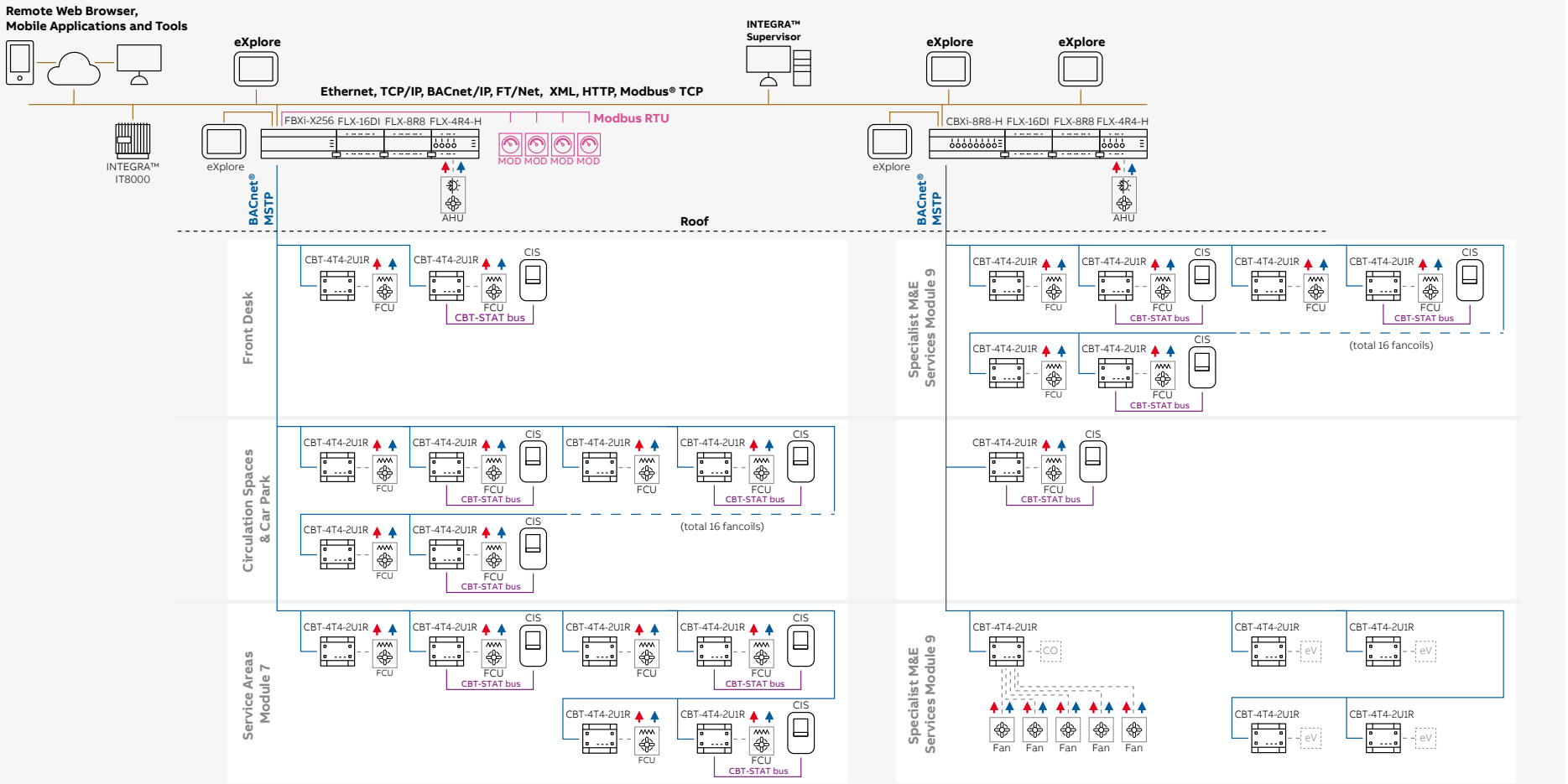
Room Wiring & Control
General Ward



Room Wiring & Control
Premium Ward



HVAC Control



4

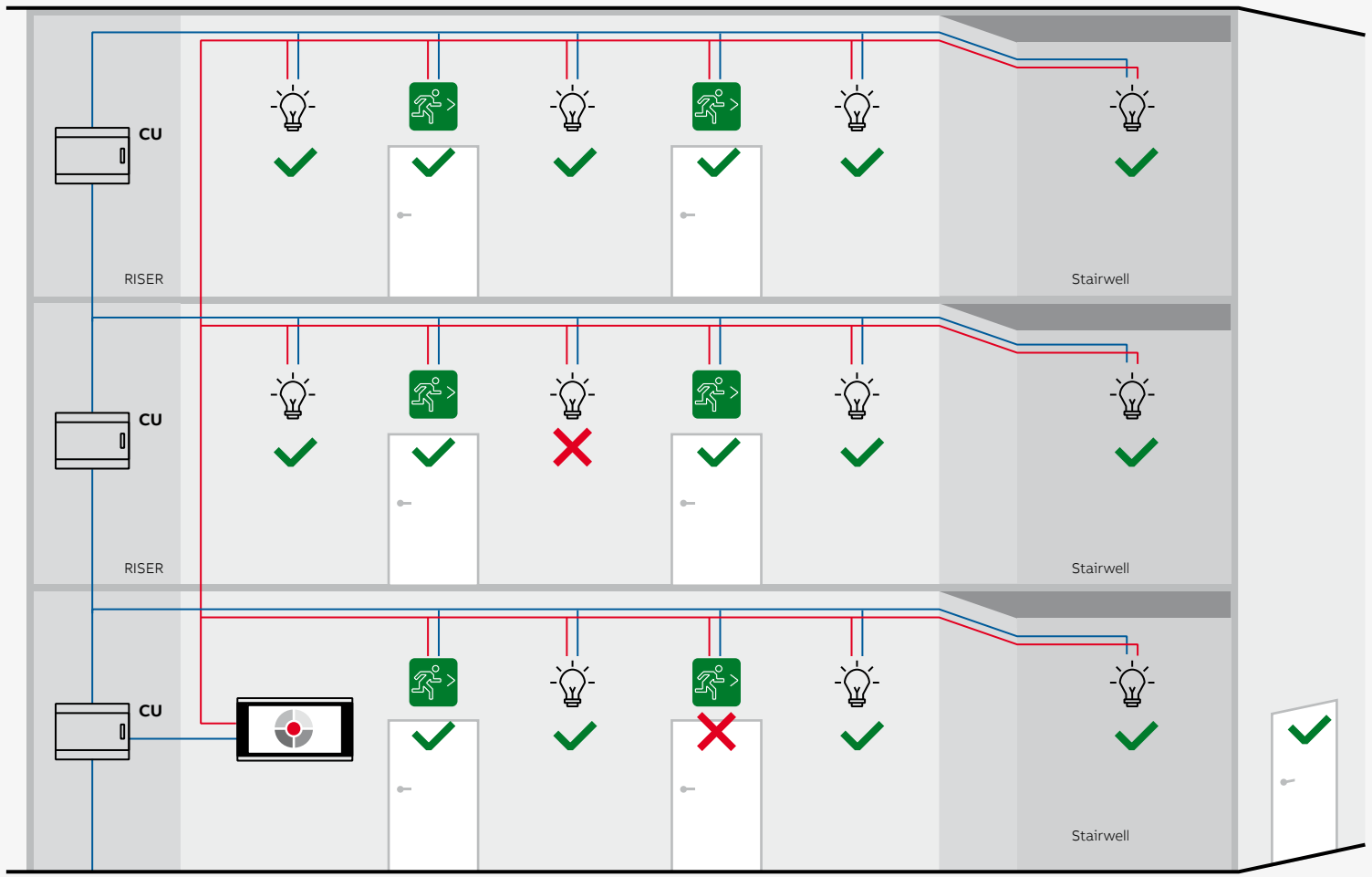
HEALTHCARE

ARCHITECTURE

APPLICATION DETAILS

4.5 HVAC Control

Emergency Lighting
DALI (EUR)



4

HEALTHCARE

ARCHITECTURE

APPLICATION DETAILS

4.6 Emergency Lighting

DALI (EUR)

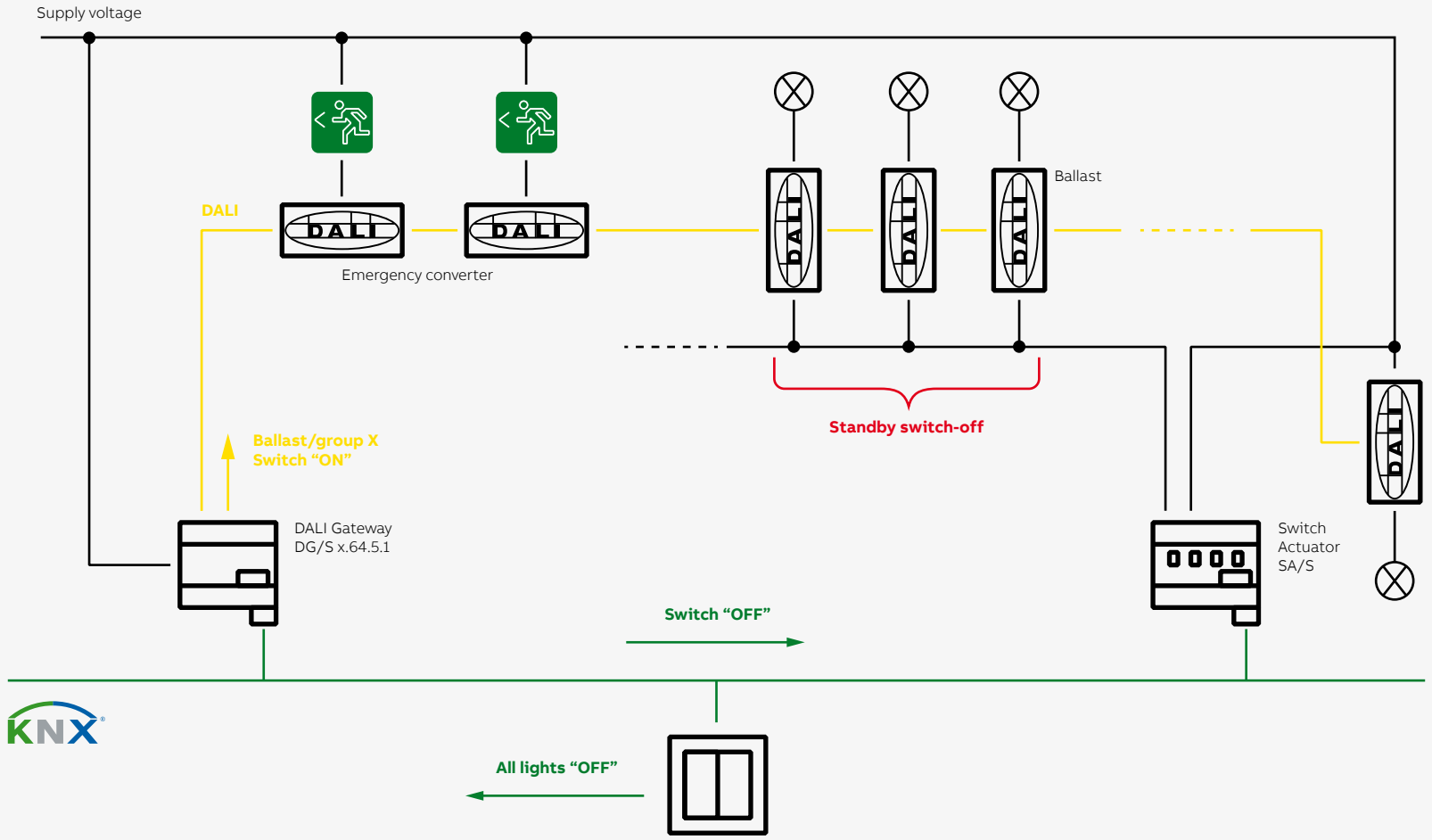
Nexus®Pro (NAM-Canada and USA)

Central Battery (UK, MEA)

NEXT

Emergency Lighting
DALI (EUR)

DALI Emergency Lighting with “Standby switch-off”



4

HEALTHCARE

ARCHITECTURE

APPLICATION DETAILS

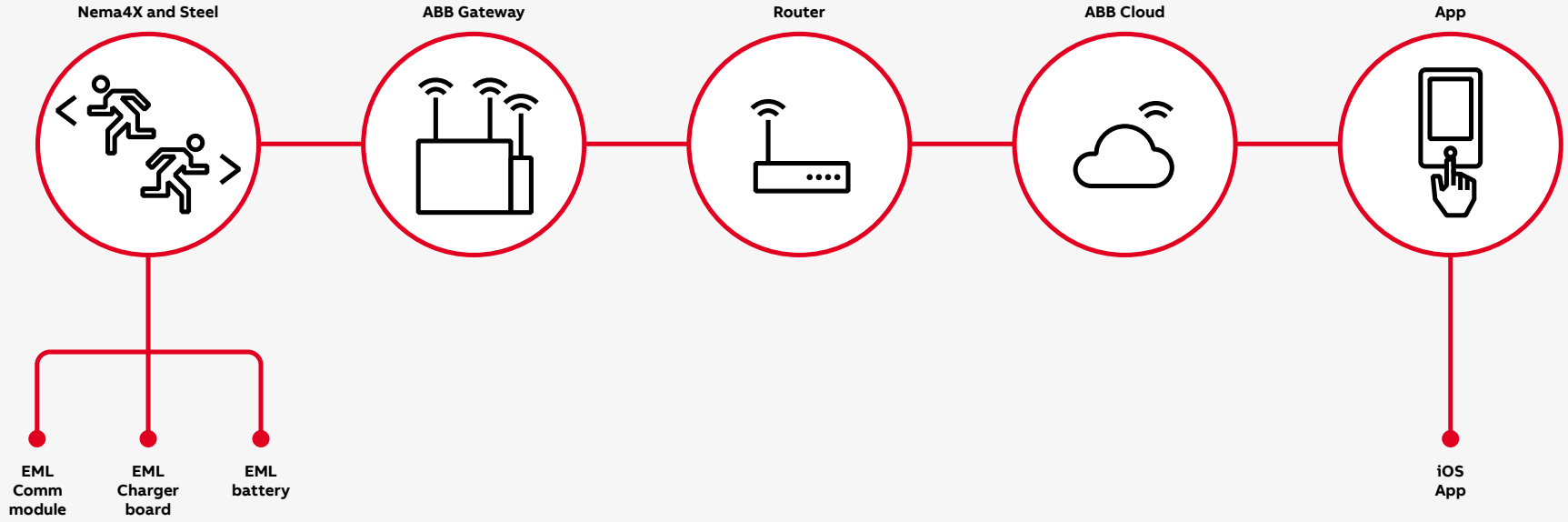
4.6 Emergency Lighting

DALI (EUR)

Nexus®Pro (NAM-Canada and USA)

Central Battery (UK, MEA)

Emergency Lighting
Nexus®Pro (NAM)



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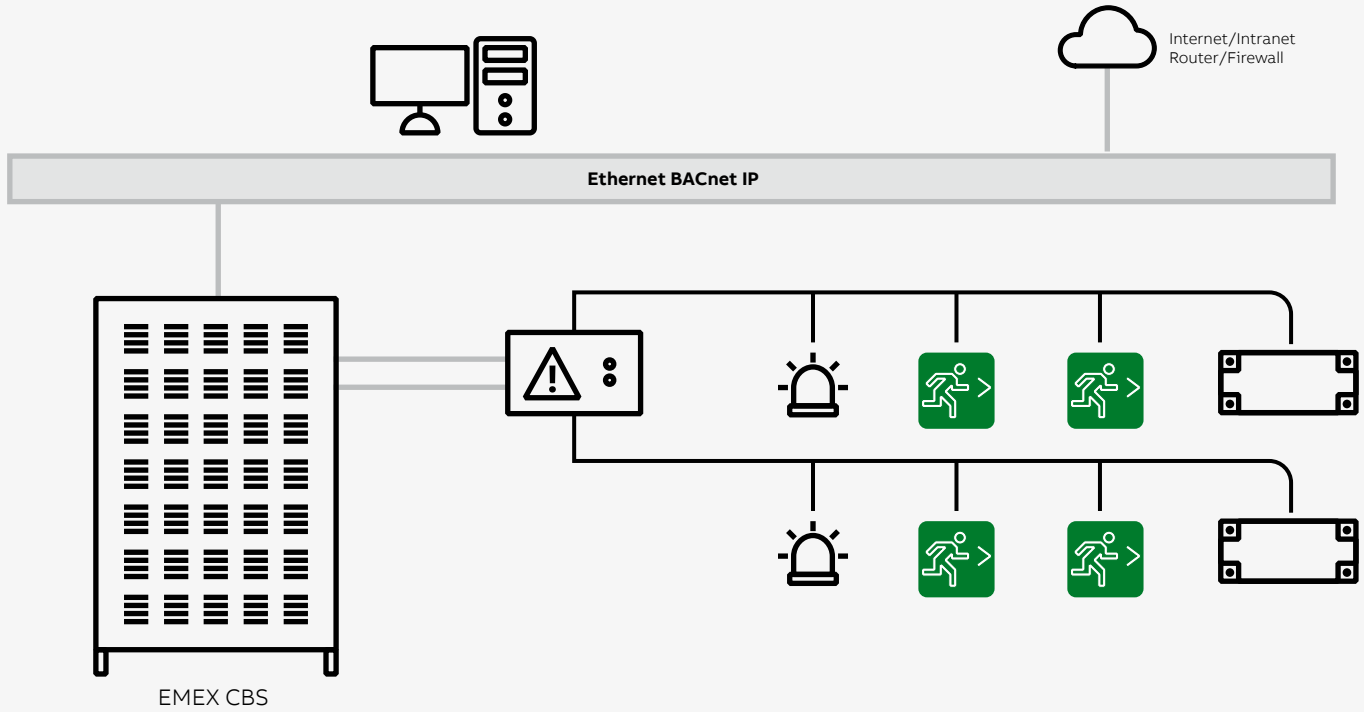
Emergency Lighting
Central Battery (UK, MEA)



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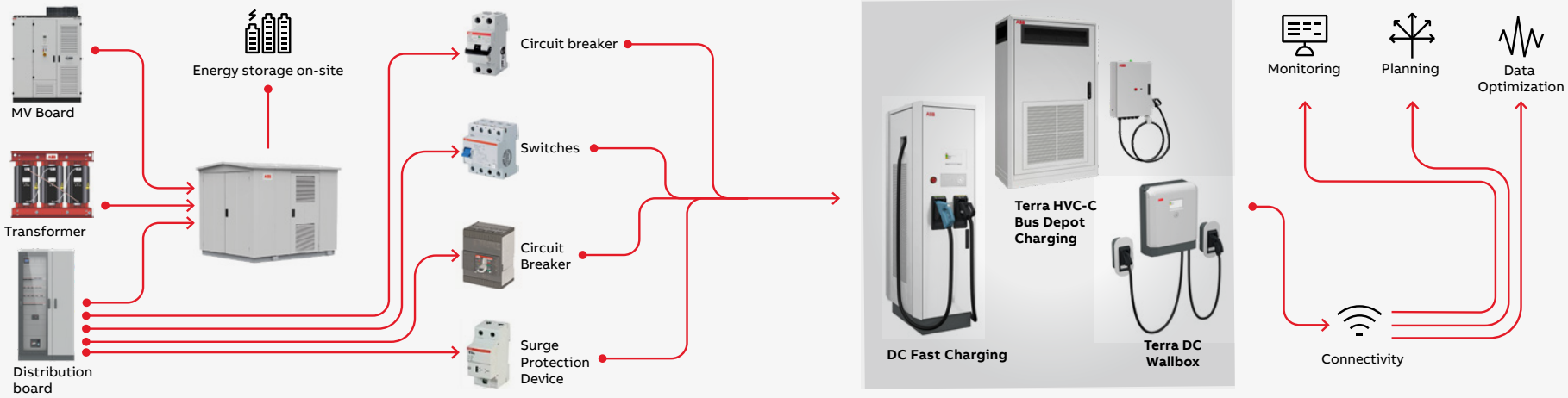
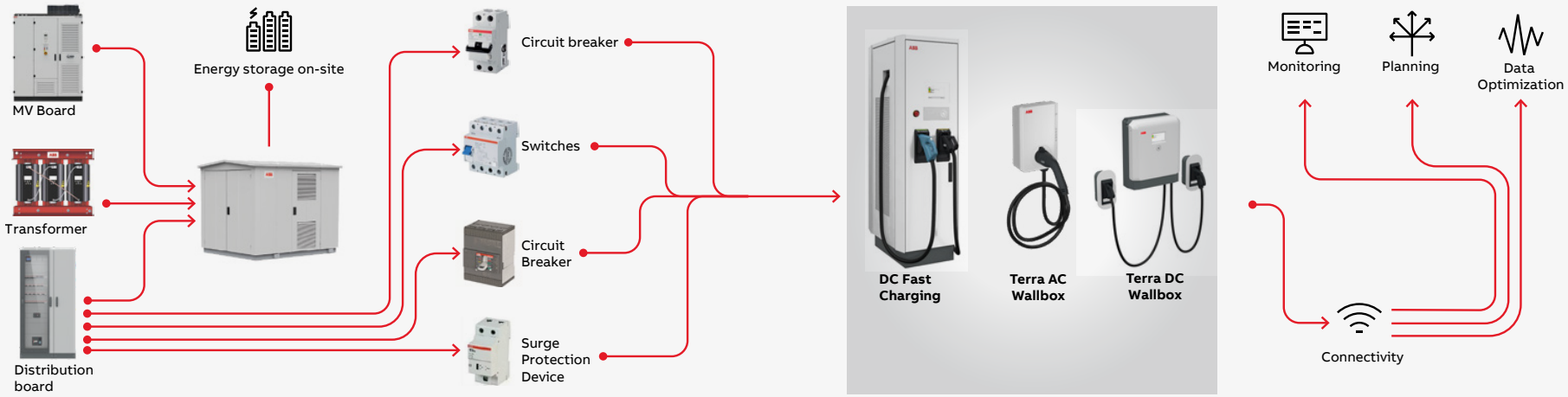
EV Charging
Fleet charging



EV Charging
Car charging



4 HEALTHCARE

ARCHITECTURE
APPLICATION DETAILS

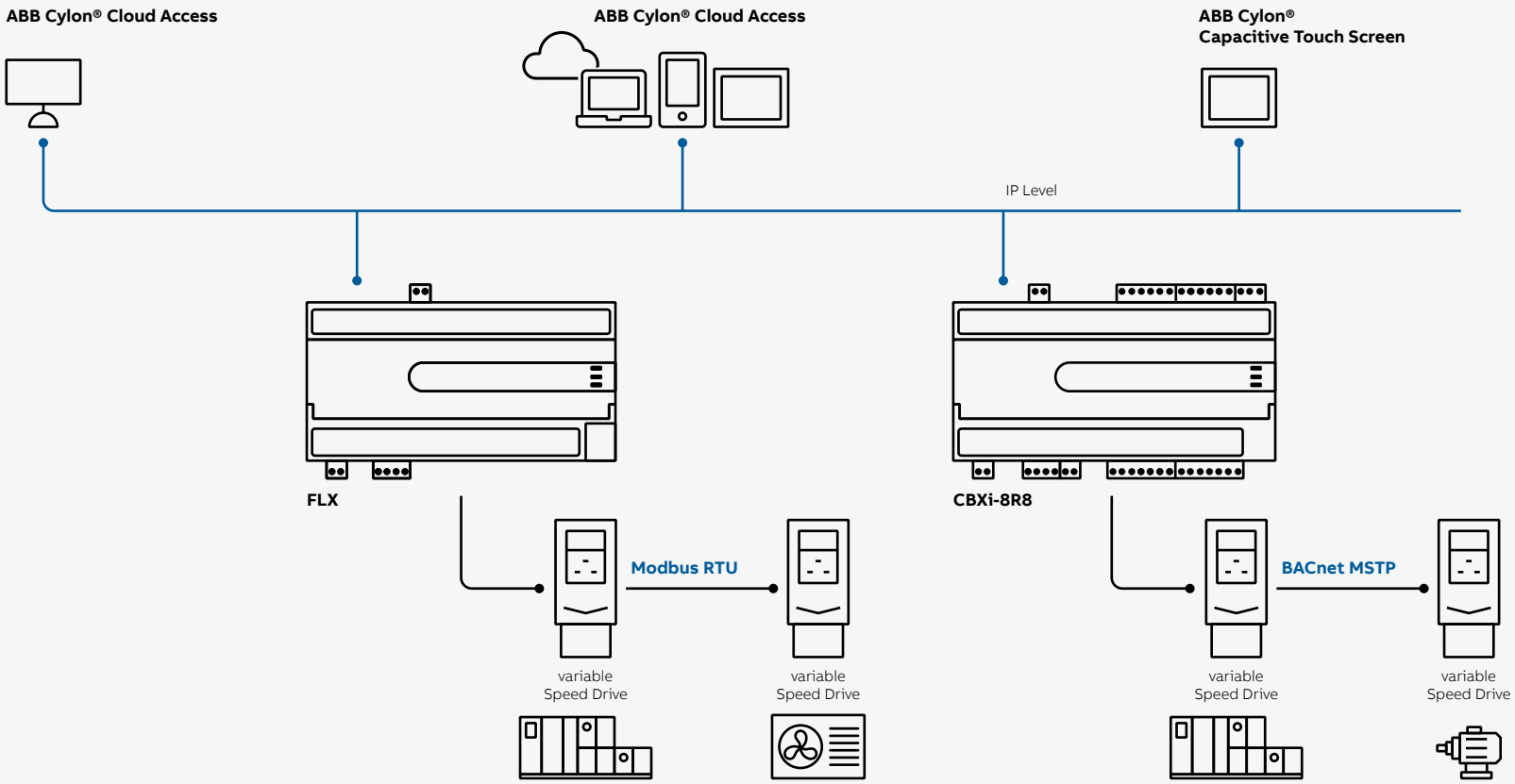
4.7 EV Charging

Fleet charging

Car charging

4.1 POWER DISTRIBUTION
4.2 ENERGY MANAGEMENT
4.3 LIGHTING CONTROL
4.4 ROOM WIRING & CONTROL
4.5 HVAC CONTROL
4.6 EMERGENCY LIGHTING
4.7 EV CHARGING
4.8 DRIVES & MOTORS

Drives & Motors

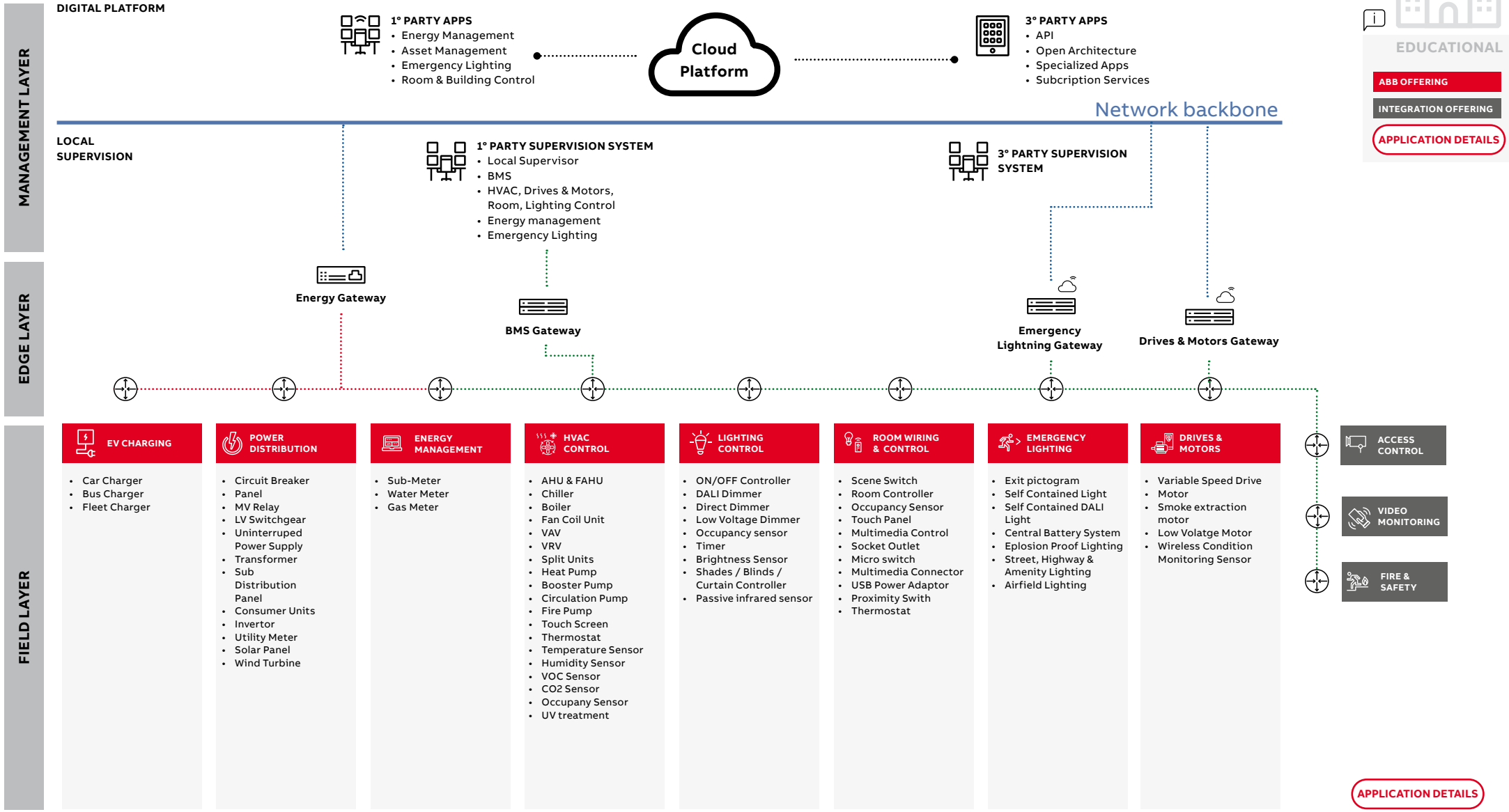


5

Educational

ENTER

Reference Architecture
Educational



Educational Reference Architecture
Application details

5

EDUCATIONAL

ARCHITECTURE

5

5.1 Power Distribution
- Overview
- Edge Layer
- Power Management
- Uninterrupted Power Supply

5.2 Energy Management
- Overview
- Multi Zone Mgmt

5.3 Lighting Control
- Overview
- Room Automation
- Indoor Environment Control

5.4 Room Wiring & Control

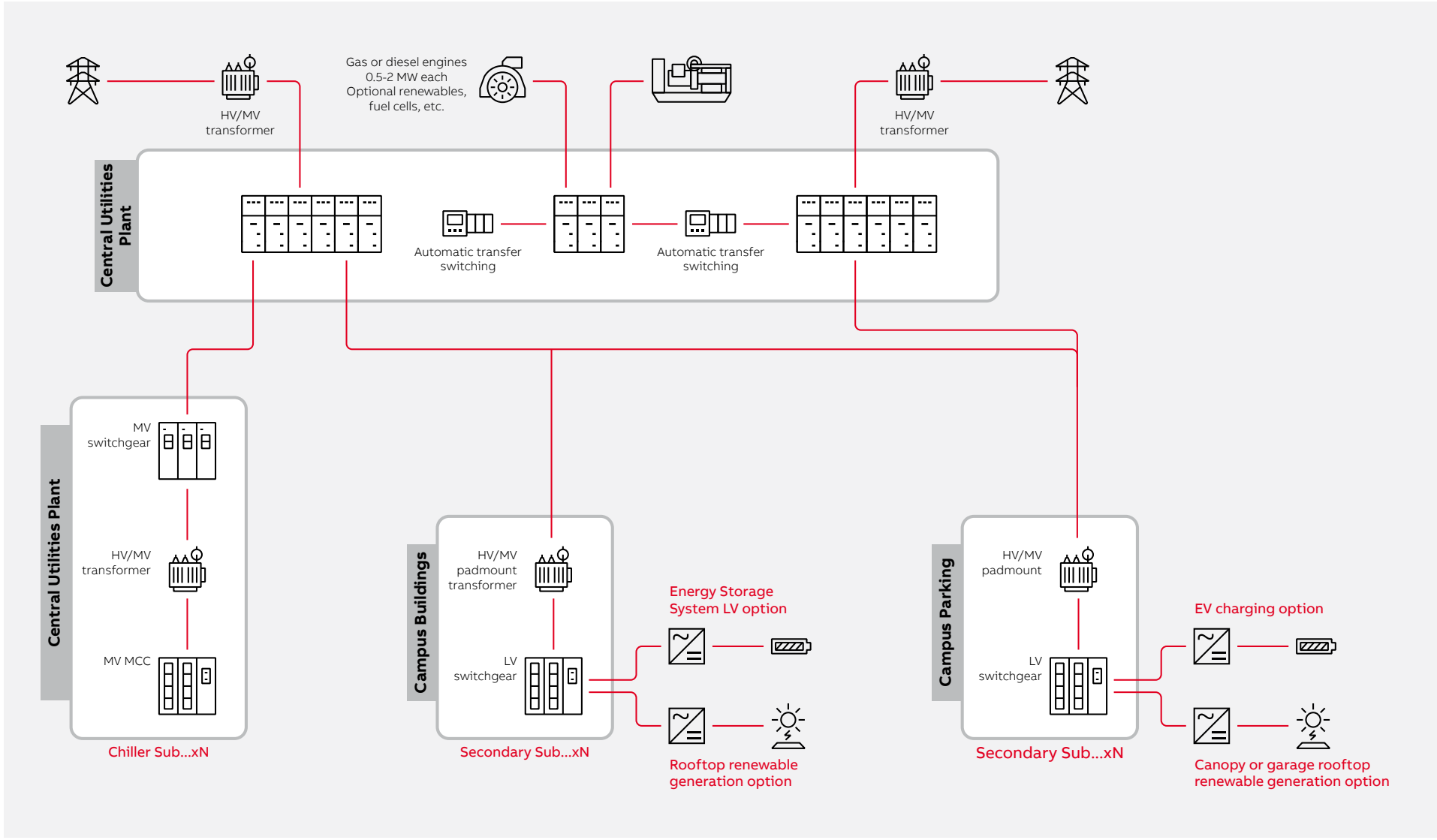
5.5 HVAC Control

5.6 Emergency Lighting
- DALI (EUR)
- Nexus®Pro (NAM)
- Central Battery (UK, MEA)

5.7 EV Charging

5.8 Drives & Motors
- Overview
- Sensors and Variable Speed Drives

Power Distribution
Overview



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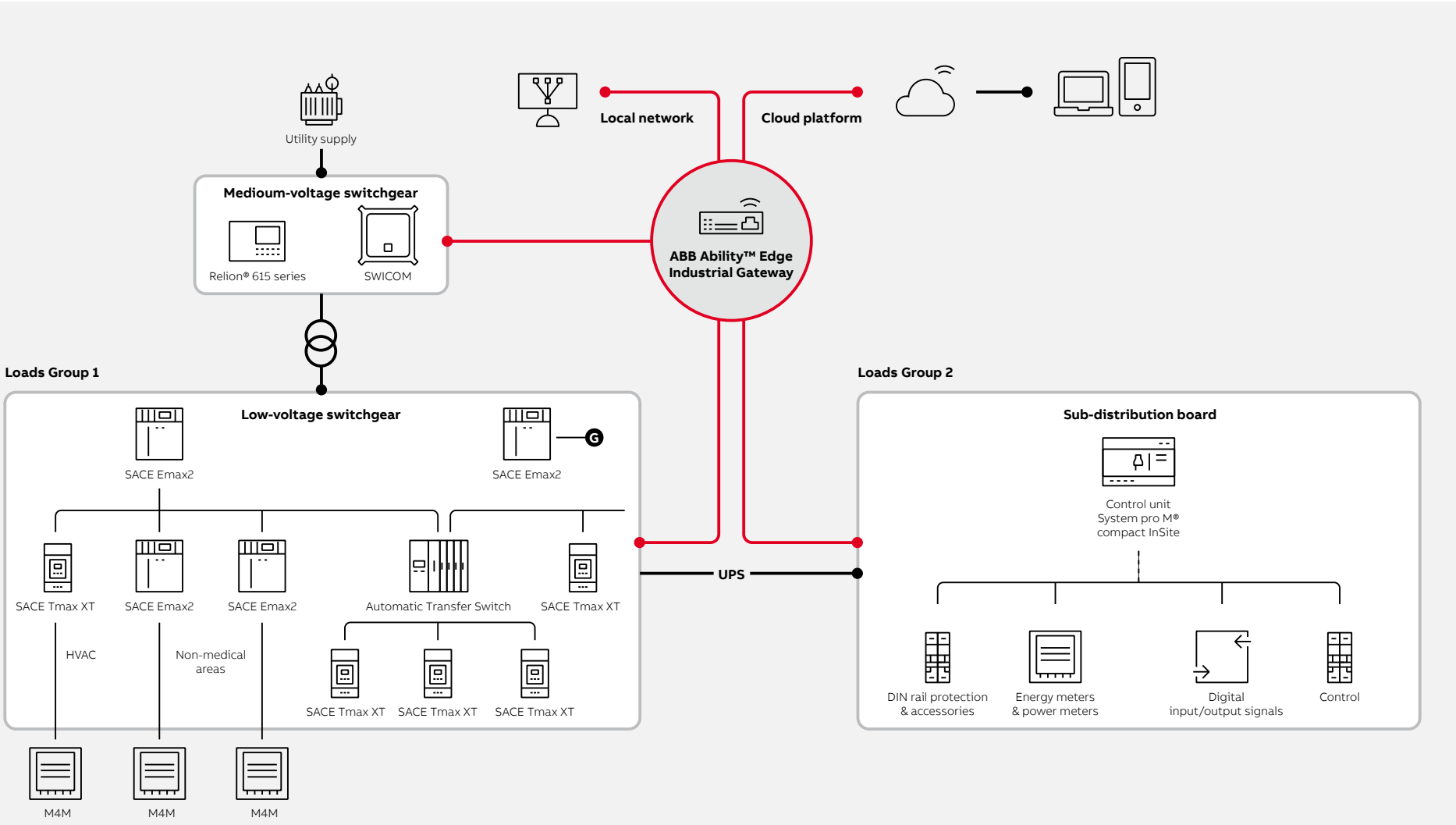
EDUCATIONAL

ARCHITECTURE

APPLICATION DETAILS

Power Distribution
Edge Layer



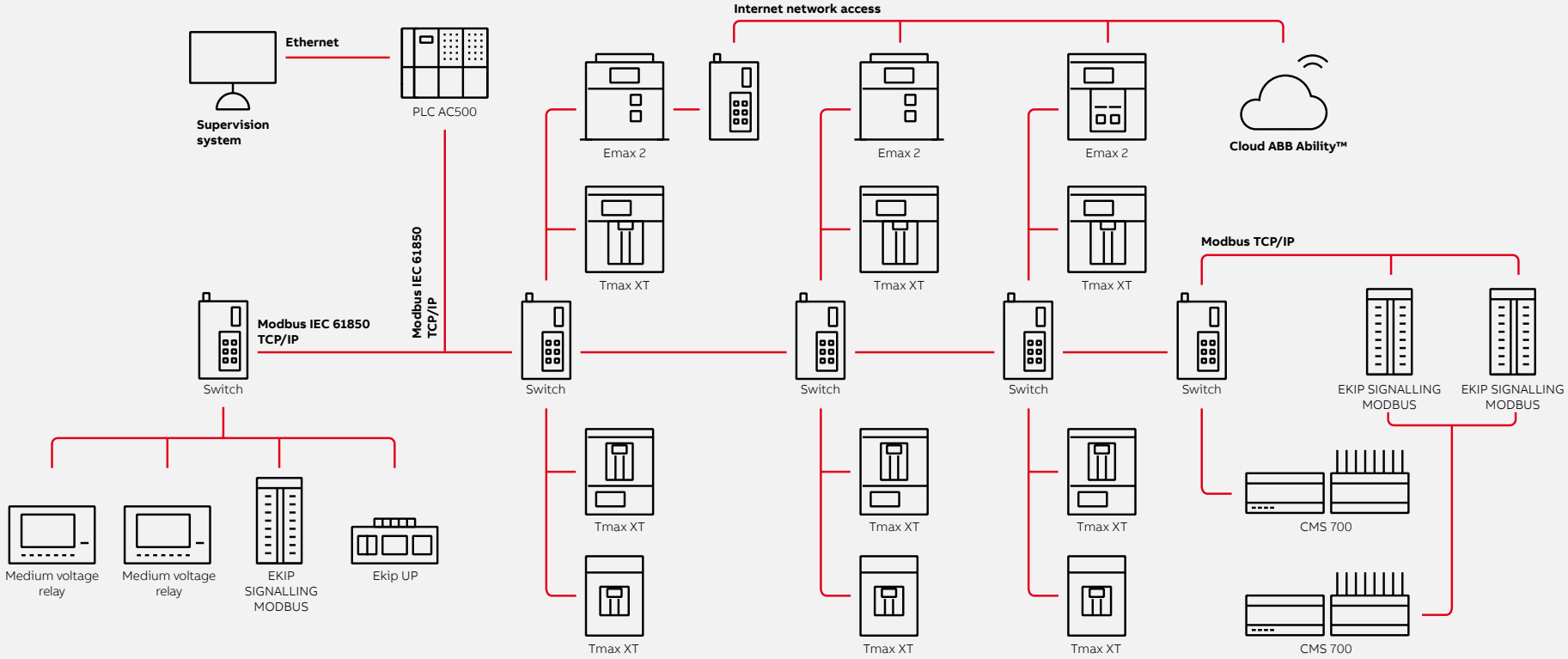
5

EDUCATIONAL

ARCHITECTURE

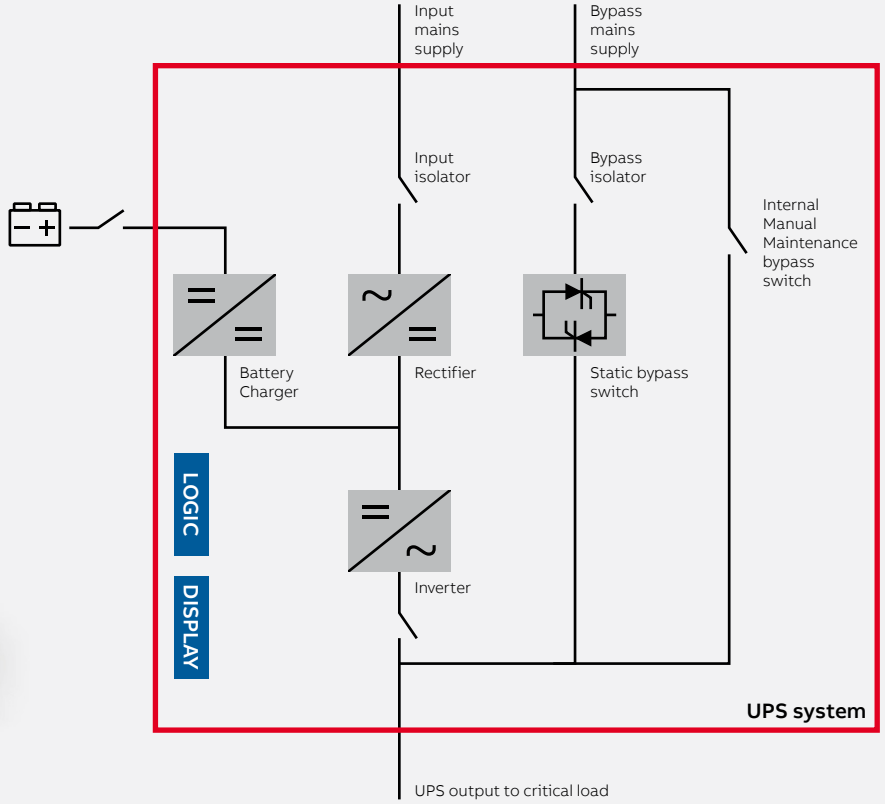
APPLICATION DETAILS

Power distribution
Power Management



Power Distribution

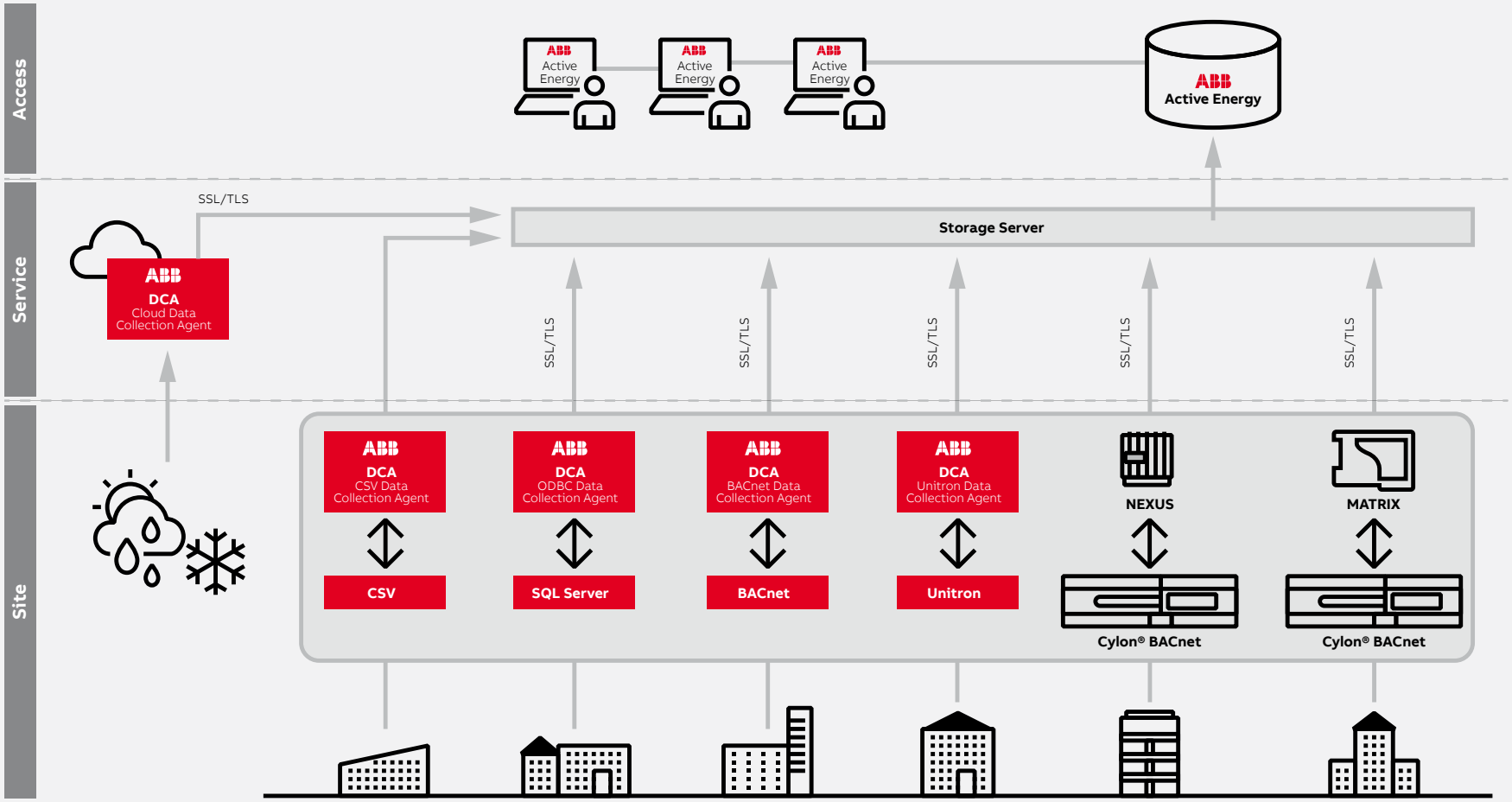
Uninterrupted Power Supply



Energy Management
Overview

5

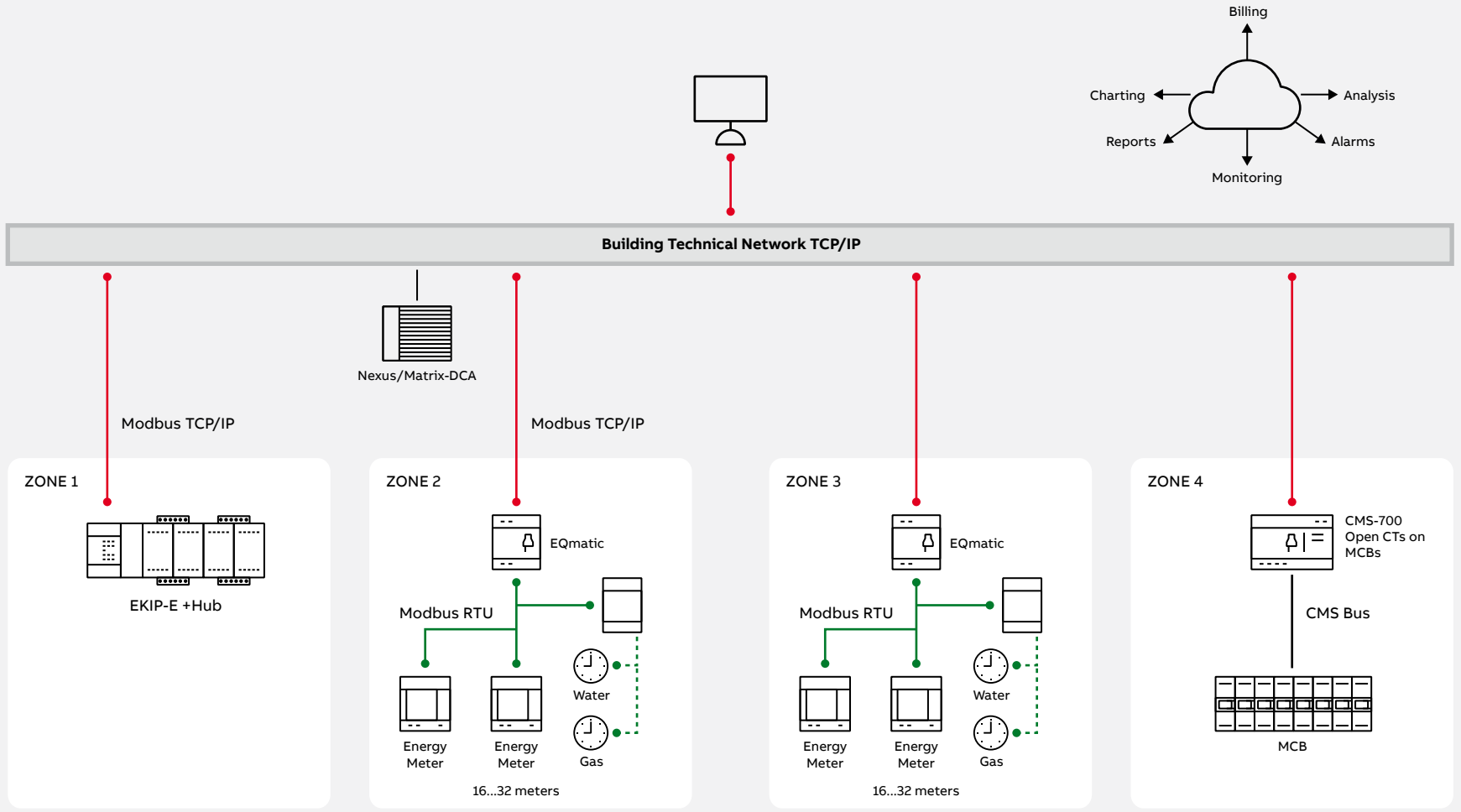
Active Energy Manager (for NAM)



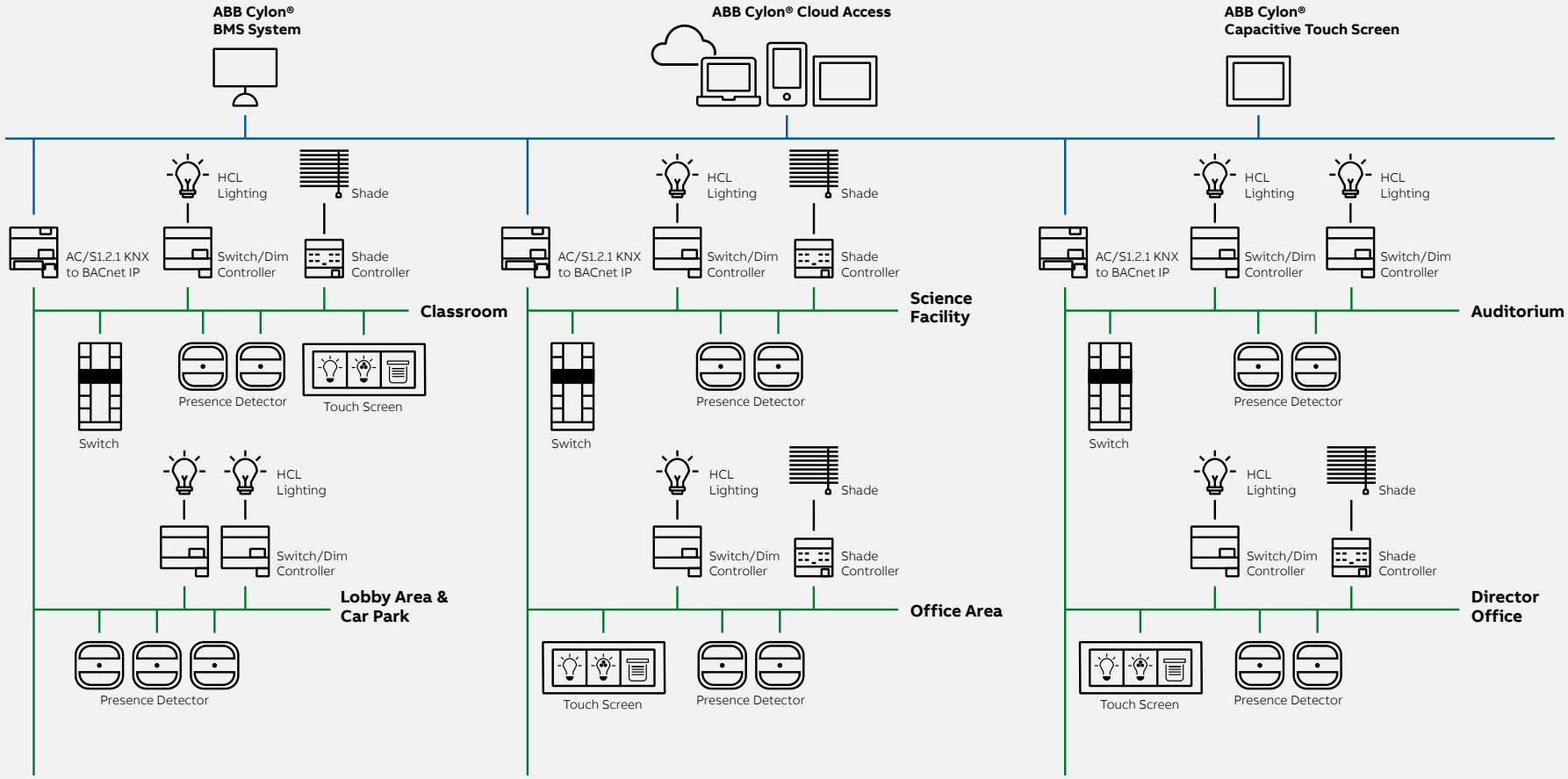
Energy Management
Multi Zone Mgmt

5

Active Energy Manager (for NAM)



Lighting control
Overview



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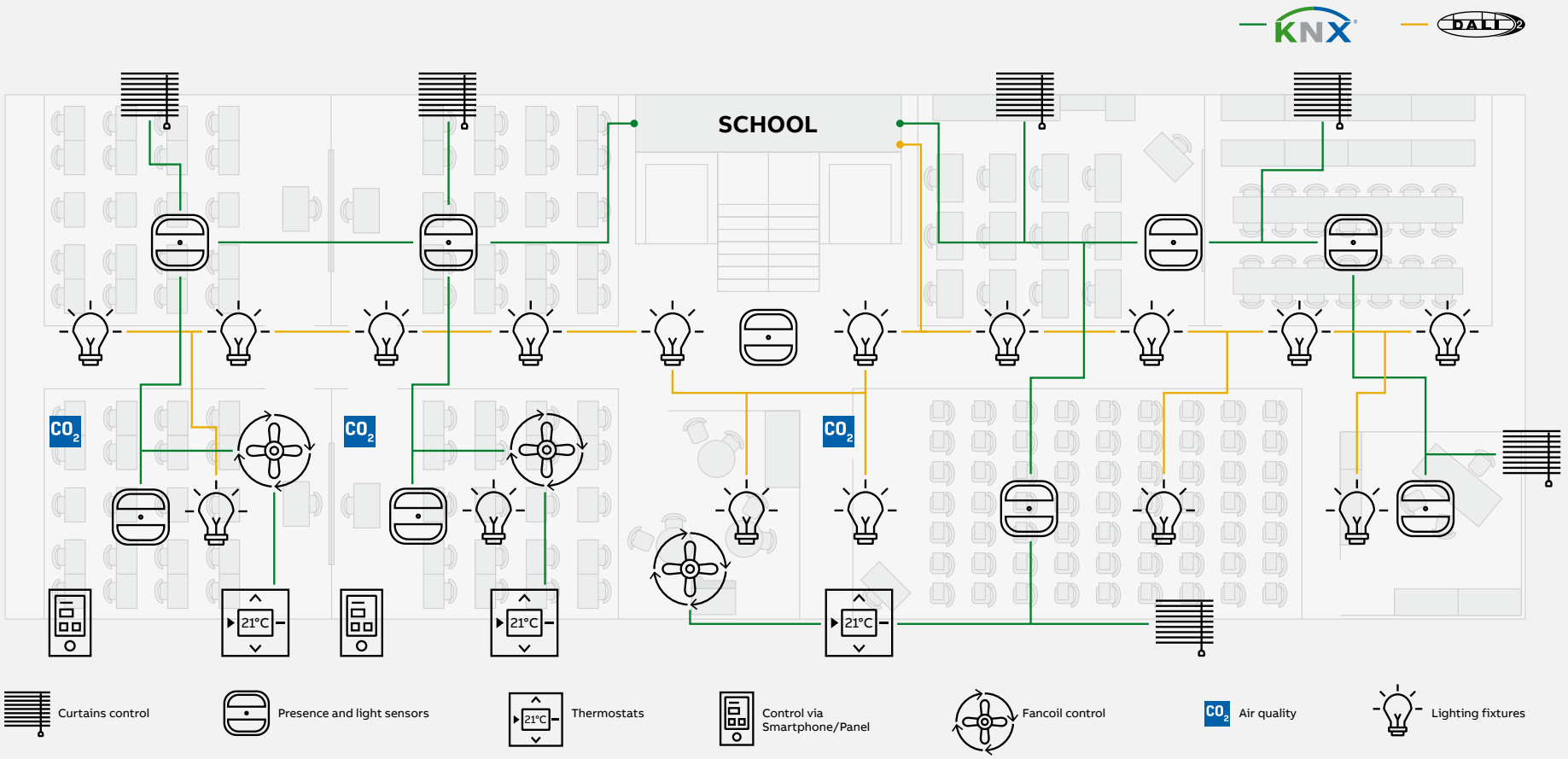
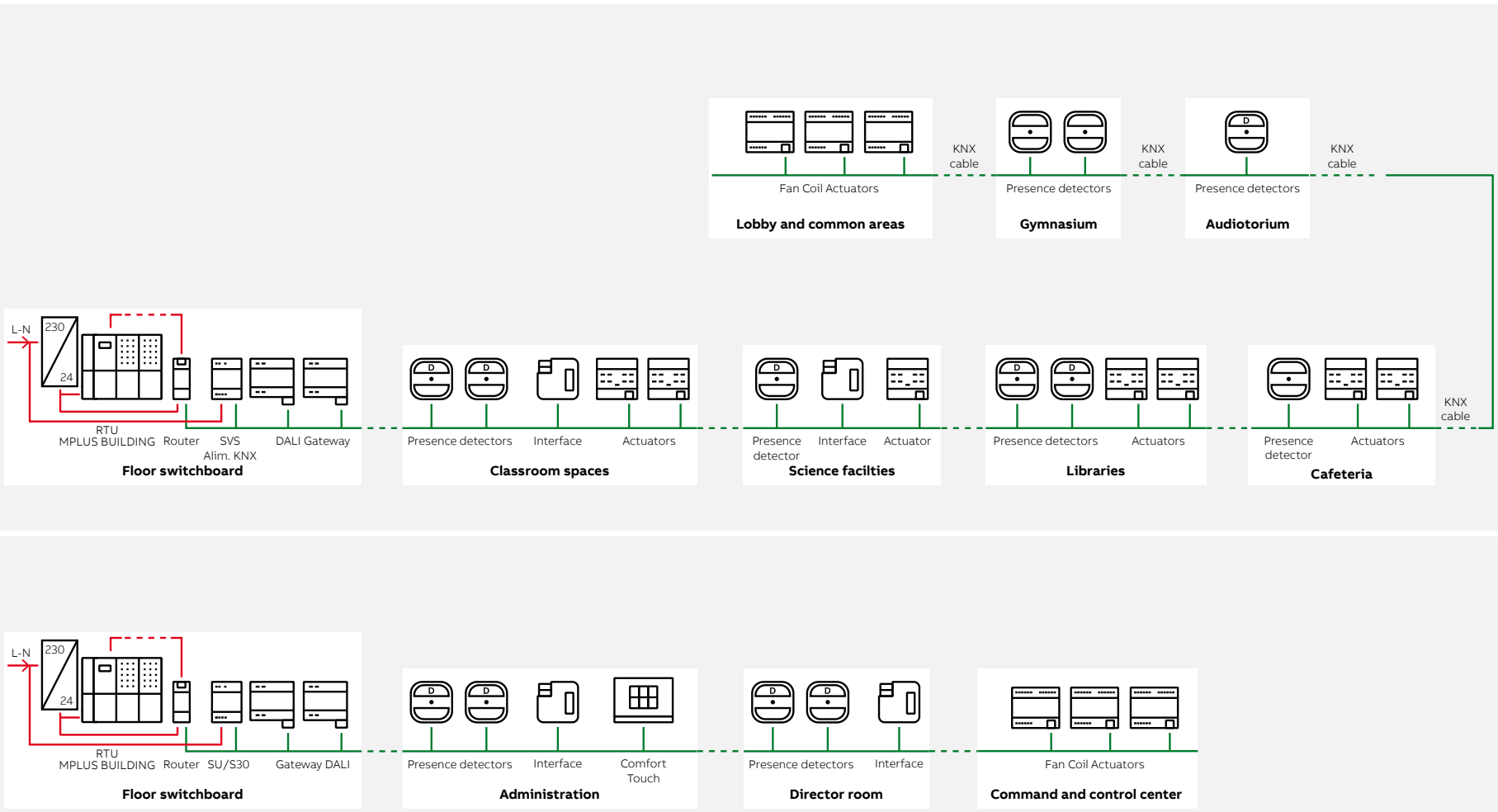
Lighting control
Room Automation

5

Application example



Lighting control
Indoor Environment Control



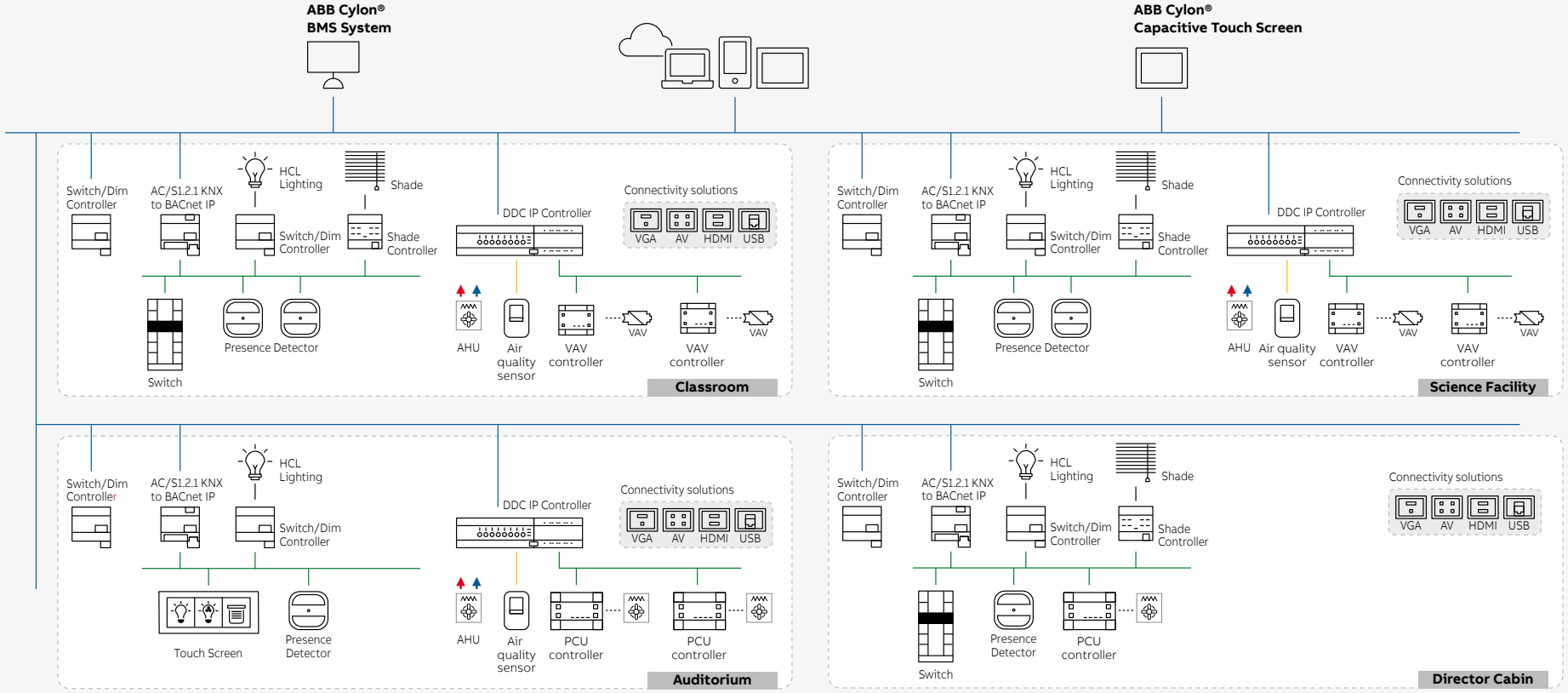
5

EDUCATIONAL

ARCHITECTURE

APPLICATION DETAILS

Room Wiring & Control



5

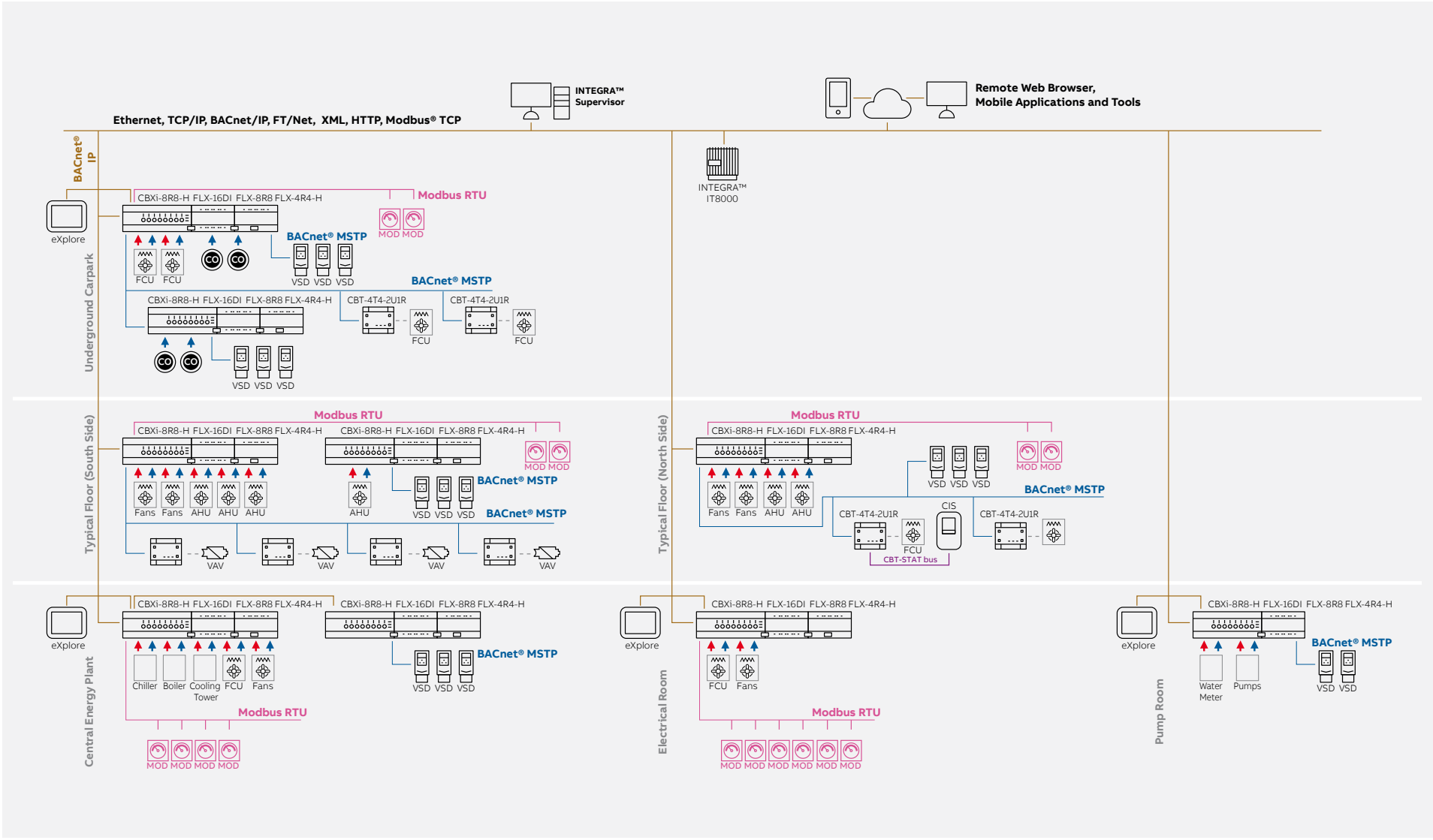
EDUCATIONAL

ARCHITECTURE

APPLICATION DETAILS

5.4 Lighting Control

HVAC Control



5

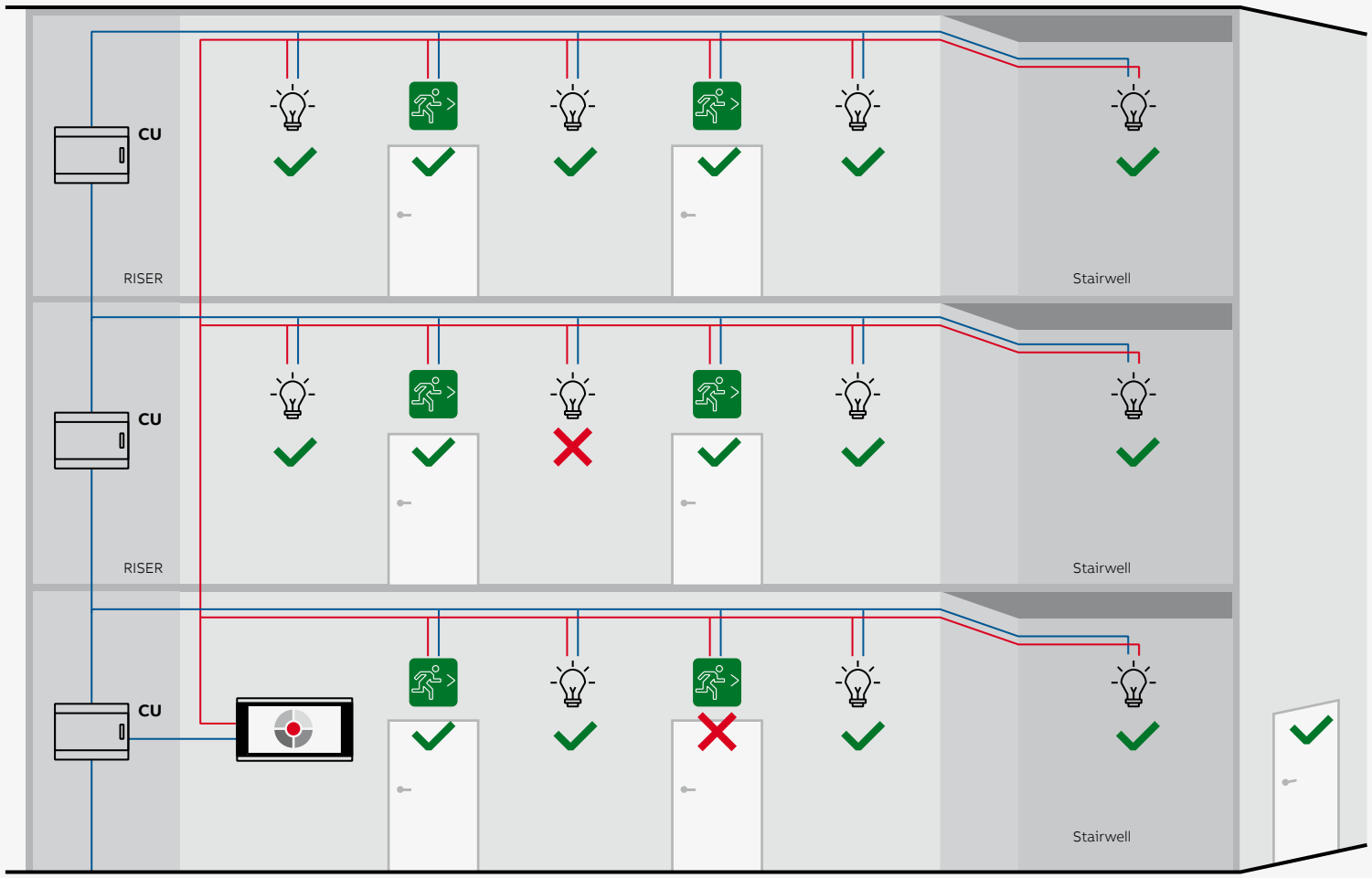
EDUCATIONAL

ARCHITECTURE

APPLICATION DETAILS

5.5 HVAC Control

Emergency Lighting
DALI (EUR)



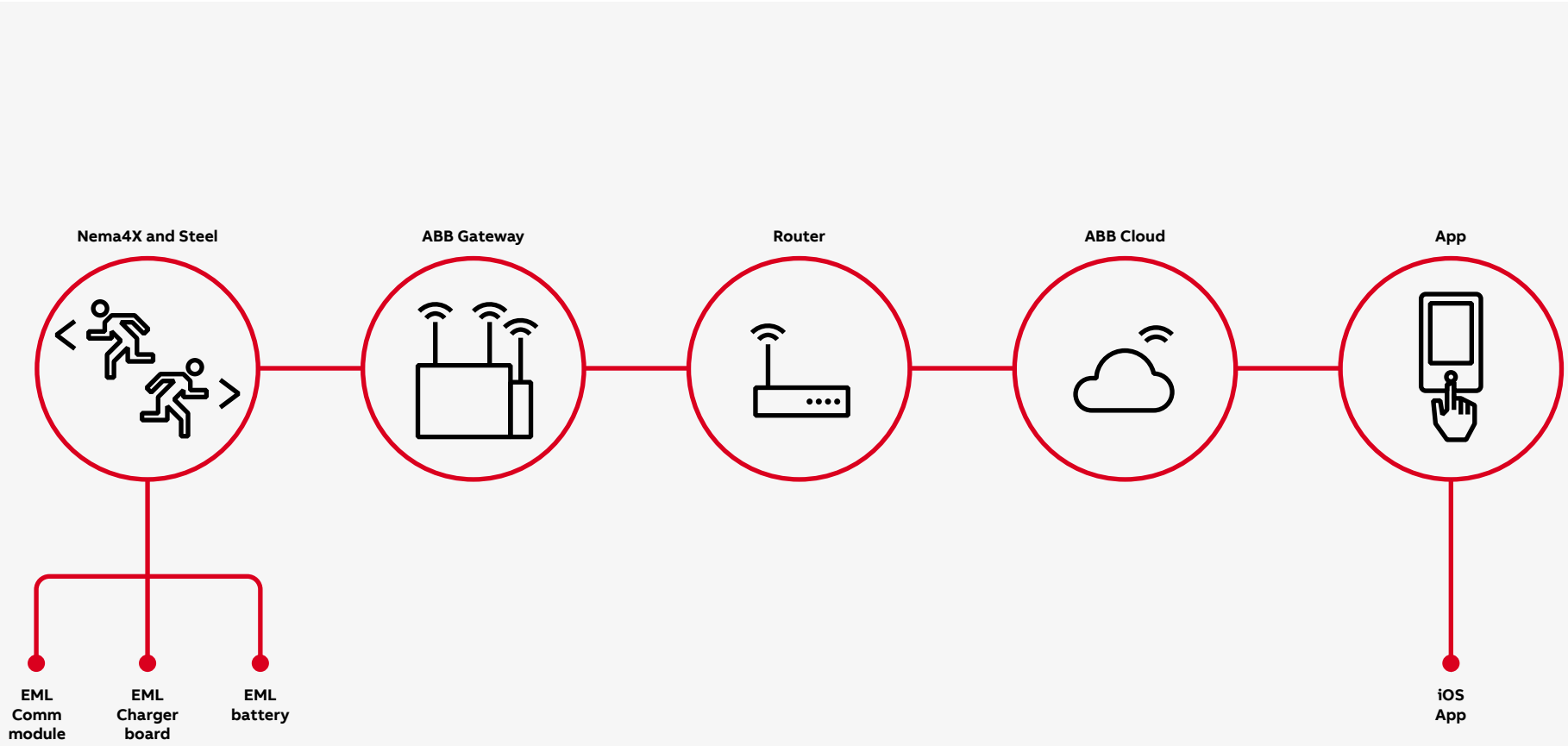
5

EDUCATIONAL

ARCHITECTURE

APPLICATION DETAILS

Emergency Lighting
Nexus®Pro (NAM)



5

EDUCATIONAL

ARCHITECTURE

APPLICATION DETAILS

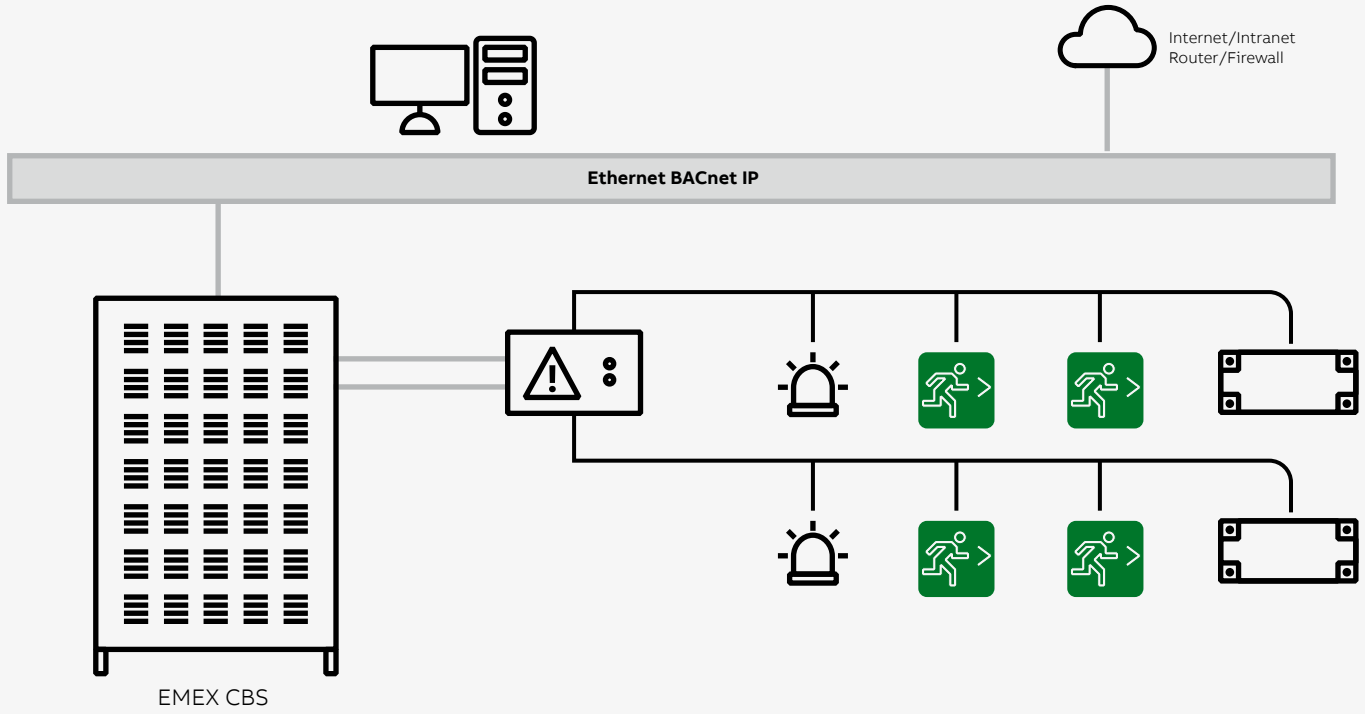
5.6 Emergency Lighting

DALI (EUR)

Nexus®Pro (NAM)

Central Battery (UK, MEA)

Emergency Lighting
Central Battery (UK, MEA)



5

EDUCATIONAL

ARCHITECTURE

APPLICATION DETAILS

5.6 Emergency Lighting

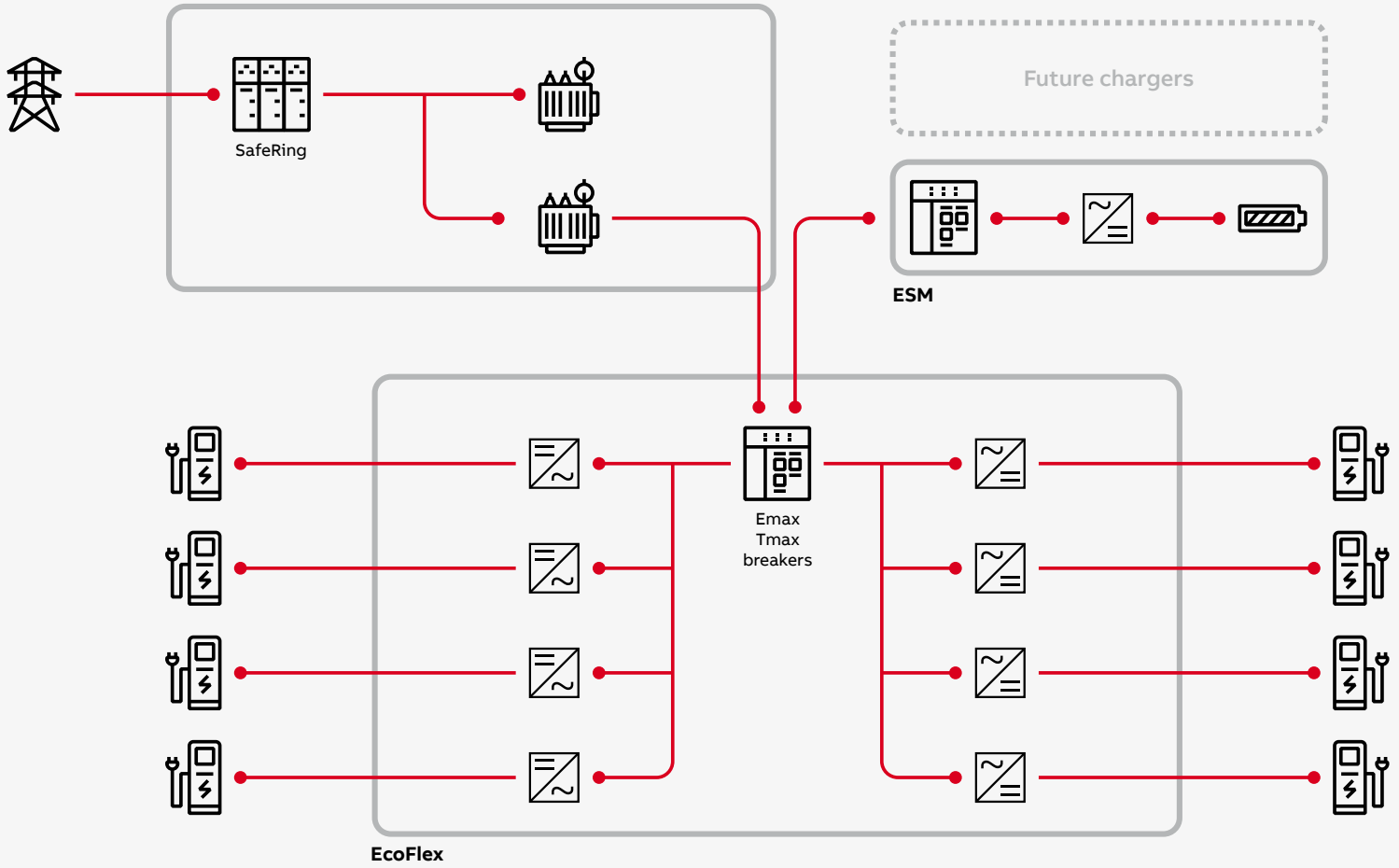
DALI (EUR)

Nexus®Pro (NAM)

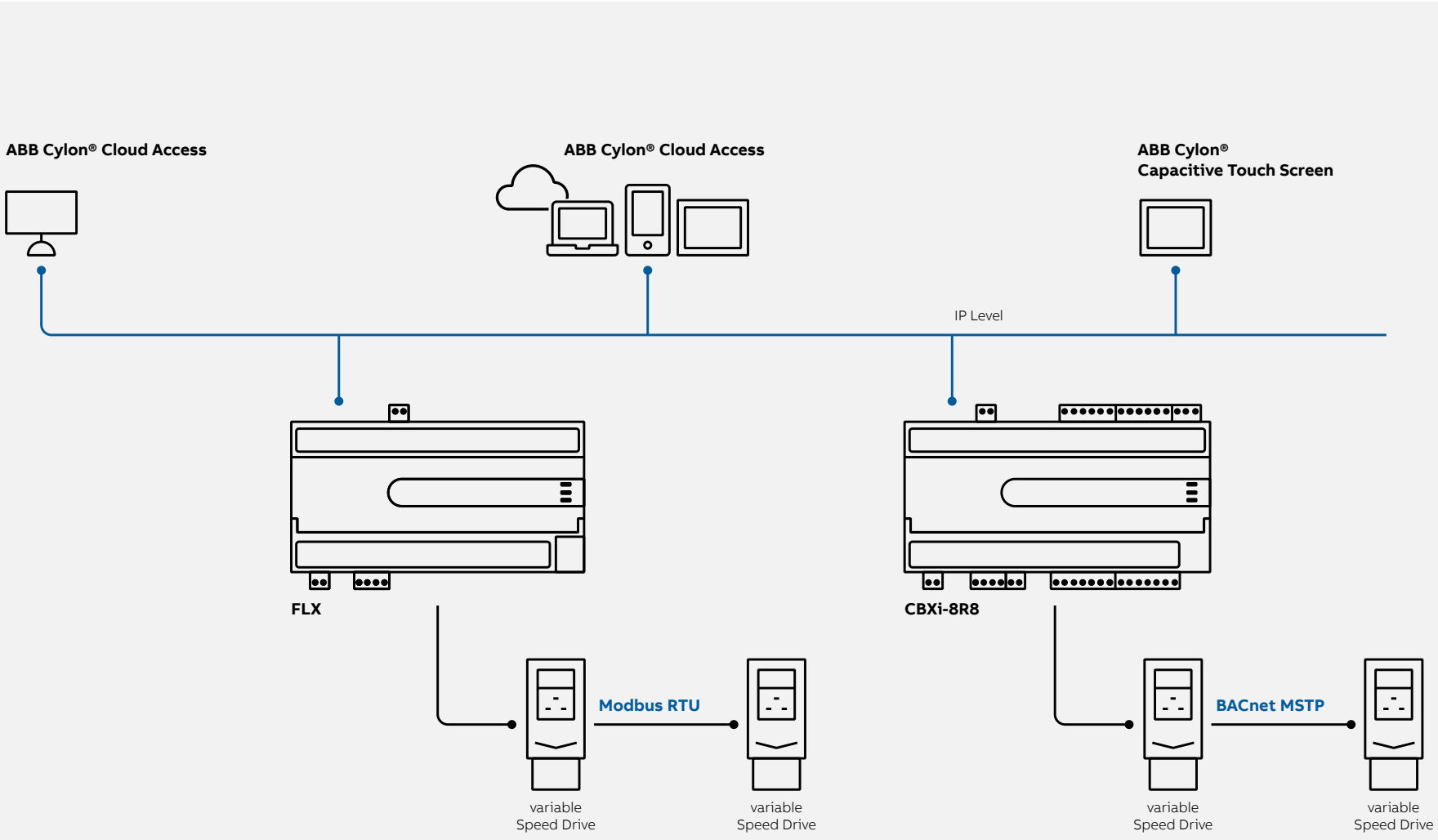
Central Battery (UK, MEA)

EV Charging

Fleet Charging Ecoflex

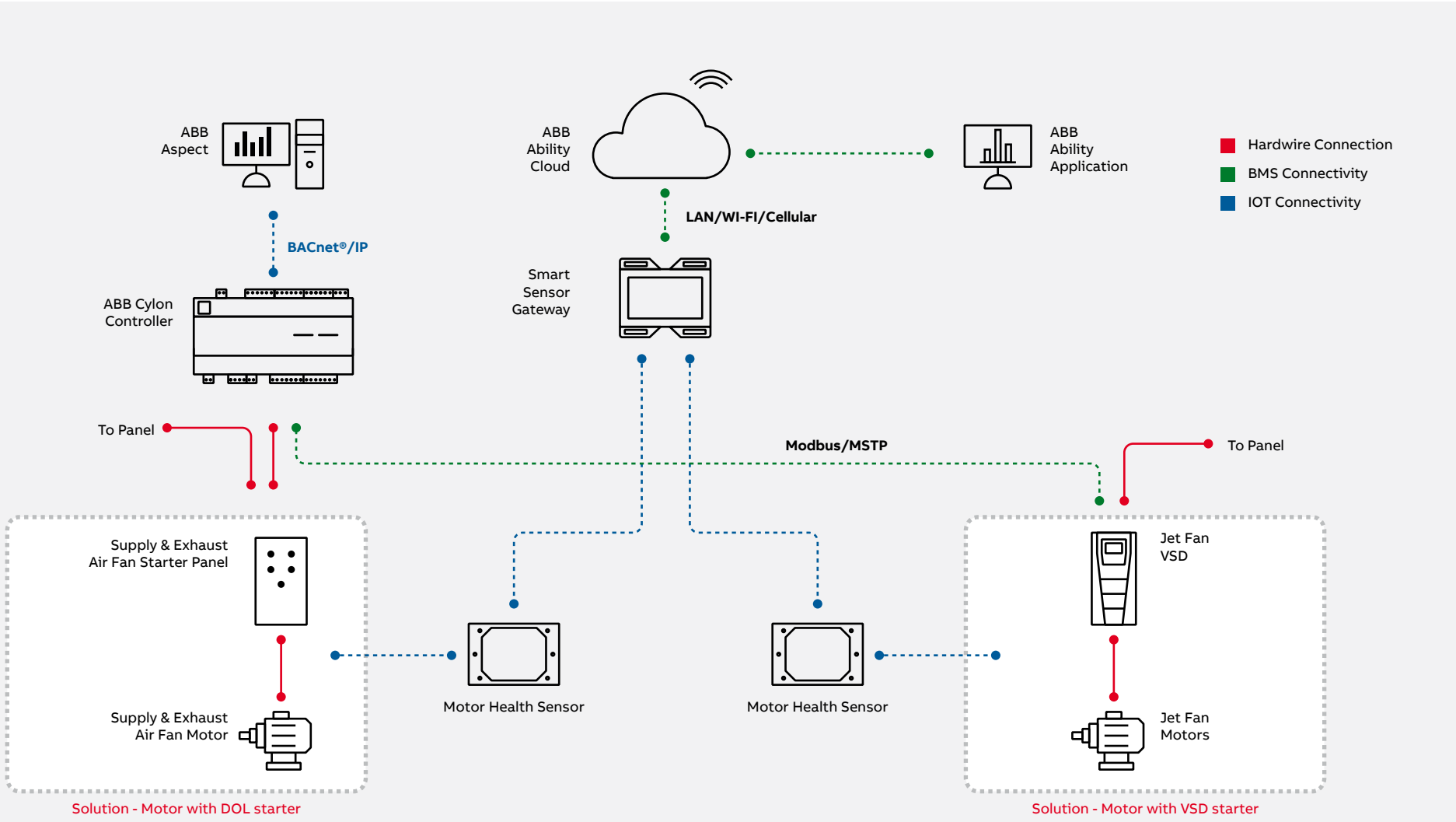


Drives & Motors
Overview



Drives & Motors

Sensors and Variable Speed Drives

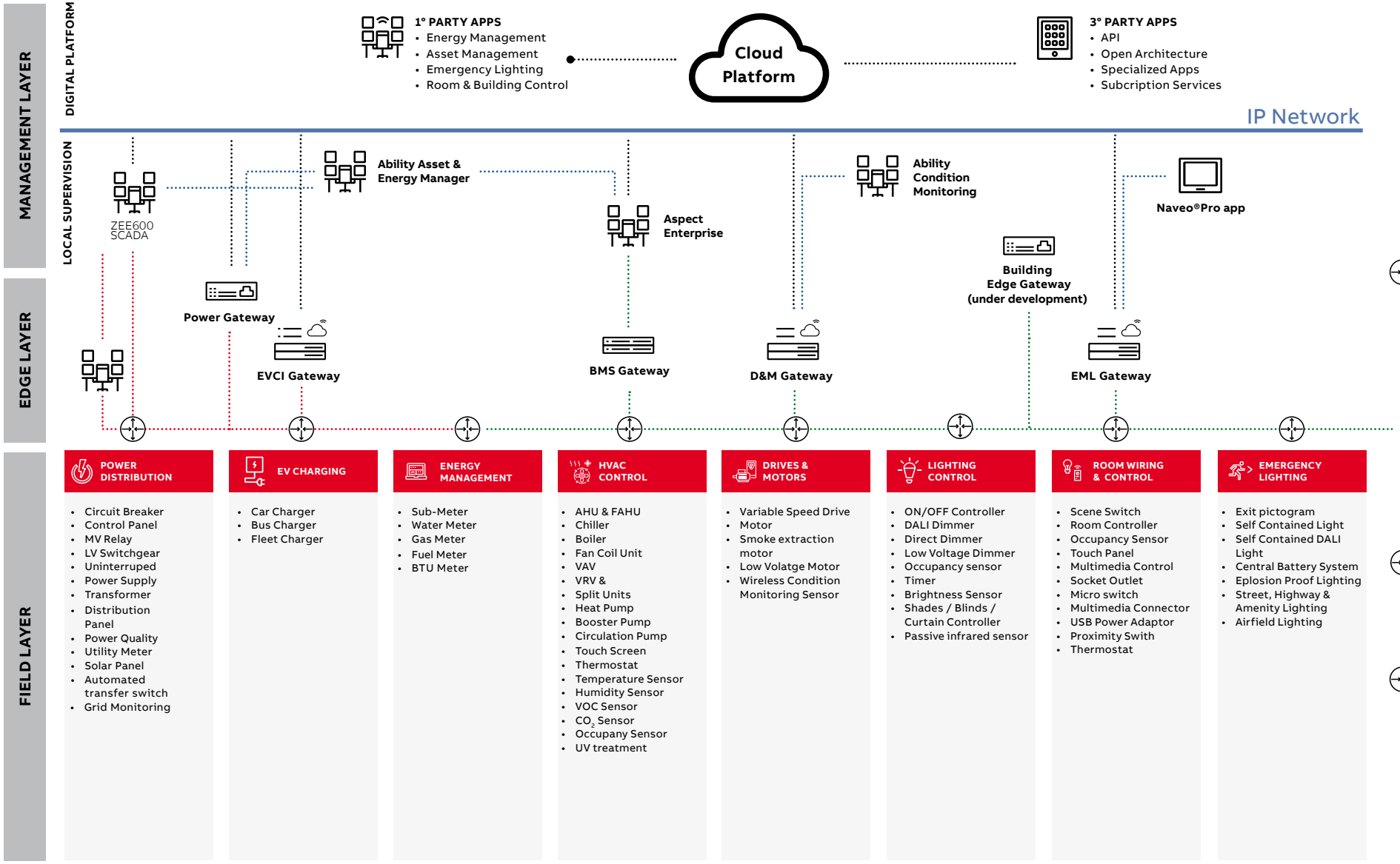


6

Infrastructure

ENTER

Reference Architecture
Infrastructure



INFRASTRUCTURE

ABB OFFERING

INTEGRATION OFFERING

APPLICATION INTERFACE

PREVIOUS

APPLICATION DETAILS

Infrastructure Reference Architecture
Application details

6

6.1 Power Distribution
- Overview
- Edge Layer
- Protection and Control
- Motor starting and protection for HVAC
- Uninterrupted Power Supply
- Lighting Power Distribution

6.2 Energy Management
- Overview
- Multi Site Mgmt
- Metering architecture

6.3 Lighting Control
- Overview
- Room Automation
- Indoor Environment Control

6.4 Room Wiring & Control

6.5 HVAC Control

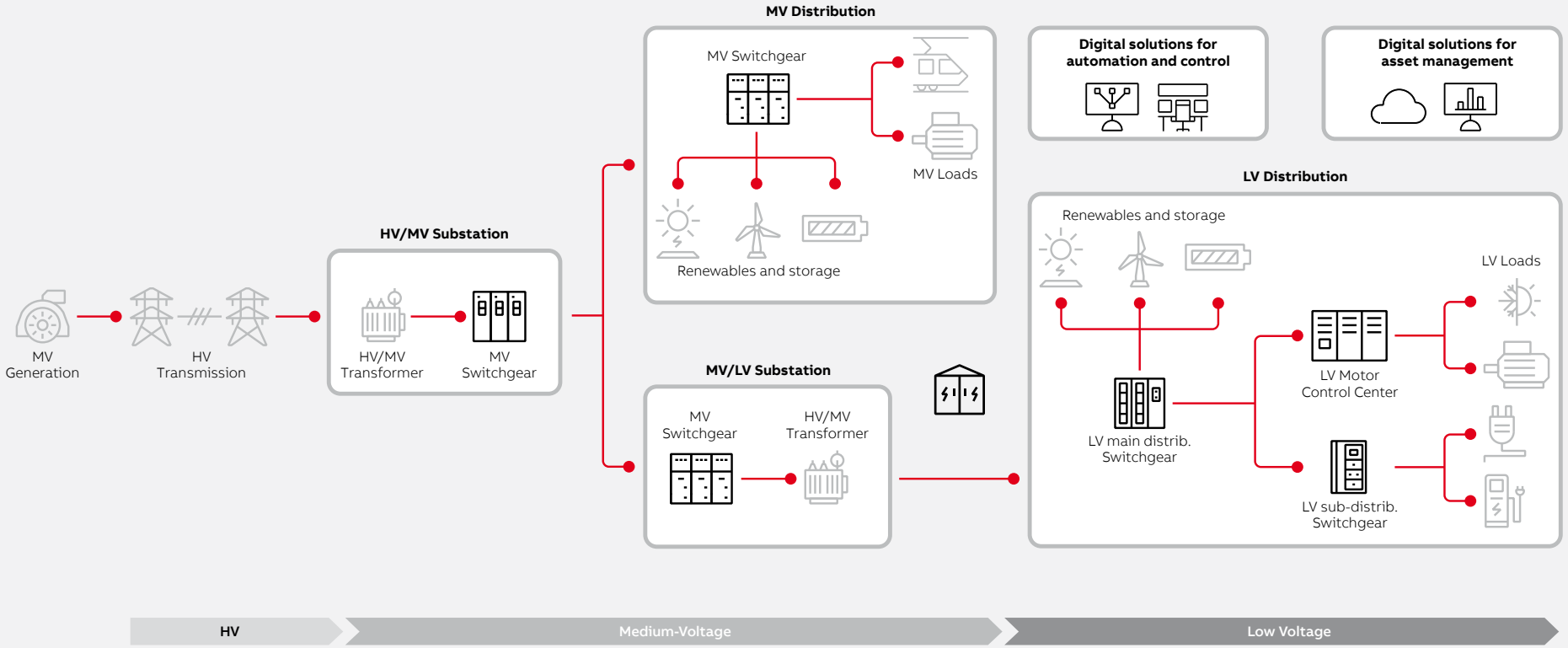
6.6 Emergency Lighting
- DALI (EUR)
- Nexus®Pro (NAM)
- Central Battery (UK, MEA)

6.7 EV Charging
- Overview
- Fleet charging

6.8 Drives & Motors
- Overview
- Sensors and Variable Speed Drives

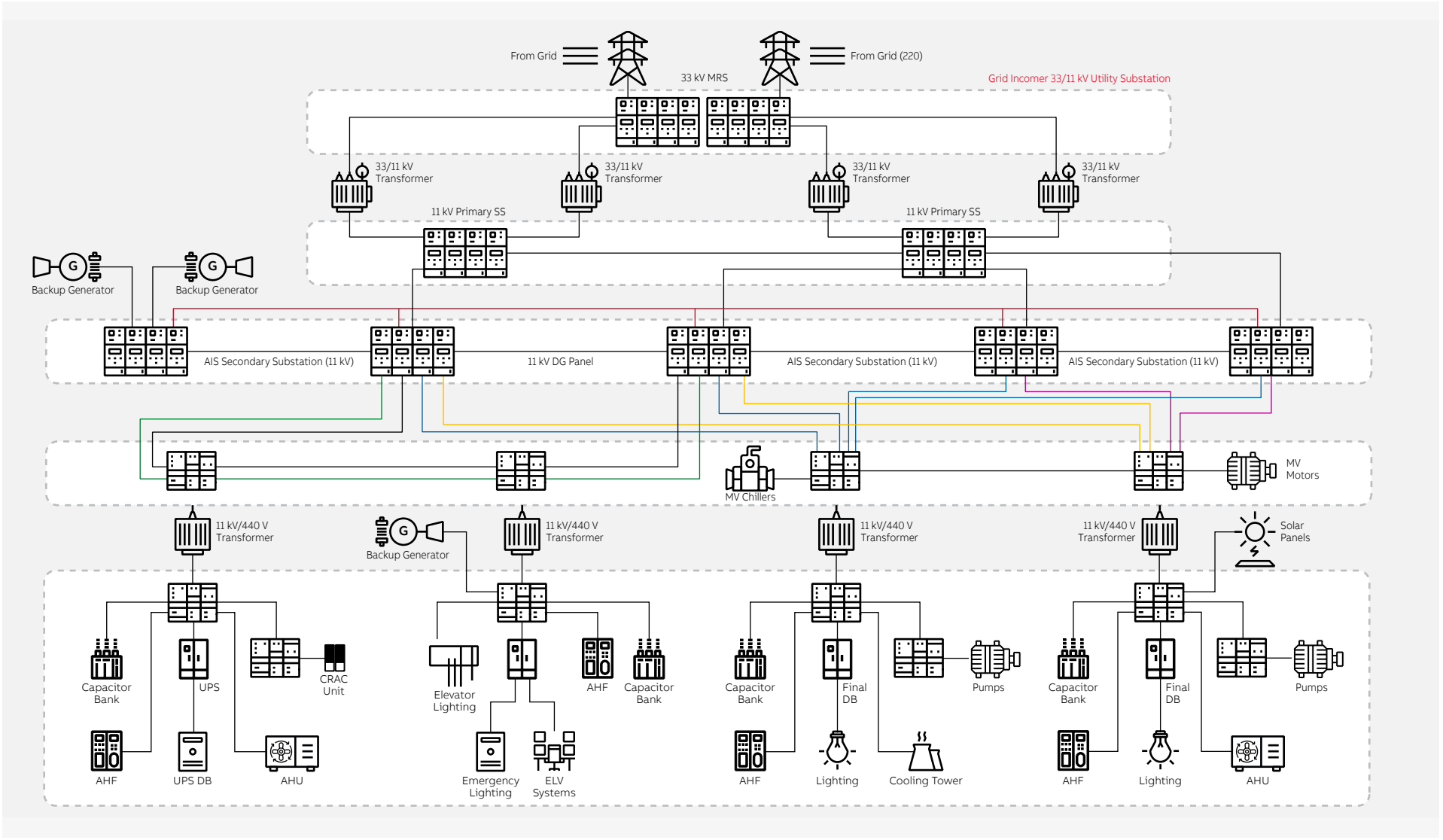
Power Distribution
Overview

General topology diagram



Power Distribution
Overview

Single line diagram - typical 01



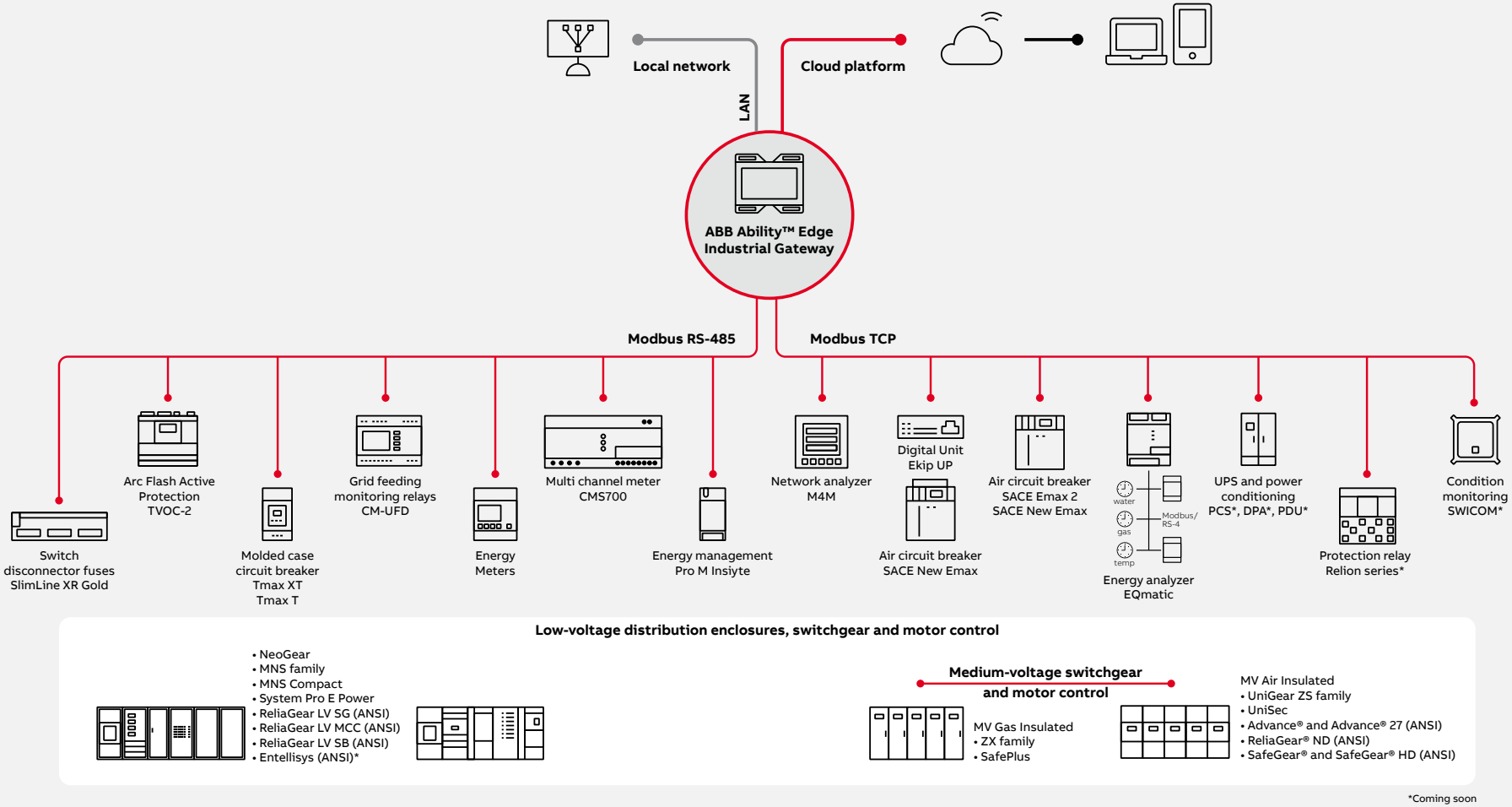
6

INFRASTRUCTURE

ARCHITECTURE

APPLICATION DETAILS

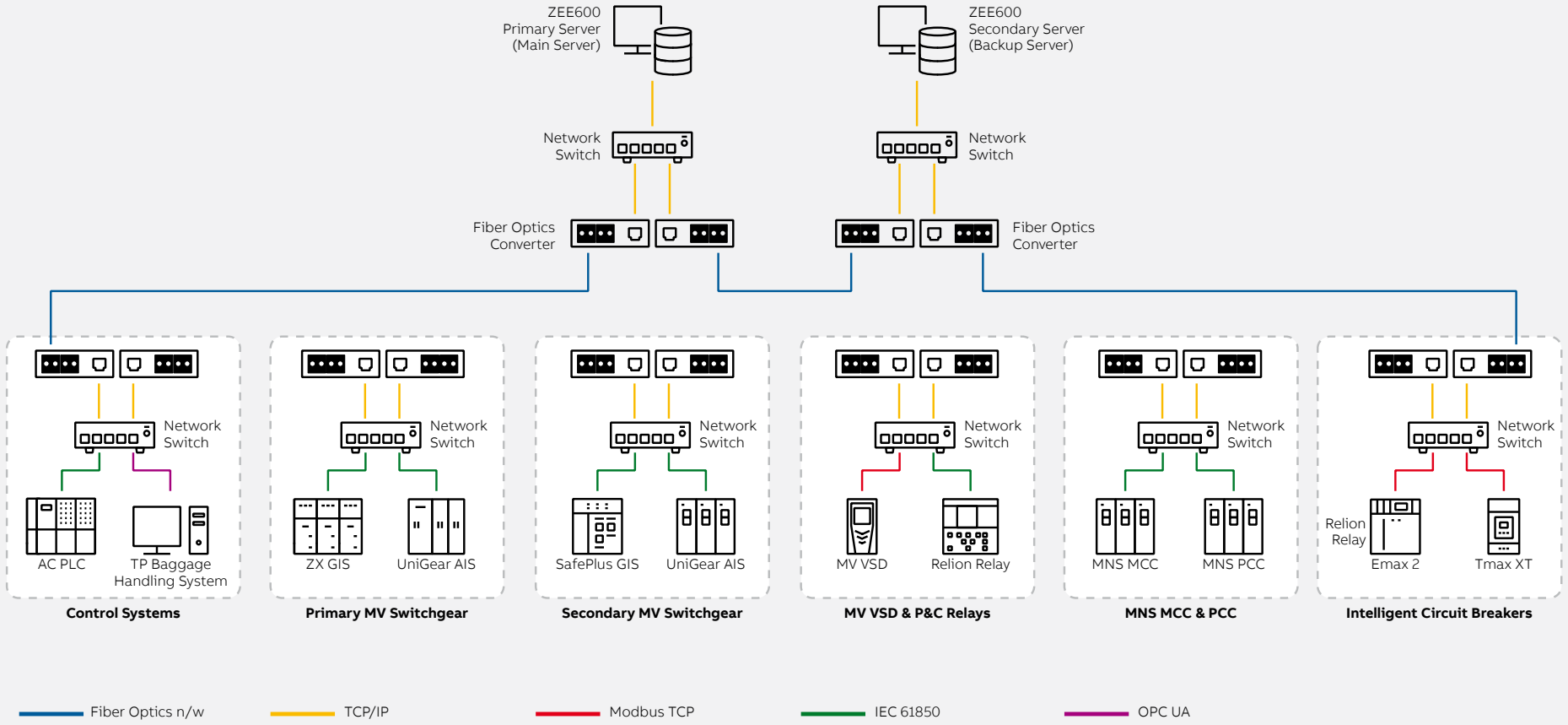
Power Distribution
Edge Layer



*Coming soon

6

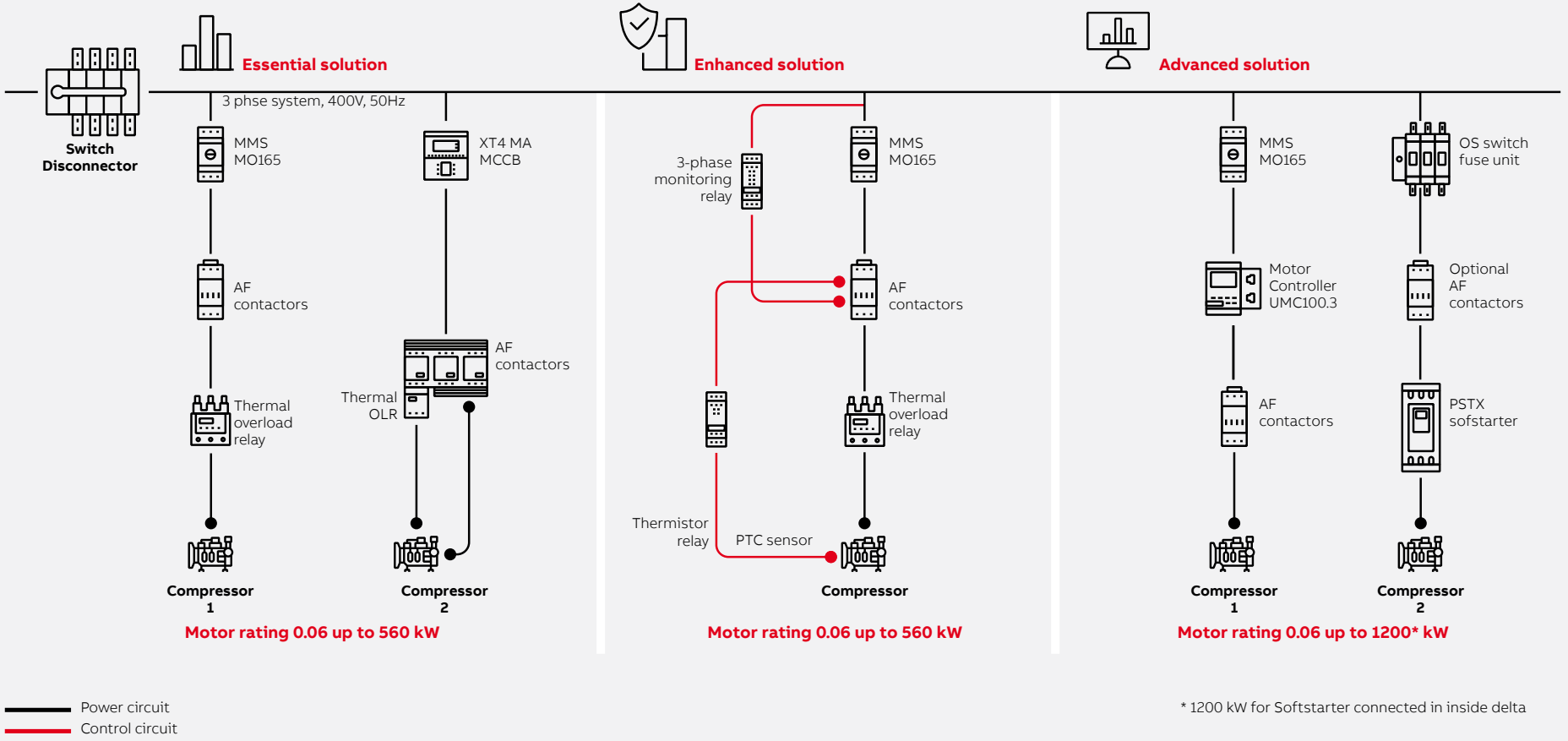
Power Distribution
Protection and Control



Power Distribution

Motor starting and protection for HVAC

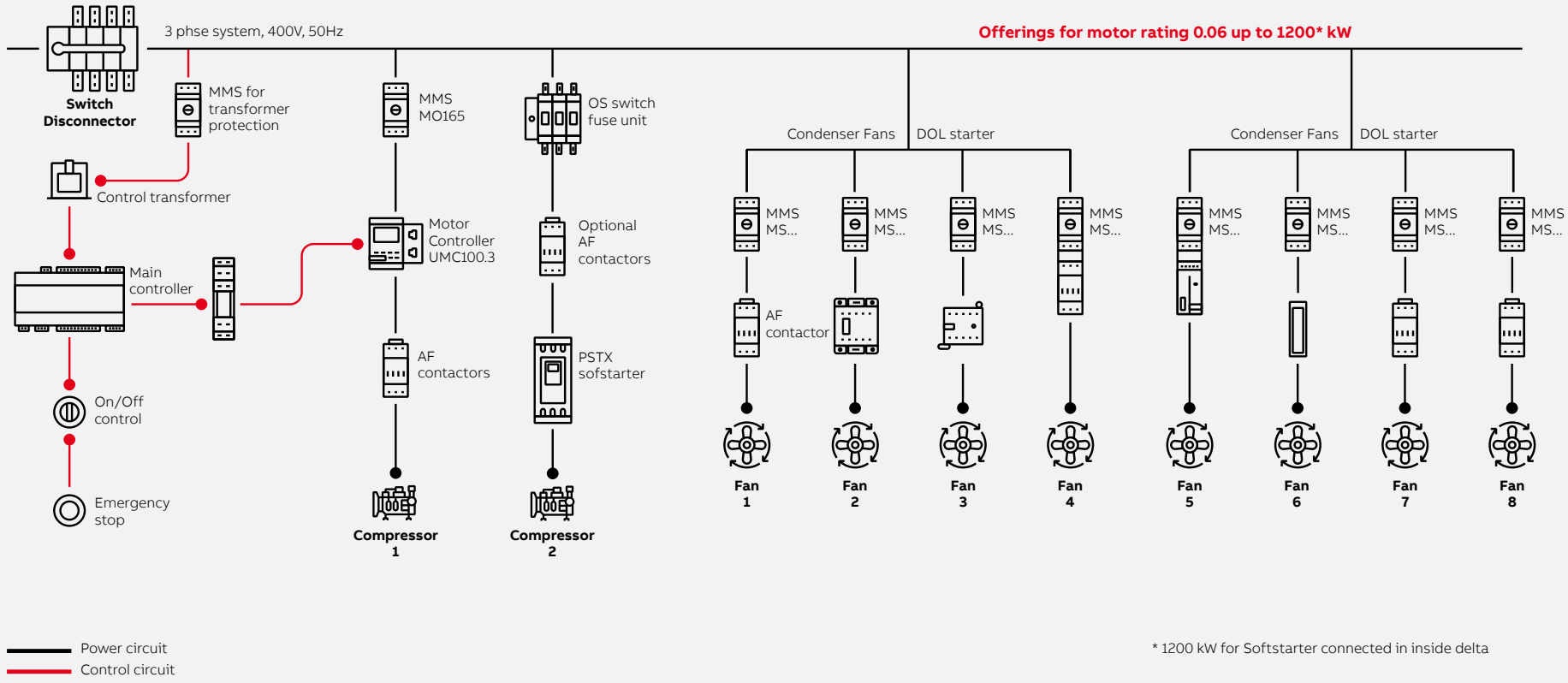
Water Cooled Chillers



Power Distribution

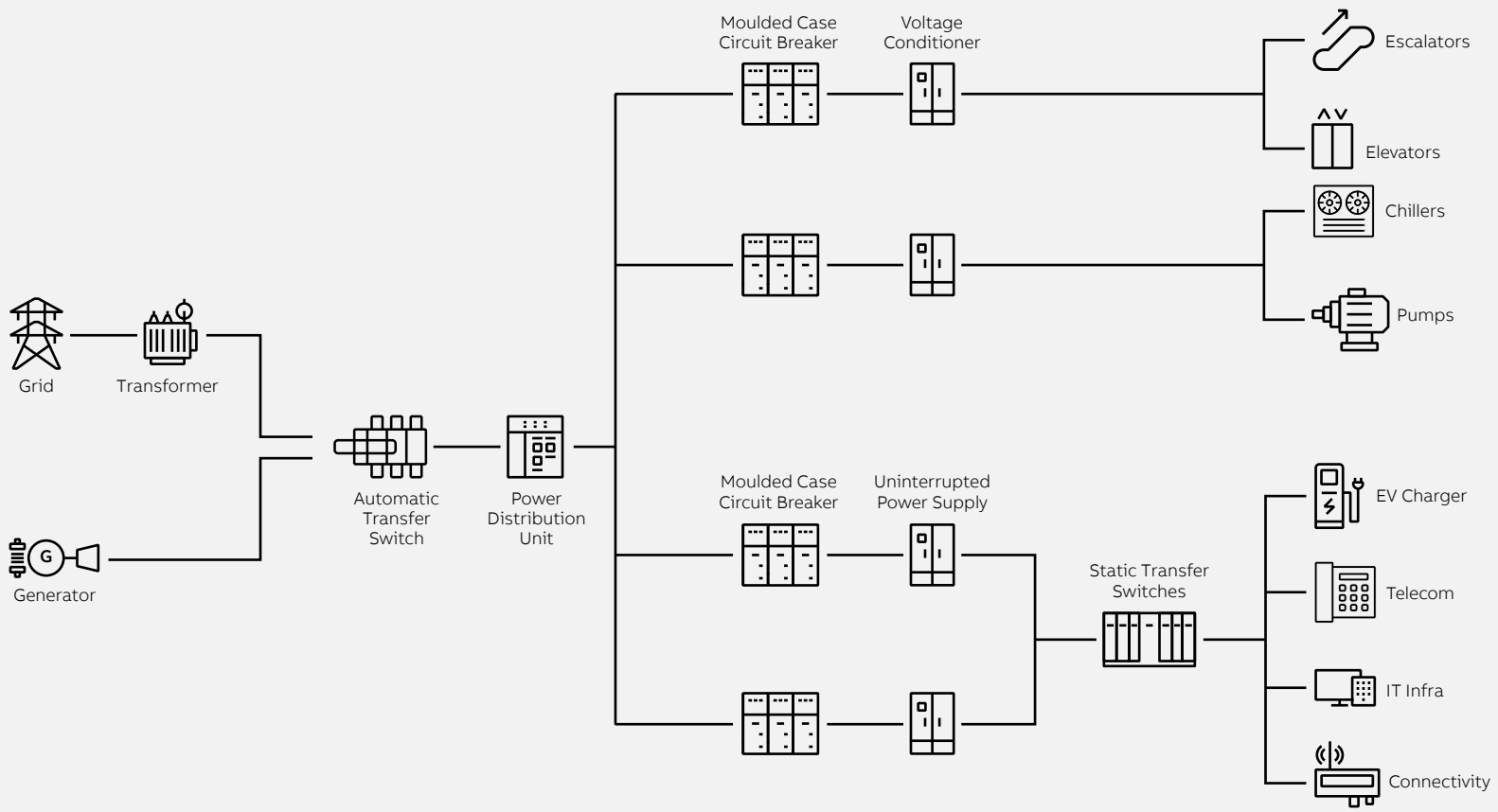
Motor starting and protection for HVAC

Air Cooled Chillers

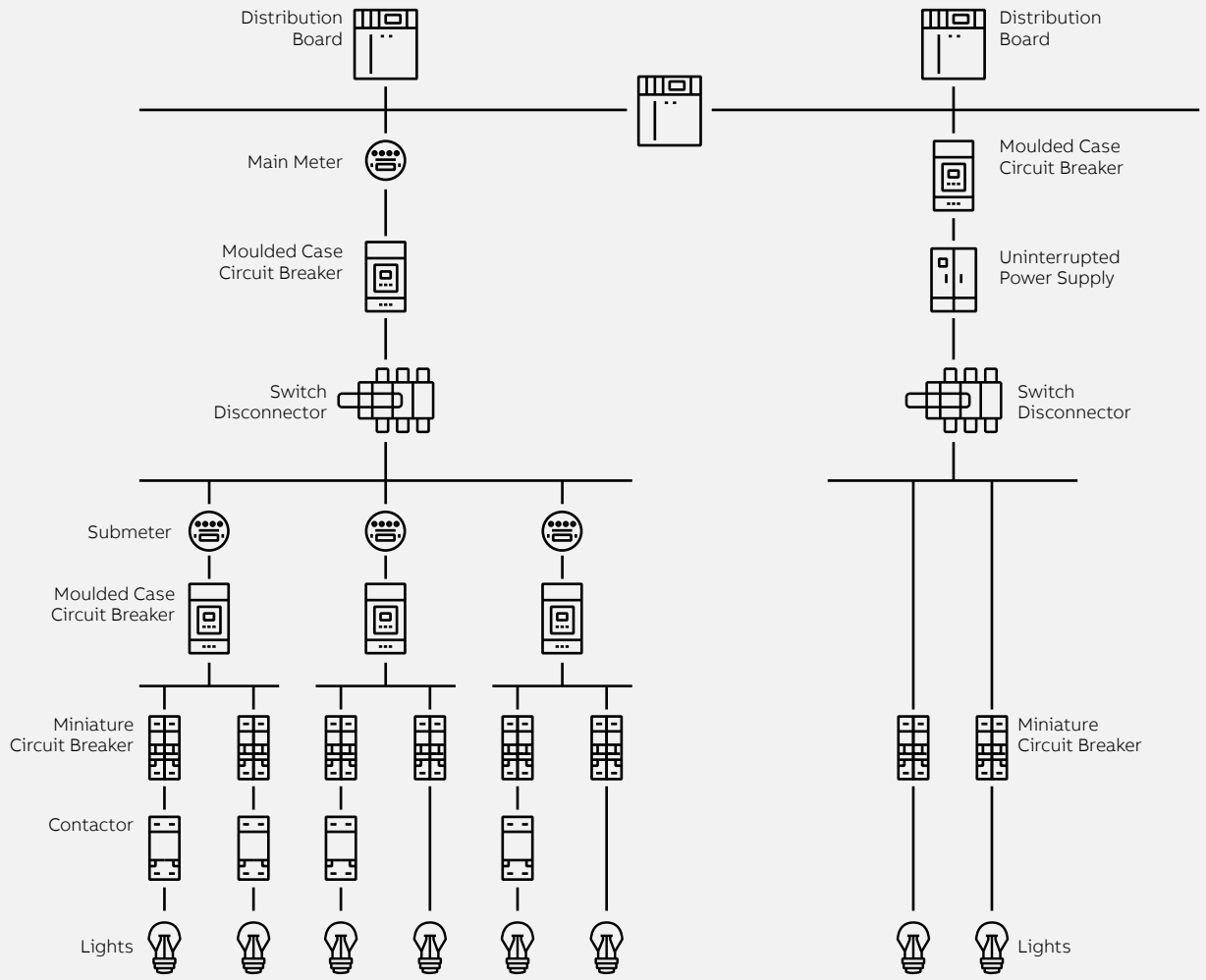


Power Distribution
Uninterrupted Power Supply

Power Backup and Voltage Conditioning

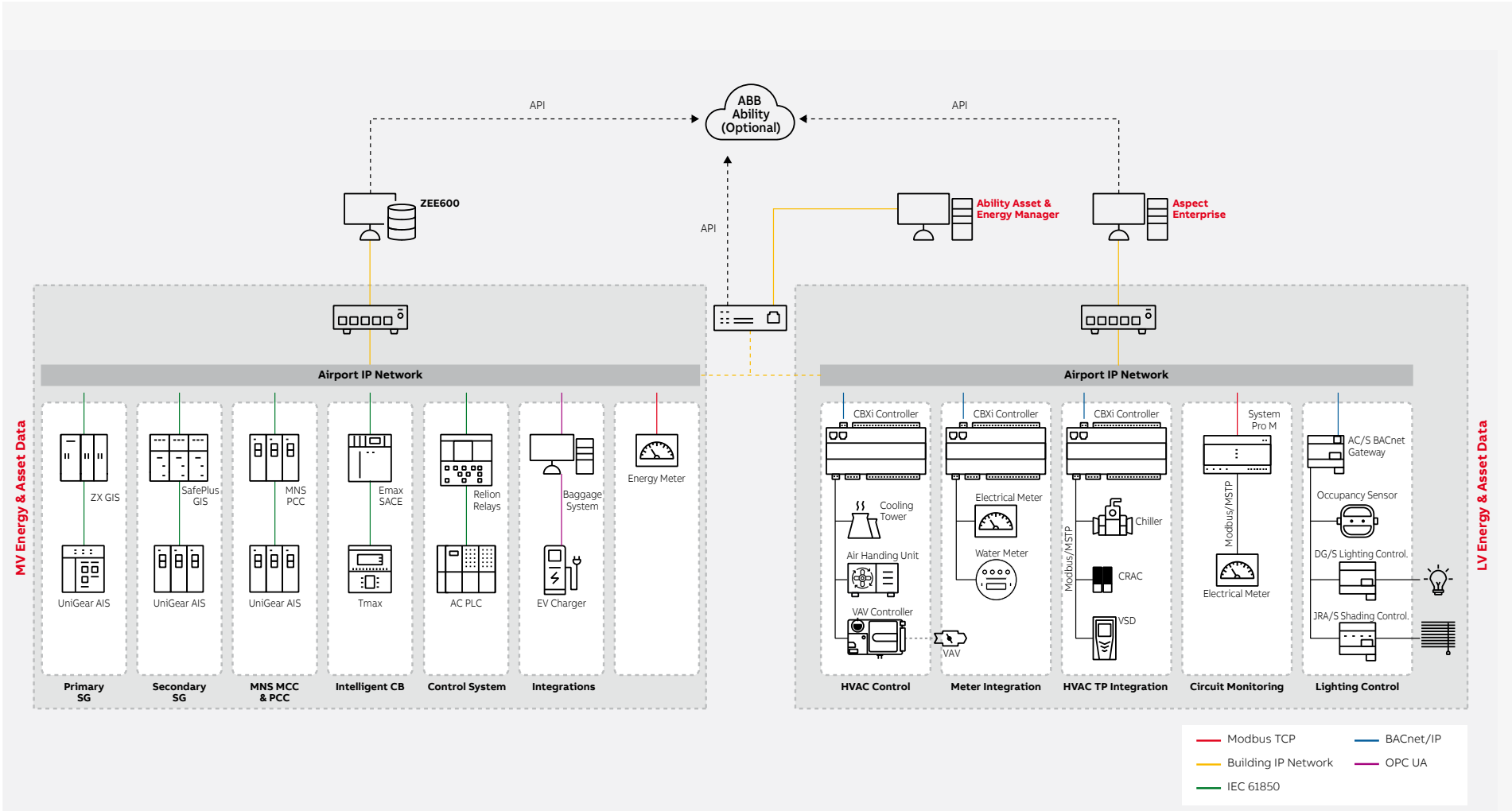


Power Distribution
Lighting Power Distribution

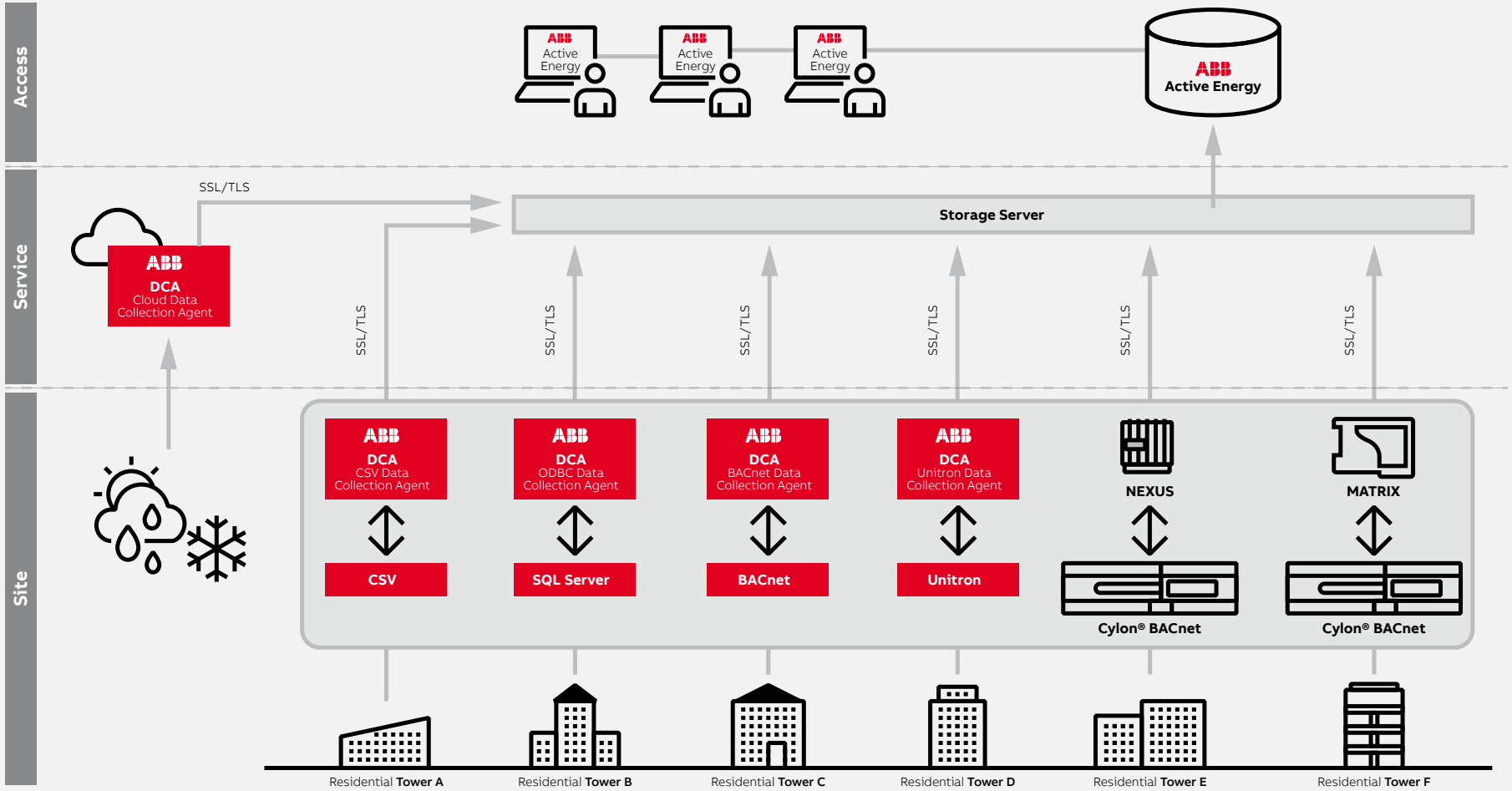


Energy Management
Overview

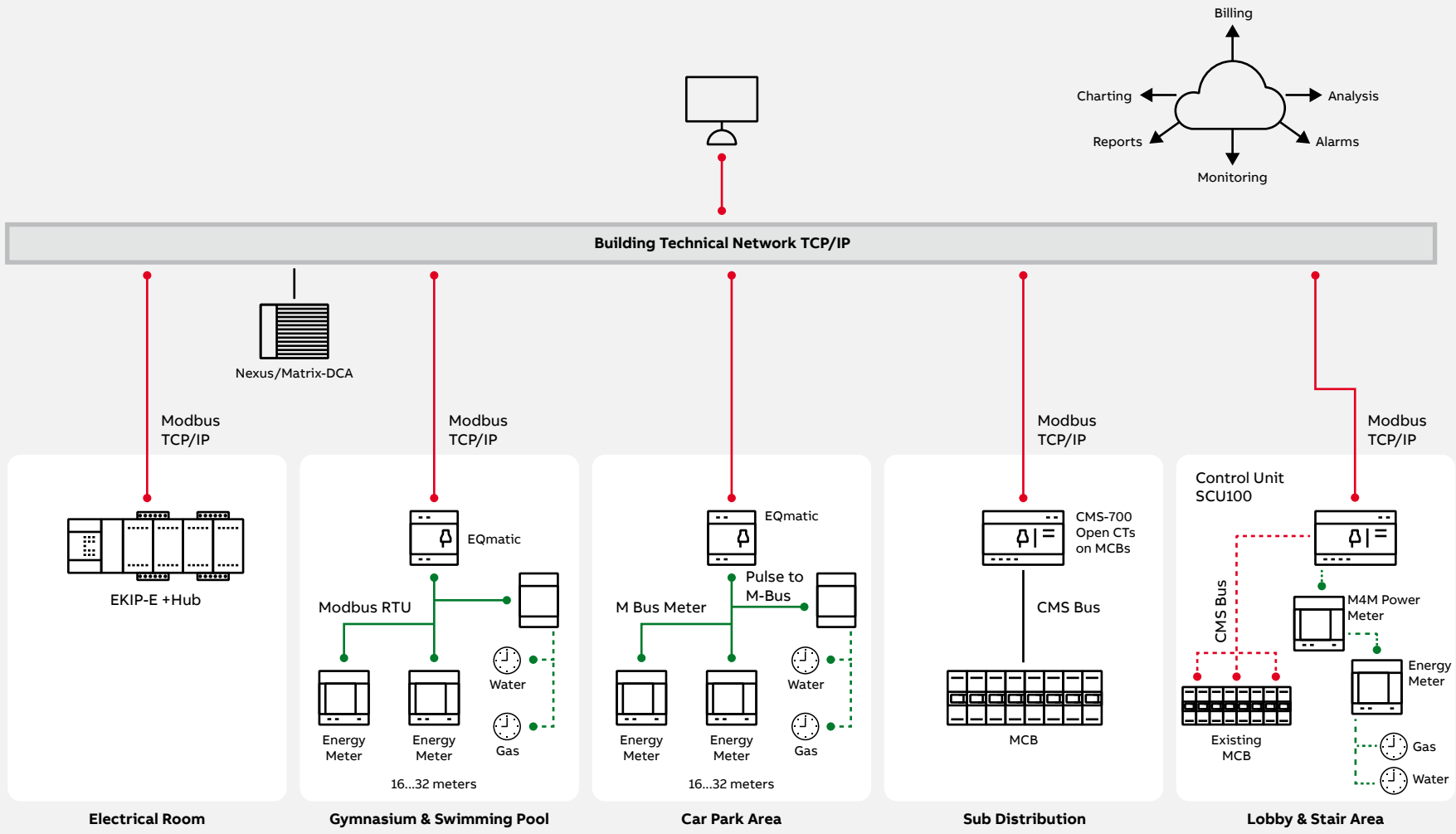
Energy & Asset Manager - typical 02



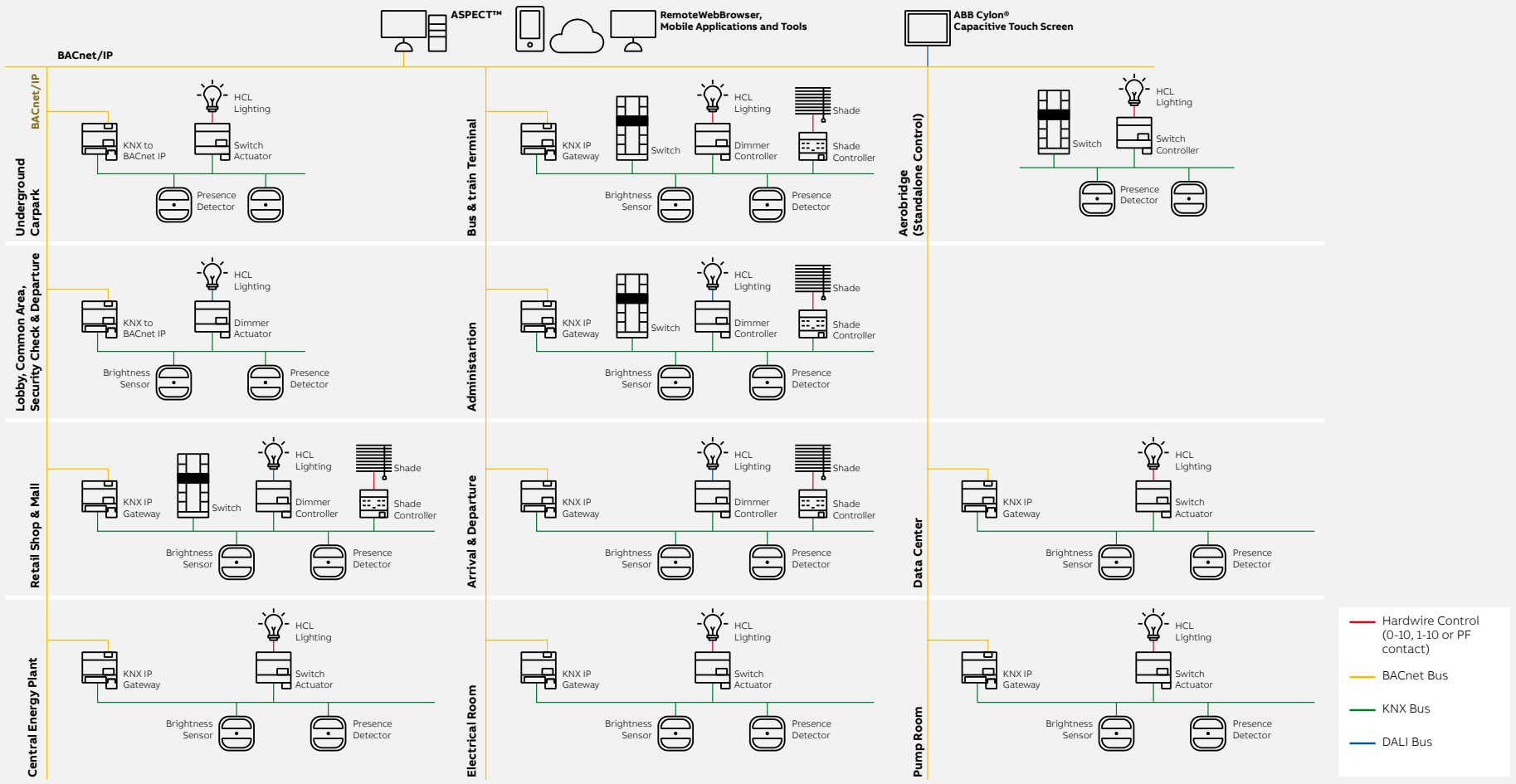
Energy Management
Multi Site Mgmt



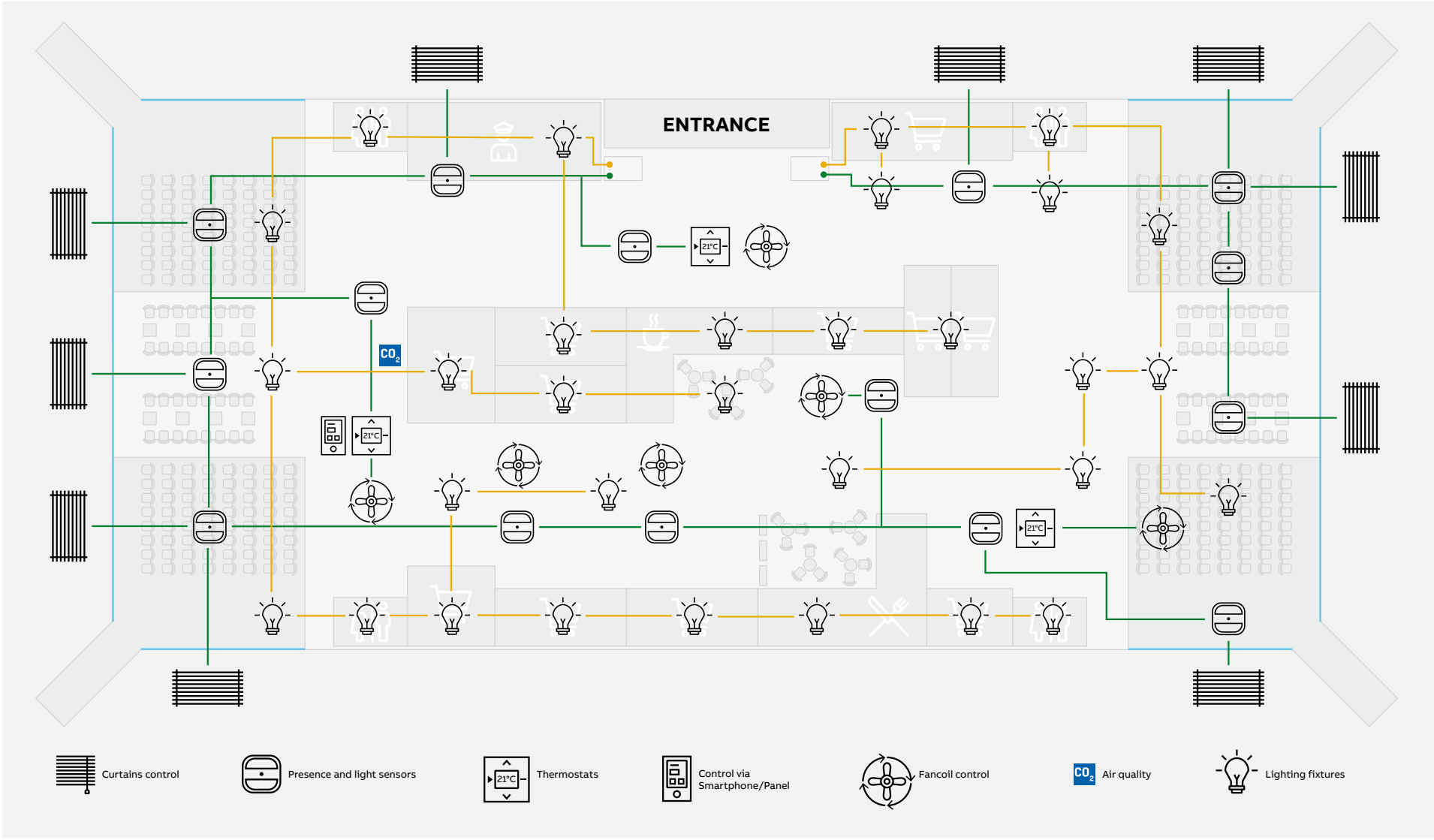
Energy Management
Metering Architecture



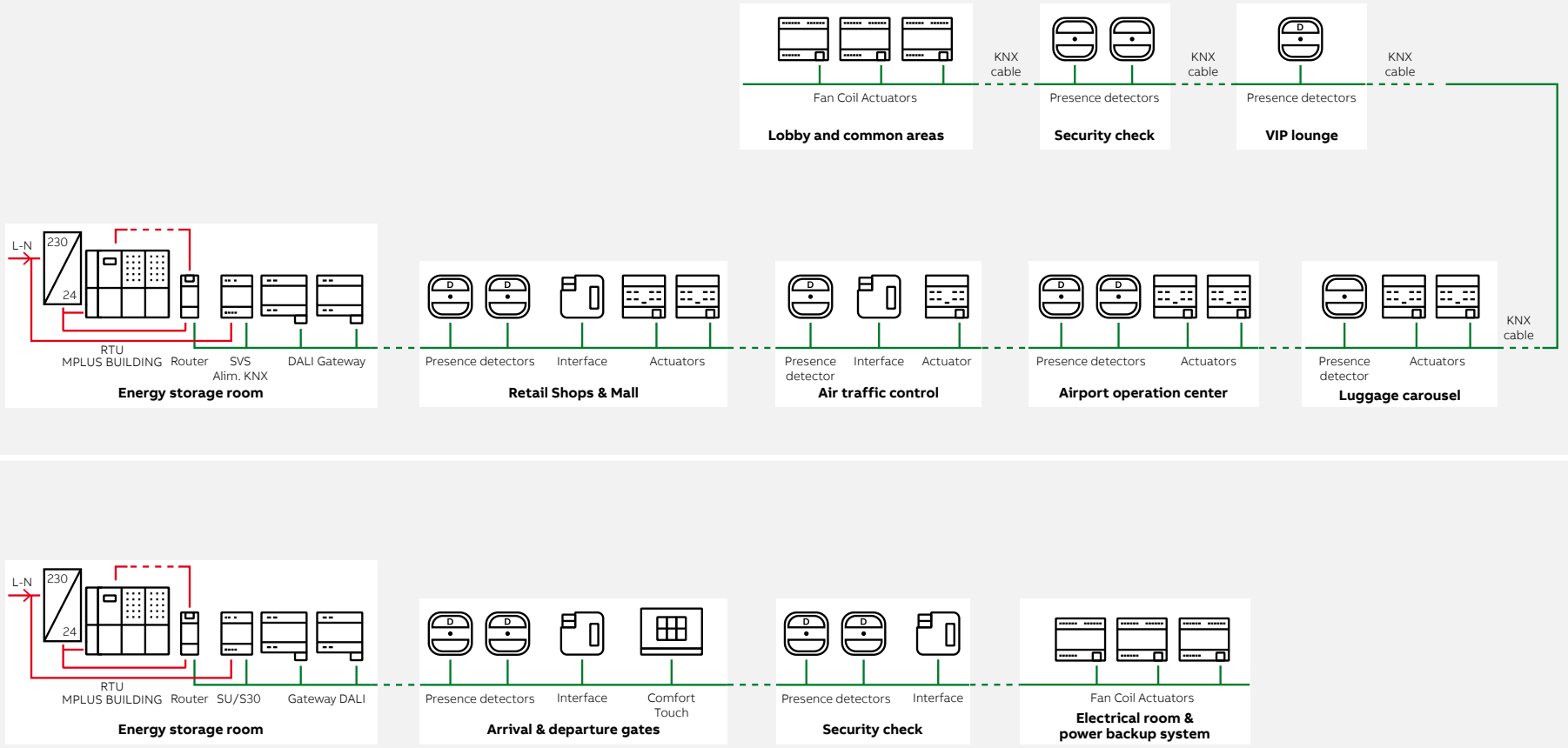
Lighting Control
Overview



Lighting Control
Room Automation



Lighting Control
Indoor Environment Control



6

INFRASTRUCTURE

ARCHITECTURE

APPLICATION DETAILS

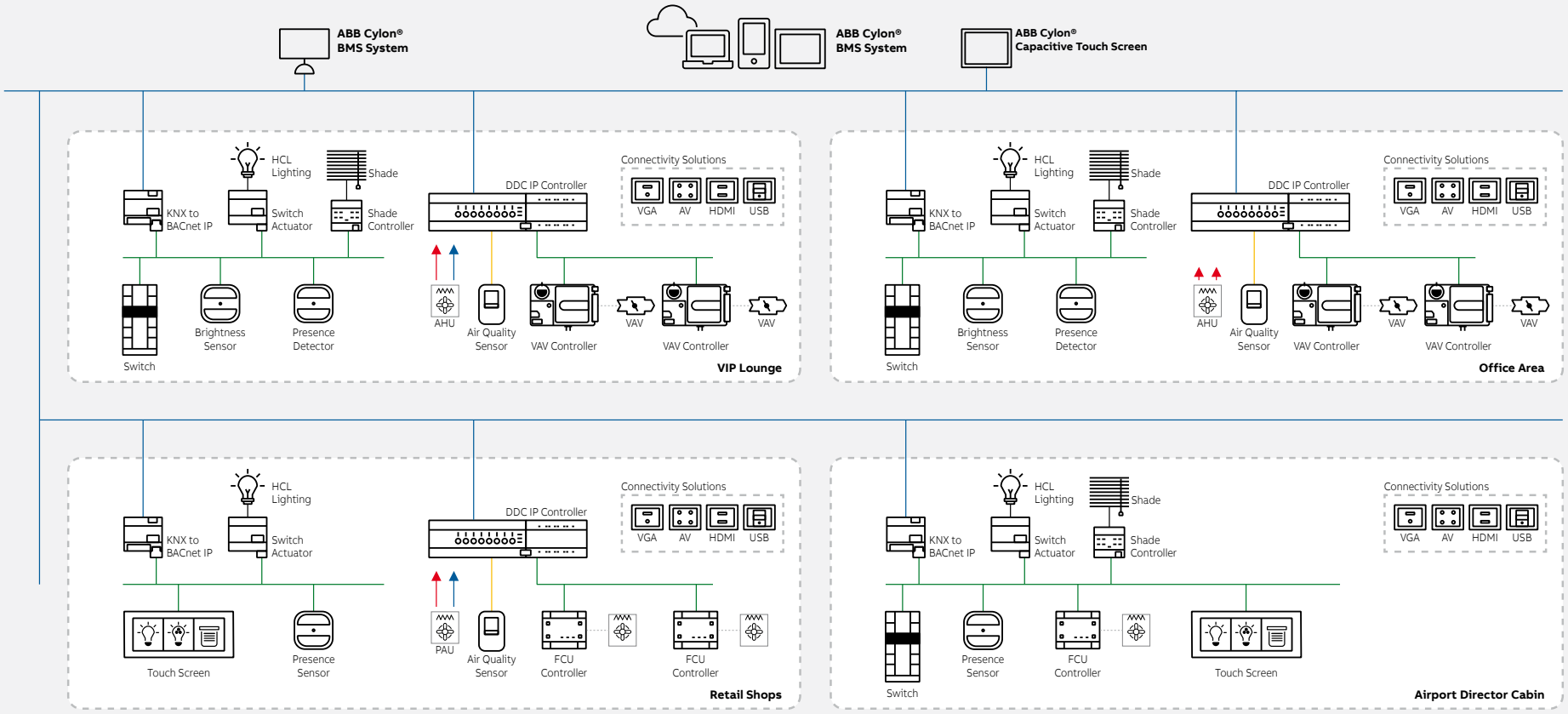
6.3 Lighting Control

Overview

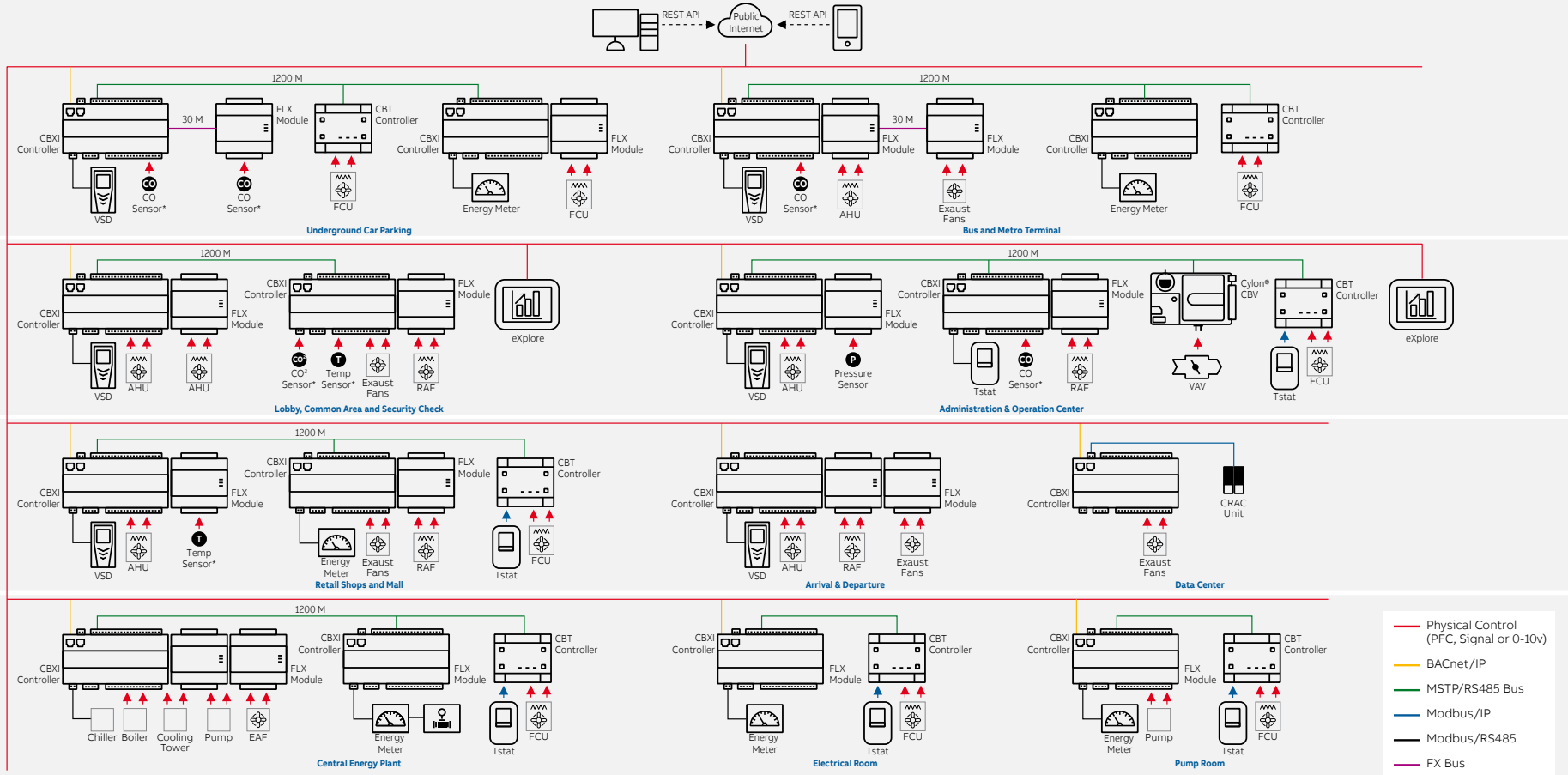
Room Automation

Indoor Environment Control

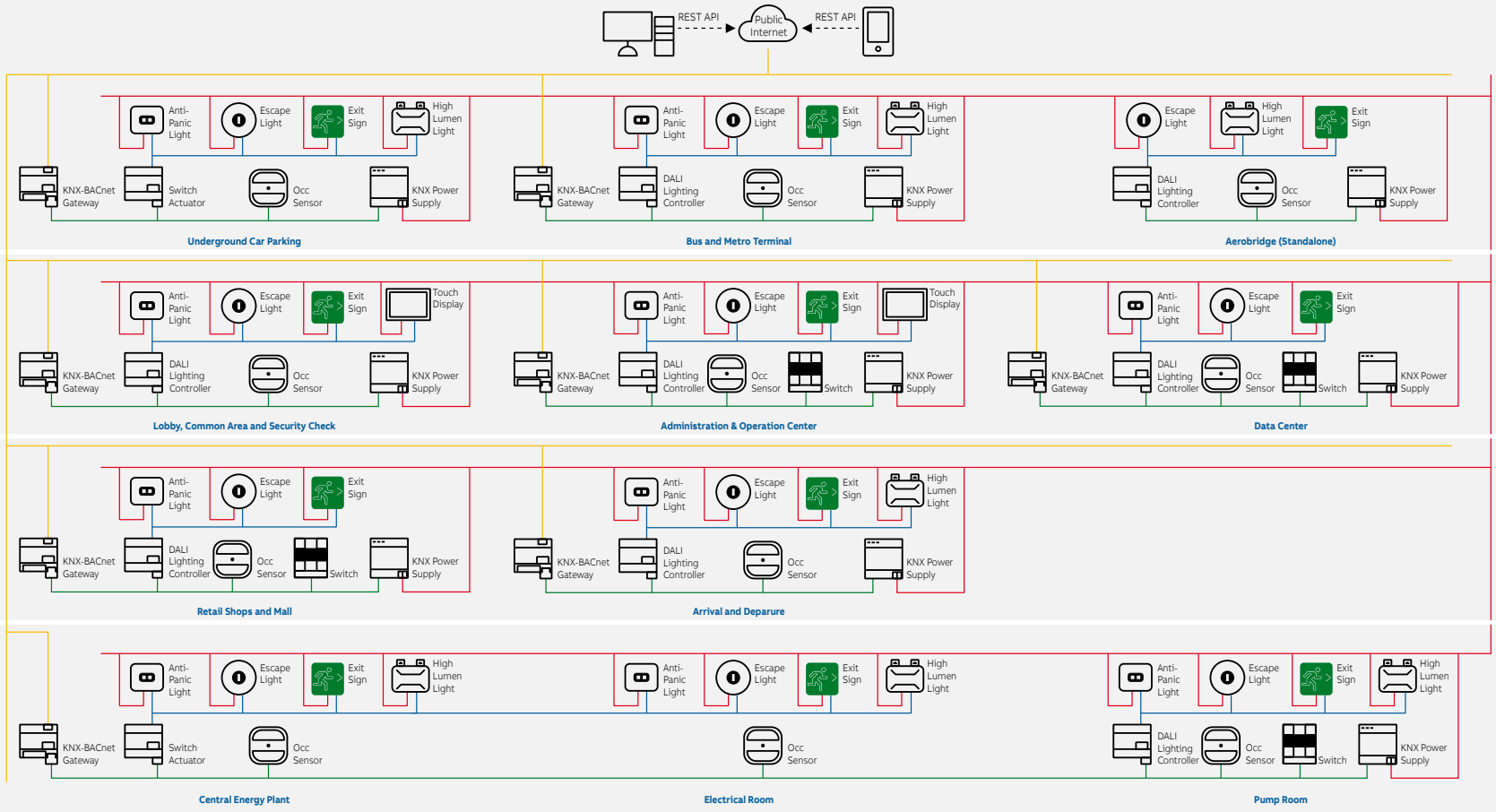
Room Wiring & Control



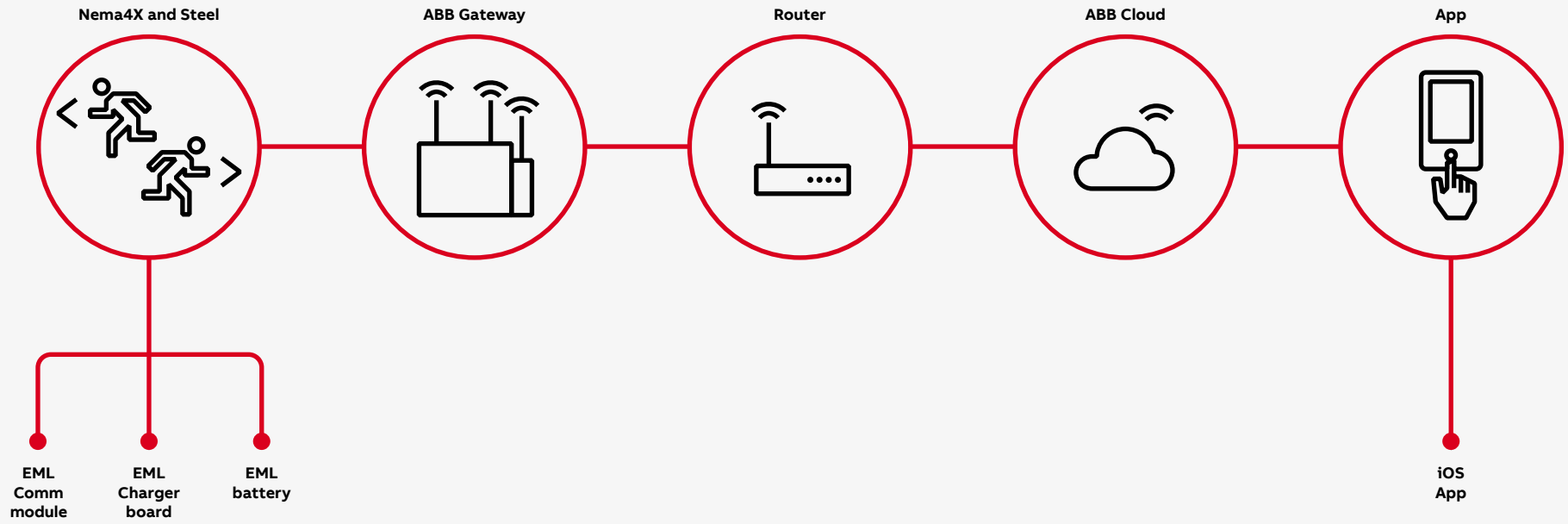
HVAC Control



Emergency Lighting
DALI (EUR)

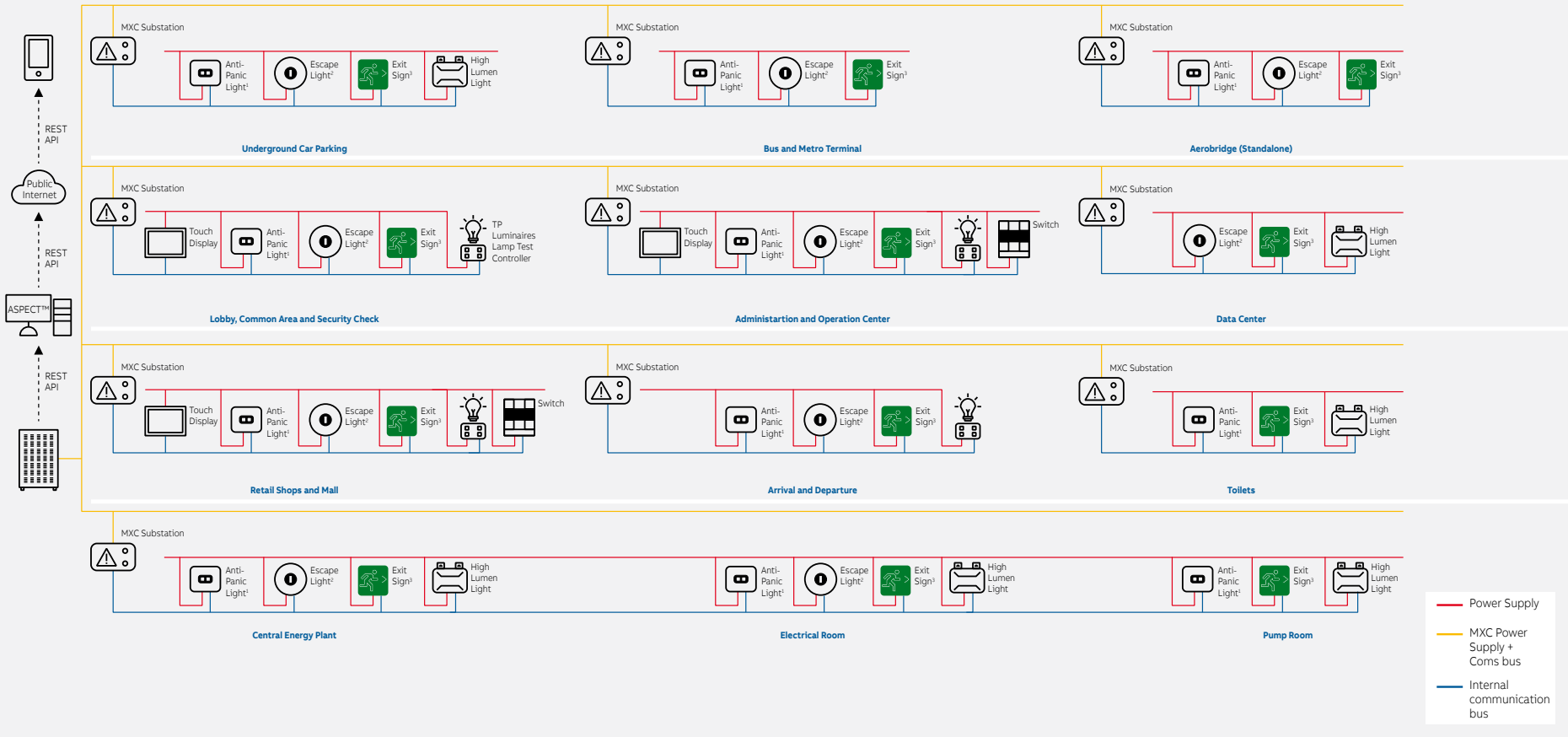


Emergency Lighting
Nexus®Pro (NAM)



6

Emergency Lighting
Central Battery (UK, MEA)



6

INFRASTRUCTURE

ARCHITECTURE

APPLICATION DETAILS

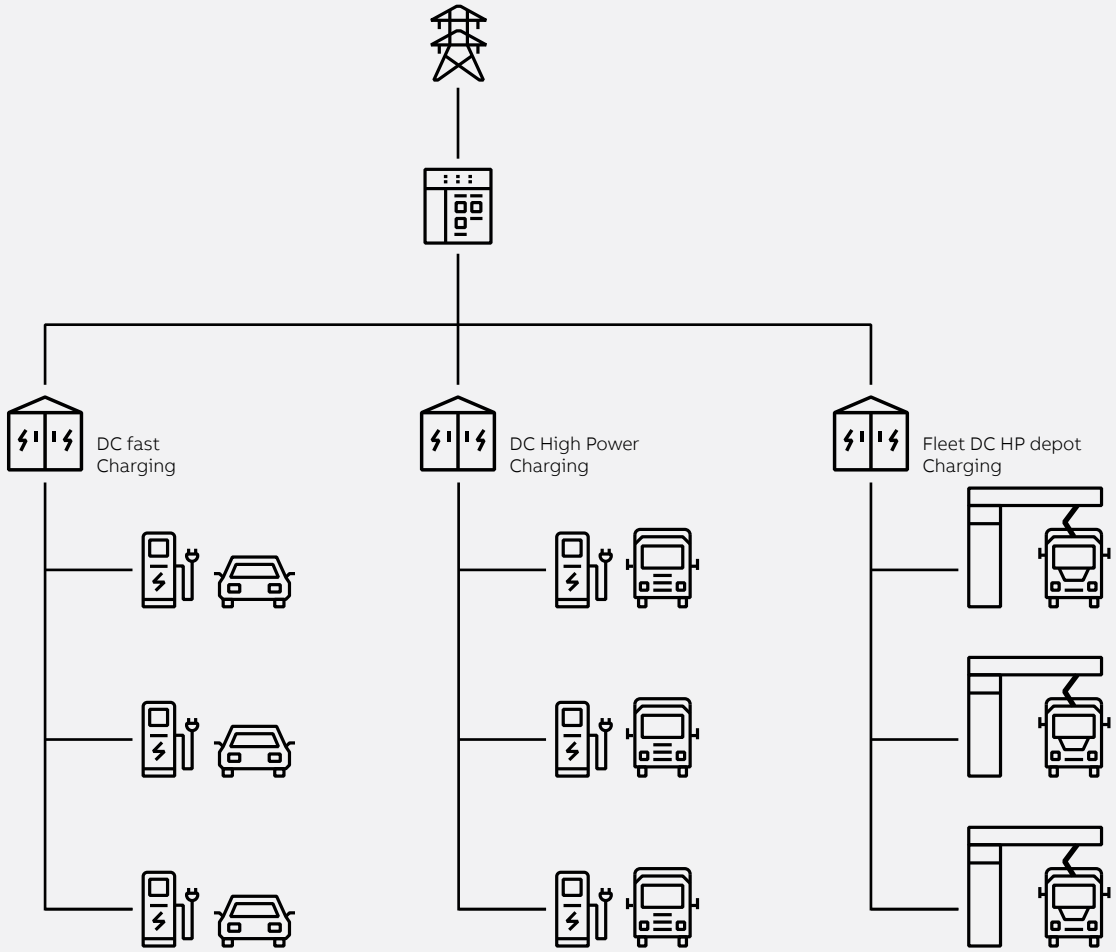
6.6 Emergency Lighting

DALI (EUR)

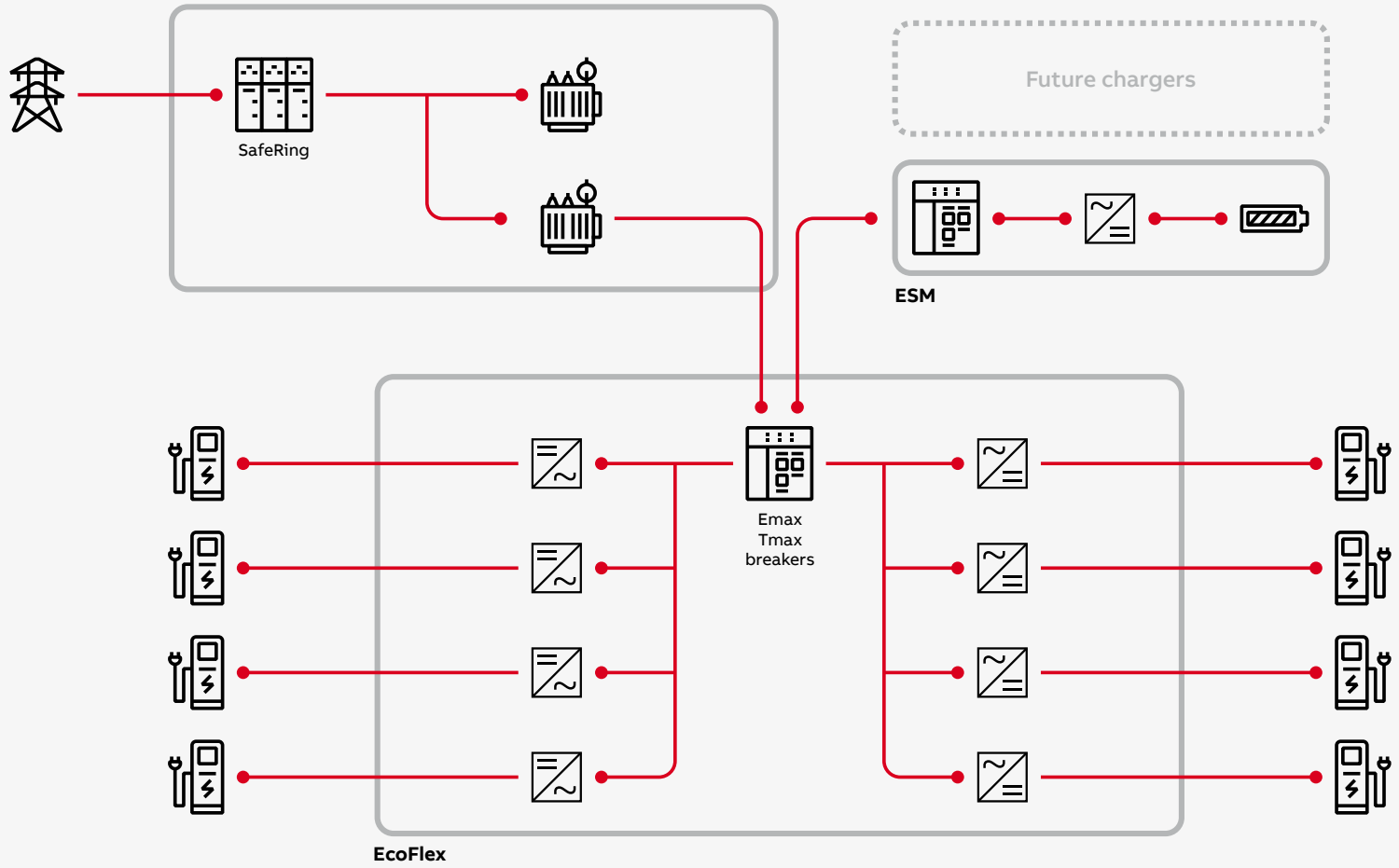
Nexus®Pro (NAM)

Central Battery (UK, MEA)

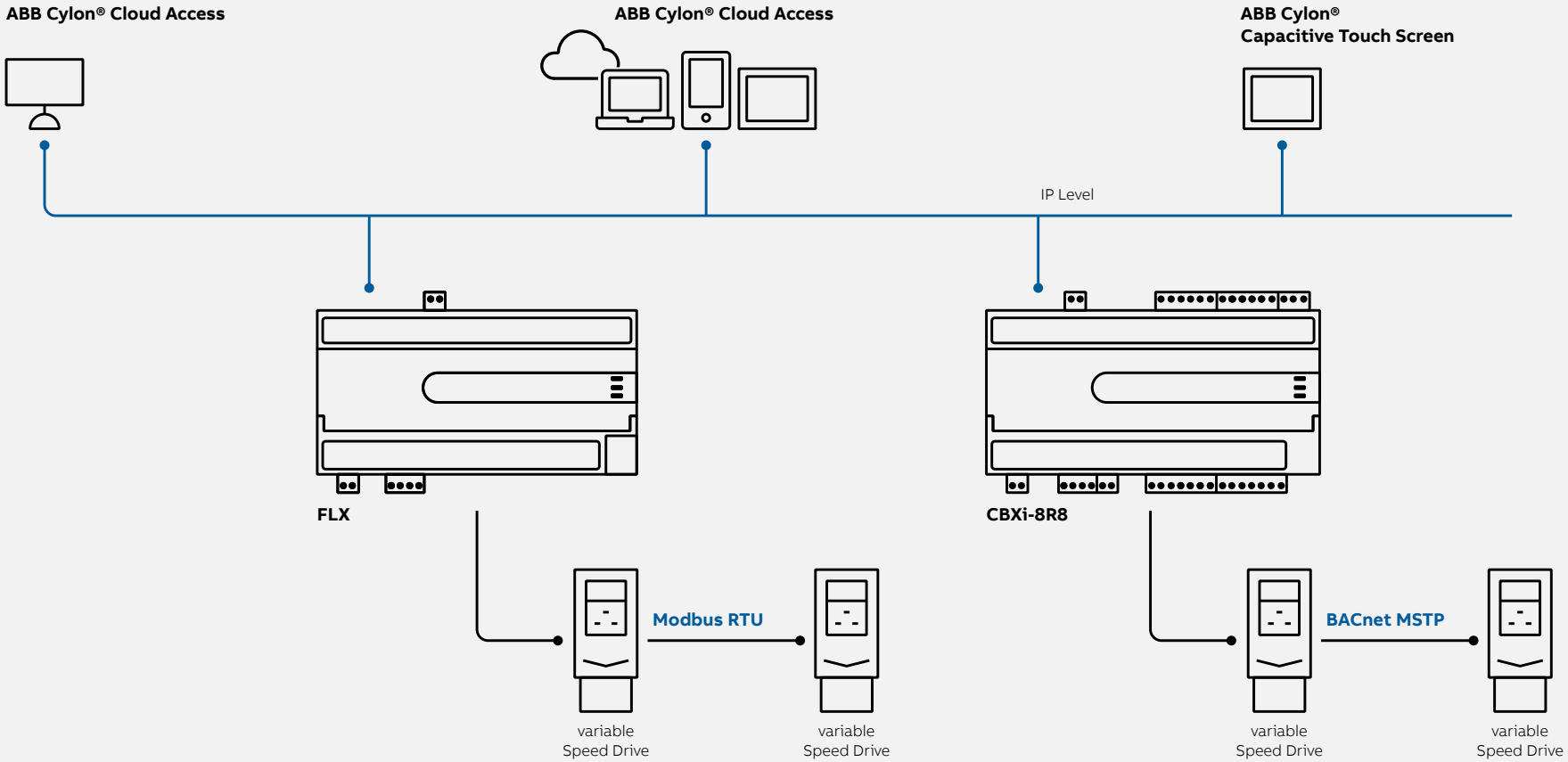
EV Charging
Overview



EV Charging
Fleet charging



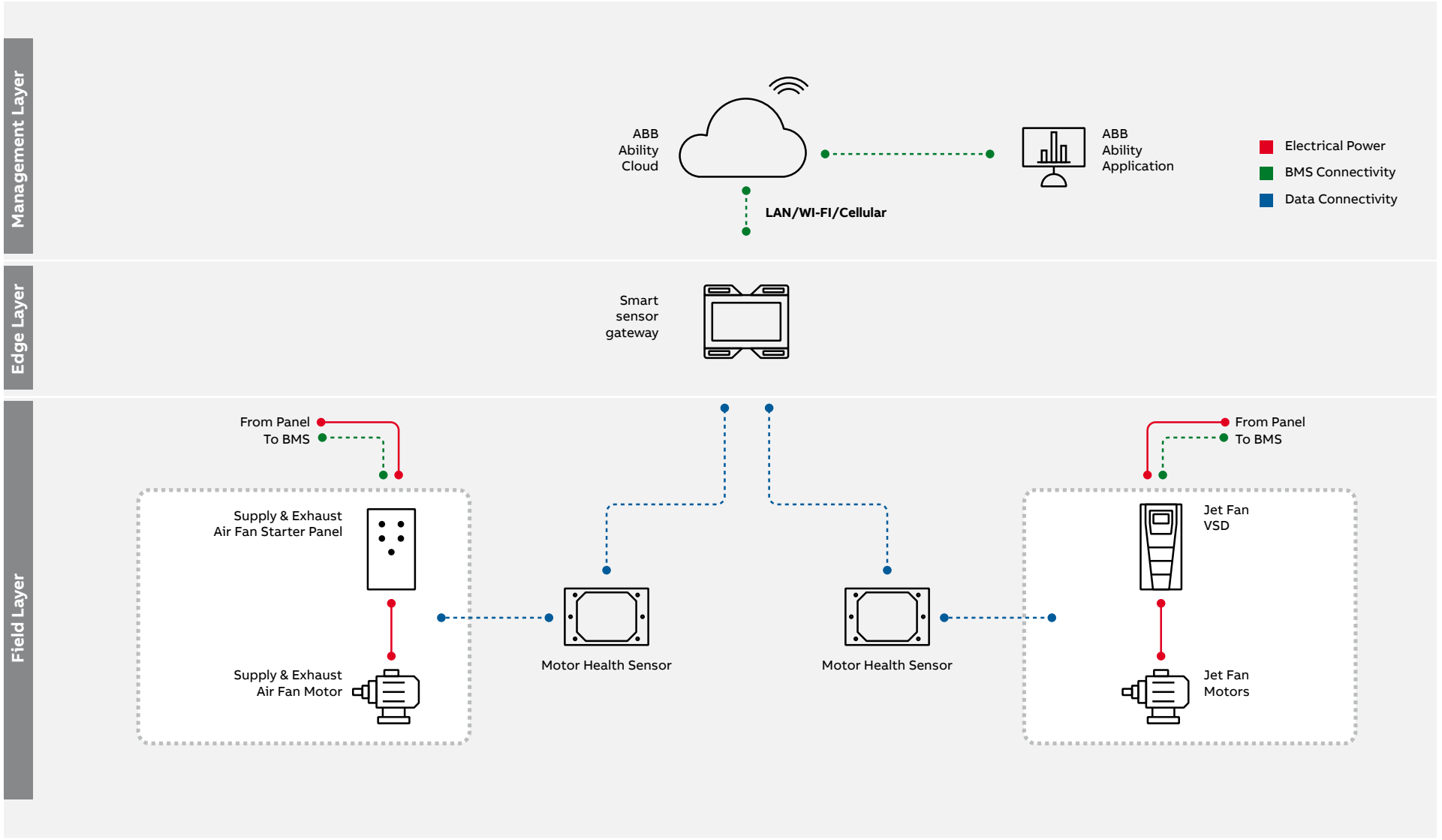
Drives & Motors
Overview



Drives & Motors

Sensors and Variable Speed Drives

Reference Architecture with Smart Sensors and VFD

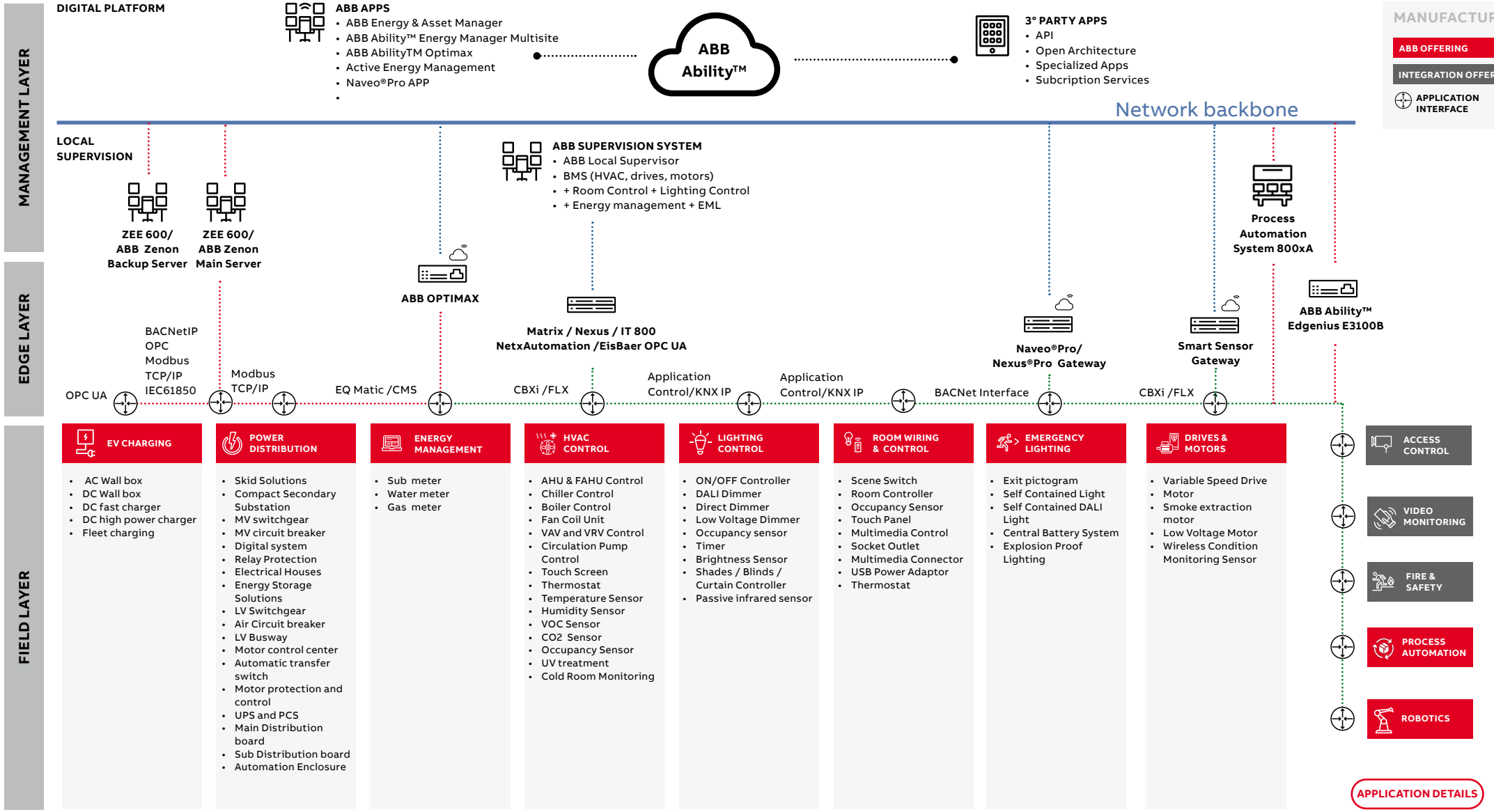


7

Manufacturing

ENTER

Reference Architecture
Manufacturing



Manufacturing Reference Architecture
Application details

7

7.1 Power Distribution
- MV Overview
- LV Overview
- Microgrids
- Battery Energy Storage
- Uninterrupted Power Supply
- Motor starting and protection for HVAC

7.2 Energy Management
- Overview
- Metering architecture
- Renewables monitoring
- Energy metering

7.3 Lighting Control
- Overview
- Room Automation
- Indoor Environment Control

7.4 Room Wiring & Control

7.5 HVAC Control

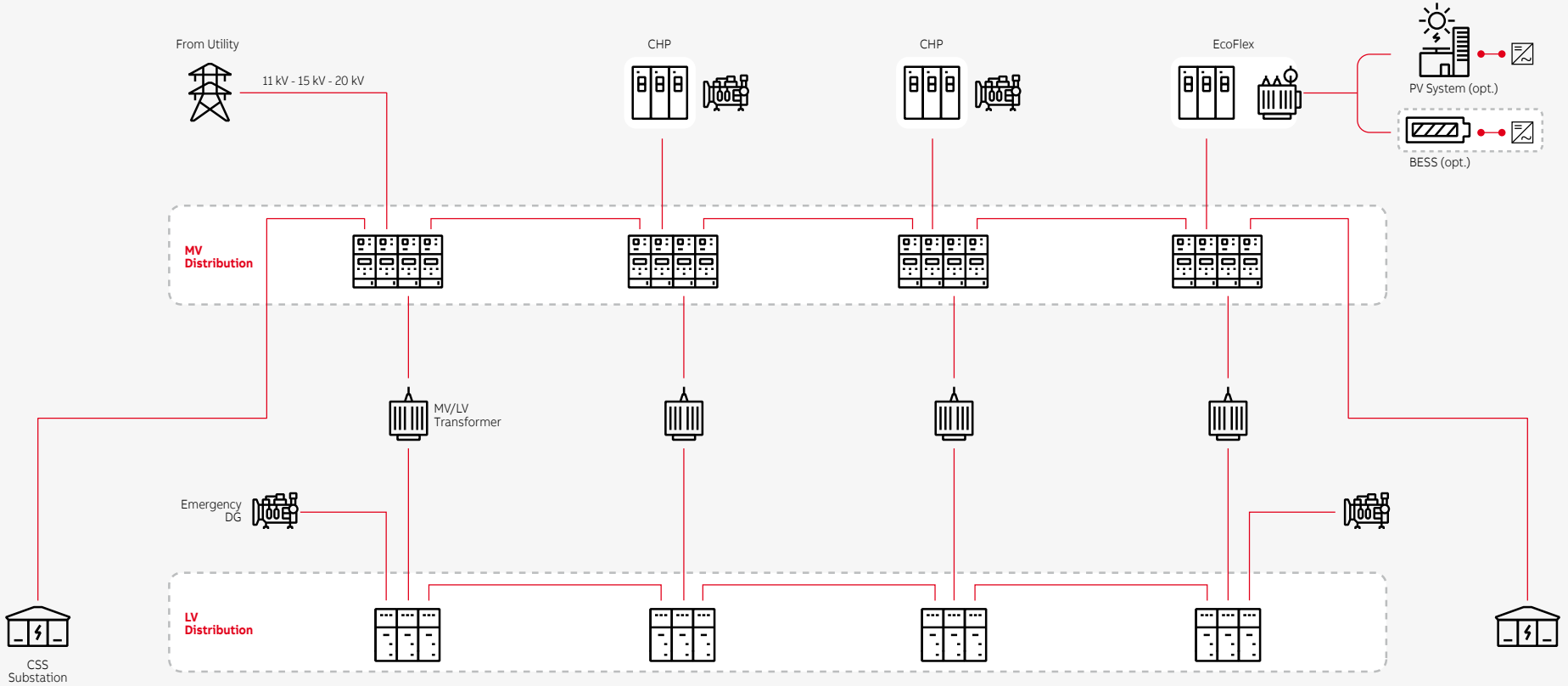
7.6 Emergency Lighting
- DALI (EUR)
- Nexus®Pro (NAM)
- Central Battery (UK, MEA)

7.7 EV Charging

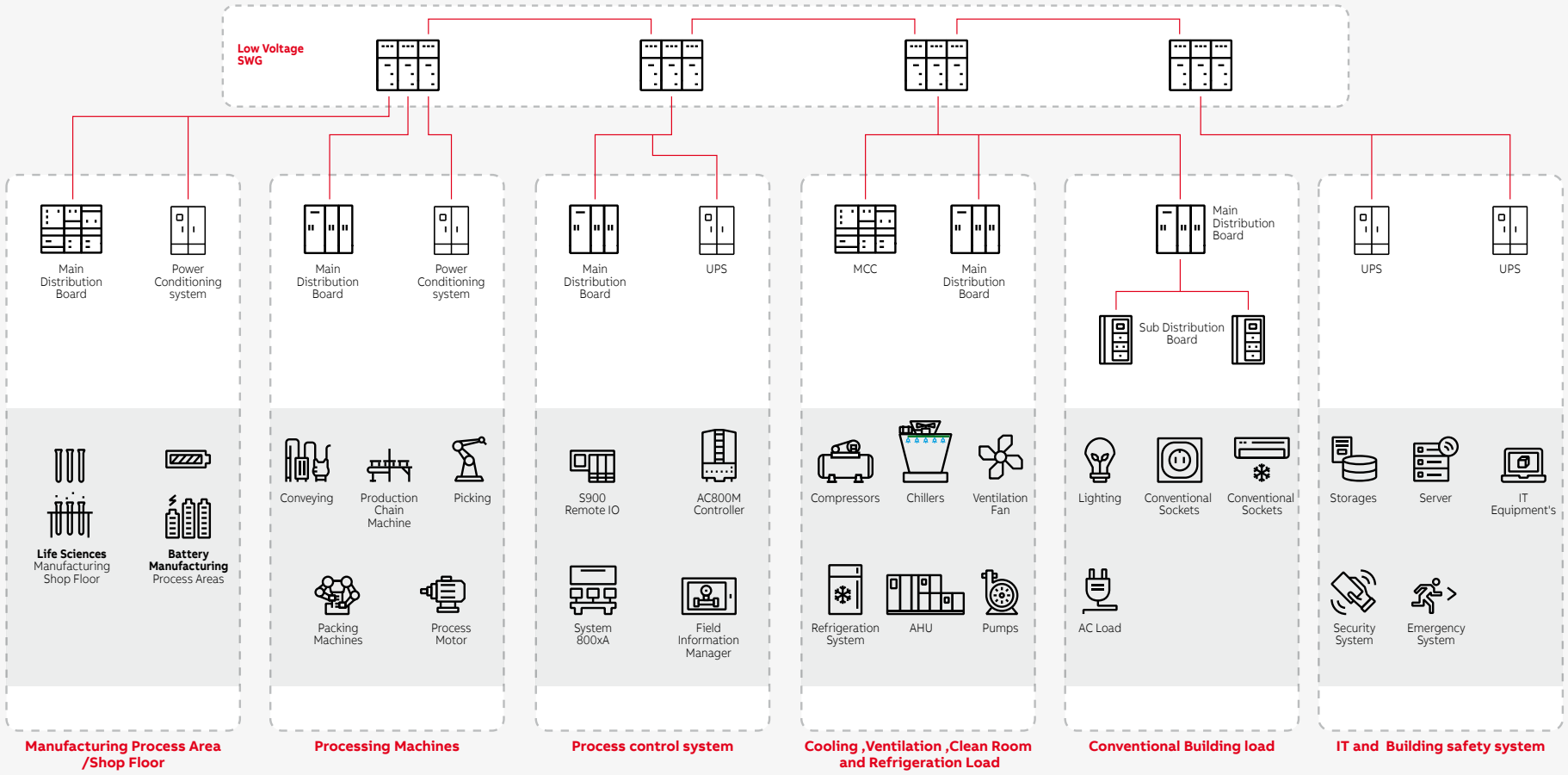
7.8 Drives & Motors
- Overview
- Sensors and Variable Speed Drives

Power Distribution

MV Overview

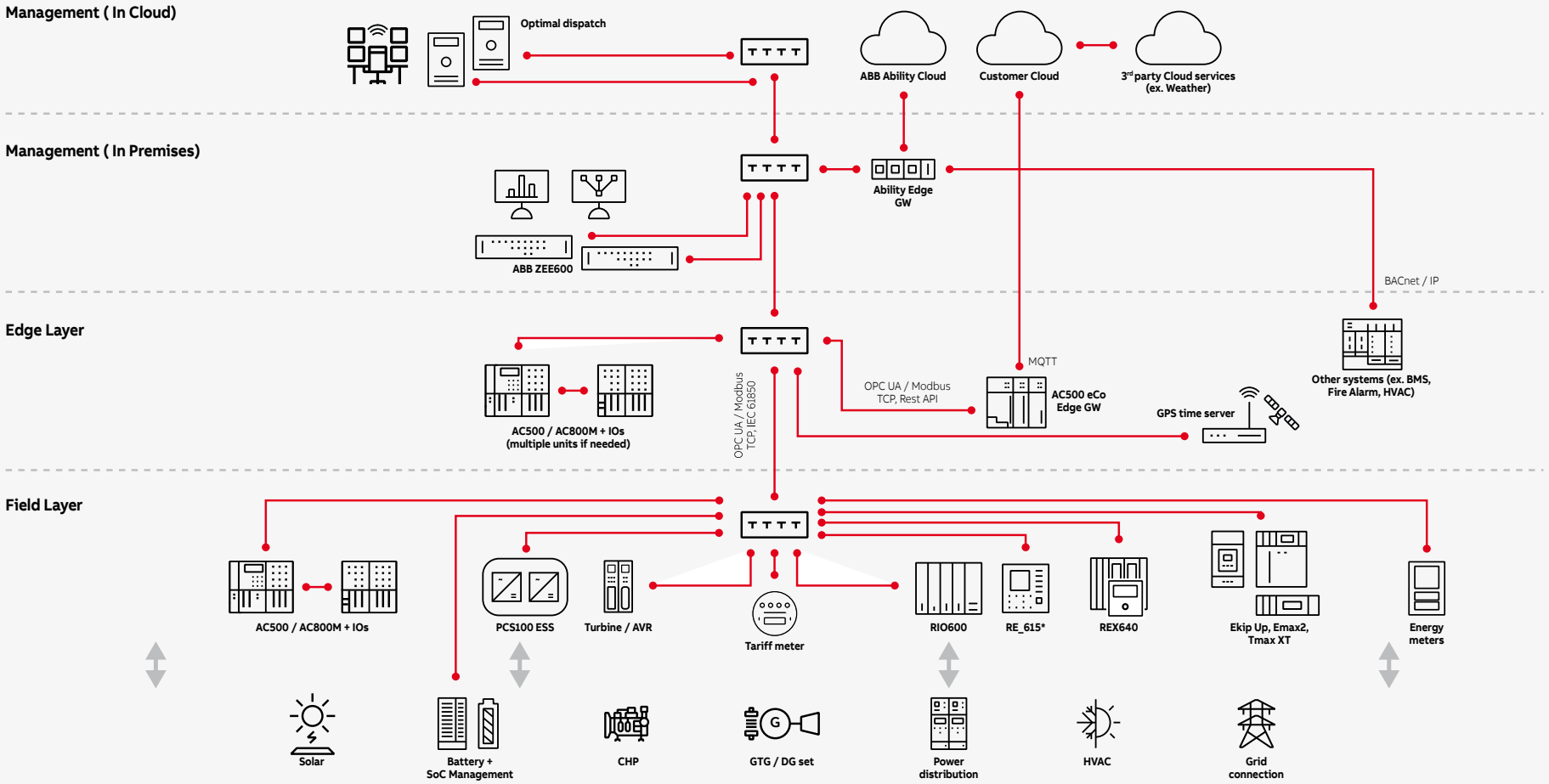


Power Distribution
LV Overview



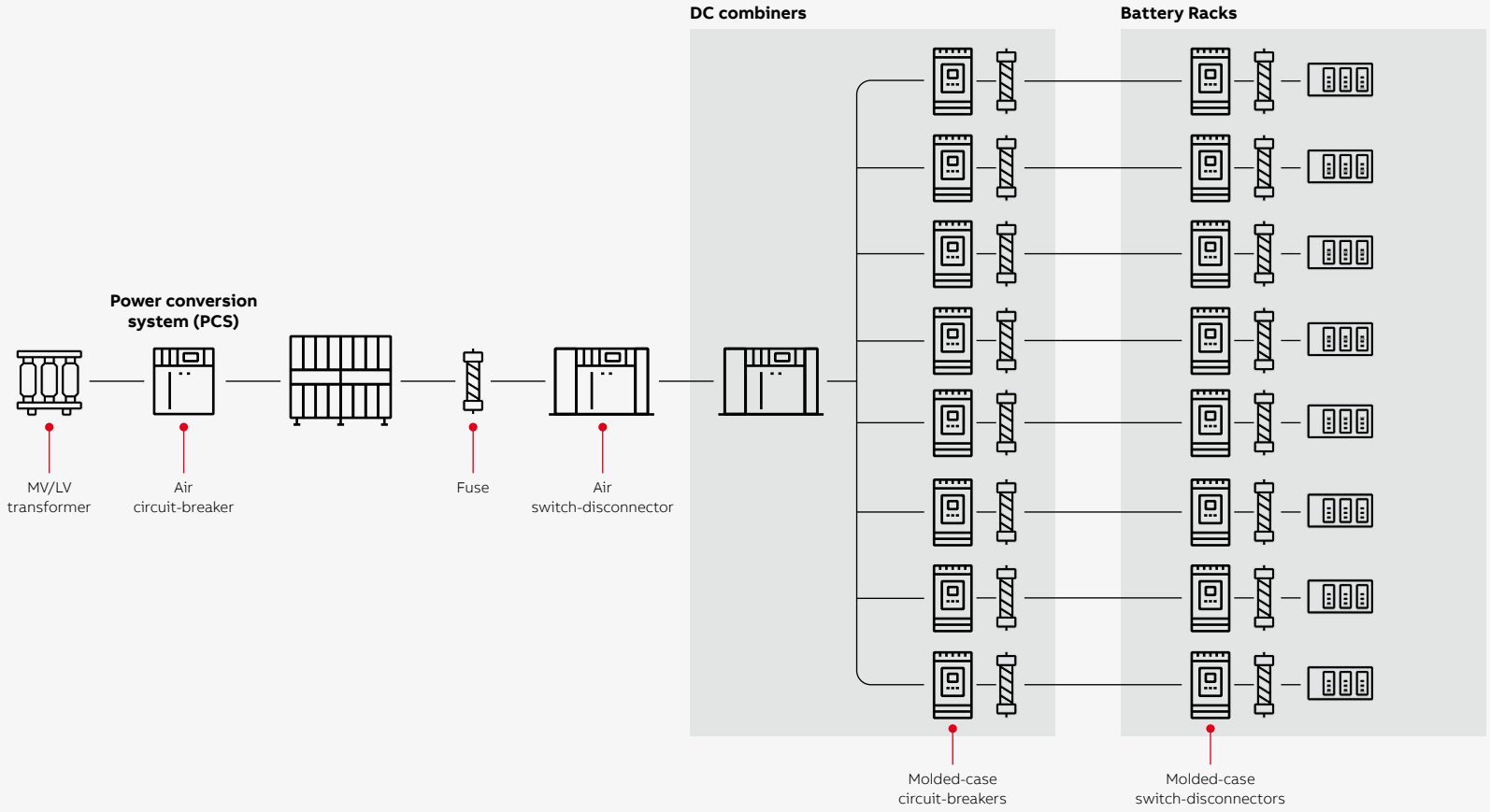
Power Distribution
Microgrids

System architecture, conceptual



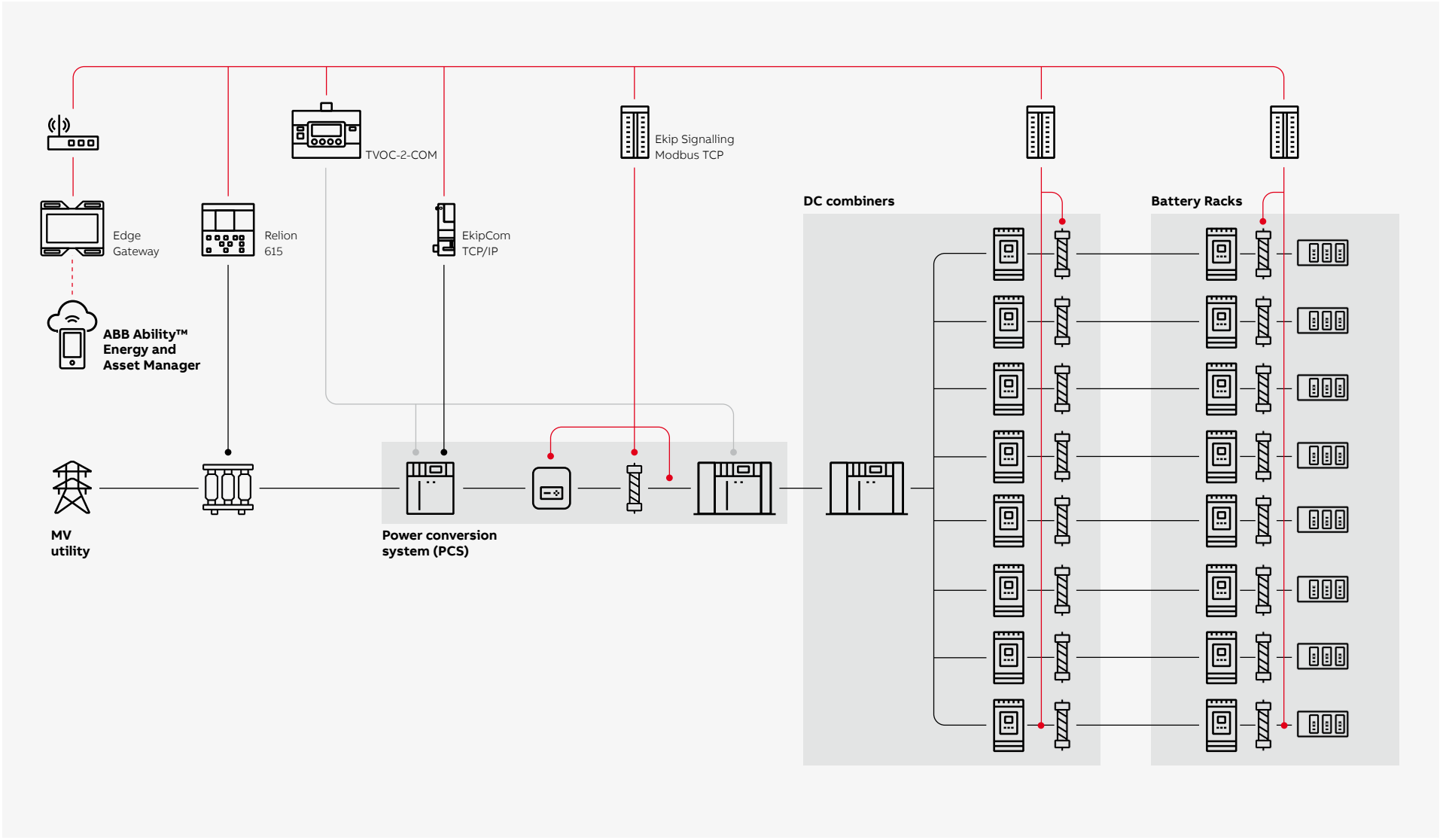
Power Distribution
Battery Energy Storage

Monitoring system



Power Distribution
Battery Energy Storage

Monitoring system



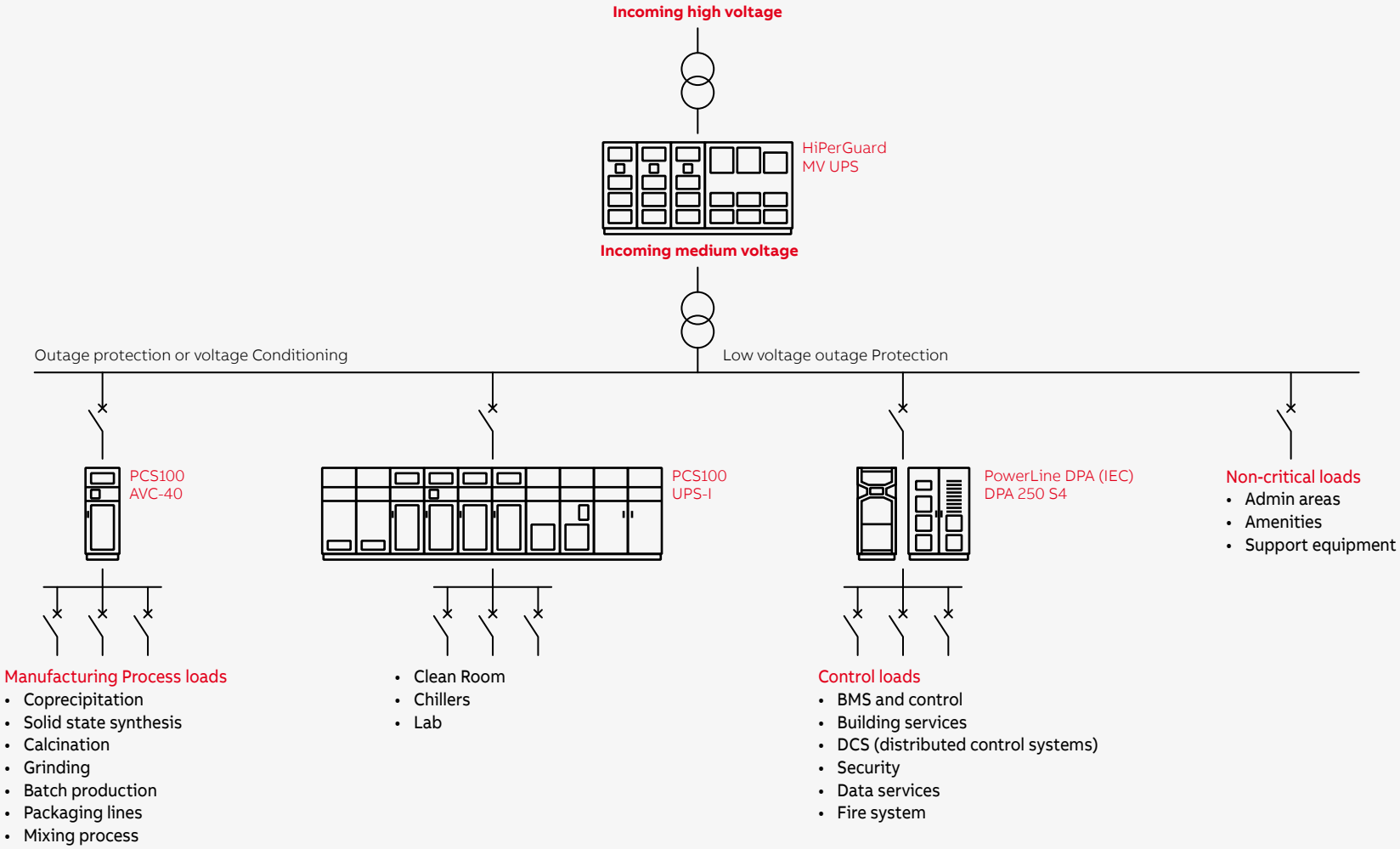
7 MANUFACTURING

ARCHITECTURE

APPLICATION DETAILS

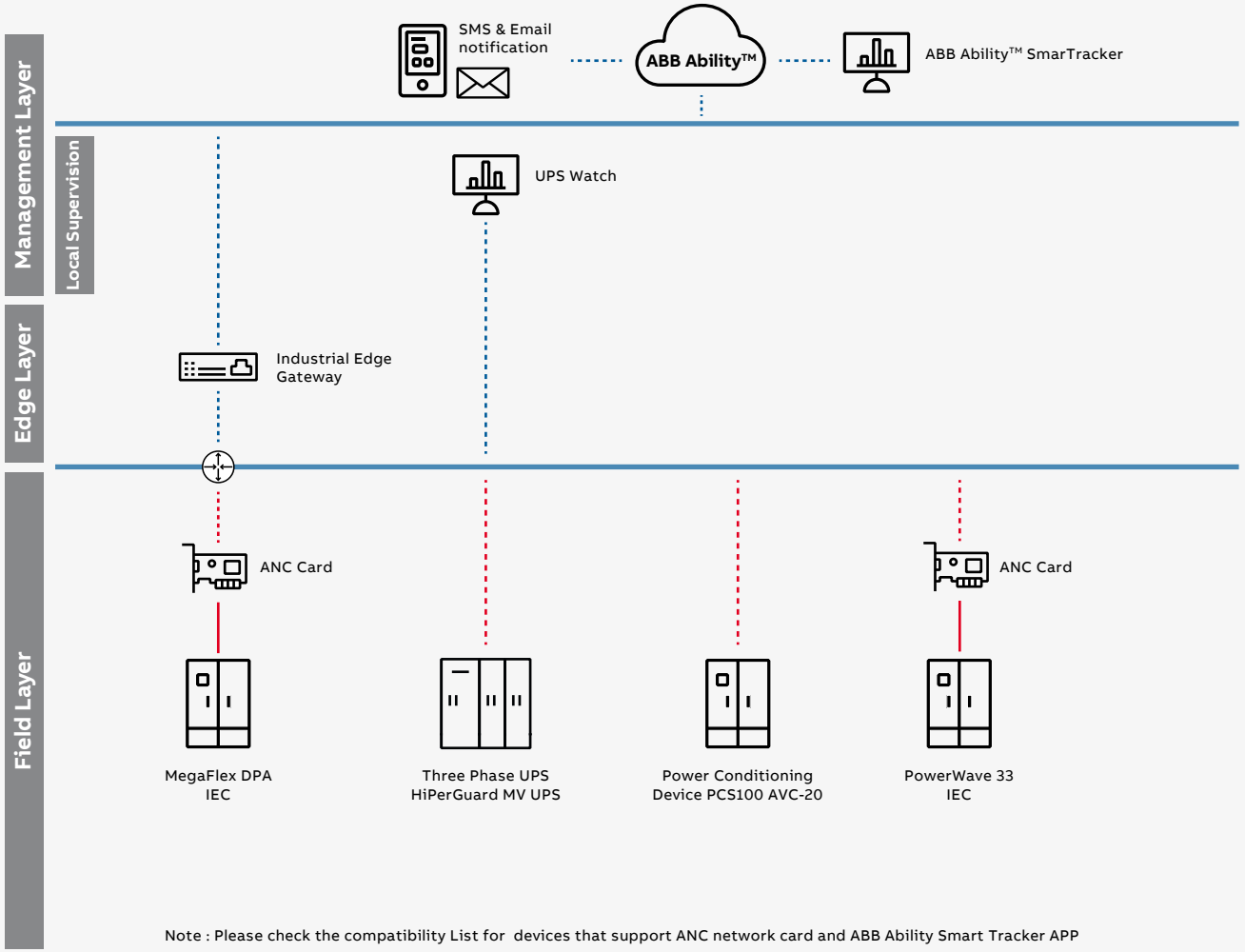
Power Distribution
Uninterrupted Power Supply

BESS Solution



Power Distribution
Uninterrupted Power Supply

Digital Architecture

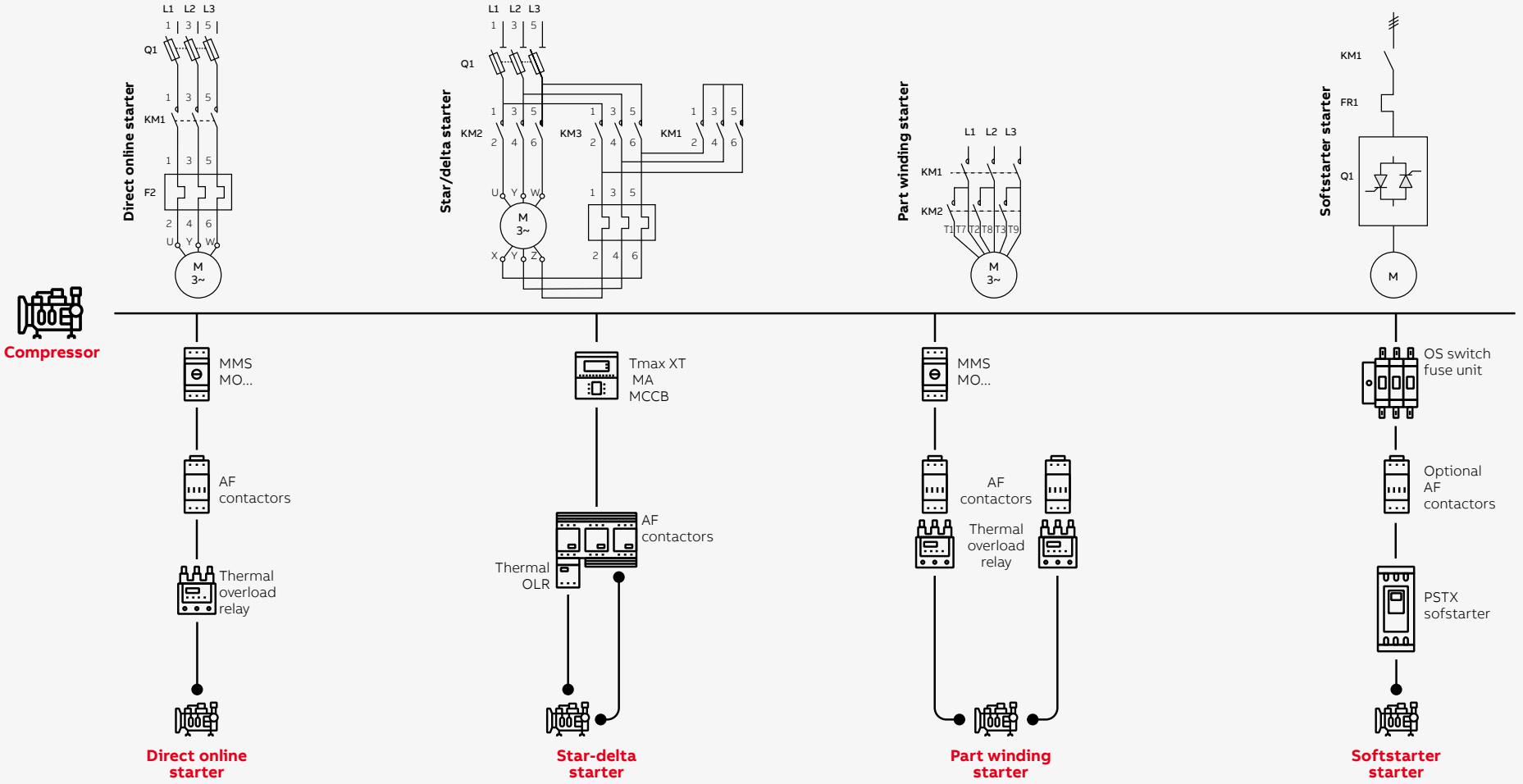


Note : Please check the compatibility List for devices that support ANC network card and ABB Ability Smart Tracker APP

Power Distribution

Motor starting and protection for HVAC

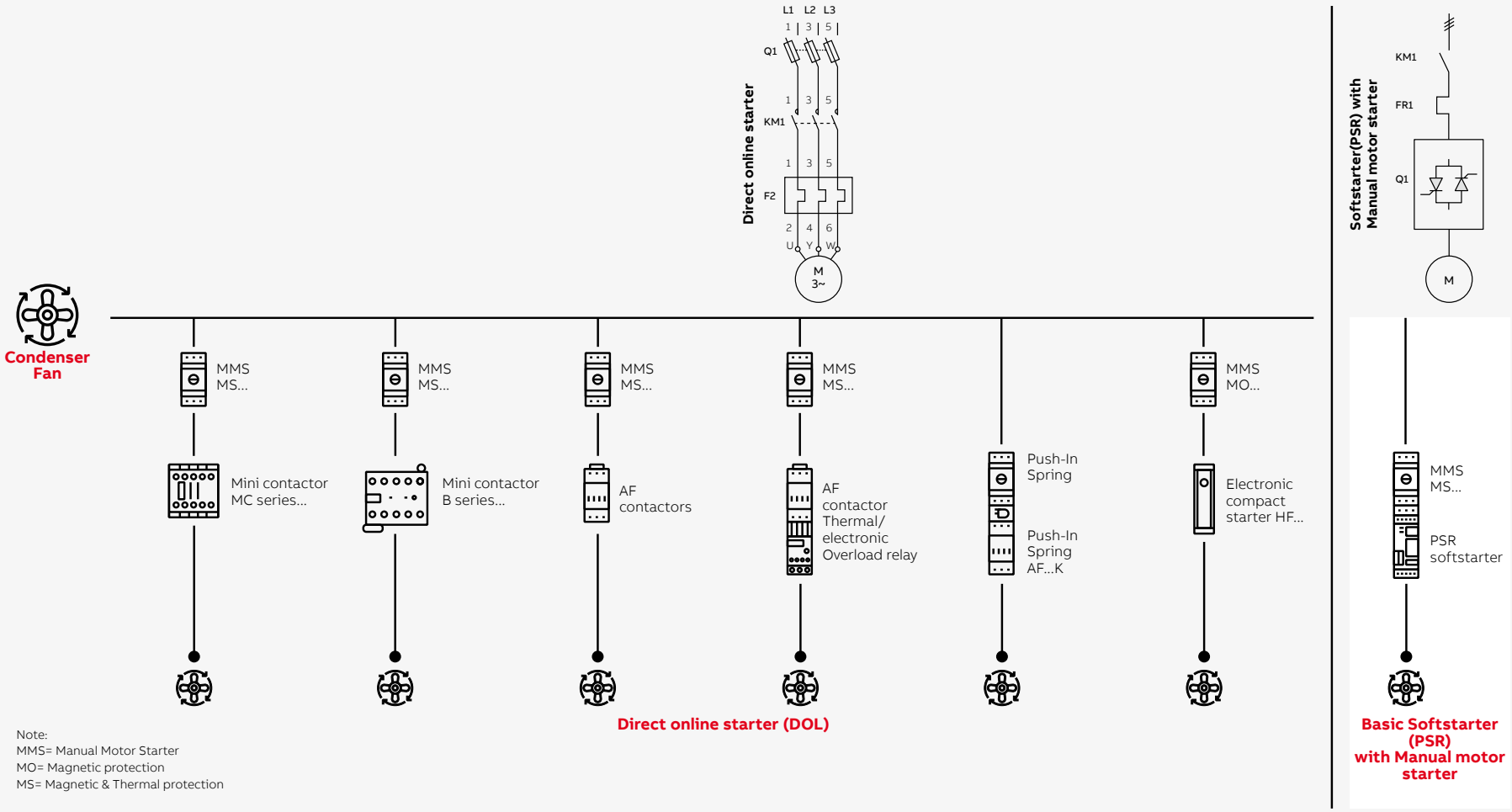
Compressor Recommended Starter for Air Cooled Chiller



Power Distribution

Motor starting and protection for HVAC

Starting and protection, recommended starter type for condenser fan



Note:
MMS= Manual Motor Starter
MO= Magnetic protection
MS= Magnetic & Thermal protection

7

MANUFACTURING

ARCHITECTURE

APPLICATION DETAILS

7.1 Power Distribution

MV Overview

LV Overview

Microgrids

Battery Energy Storage

Uninterrupted Power Supply

Motor starting and protection for HVAC

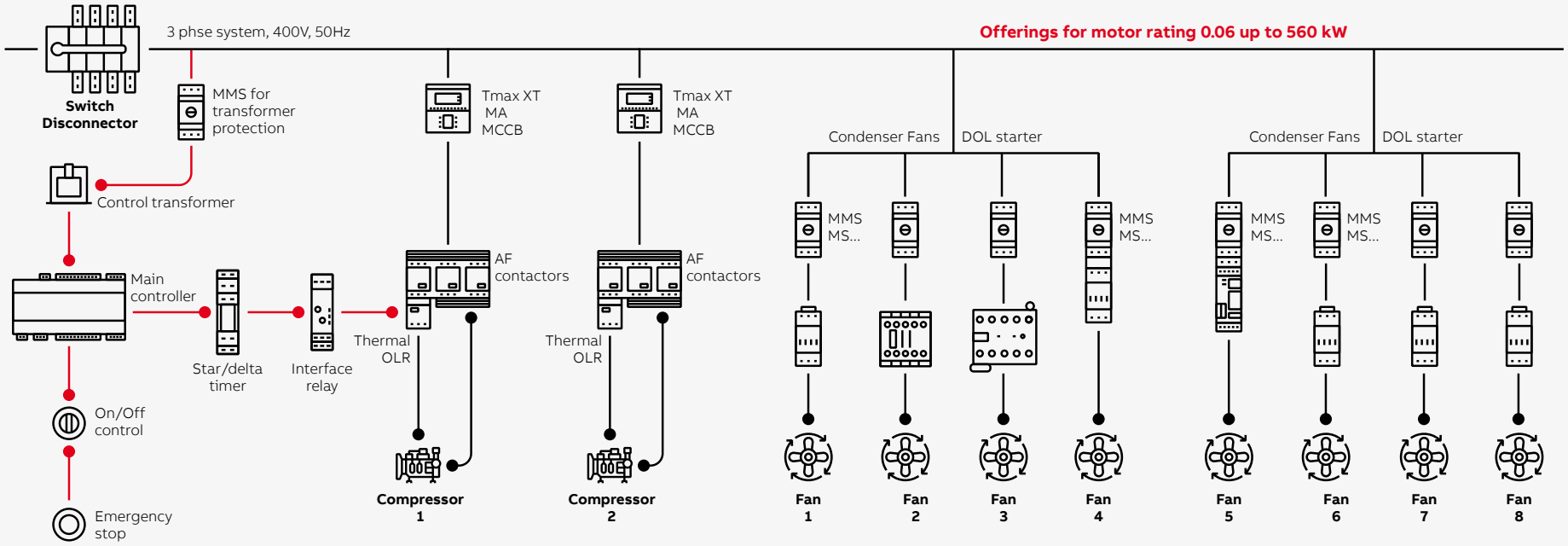
7.1 POWER DISTRIBUTION
7.2 ENERGY MANAGEMENT
7.3 LIGHTING CONTROL
7.4 ROOM WIRING & CONTROL
7.5 HVAC CONTROL
7.6 EMERGENCY LIGHTING
7.7 EV CHARGING
7.8 DRIVES & MOTORS

NEXT

Power Distribution

Motor starting and protection for HVAC

ABB's solution for motor Starting and Protection (Air Cooled Chillers)

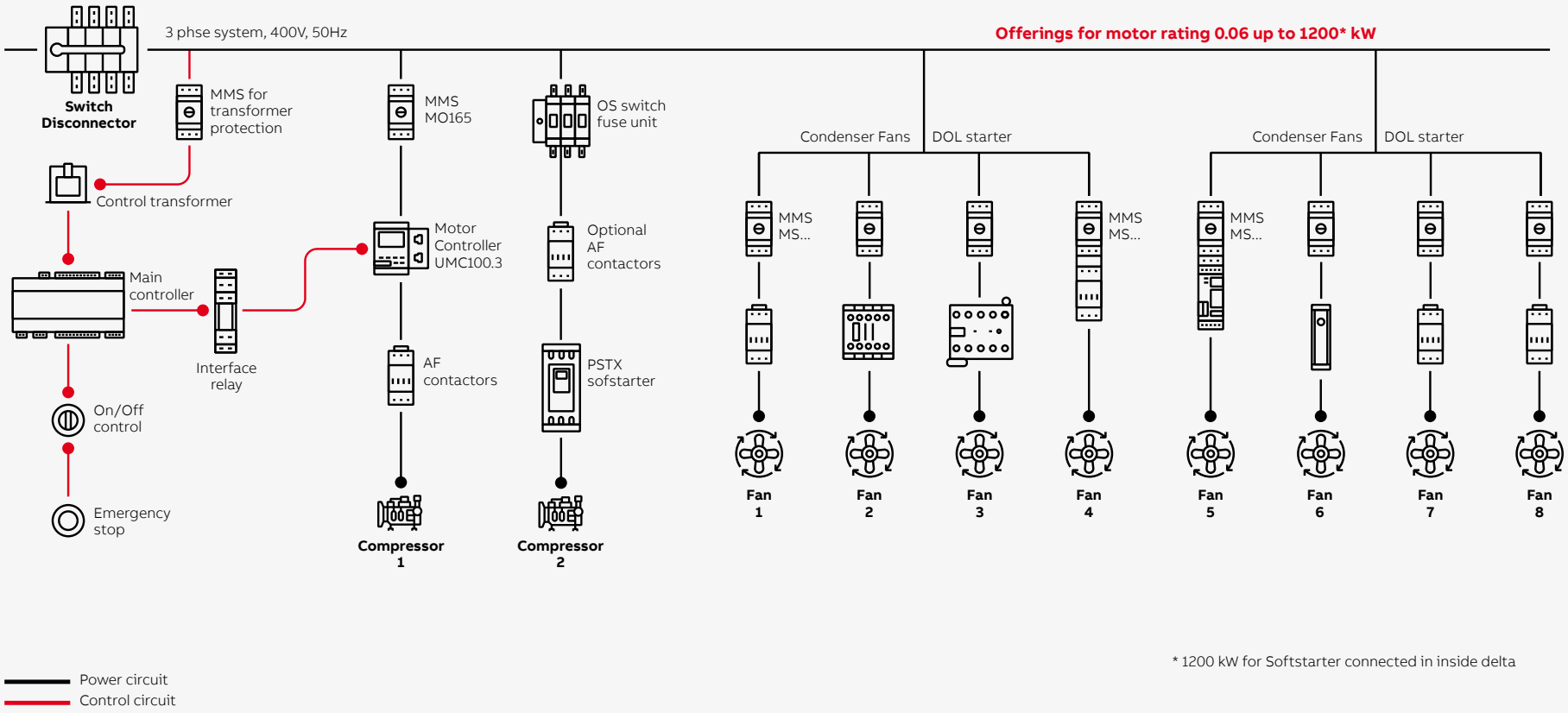


NEXT

Power Distribution

Motor starting and protection for HVAC

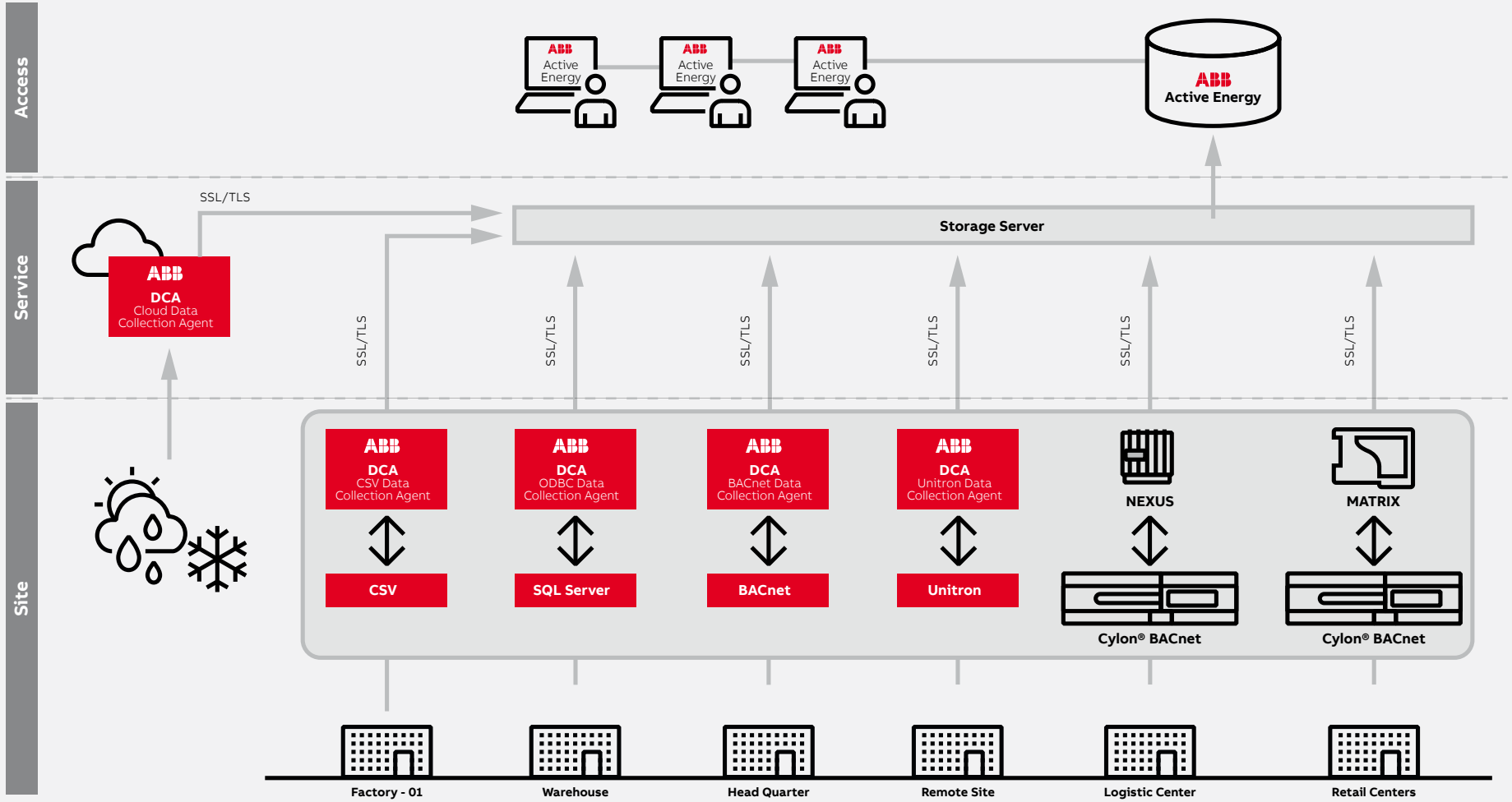
ABB's Advanced solution for motor starting (Air Cooled Chillers)



* 1200 kW for Softstarter connected in inside delta

Energy Management
Overview

Active Energy Manager (for NAM)



7

MANUFACTURING

ARCHITECTURE

APPLICATION DETAILS

7.2 Energy Management

Overview

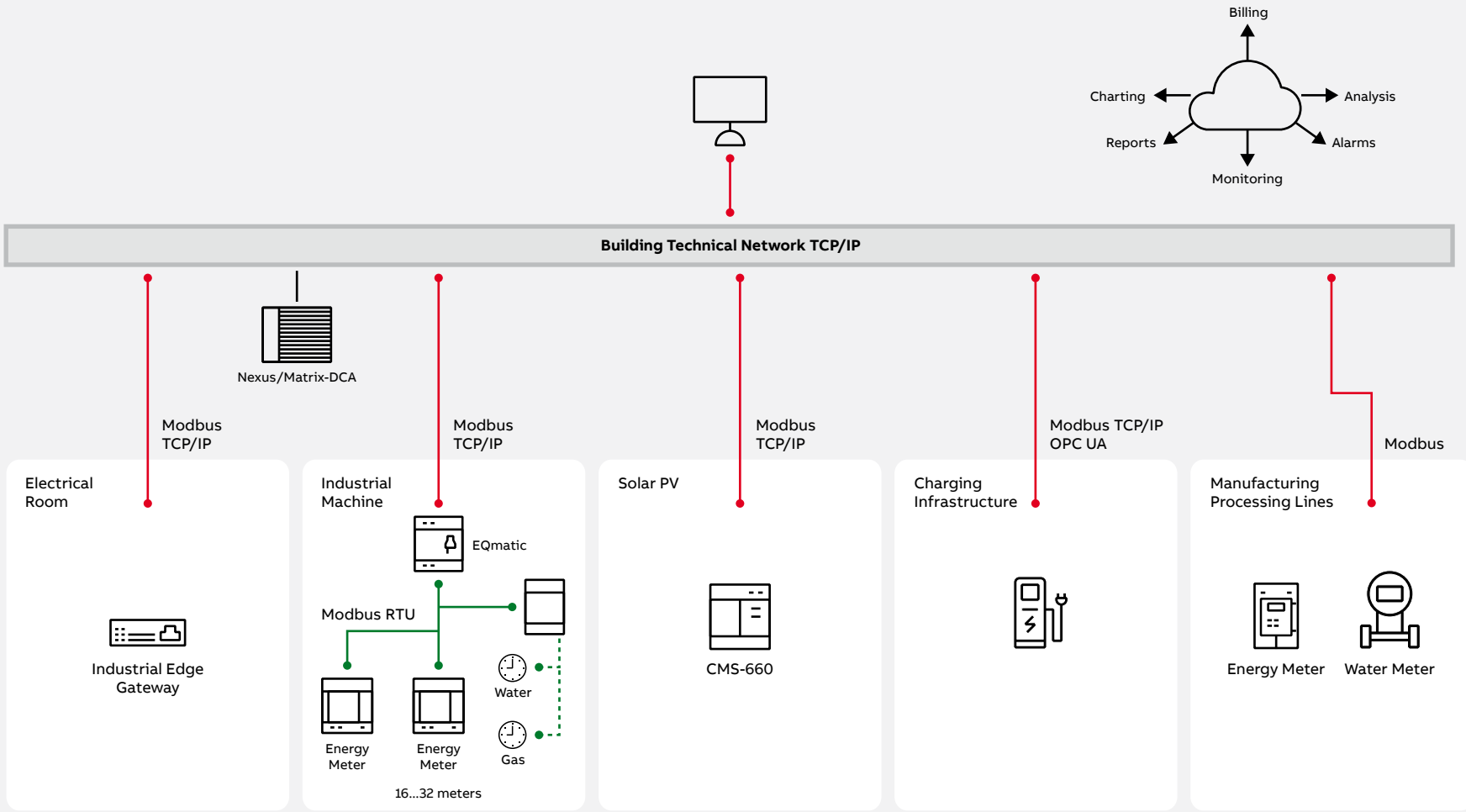
Metering architecture

Renewables monitoring

Energy metering

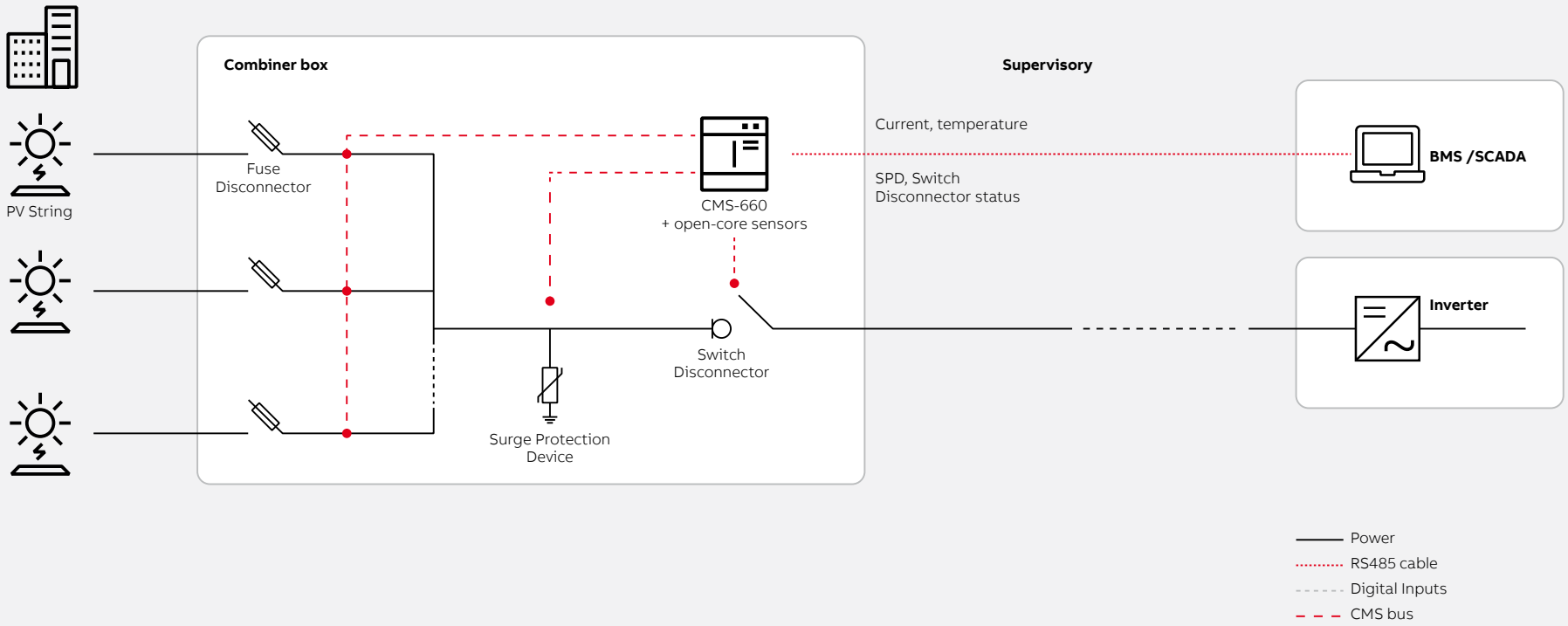
7.1 POWER DISTRIBUTION
7.2 ENERGY MANAGEMENT
7.3 LIGHTING CONTROL
7.4 ROOM WIRING & CONTROL
7.5 HVAC CONTROL
7.6 EMERGENCY LIGHTING
7.7 EV CHARGING
7.8 DRIVES & MOTORS

Energy Management
Metering architecture



Energy Management
Renewables monitoring

Scenario 1: string monitoring of commercial installations



7 MANUFACTURING

ARCHITECTURE

APPLICATION DETAILS

7.2 Energy Management

Overview

Metering architecture

Renewables monitoring

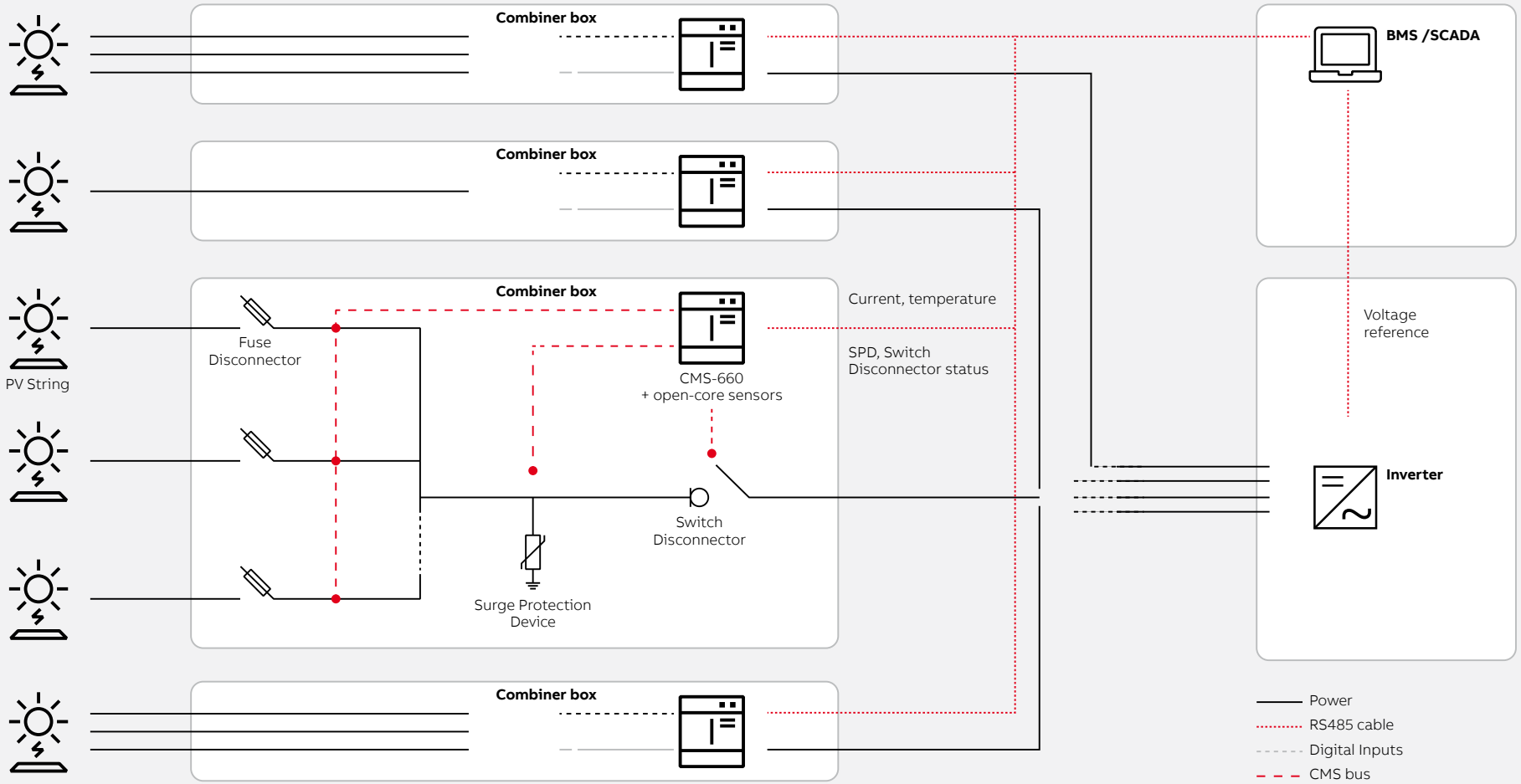
Energy metering

7.1 POWER DISTRIBUTION
7.2 ENERGY MANAGEMENT
7.3 LIGHTING CONTROL
7.4 ROOM WIRING & CONTROL
7.5 HVAC CONTROL
7.6 EMERGENCY LIGHTING
7.7 EV CHARGING
7.8 DRIVES & MOTORS

NEXT

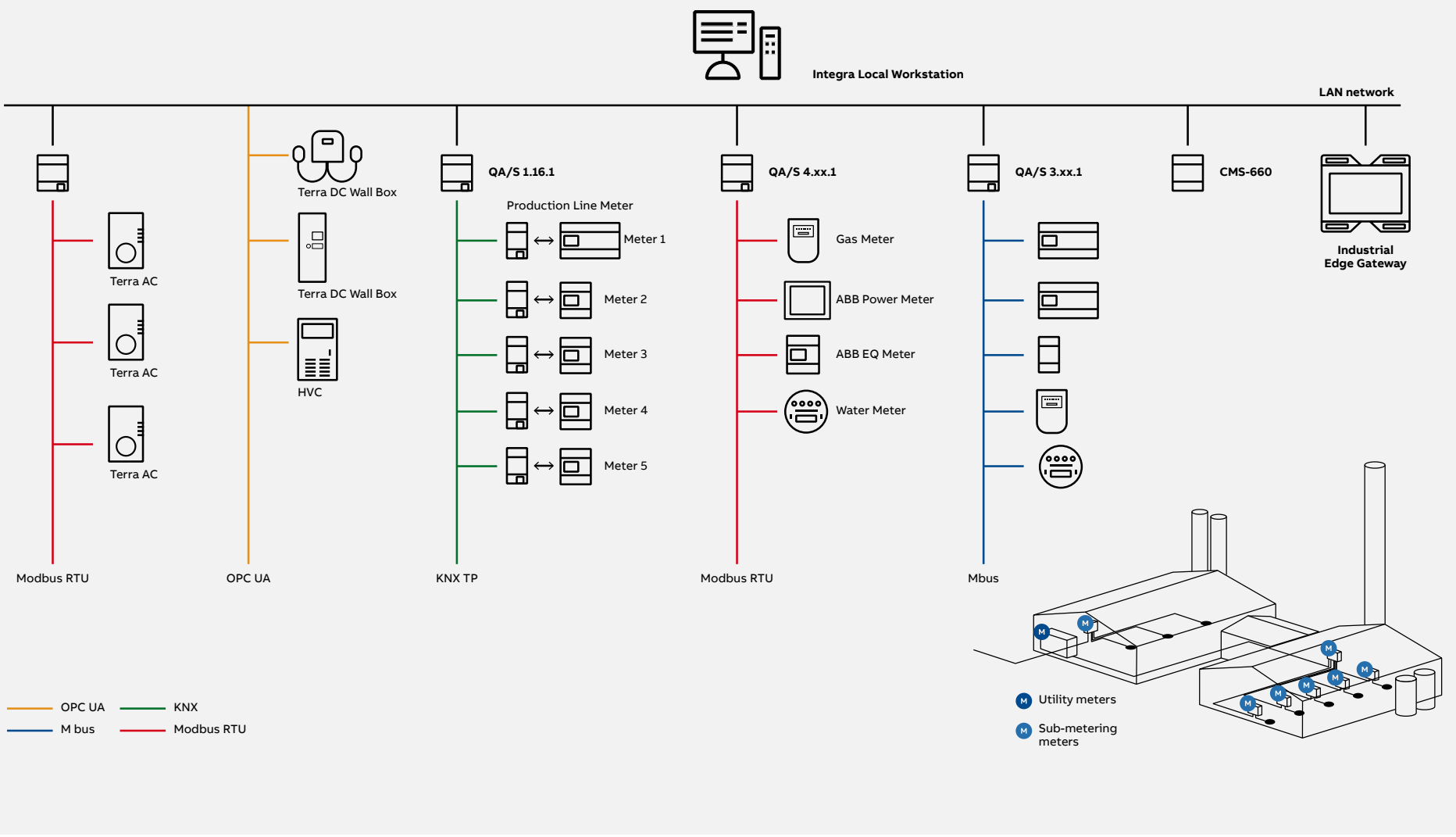
Energy Management
Renewables monitoring

Scenario 2: Largescale solar PV installation (individual string monitoring)



Energy Management

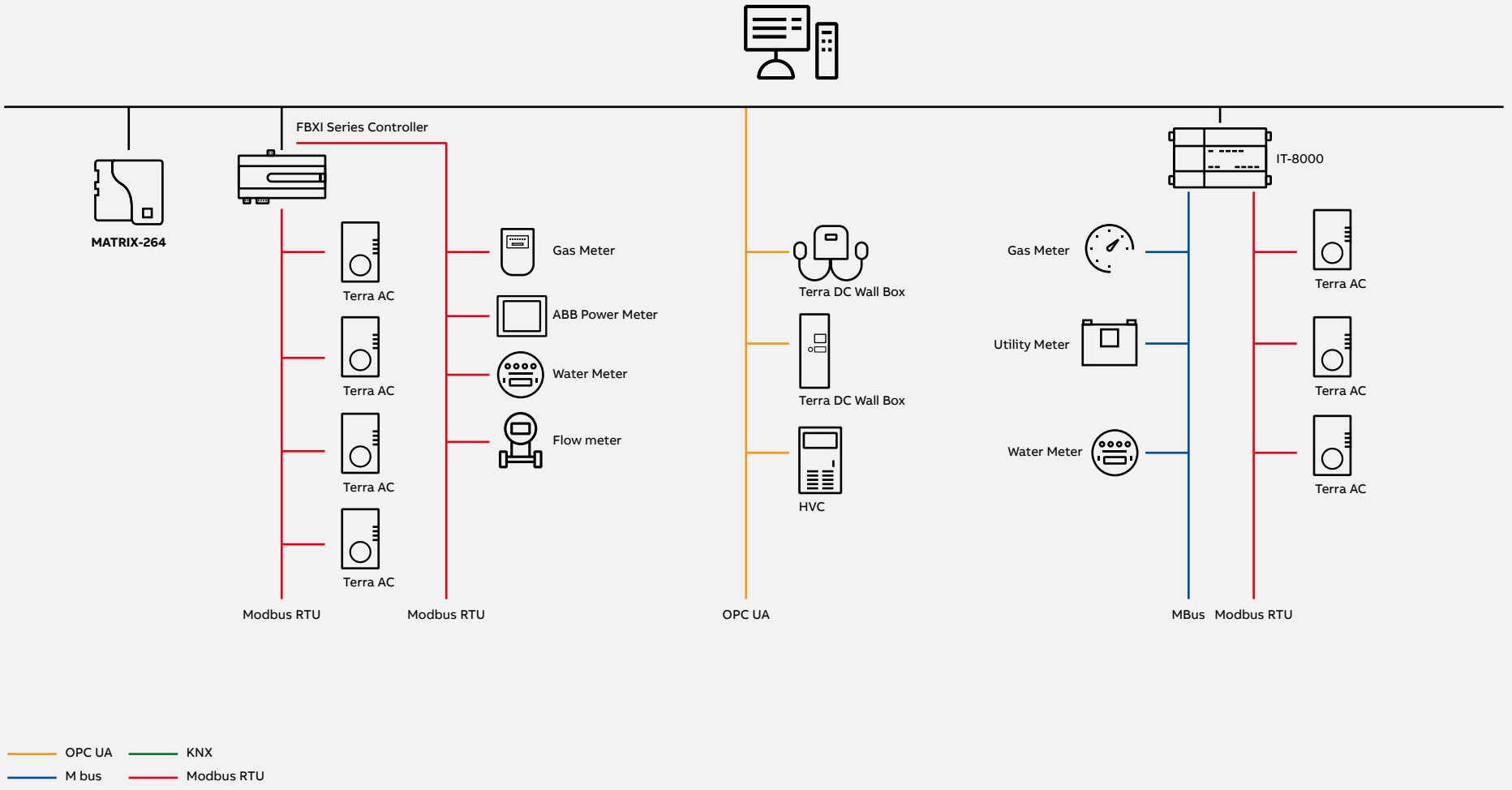
Energy metering



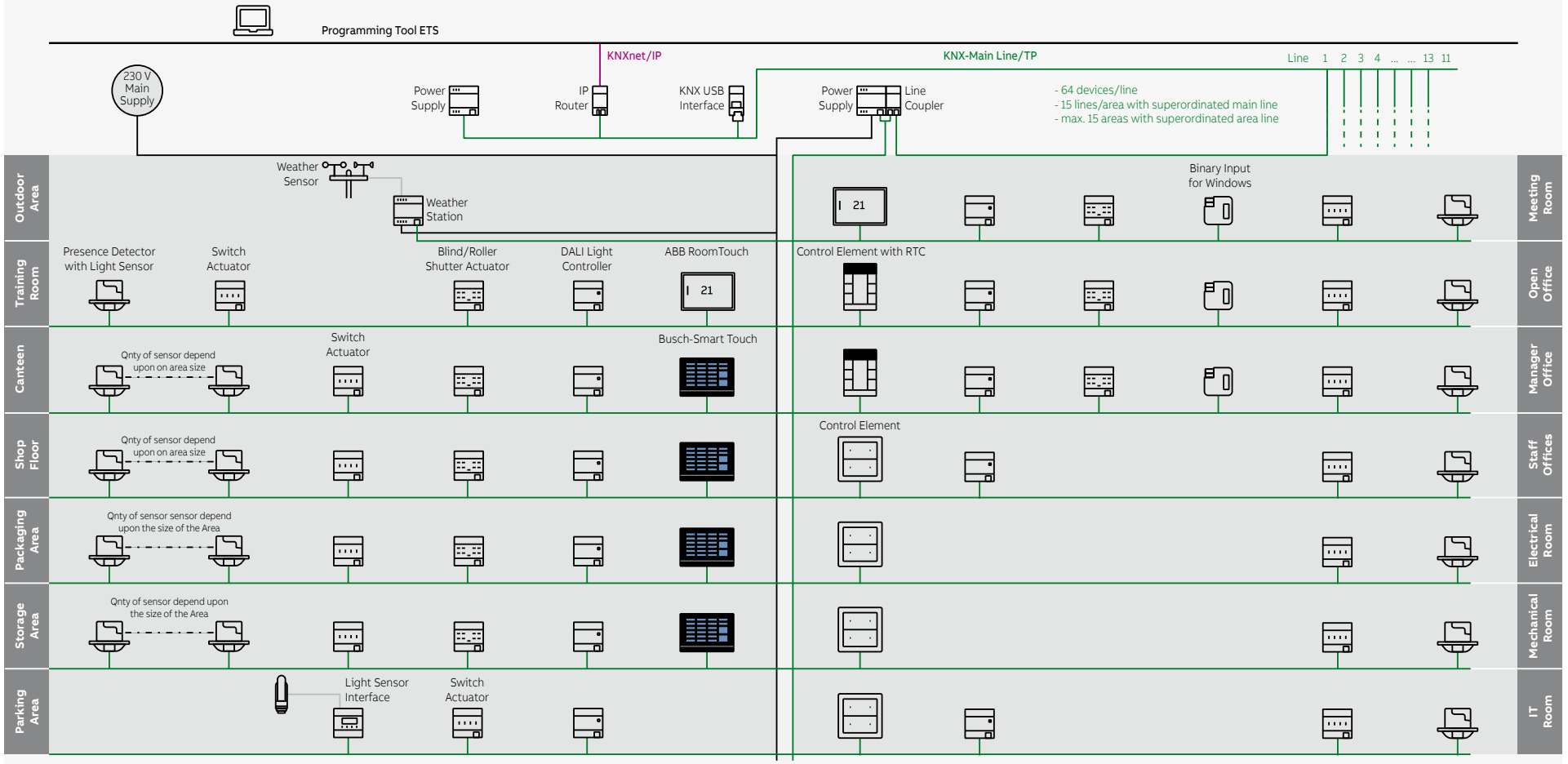
NEXT

Energy Management
Energy metering

Energy Management with Cylon offering

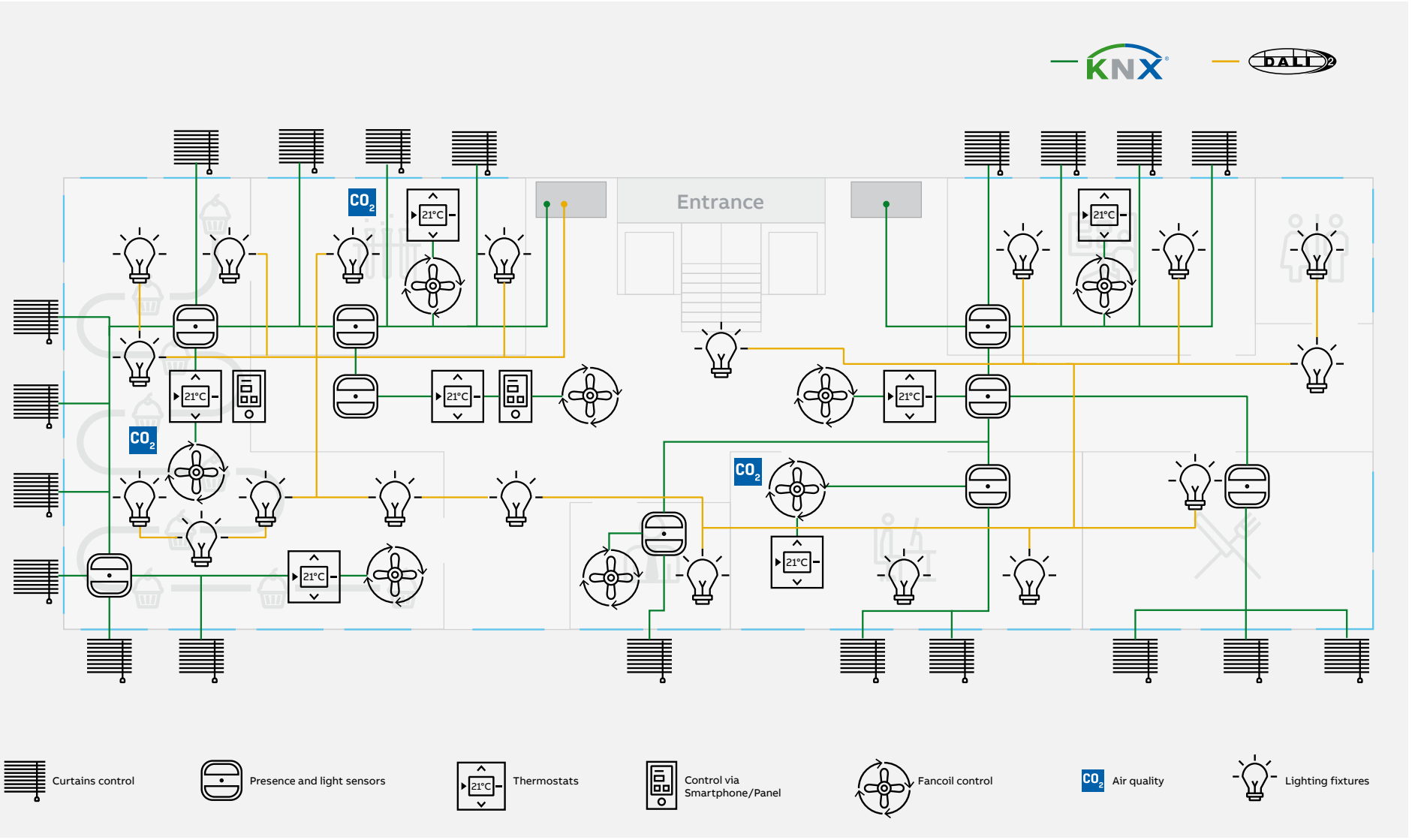


Lighting Control
Overview

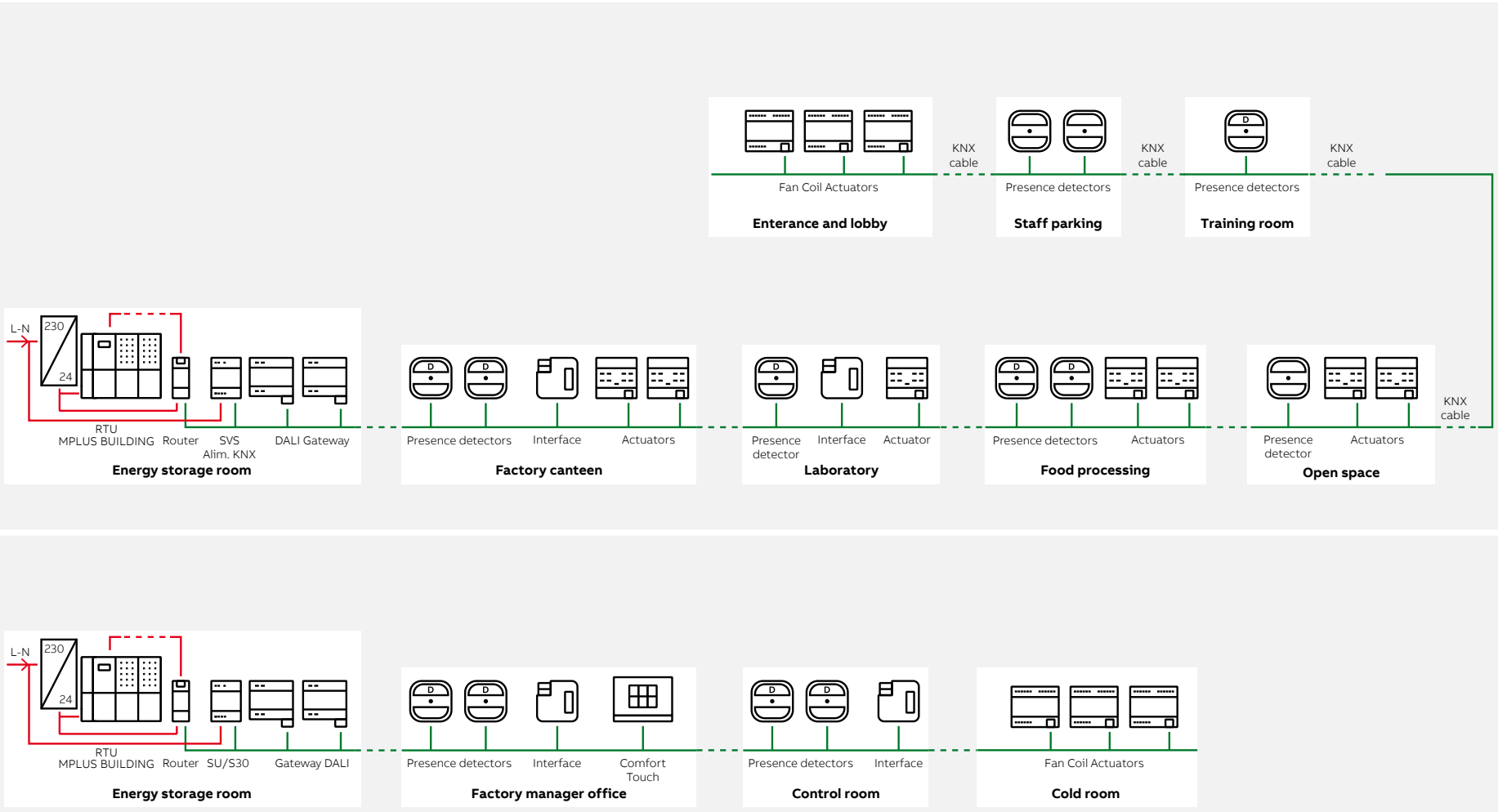


Lighting Control
Room Automation

Application example



Lighting Control
Indoor Environment Control



7 MANUFACTURING

ARCHITECTURE

APPLICATION DETAILS

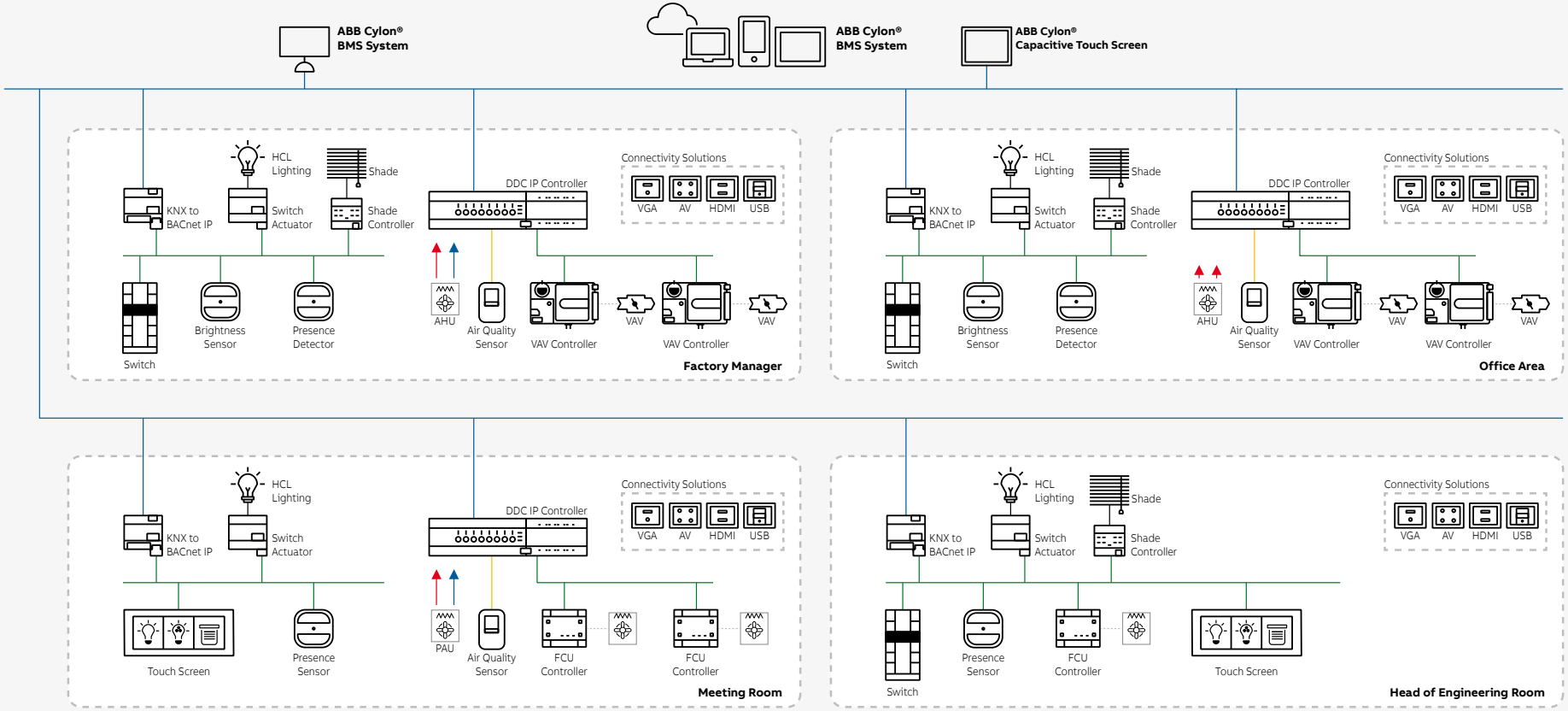
7.3 Lighting Control

Overview

Room Automation

Indoor Environment Control

Room Wiring & Control



7

MANUFACTURING

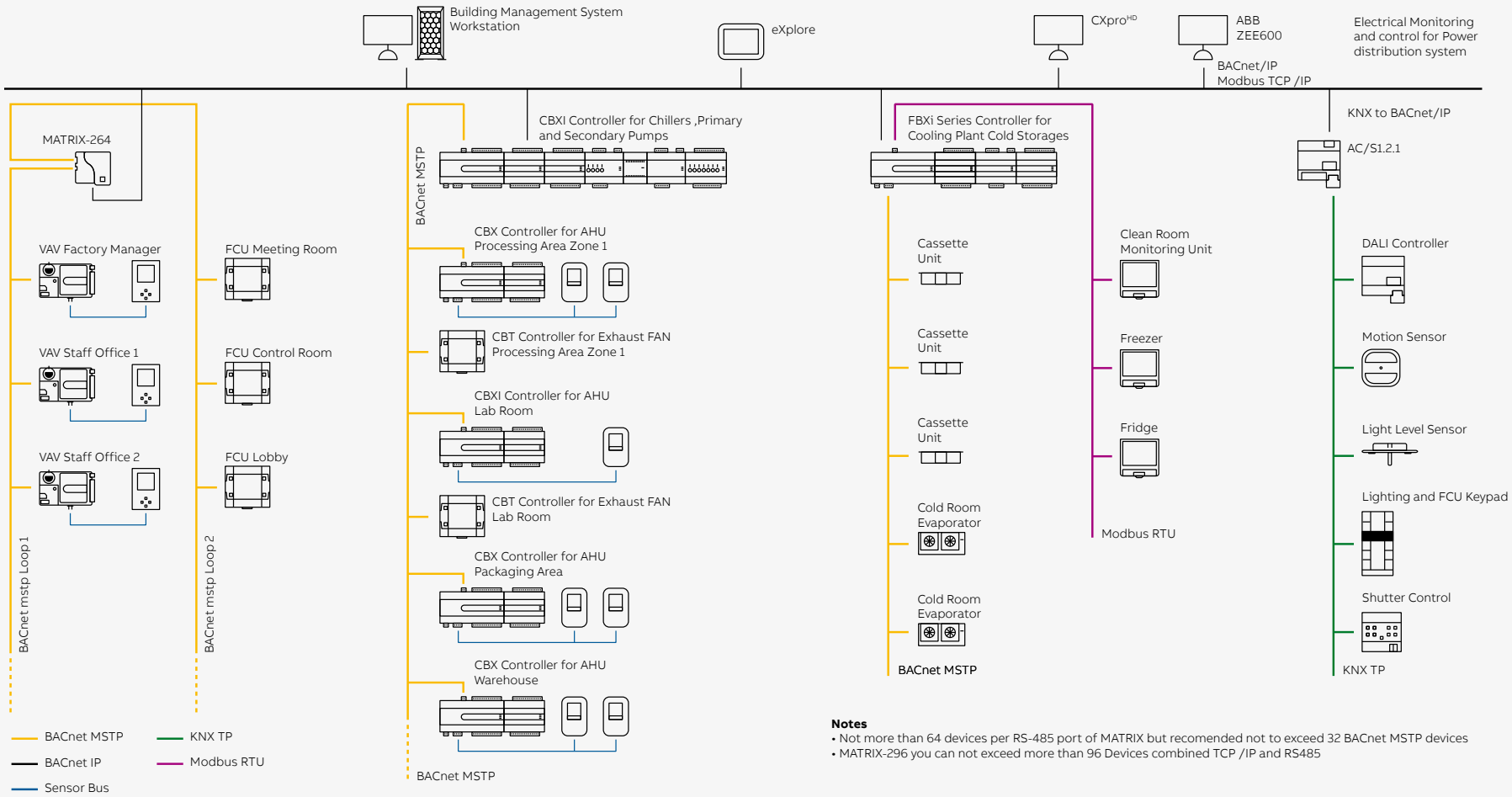
ARCHITECTURE

APPLICATION DETAILS

7.4 Room Wiring & Control

HVAC Control

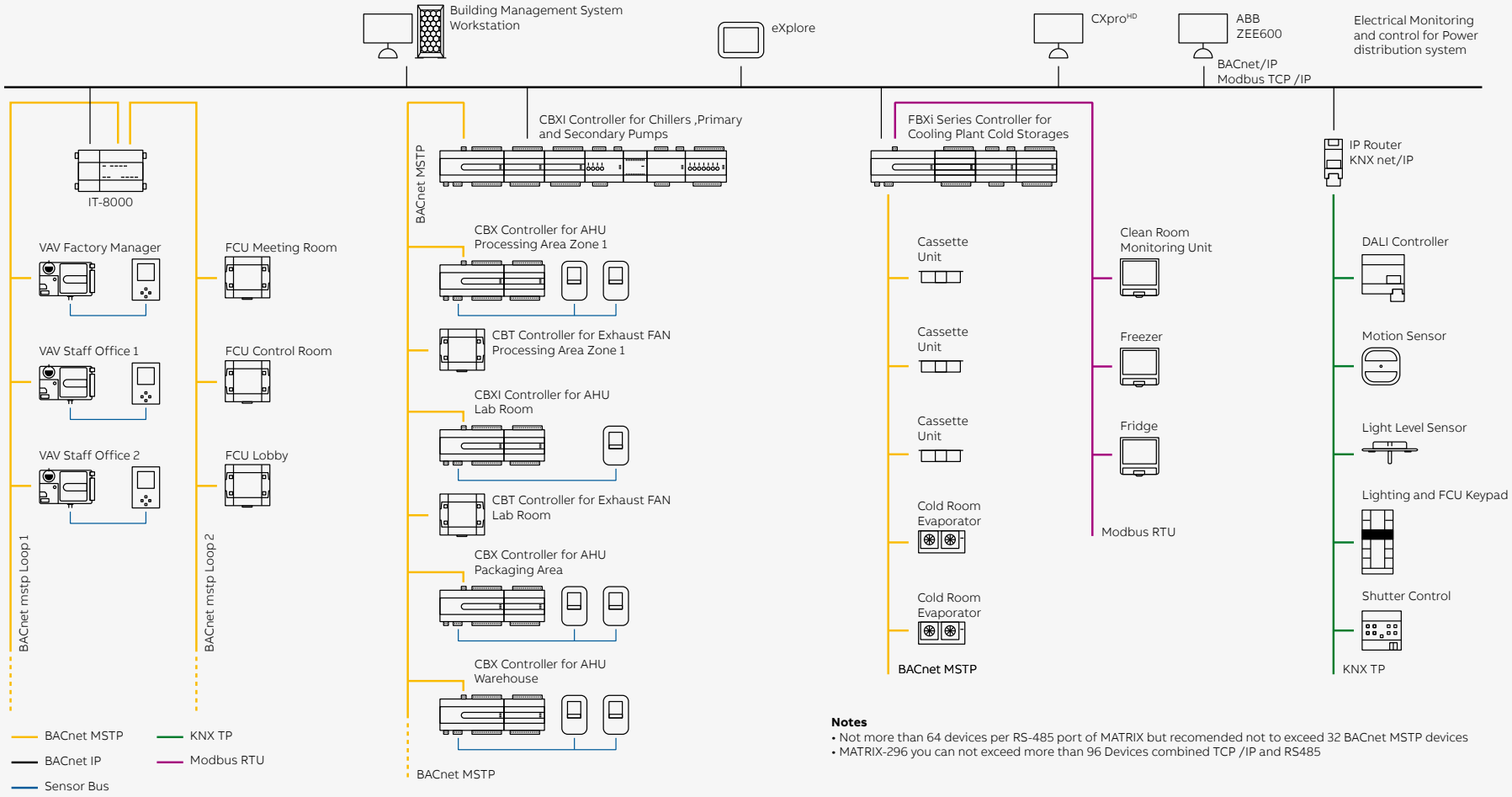
Reference Architecture with Matrix 264



NEXT

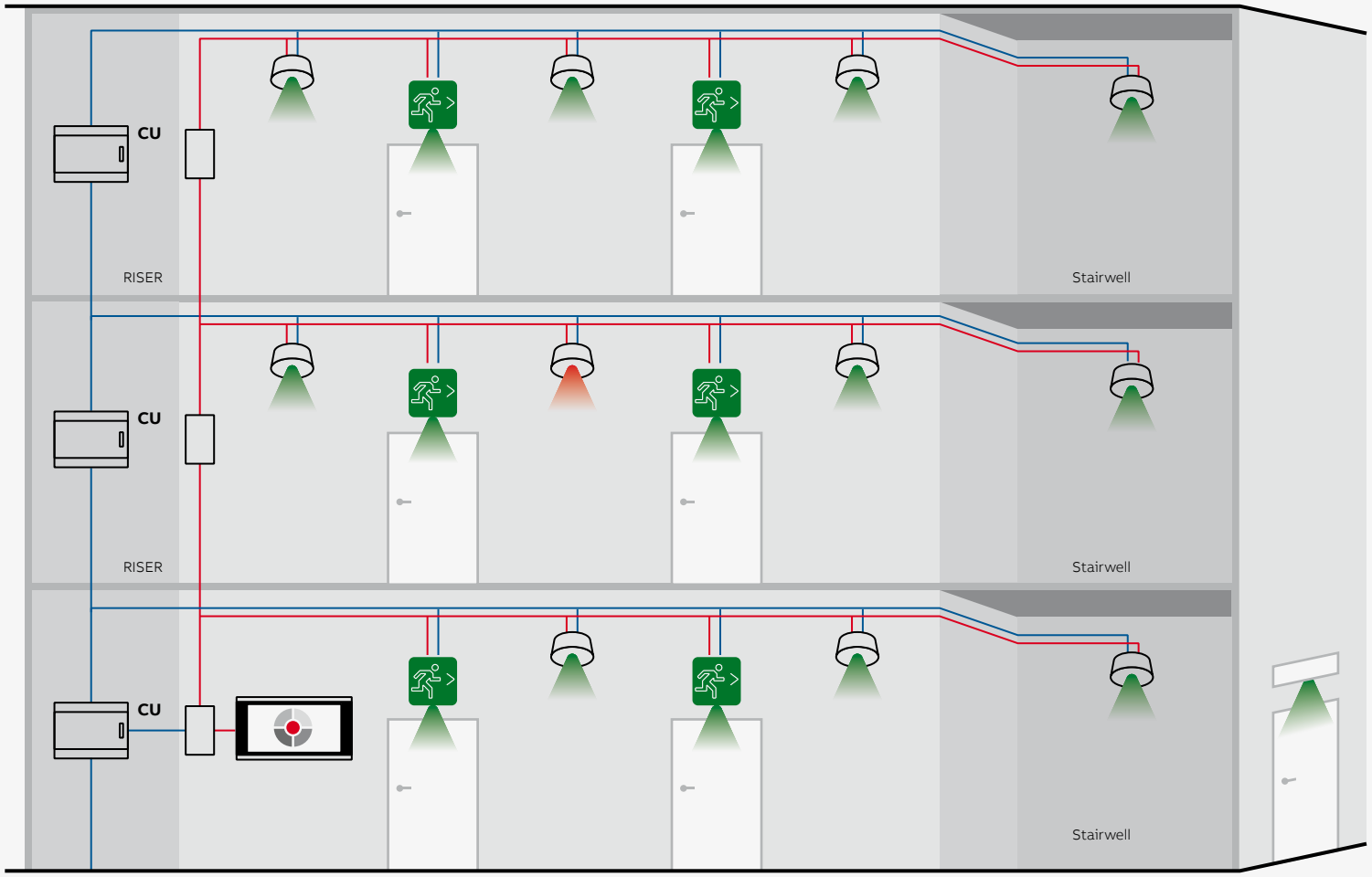
HVAC Control

Reference Architecture with Matrix and IT-8000



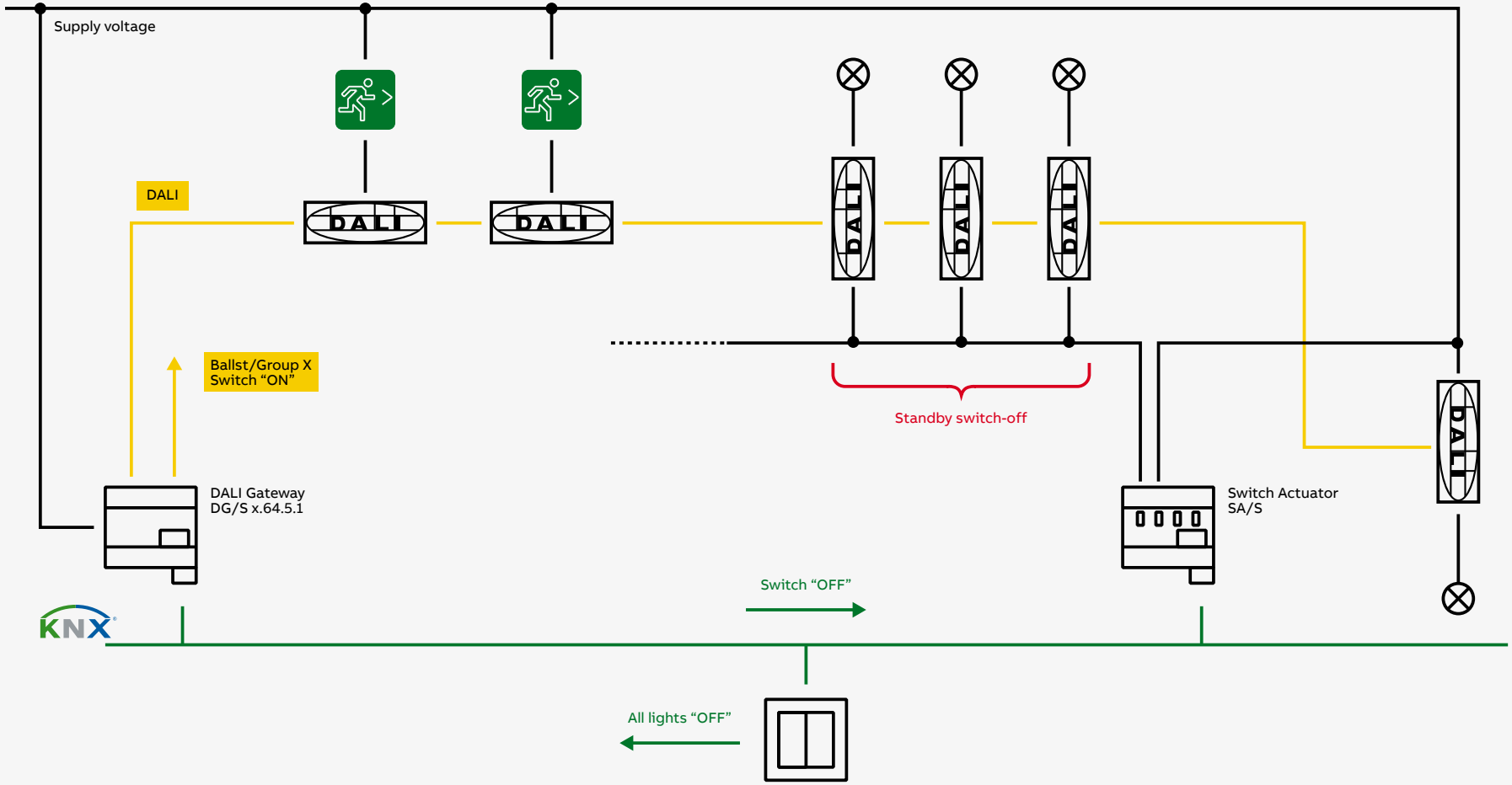
Notes
- Not more than 64 devices per RS-485 port of MATRIX but recomended not to exceed 32 BACnet MSTP devices
- MATRIX-296 you can not exceed more than 96 Devices combined TCP /IP and RS485

Emergency Lighting
DALI (EUR)

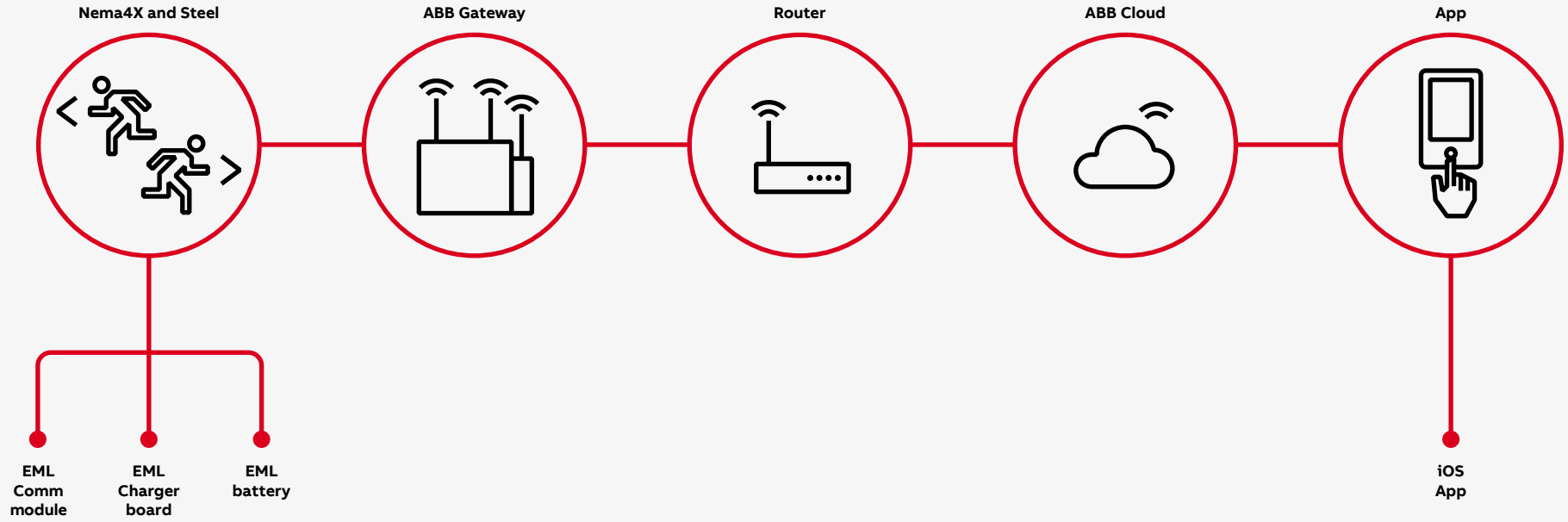


NEXT

Emergency Lighting
DALI (EUR)



Emergency Lighting
Nexus®Pro (NAM)



7

MANUFACTURING

ARCHITECTURE

APPLICATION DETAILS

7.6 Emergency Lighting

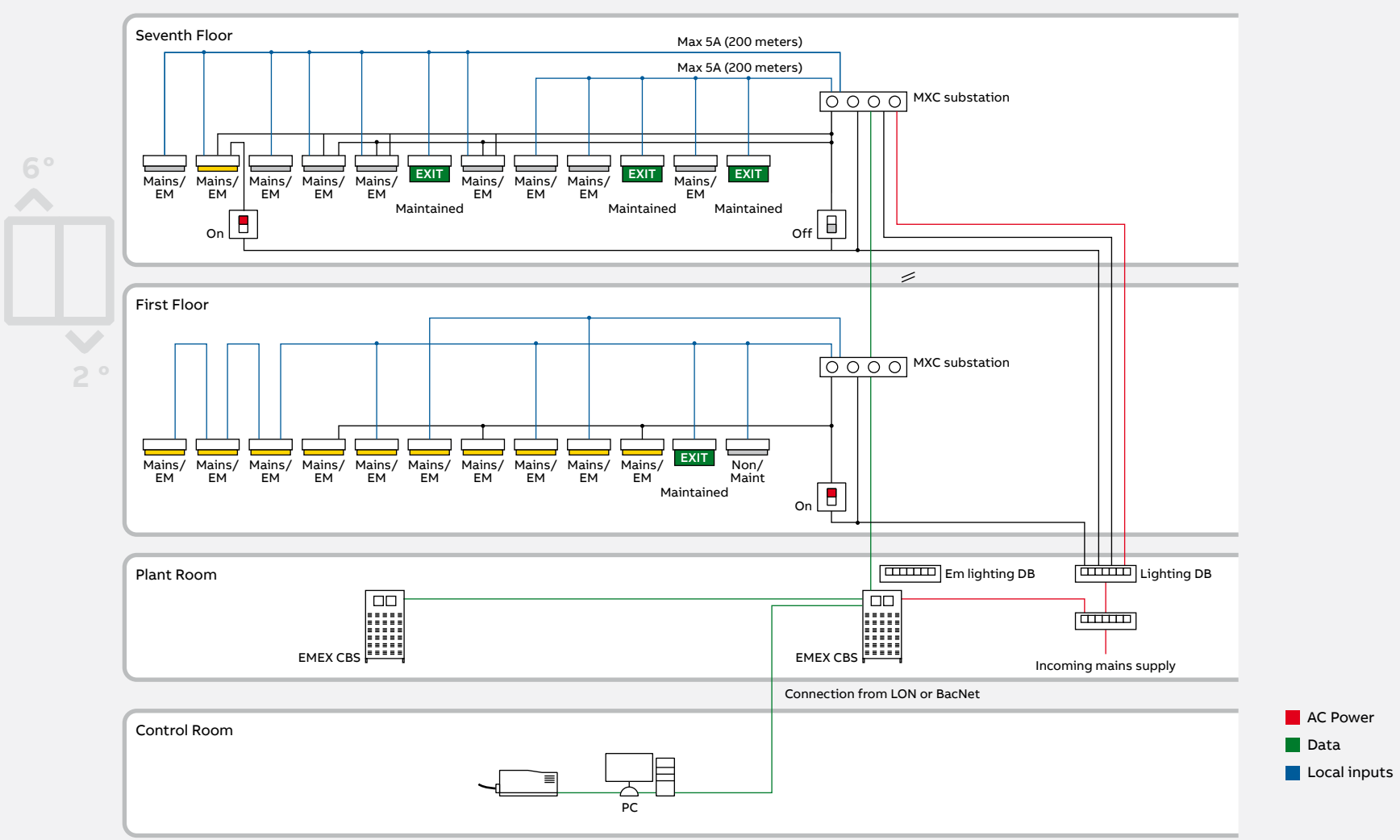
DALI (EUR)

Nexus®Pro (NAM)

Central Battery (UK, MEA)

Emergency Lighting
Central Battery (UK, MEA)

Layout schematic - MXD4 substations



7 MANUFACTURING

ARCHITECTURE

APPLICATION DETAILS

7.6 Emergency Lighting

DALI (EUR)

Nexus®Pro (NAM)

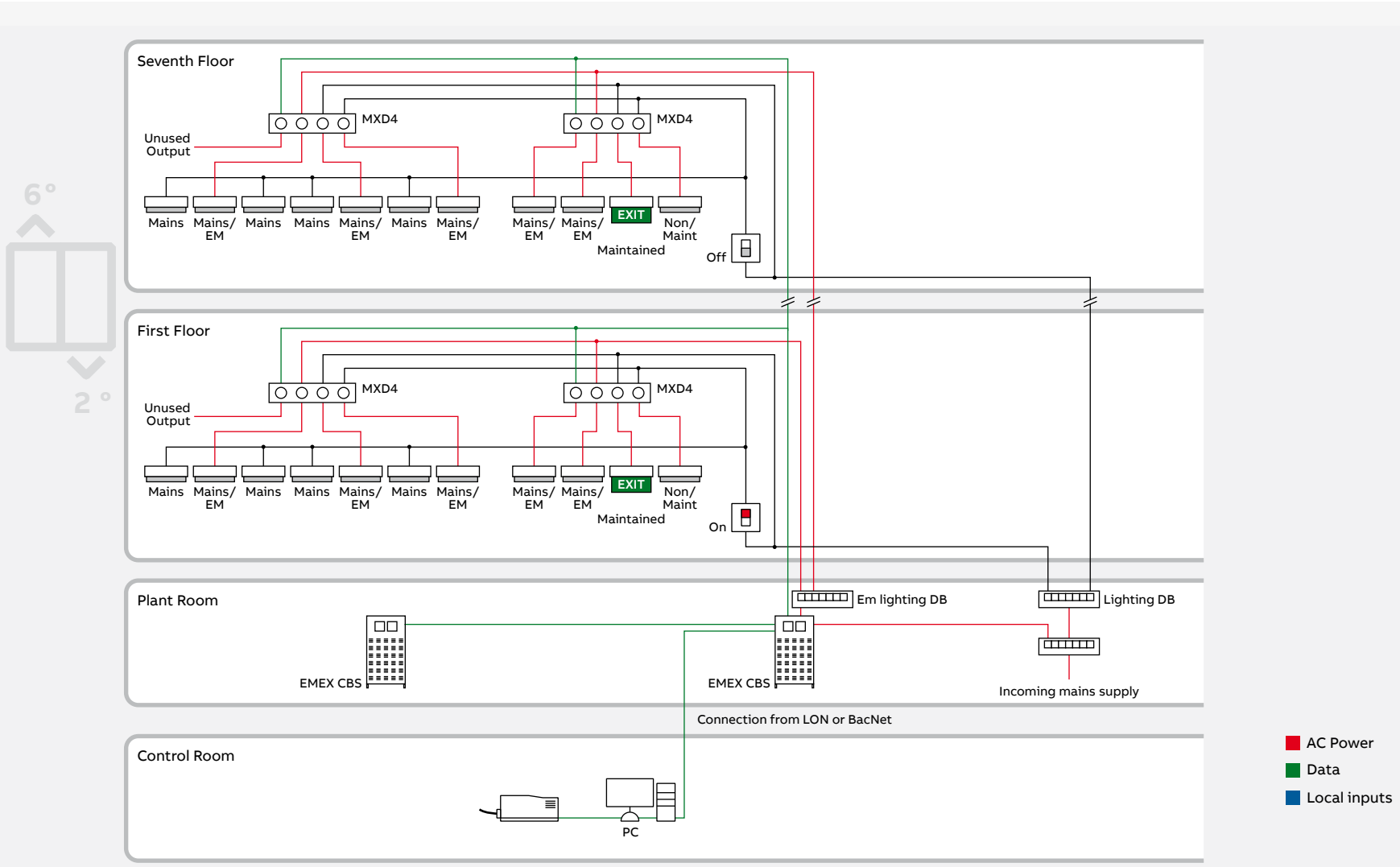
Central Battery (UK, MEA)

7.1 POWER DISTRIBUTION
7.2 ENERGY MANAGEMENT
7.3 LIGHTING CONTROL
7.4 ROOM WIRING & CONTROL
7.5 HVAC CONTROL
7.6 EMERGENCY LIGHTING
7.7 EV CHARGING
7.8 DRIVES & MOTORS

NEXT

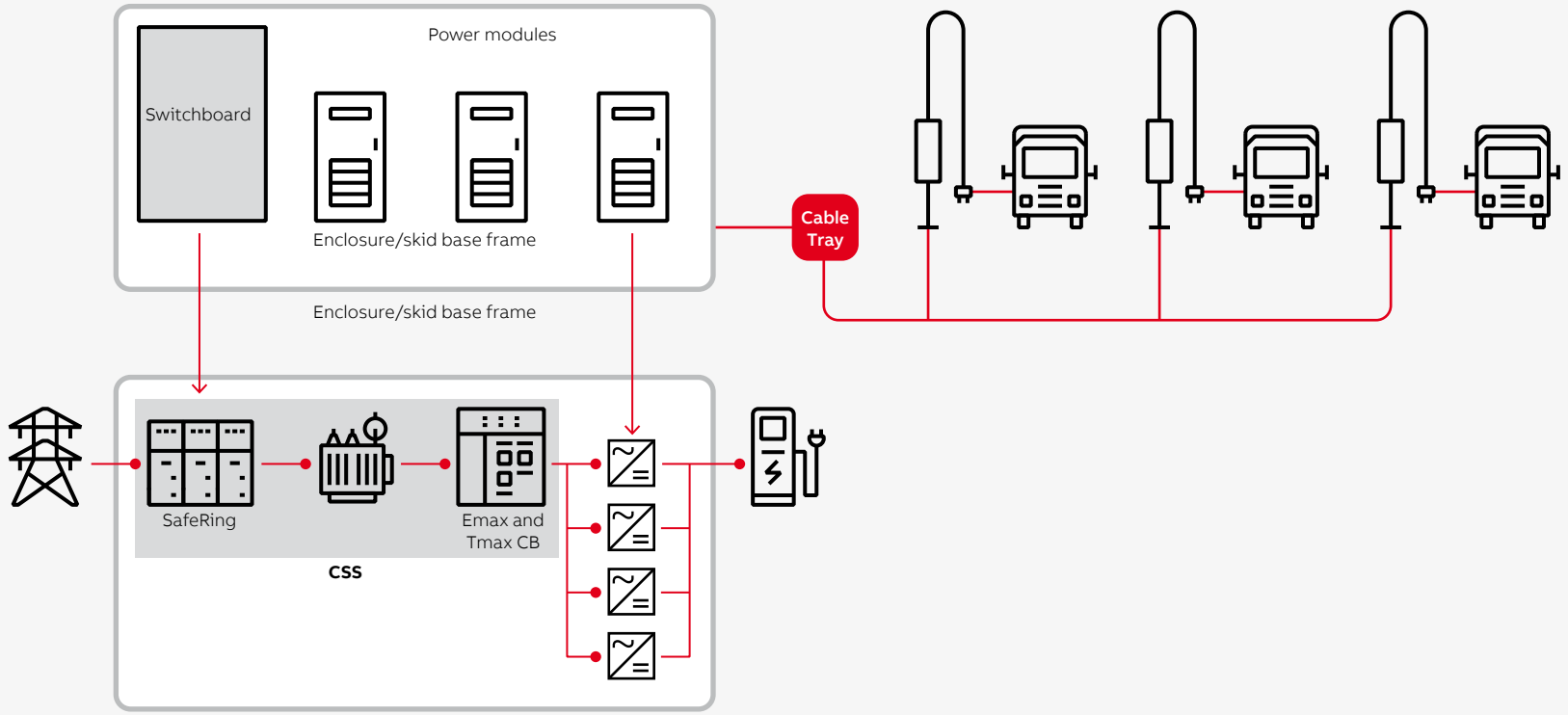
Emergency Lighting
Central Battery (UK, MEA)

Layout schematic - MXC substations



EV Charging

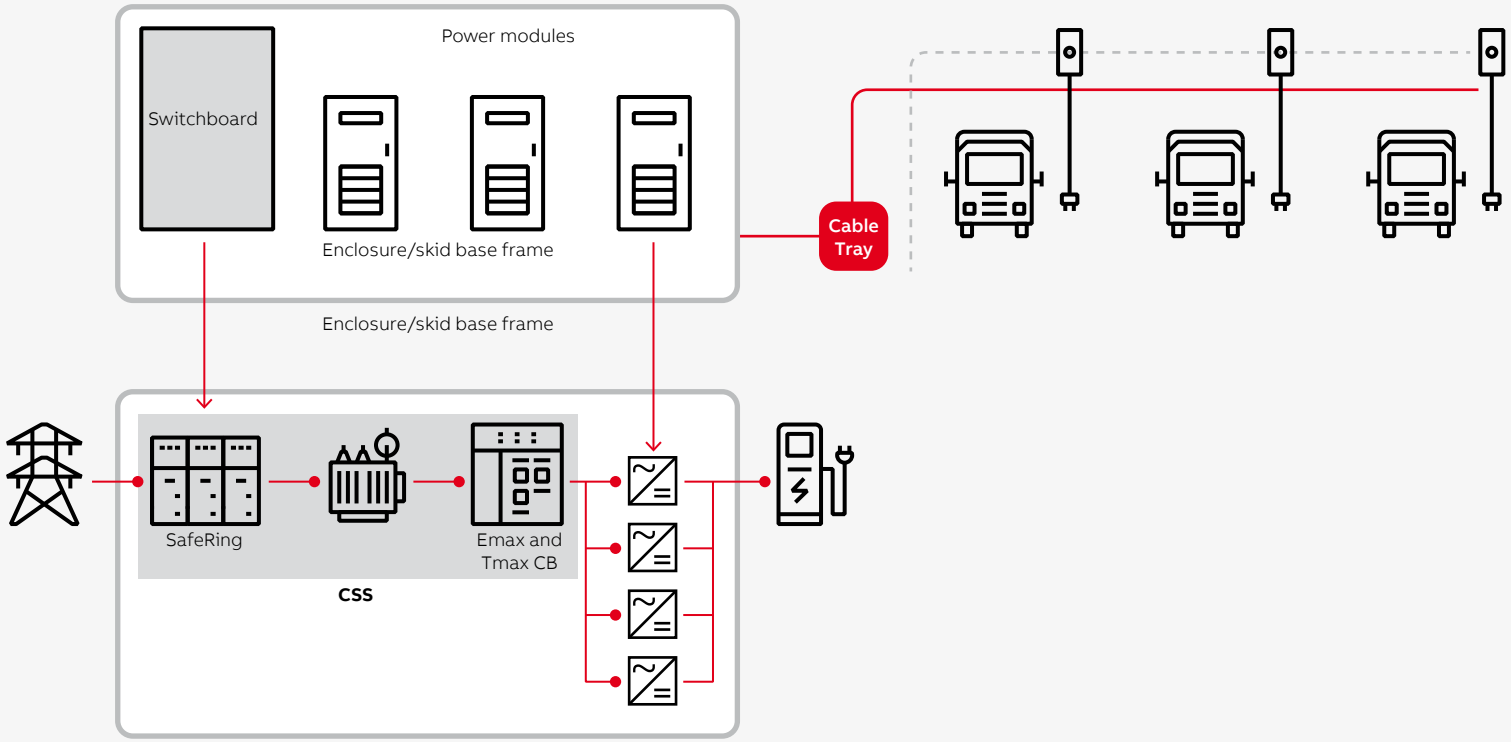
CSS with HVC depot box -Pedestal mounting



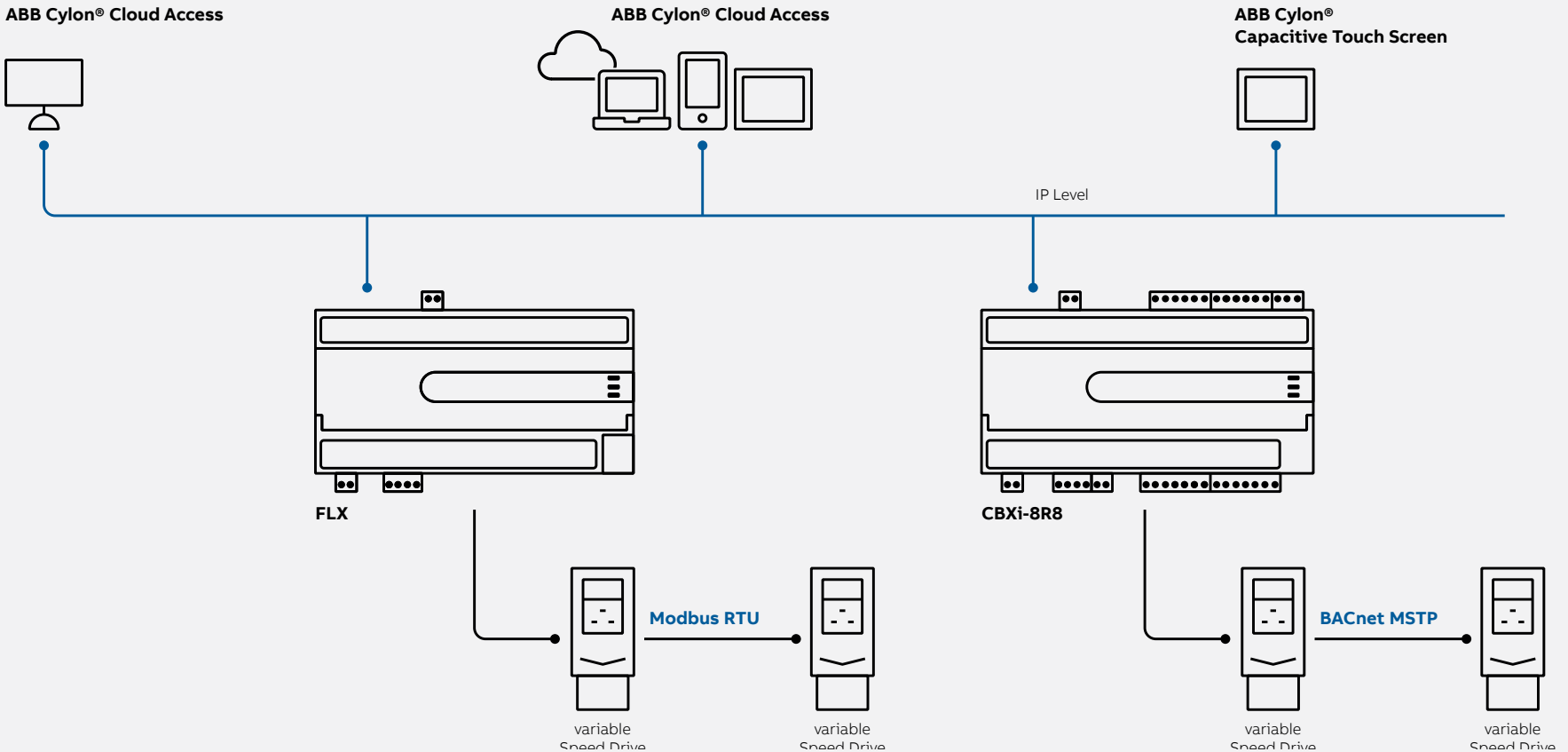
NEXT

EV Charging

CSS with HVC depot box -Wall mounting

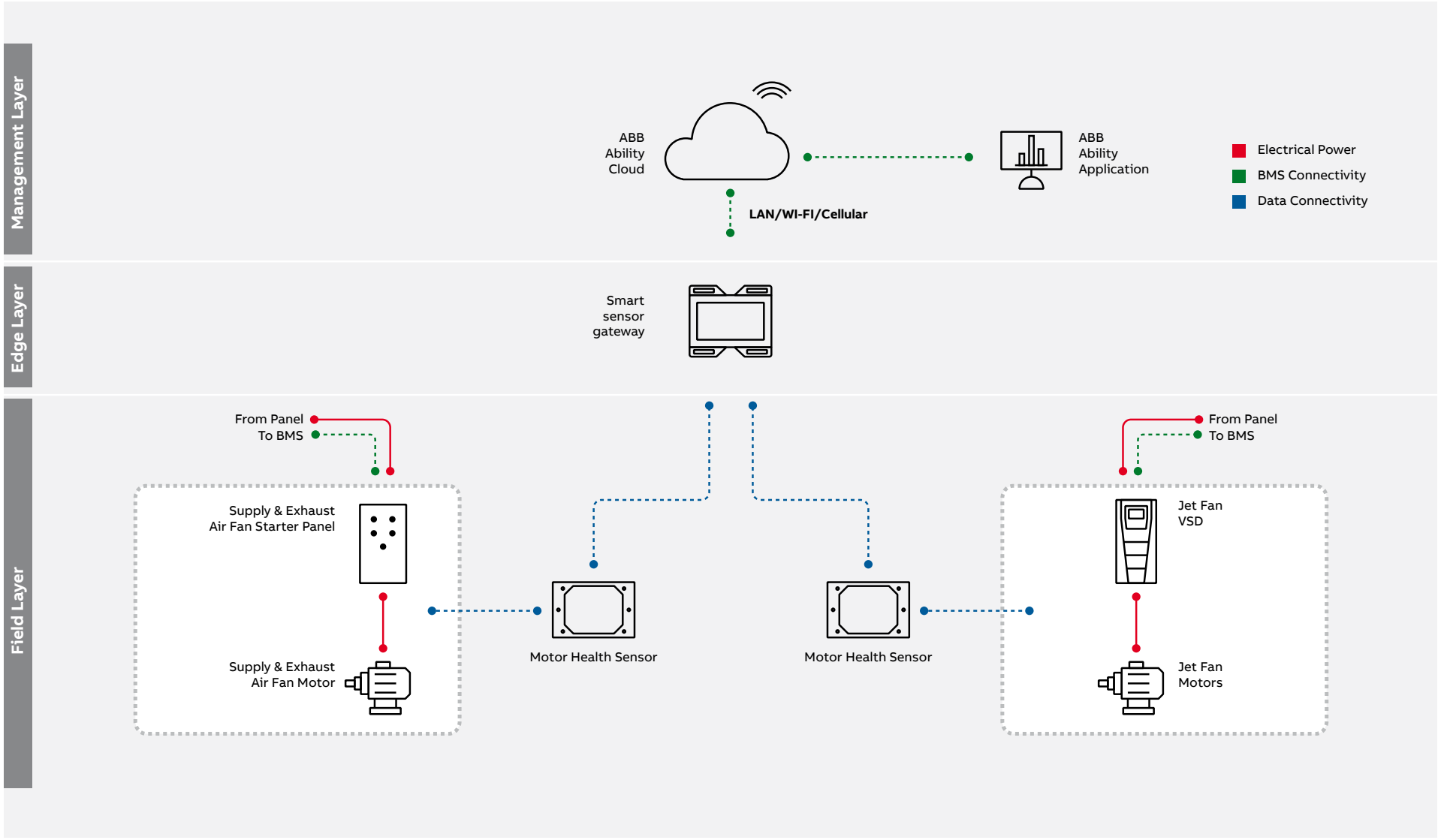


Drives & Motors
Overview



Drives & Motors
Sensors and Variable Speed Drives

Reference Architecture with Smart Sensors and VFD

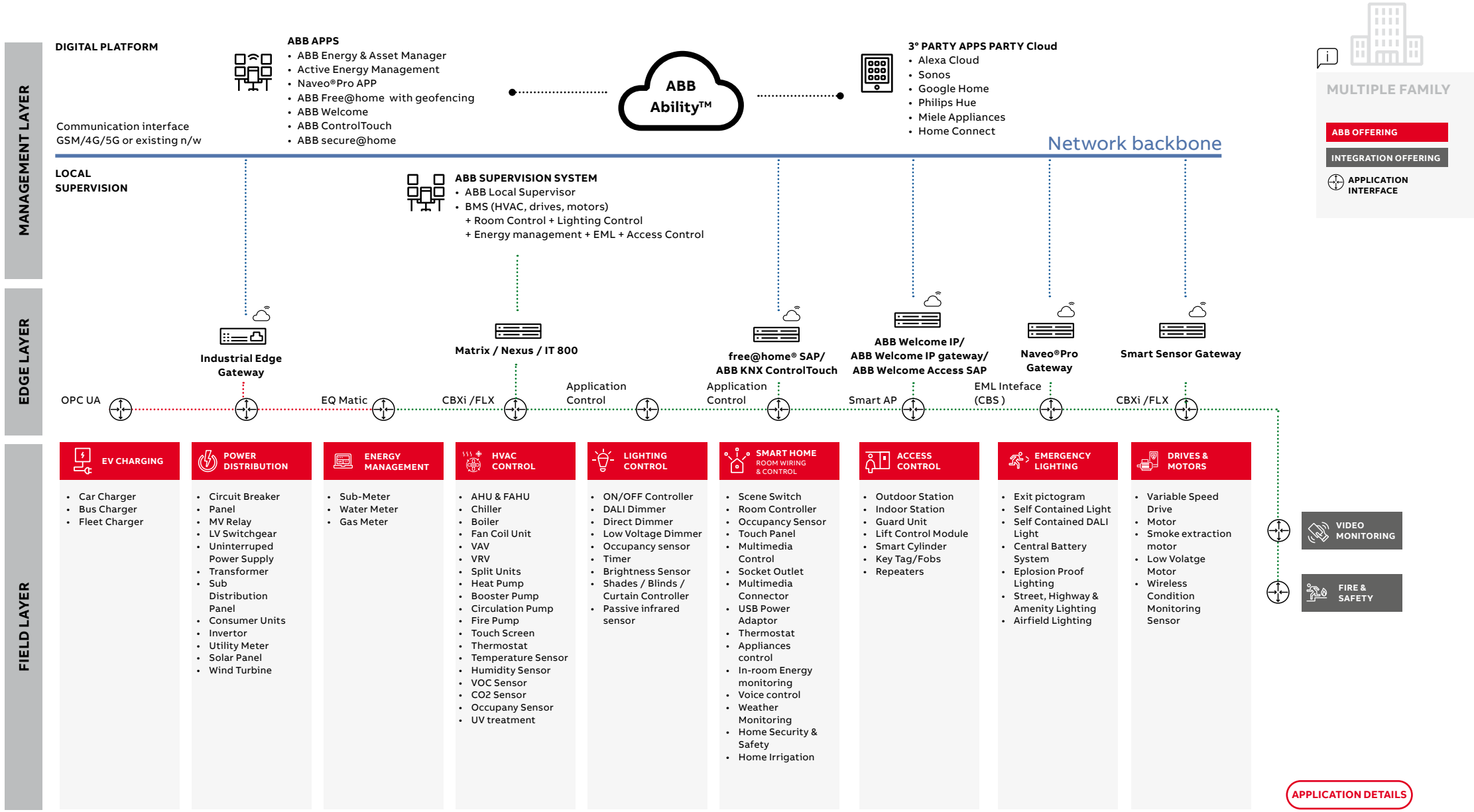


8

Residential Multiple Family

ENTER

Reference Architecture
Multiple Family



Multiple Family Reference Architecture
Application details

8

8.1 Power Distribution
- Overview (IEC)
- Floor Sub Distribution (IEC)
- Room Consumer Unit (IEC)
- Residential Tower Overview (NEMA)
- Residential Tower – Modular metering (NEMA)

8.2 Energy Management
- Overview
- Metering architecture

8.3 Smart Home
- ABB-free@home overview
- Centralized infrastructure
- Decentralized infrastructure
- Wired and wireless infrastructure

8.4 Access Control
- Welcome IP overview
- Welcome IP configurations
- Welcome 2 wires
- Welcome Access

8.5 Lighting Control
- Overview
- Corridor sensors

8.6 HVAC Control

8.7 Emergency Lighting
- DALI (EUR)
- Nexus®Pro (NAM)
- Central Battery (UK, MEA)

8.8 EV Charging

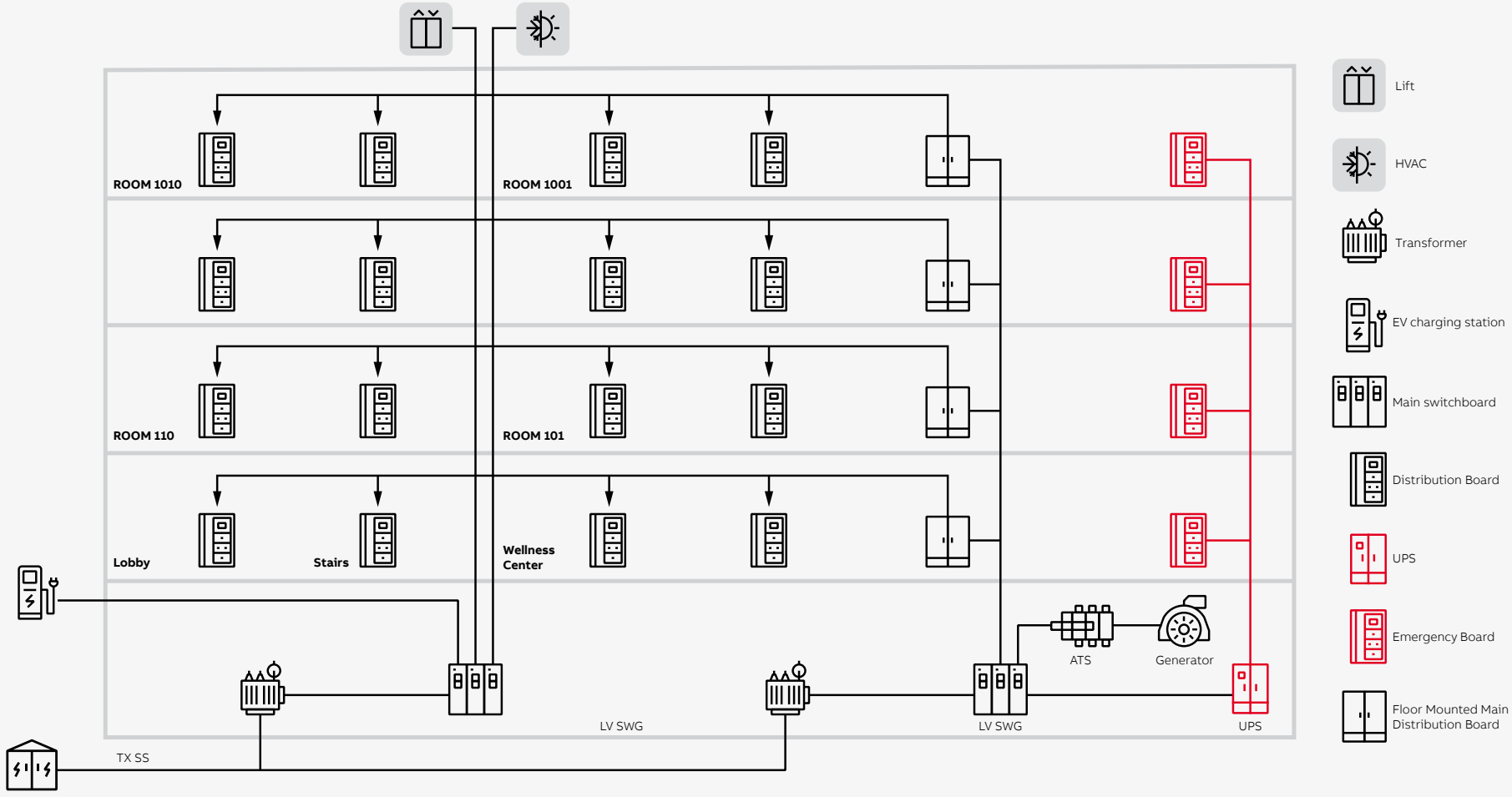
8.9 Drives & Motors
- Overview
- Smart Sensors and VFD

Power Distribution
Overview (IEC)

8

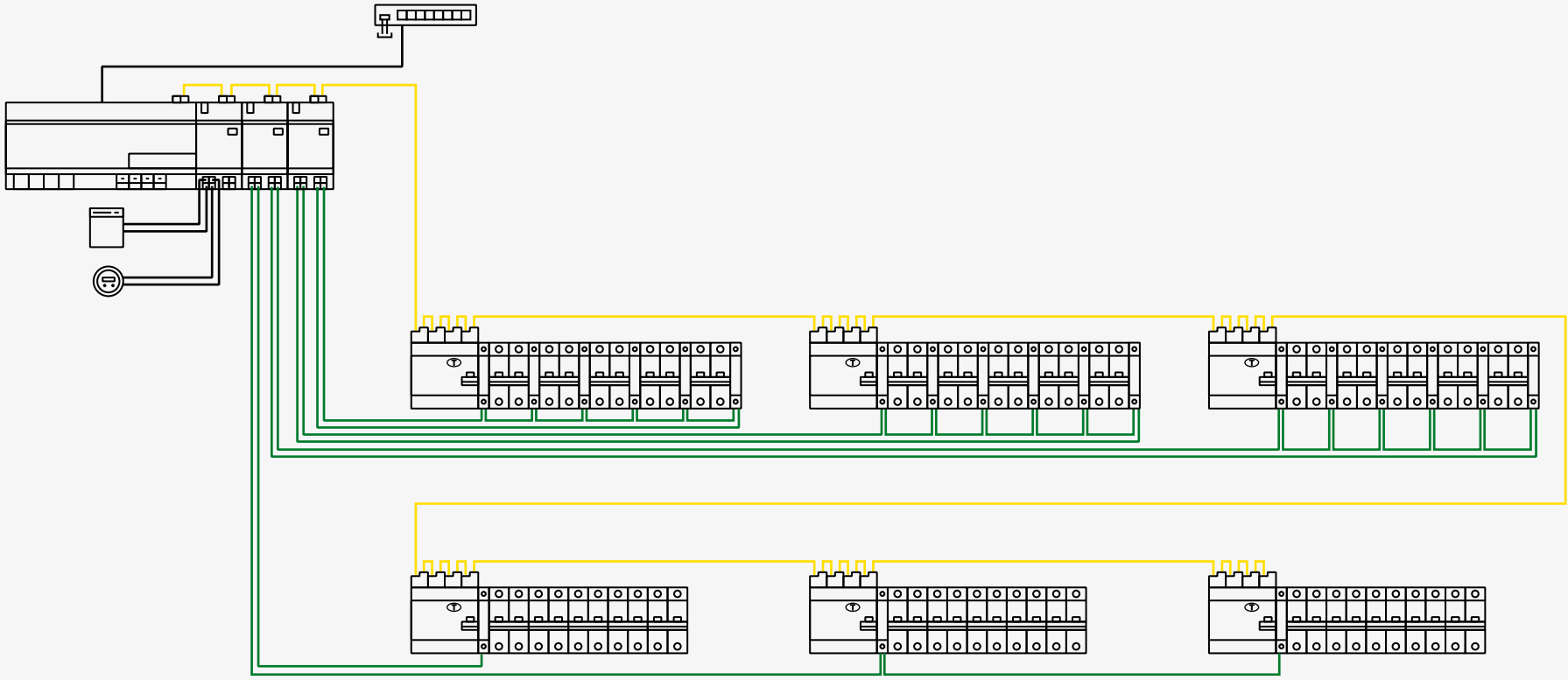
MULTIPLE FAMILY

Multiple Apartment Reference Architecture



Power Distribution
Floor Sub Distribution (IEC)

Multiple Apartment - Digital diagram of Floor sub-distribution switchboard



8

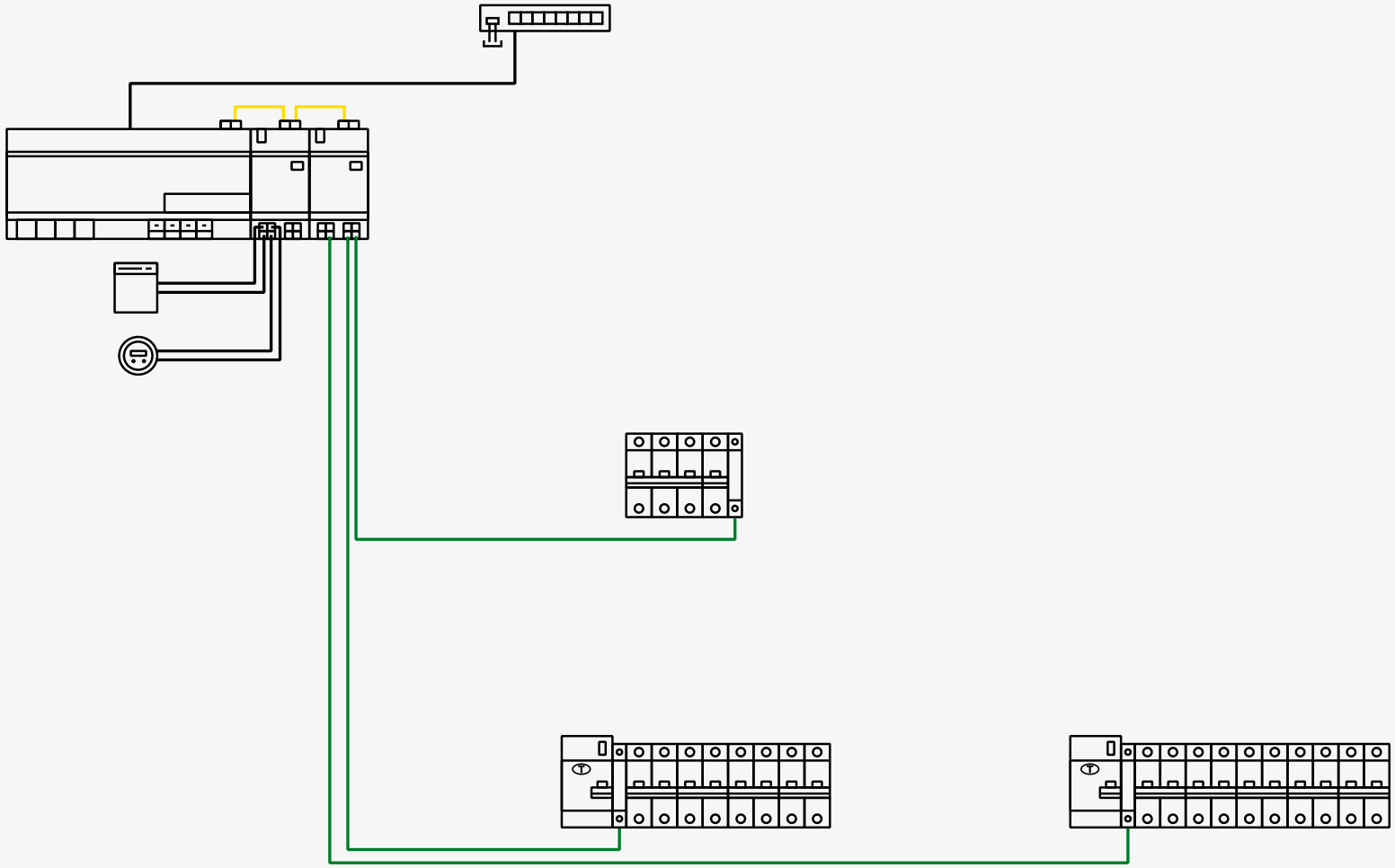
MULTIPLE FAMILY

ARCHITECTURE

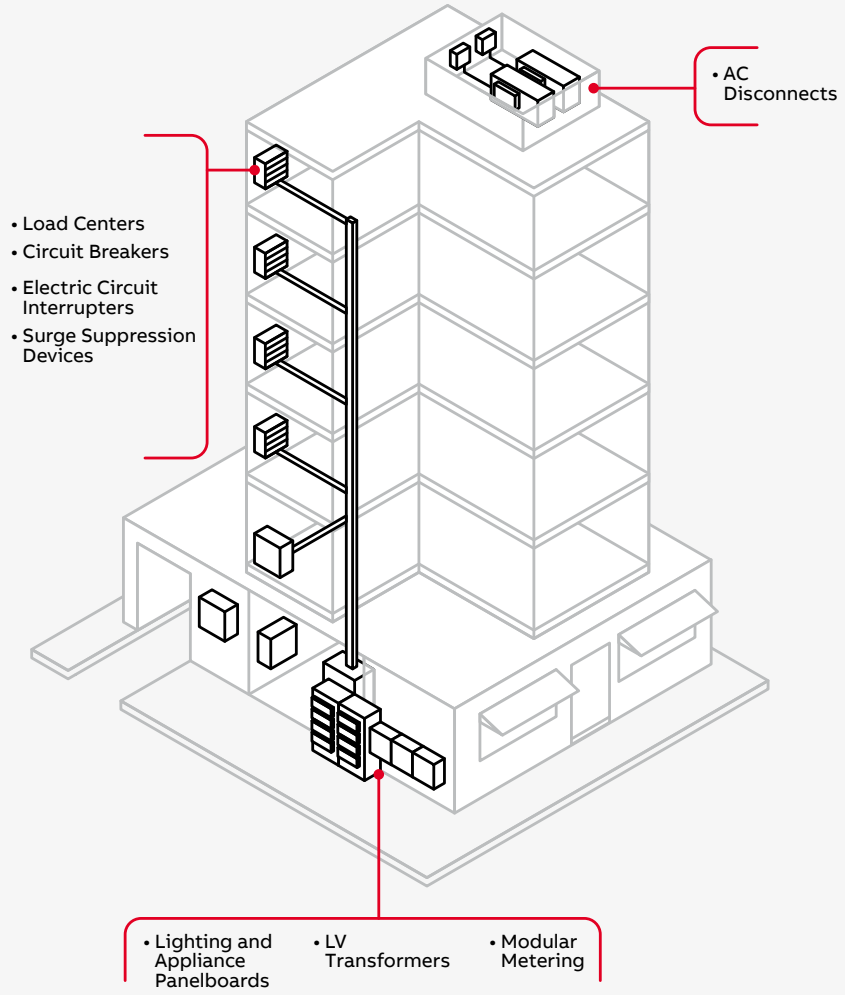
APPLICATION DETAILS

Power Distribution
Room Consumer Unit (IEC)

Multiple Apartment - Room Consumer Unit

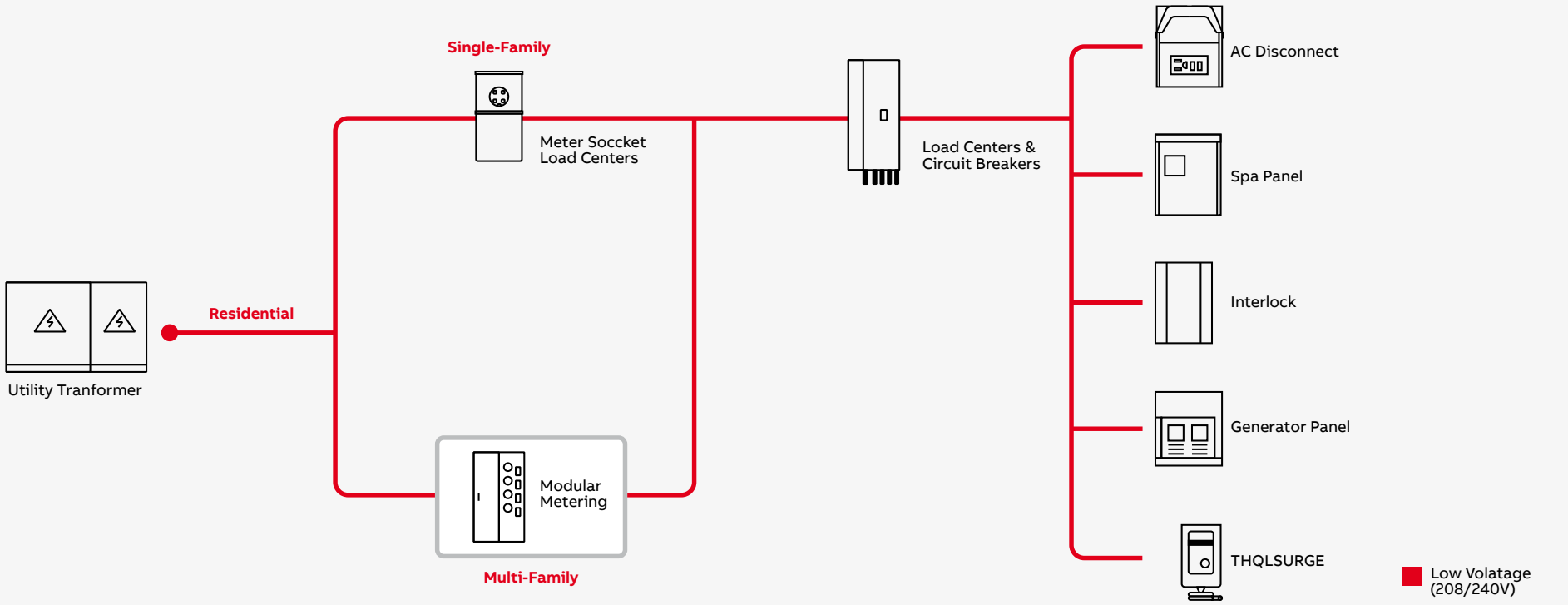


Power Distribution
Residential Tower Overview (NEMA)



Power Distribution

Residential Tower – Modular metering (NEMA)

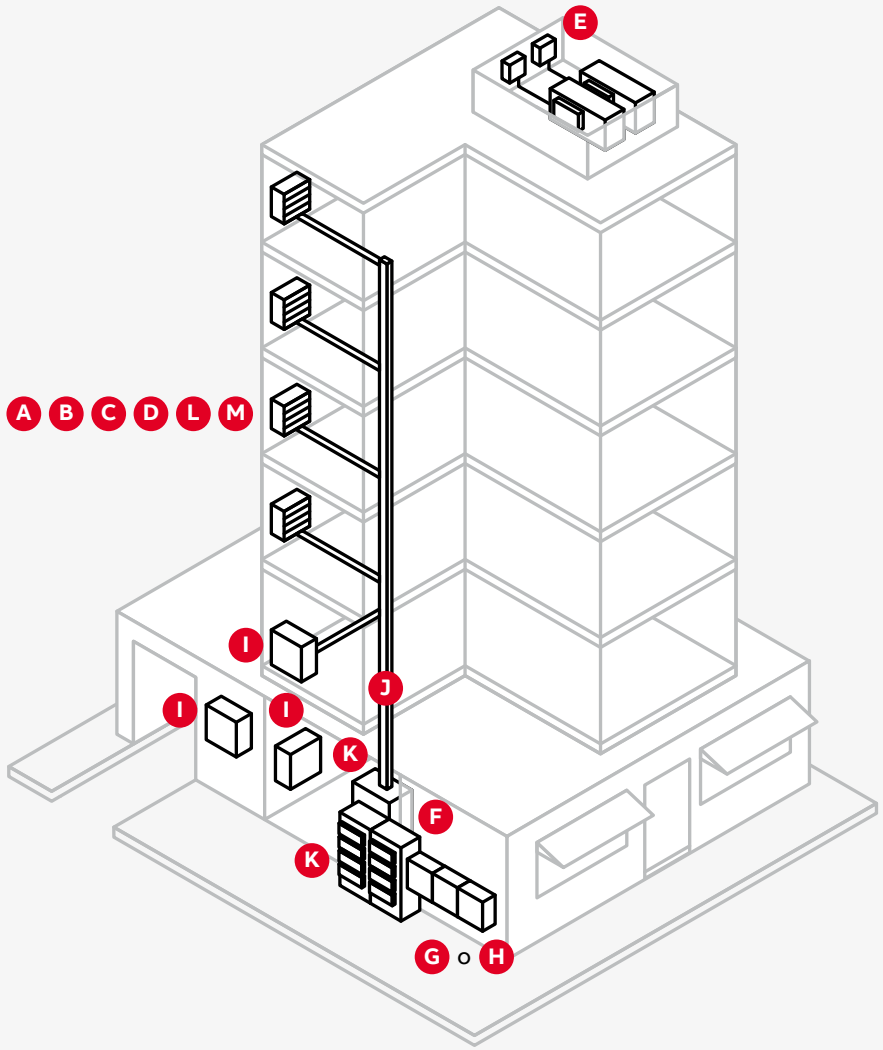


8
MULTIPLE FAMILY
ARCHITECTURE
APPLICATION DETAILS
8.1 Power Distribution
Overview (IEC)
Floor Sub Distribution (IEC)
Room Consumer Unit (IEC)
Residential Tower Overview (NEMA)
Residential Tower – Modular metering (NEMA)
8.1 POWER DISTRIBUTION
8.2 ENERGY MANAGEMENT
8.3 SMART HOME
8.4 ACCESS CONTROL
8.5 LIGHTING CONTROL
8.6 HVAC CONTROL
8.7 EMERGENCY LIGHTING
8.8 EV CHARGING
8.9 DRIVES & MOTORS
NEXT

Power Distribution

Residential Tower – Modular metering (NEMA)

Component Layout



- A Load Centers
- B Standard Circuit Breakers
- C Dual Function Circuit Interrupter
- D Arc Fault Circuit Interrupter
- E AC Disconnects
- F Meter Mod III / Modular Metering
- G General Duty Safety Switches
- H Heavy Duty Safety Switches
- I Panelboards
- J Busway
- K Switchboards
- L Surge Suppressor
- M Ground Fault Circuit Interrupter with Selt-Test

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MULTIPLE FAMILY

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APPLICATION DETAILS

8.1 Power Distribution

Overview (IEC)

Floor Sub Distribution (IEC)

Room Consumer Unit (IEC)

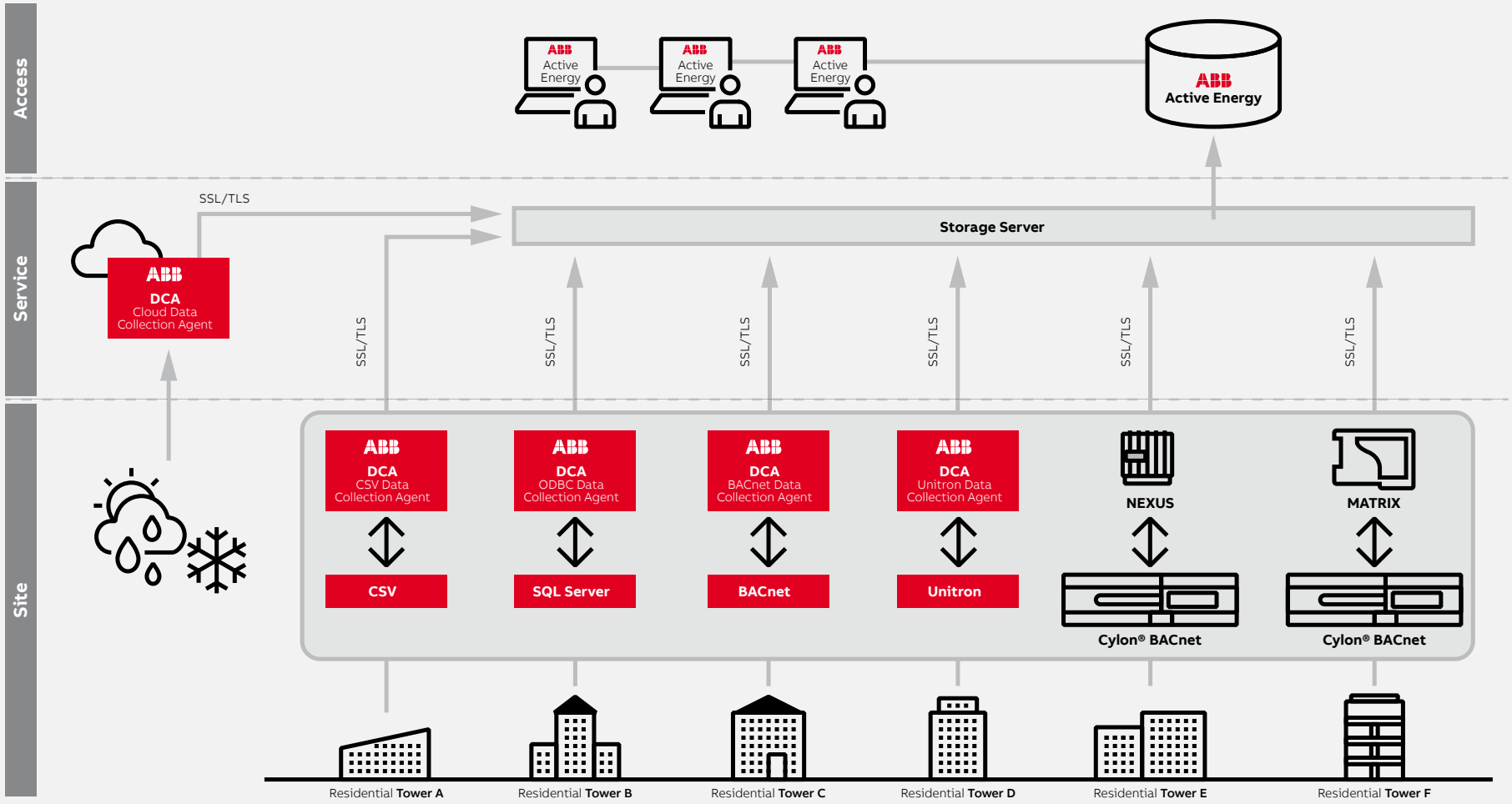
Residential Tower Overview (NEMA)

Residential Tower – Modular metering (NEMA)

8.1 POWER DISTRIBUTION
8.2 ENERGY MANAGEMENT
8.3 SMART HOME
8.4 ACCESS CONTROL
8.5 LIGHTING CONTROL
8.6 HVAC CONTROL
8.7 EMERGENCY LIGHTING
8.8 EV CHARGING
8.9 DRIVES & MOTORS

Energy Management
Overview

Active Energy Manager (for NAM)



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MULTIPLE FAMILY

ARCHITECTURE
APPLICATION DETAILS

8.2 Energy Management

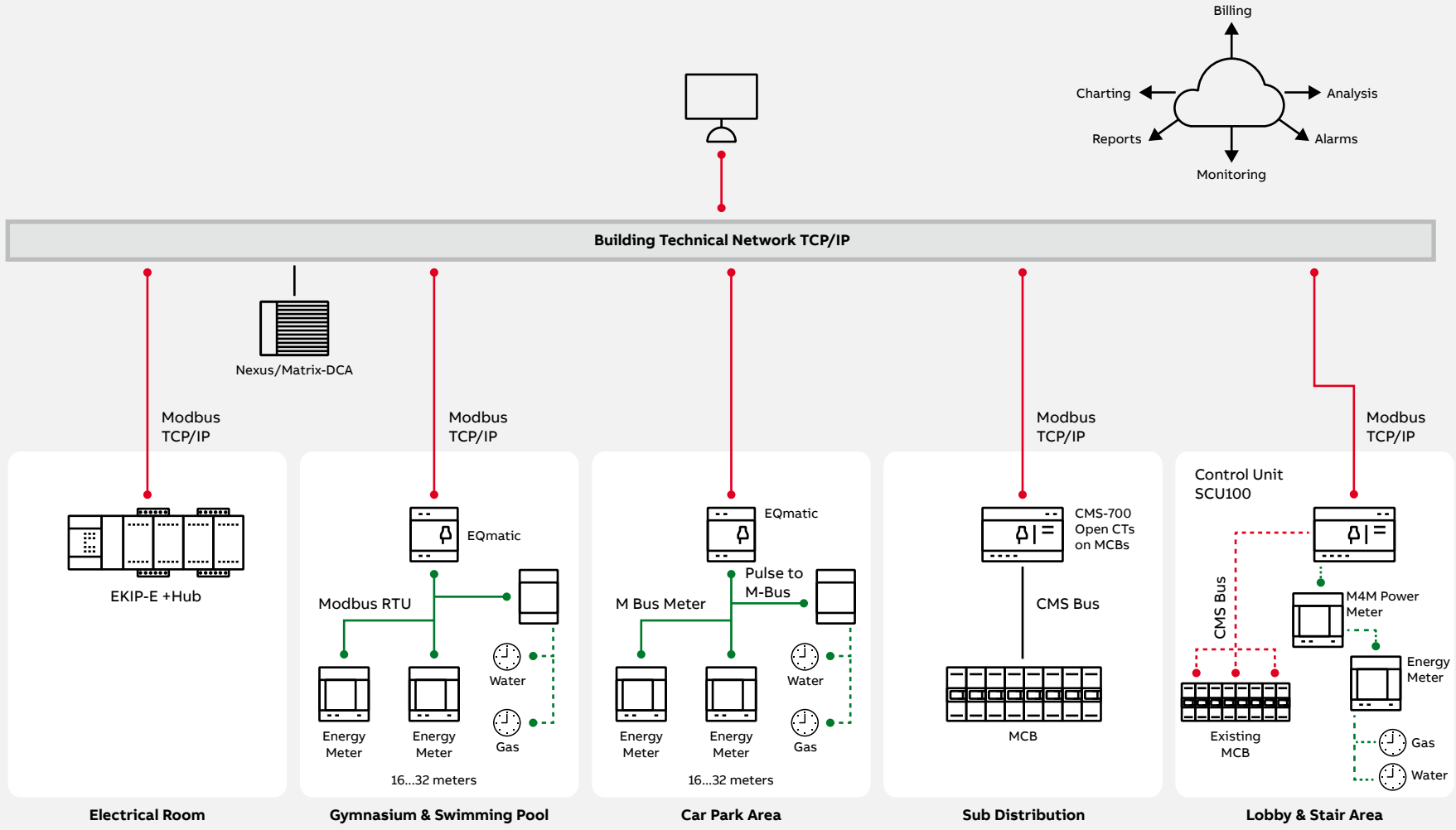
Overview

Metering architecture

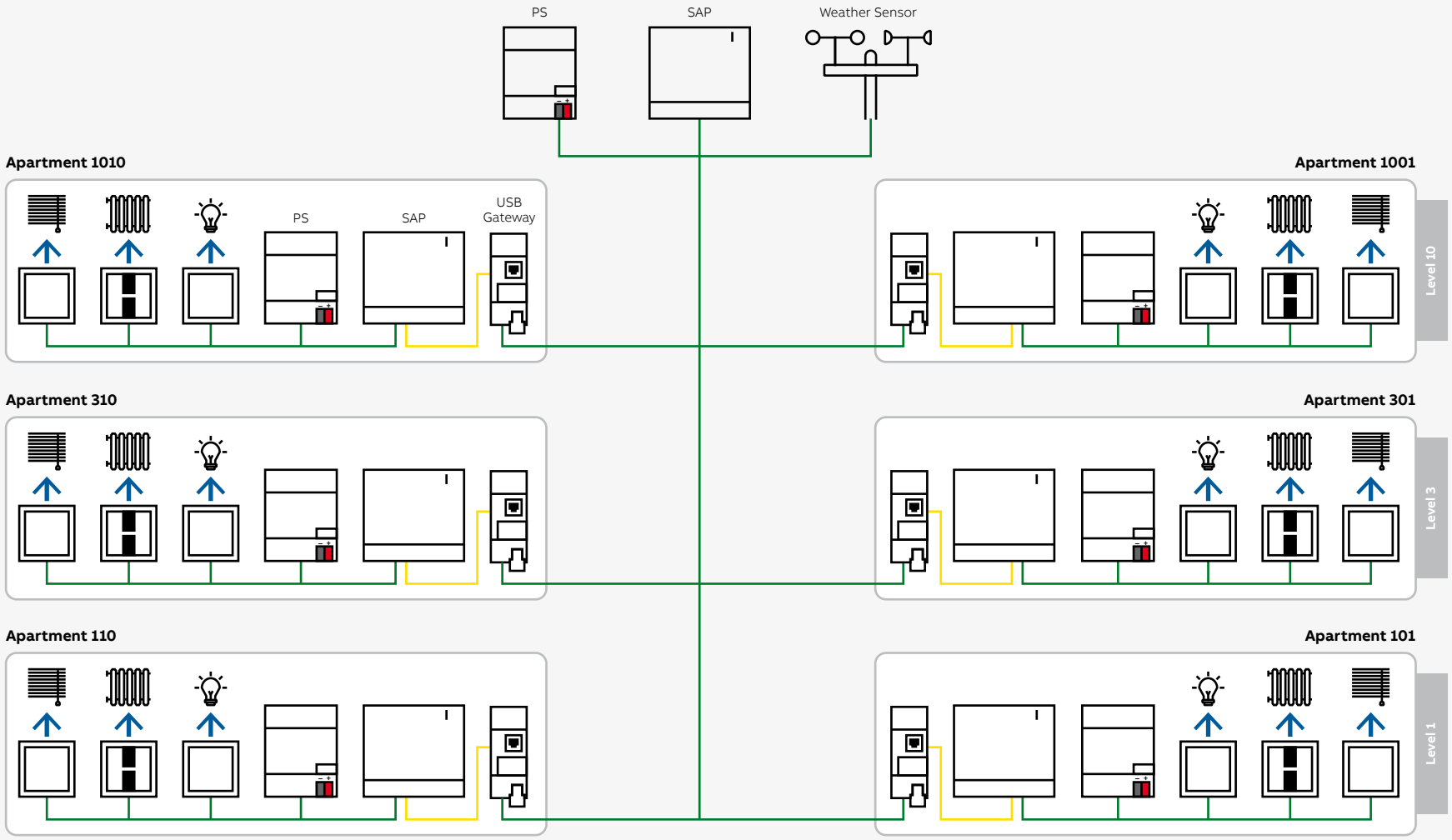
8.1 POWER DISTRIBUTION
8.2 ENERGY MANAGEMENT
8.3 SMART HOME
8.4 ACCESS CONTROL
8.5 LIGHTING CONTROL
8.6 HVAC CONTROL
8.7 EMERGENCY LIGHTING
8.8 EV CHARGING
8.9 DRIVES & MOTORS

Energy Management
Metering architecture

Active Energy Manager (for NAM)



Smart Home
ABB-free@home



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MULTIPLE FAMILY

ARCHITECTURE

APPLICATION DETAILS

8.3 Smart Home

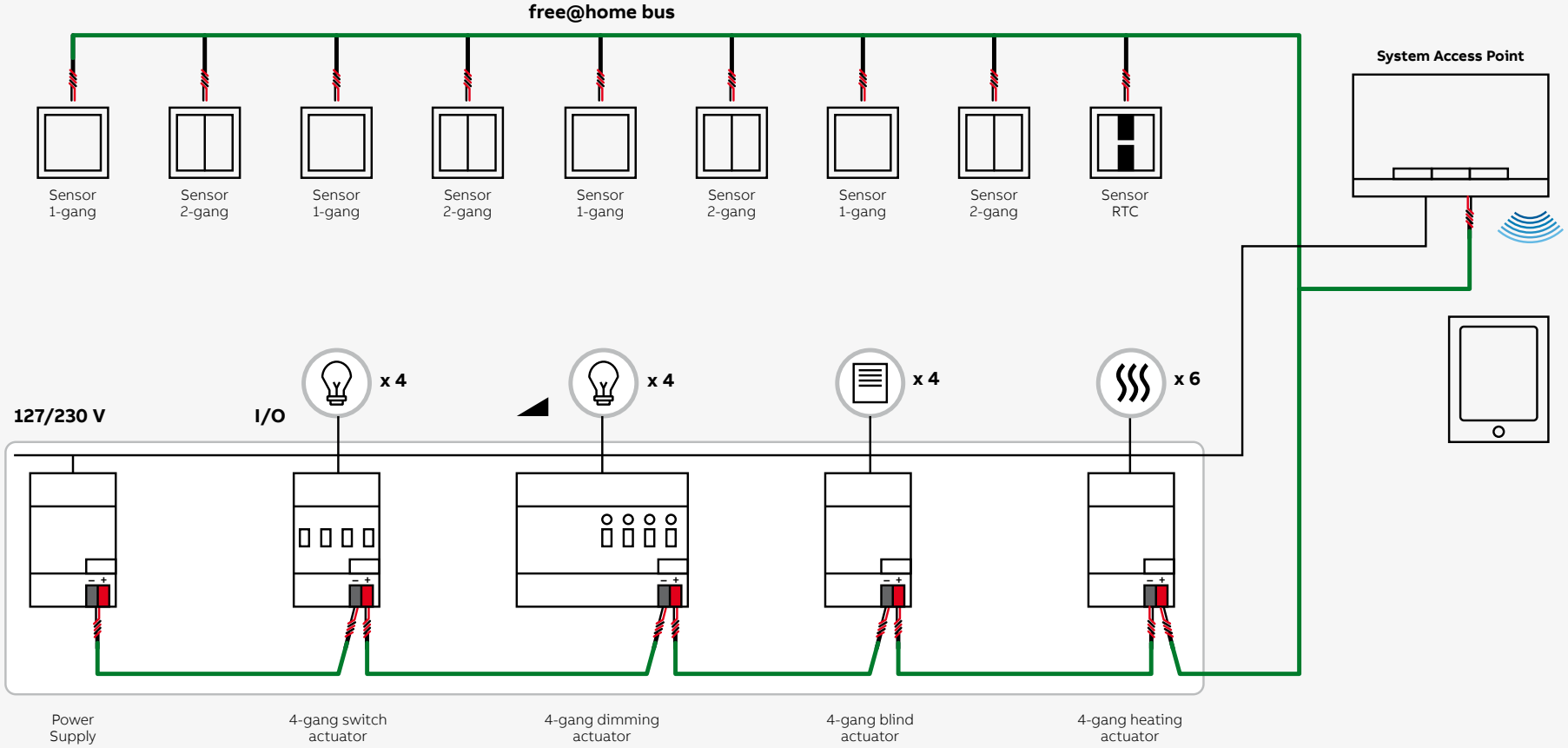
ABB-free@home

Centralized infrastructure

Decentralized infrastructure

Wired and wireless infrastructure

Smart Home
Centralized infrastructure



8

MULTIPLE FAMILY

ARCHITECTURE

APPLICATION DETAILS

8.3 Smart Home

ABB-free@home

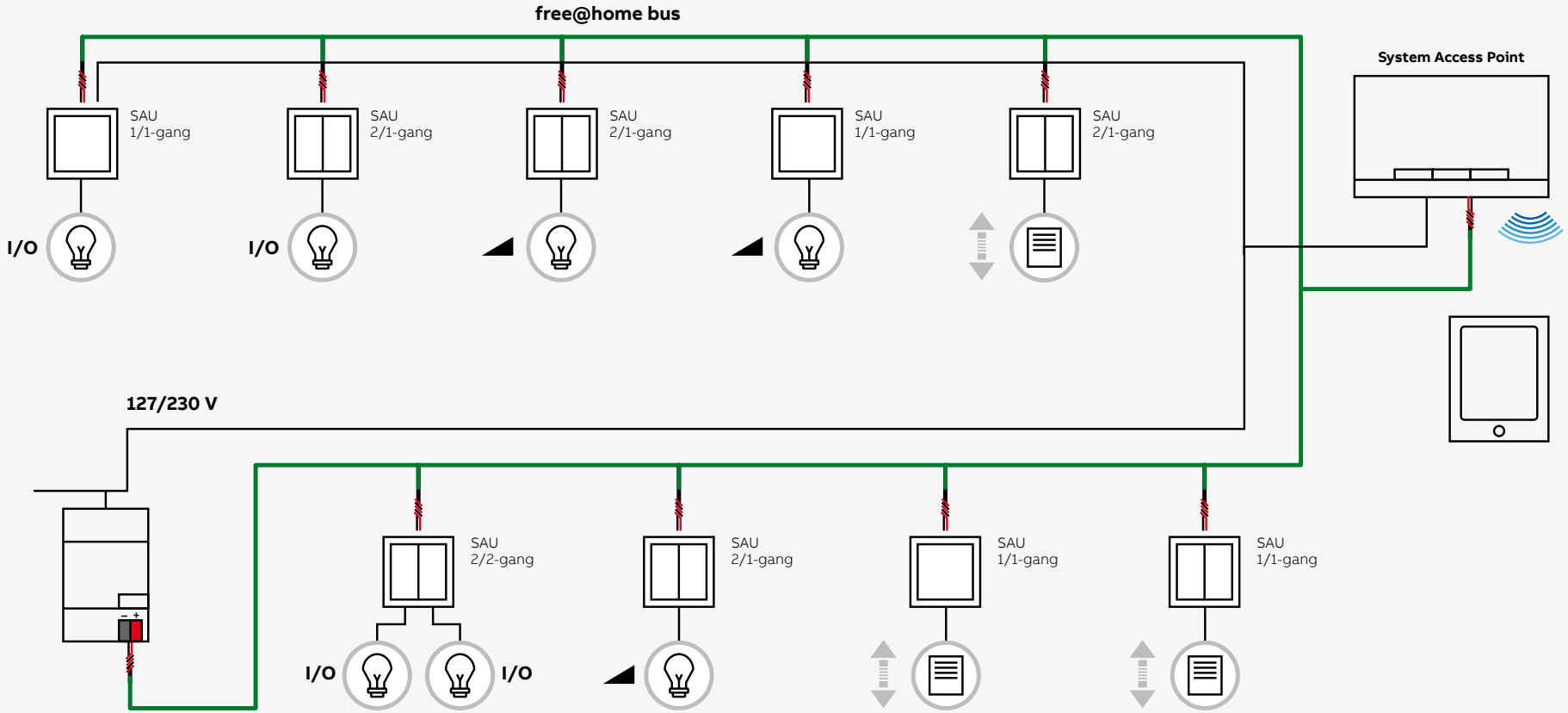
Centralized infrastructure

Decentralized infrastructure

Wired and wireless infrastructure

Smart Home

Decentralized infrastructure



8

MULTIPLE FAMILY

ARCHITECTURE

APPLICATION DETAILS

8.3 Smart Home

ABB-free@home

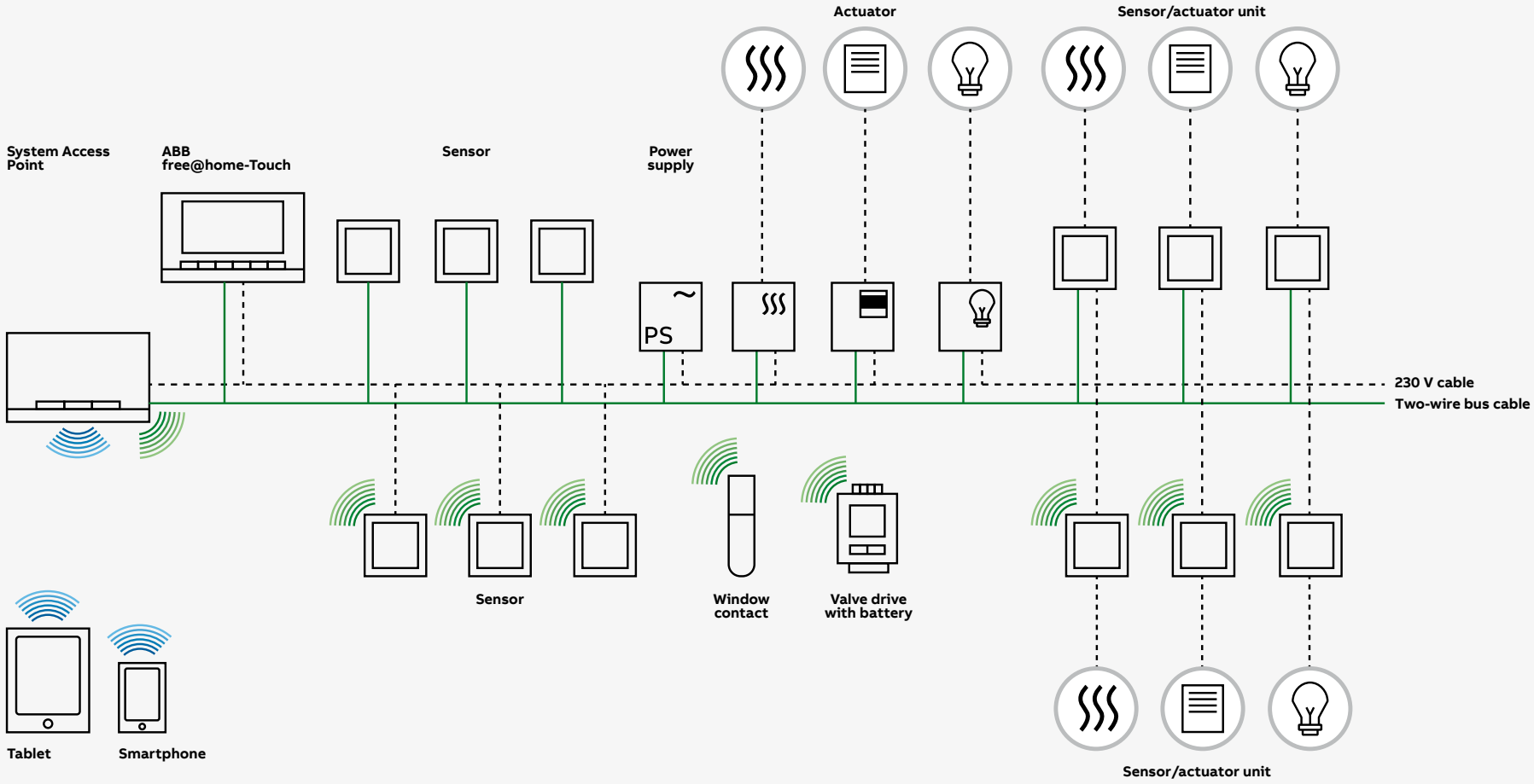
Centralized infrastructure

Decentralized infrastructure

Wired and wireless infrastructure

Smart Home

Wired and wireless infrastructure



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MULTIPLE FAMILY

ARCHITECTURE

APPLICATION DETAILS

8.3 Smart Home

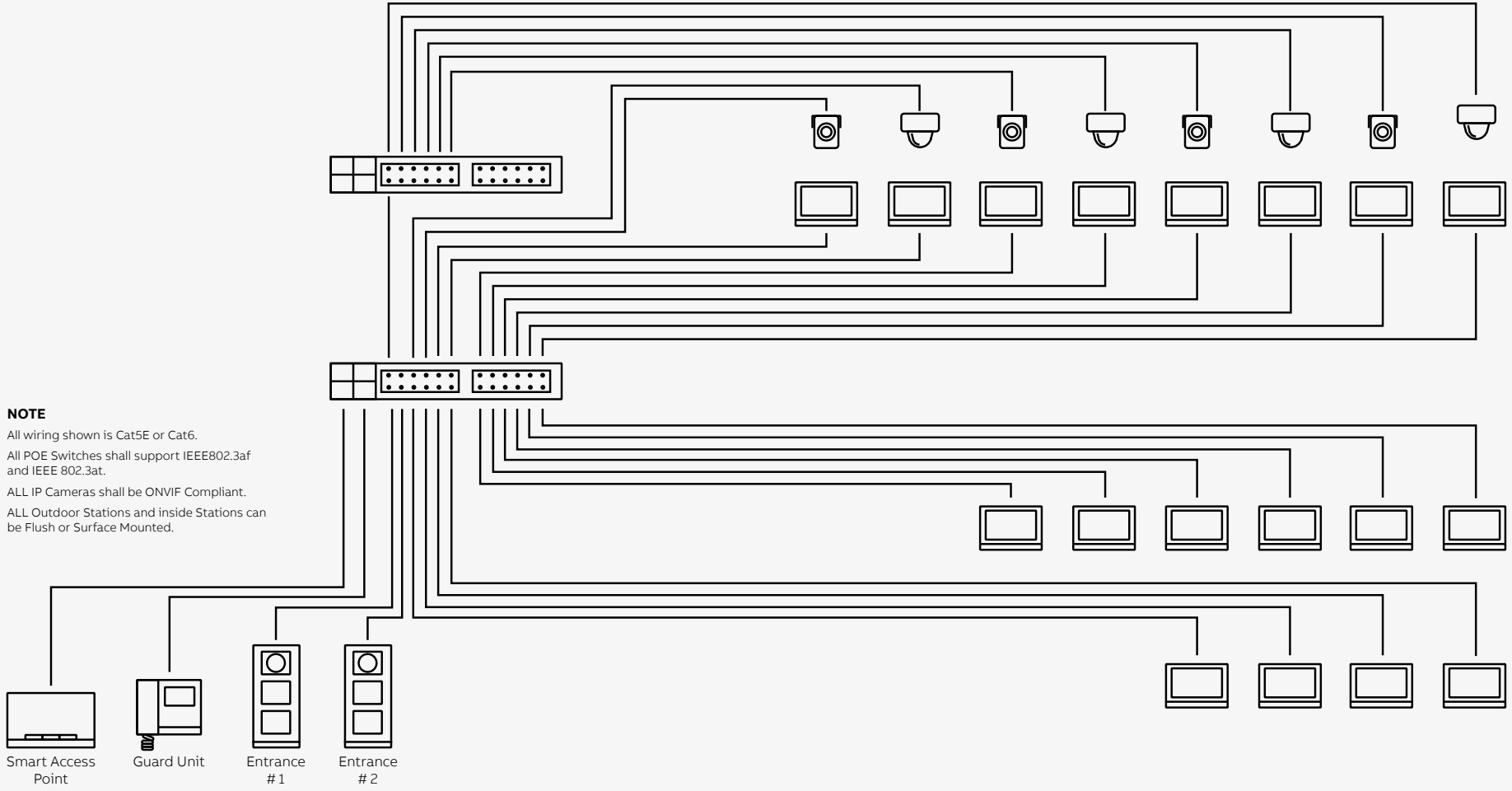
ABB-free@home

Centralized infrastructure

Decentralized infrastructure

Wired and wireless infrastructure

Access Control
Welcome IP overview



NOTE

All wiring shown is Cat5E or Cat6.

All POE Switches shall support IEEE802.3af and IEEE 802.3at.

ALL IP Cameras shall be ONVIF Compliant.

ALL Outdoor Stations and inside Stations can be Flush or Surface Mounted.

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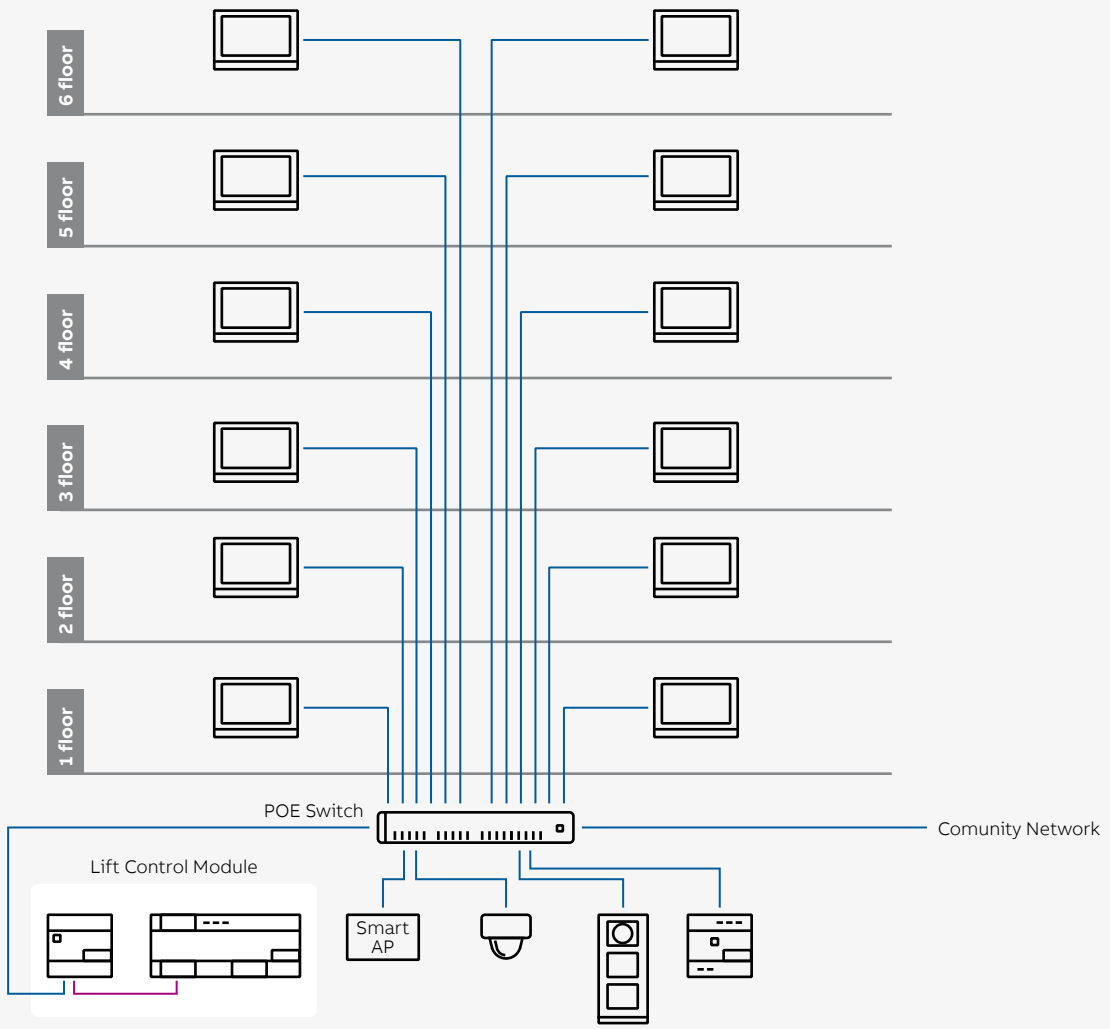
MULTIPLE FAMILY

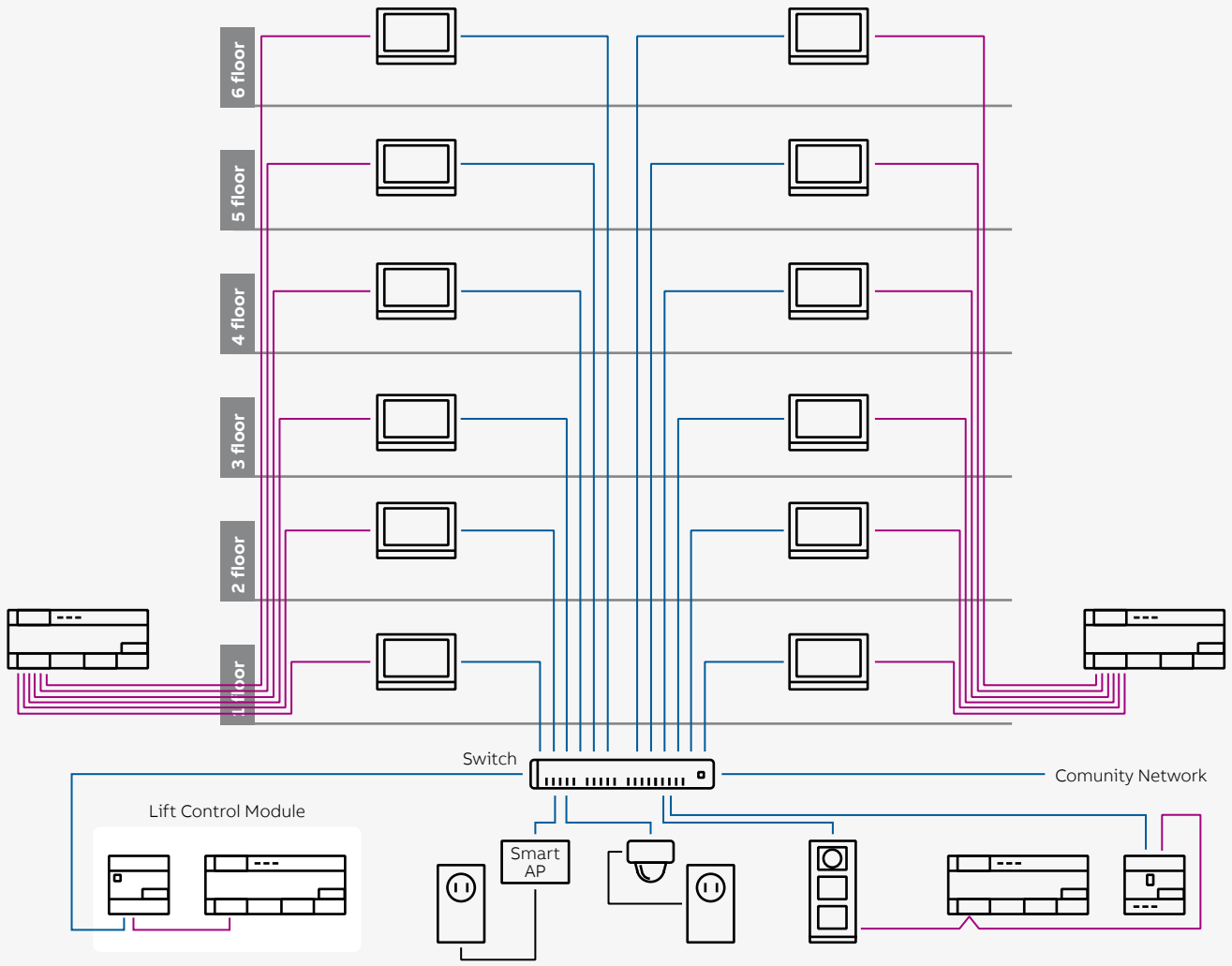
Access Control
Welcome IP configurations

Welcome IP with POE Option for Garden Tower



Access Control
Welcome IP configurations

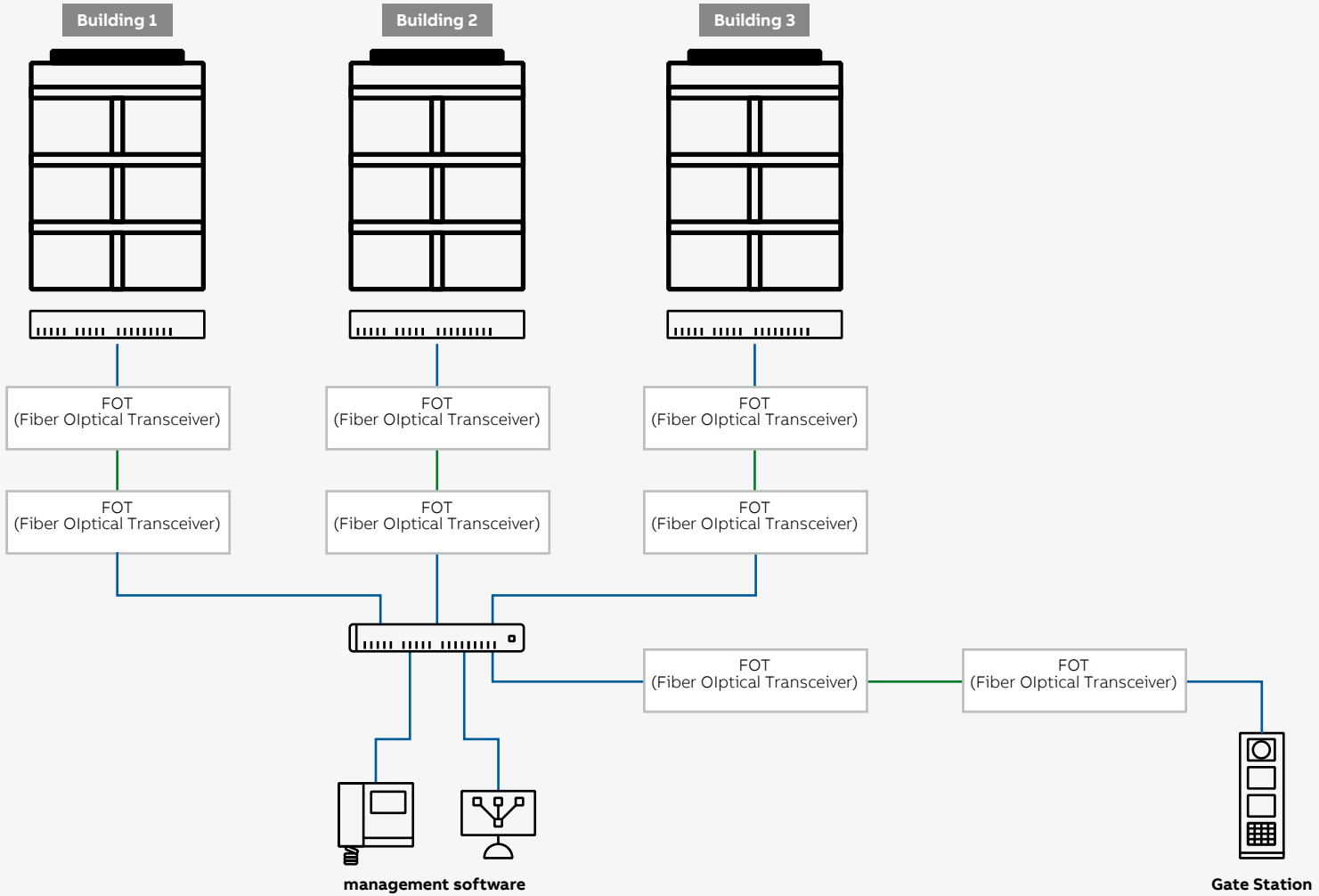
Welcome IP without POE Option for Garden Tower



NEXT

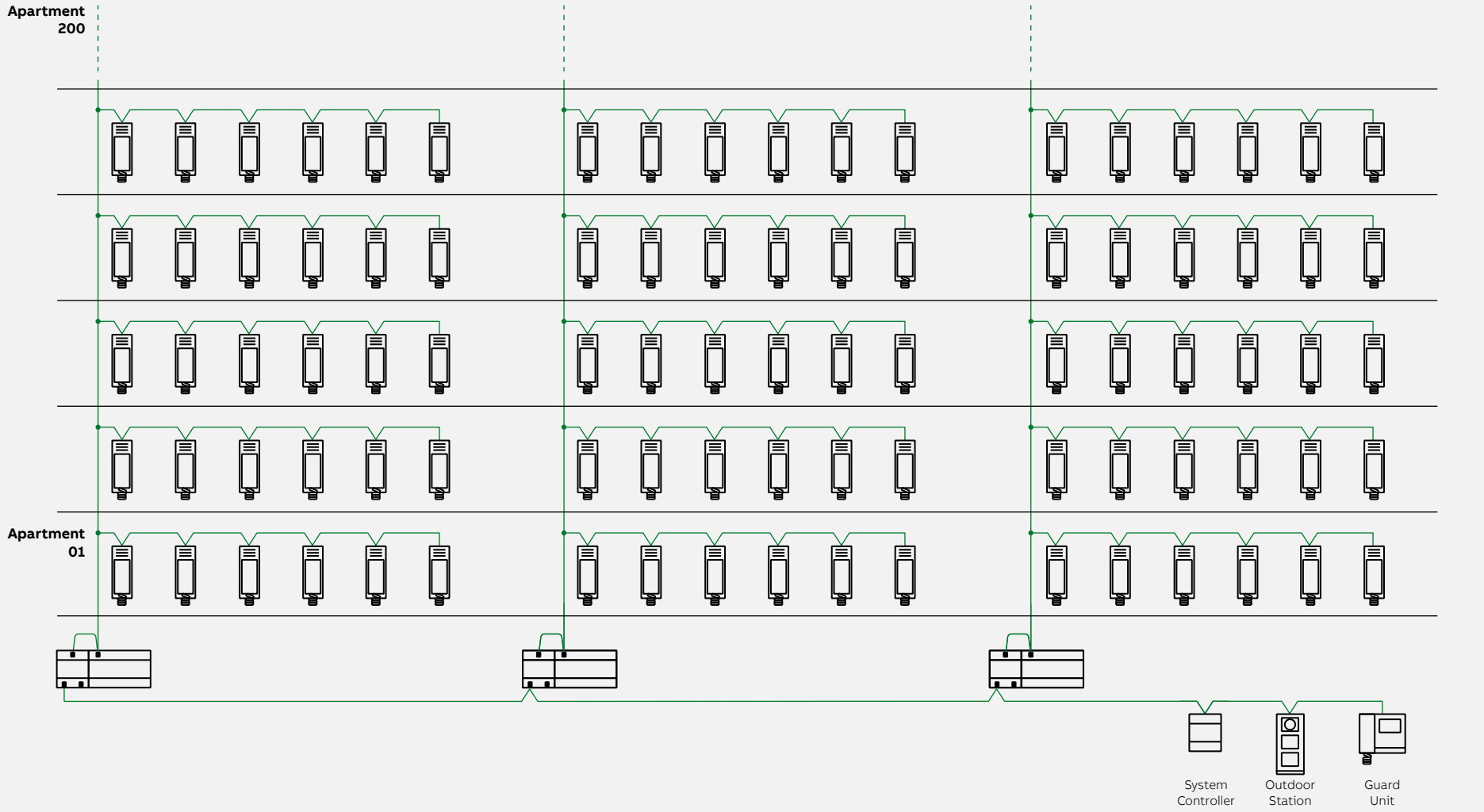
Access Control
Welcome IP configurations

Welcome IP with Fiber Optics for Residential Community



Access Control
Welcome 2 wires

Reference Architecture for Multi-family apartment (Audio only)



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MULTIPLE FAMILY

ARCHITECTURE

APPLICATION DETAILS

8.4 Access Control

Welcome IP overview

Welcome IP configurations

Welcome 2 wires

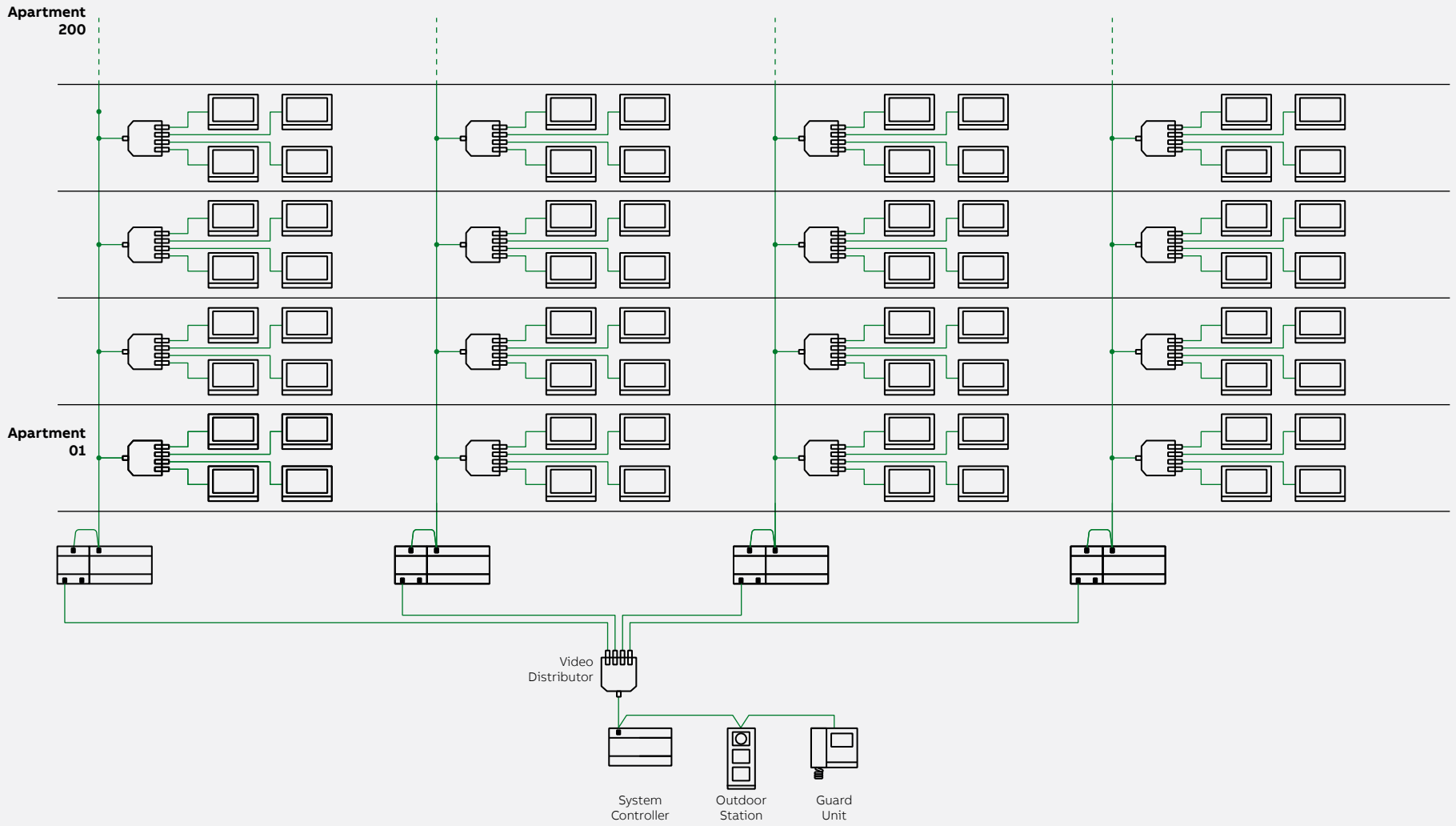
Welcome Access

8.1 POWER DISTRIBUTION
8.2 ENERGY MANAGEMENT
8.3 SMART HOME
8.4 ACCESS CONTROL
8.5 LIGHTING CONTROL
8.6 HVAC CONTROL
8.7 EMERGENCY LIGHTING
8.8 EV CHARGING
8.9 DRIVES & MOTORS

NEXT

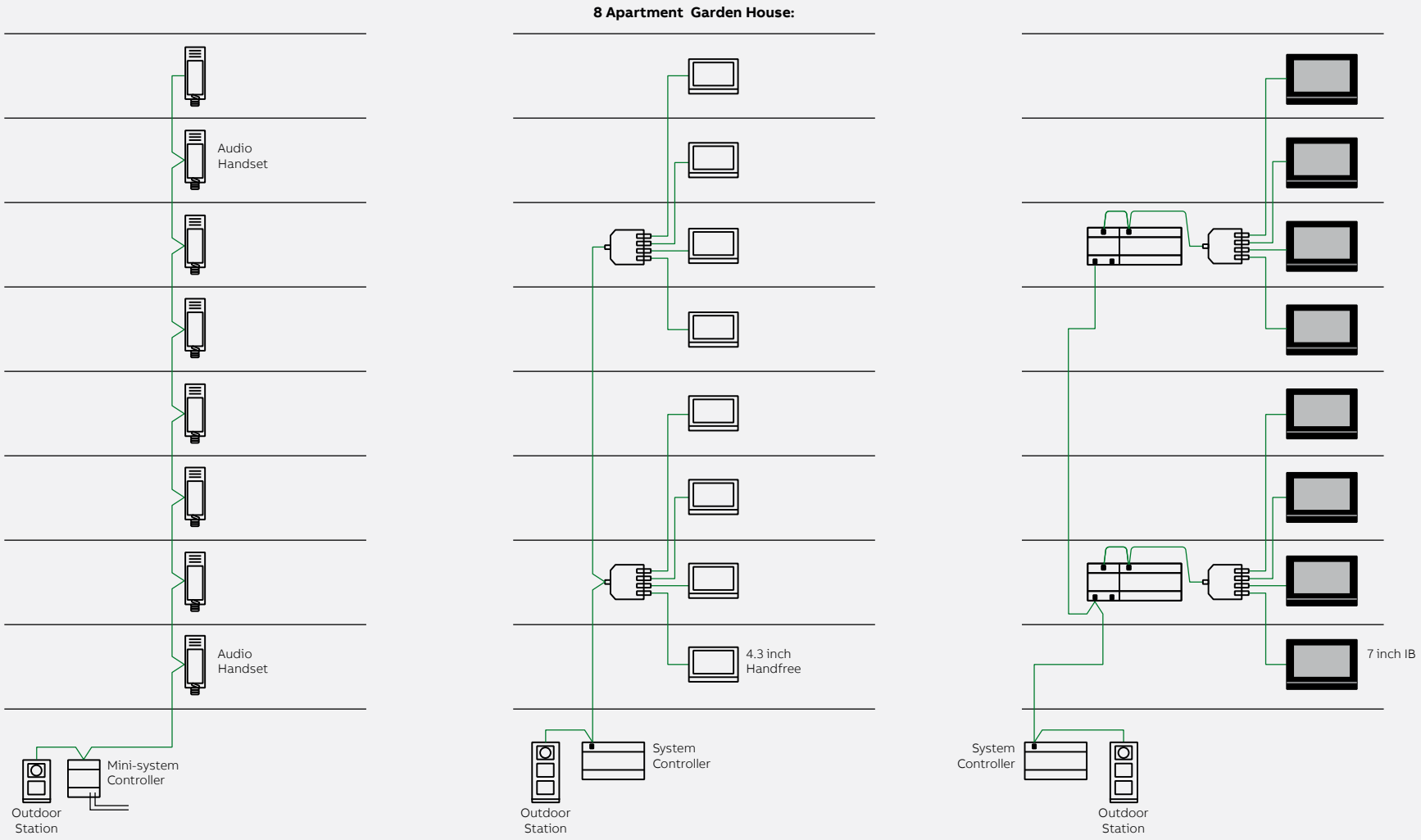
Access Control
Welcome 2 wires

Reference Architecture for Multi-family apartment (Audio & Video)

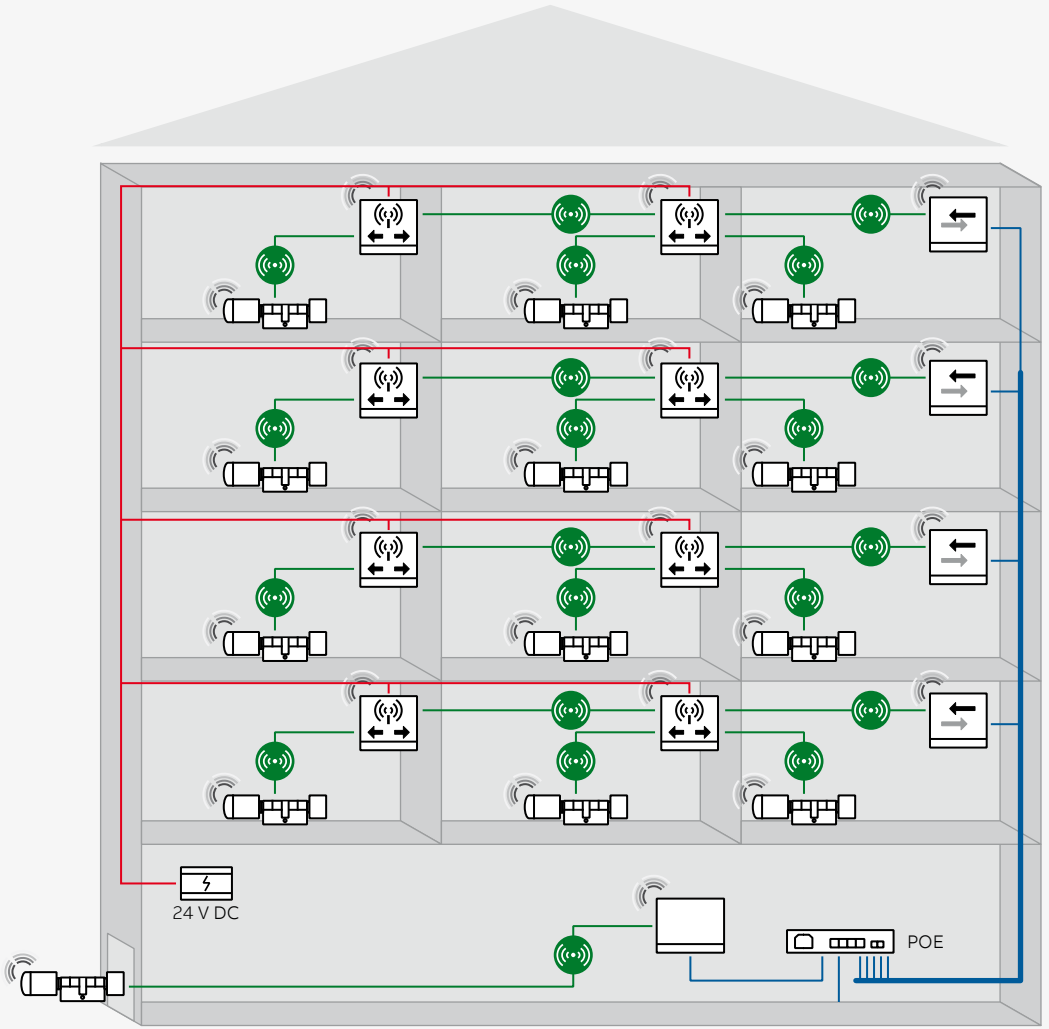


Access Control
Welcome 2 wires

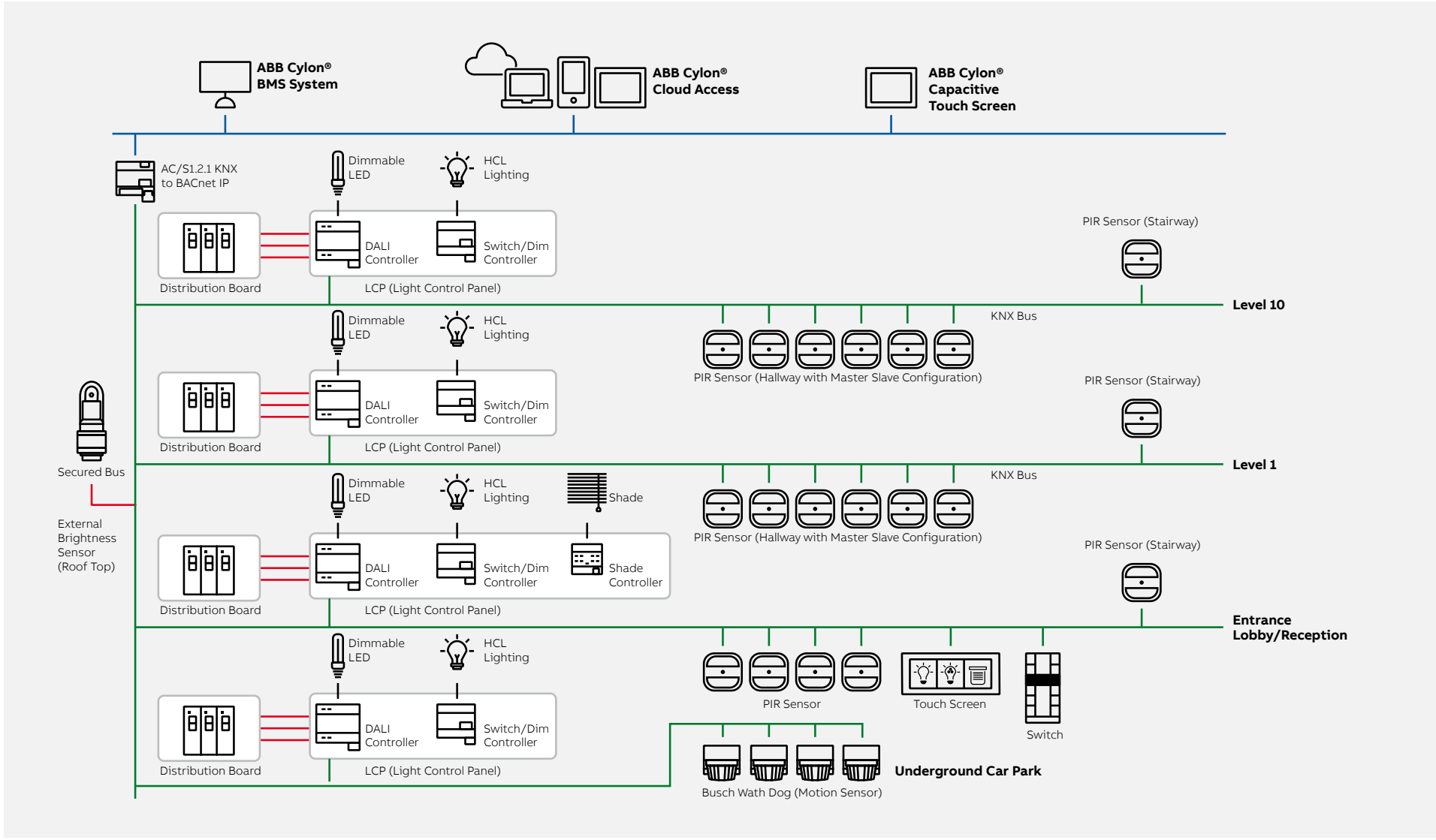
Reference Architecture for Garden House



Access Control
Welcome Access



Lighting Control
Overview



8

MULTIPLE FAMILY

ARCHITECTURE

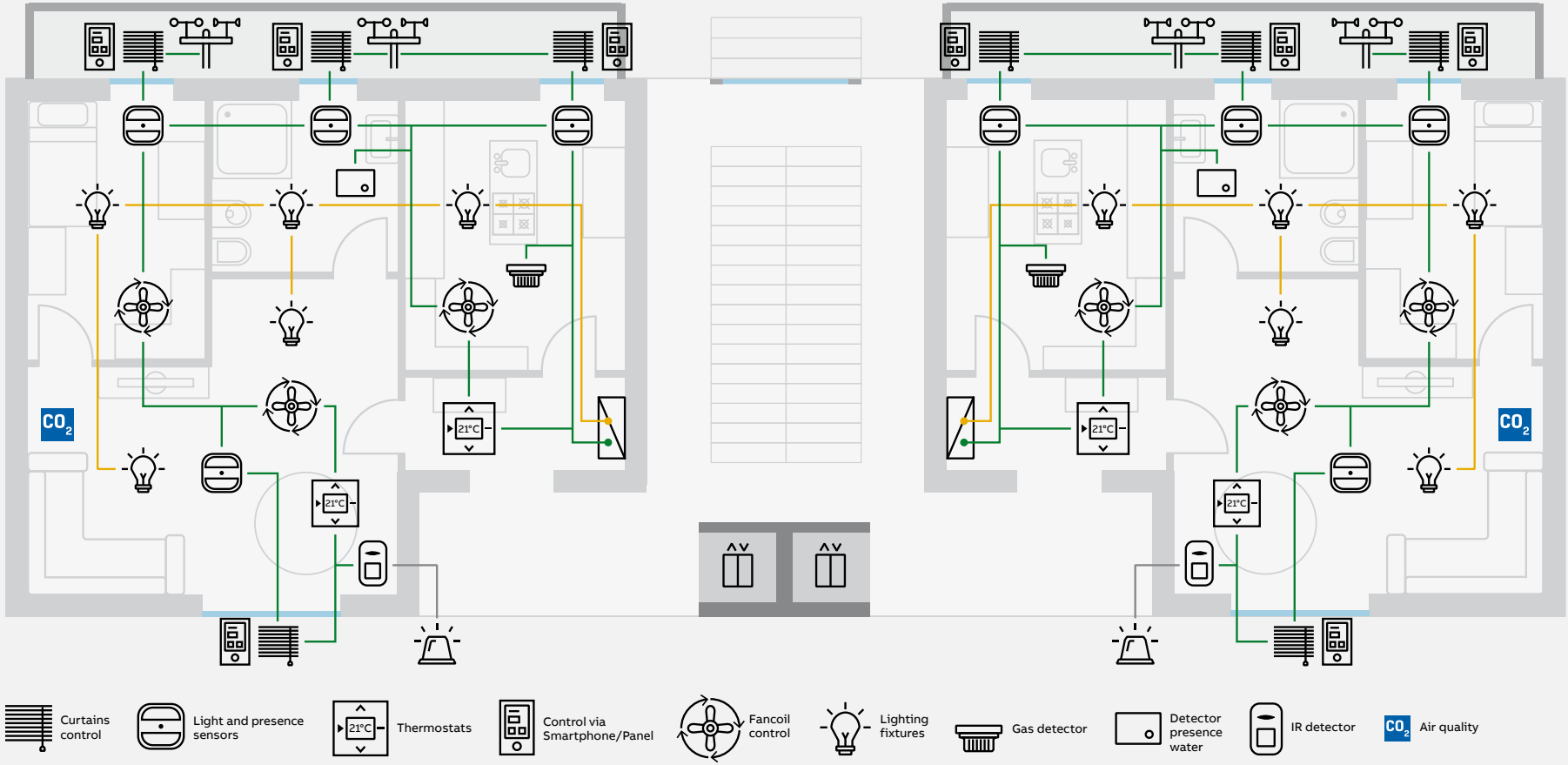
APPLICATION DETAILS

8.5 Lighting Control

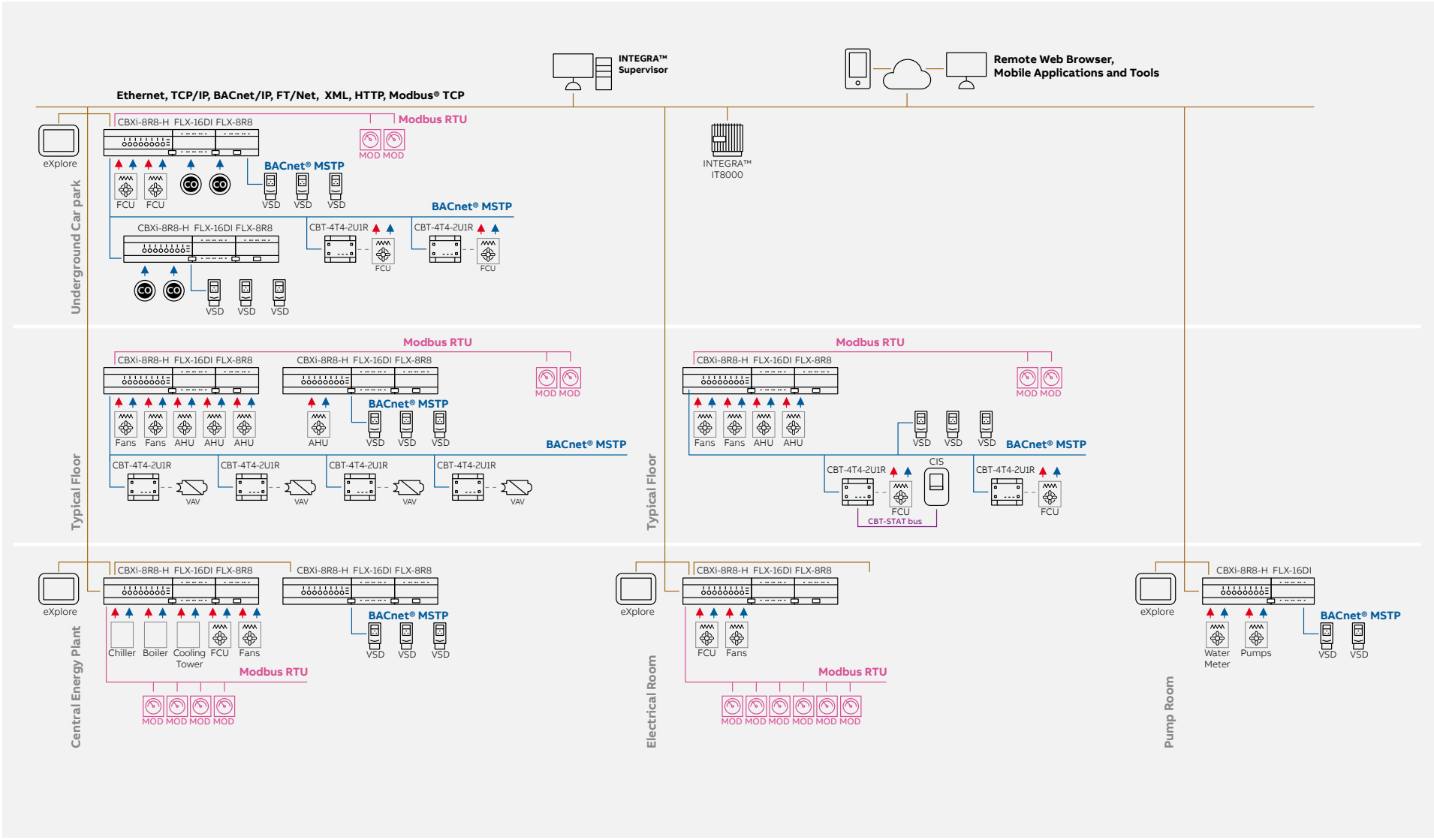
Overview

Corridor sensors

Lighting Control
Corridor sensors



HVAC Control



8

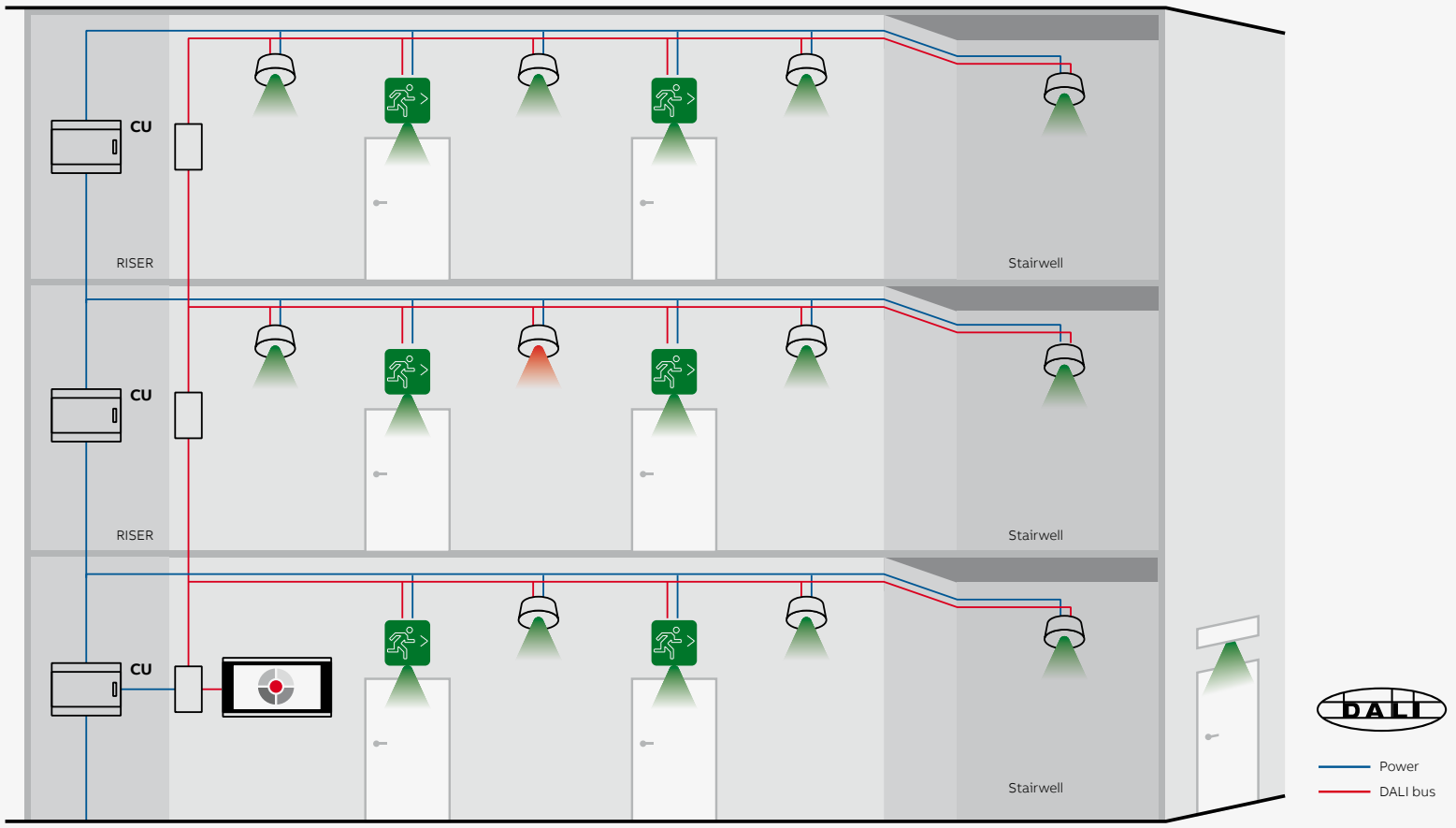
MULTIPLE FAMILY

ARCHITECTURE

APPLICATION DETAILS

8.6 HVAC Control

Emergency Lighting
DALI (EUR)



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MULTIPLE FAMILY

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APPLICATION DETAILS

8.7 Emergency Lighting

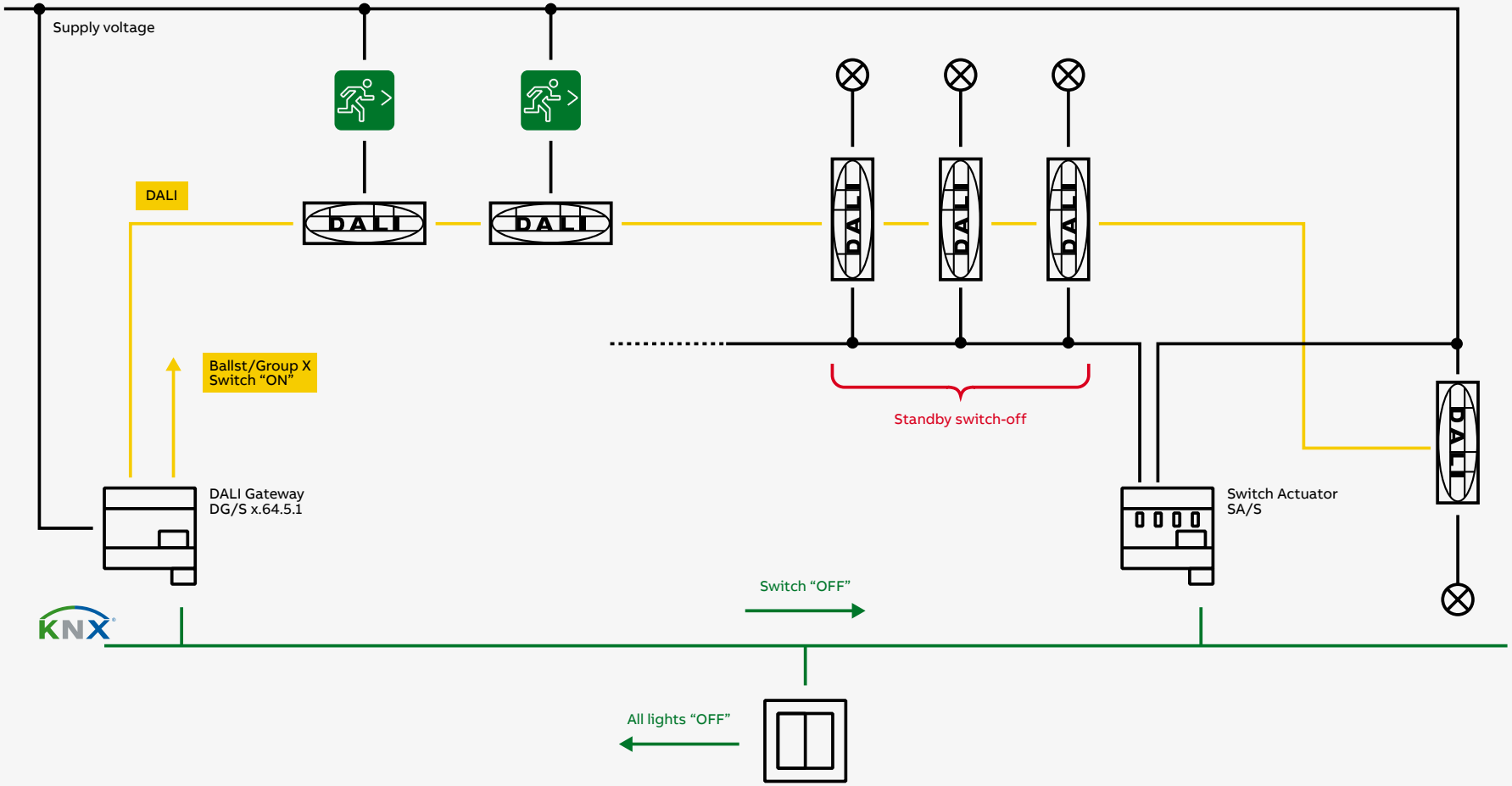
DALI (EUR)

Nexus®Pro (NAM)

Central Battery (UK, MEA)

NEXT

Emergency Lighting
DALI (EUR)



8

MULTIPLE FAMILY

ARCHITECTURE

APPLICATION DETAILS

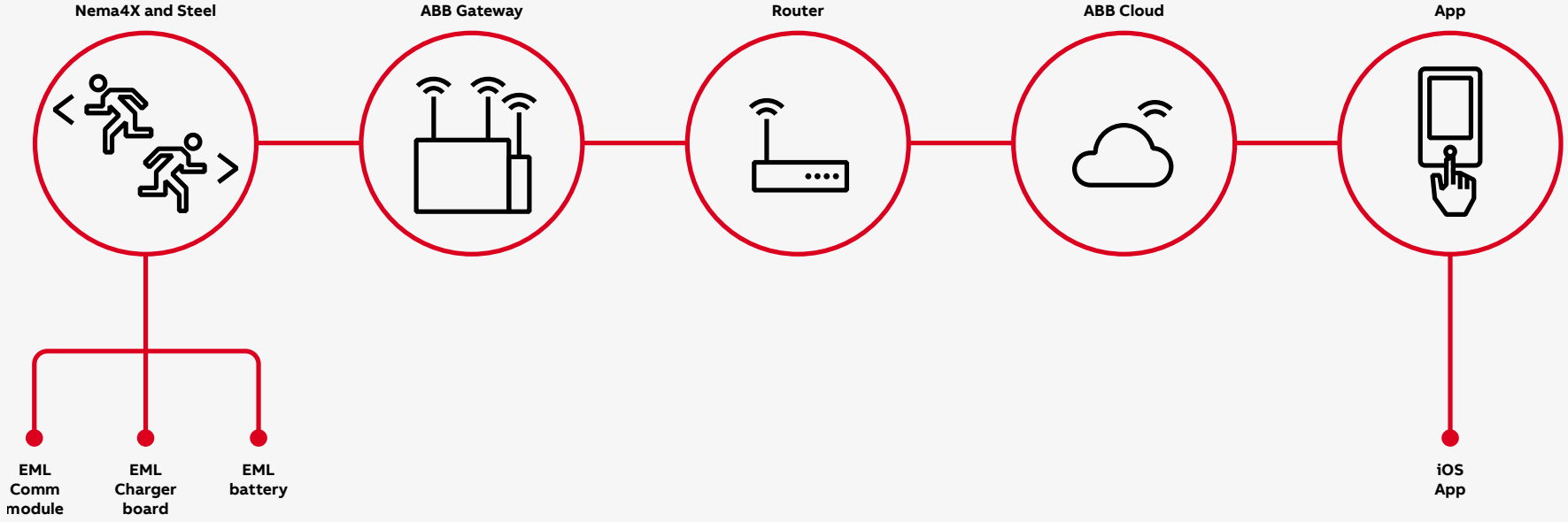
8.7 Emergency Lighting

DALI (EUR)

Nexus®Pro (NAM)

Central Battery (UK, MEA)

Emergency Lighting
Nexus®Pro (NAM)



8

MULTIPLE FAMILY

ARCHITECTURE

APPLICATION DETAILS

8.7 Emergency Lighting

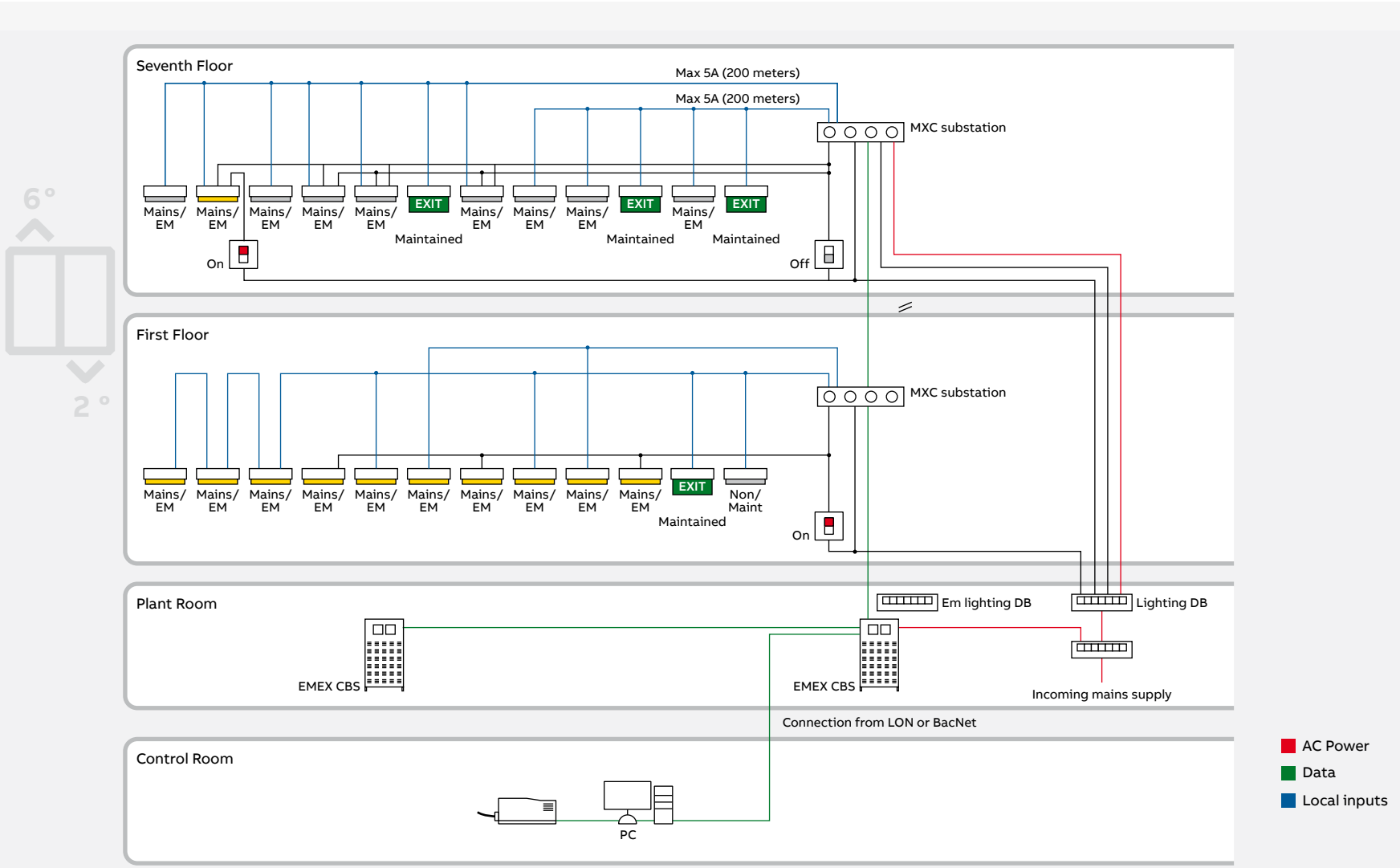
DALI (EUR)

Nexus®Pro (NAM)

Central Battery (UK, MEA)

Emergency Lighting
Central Battery (UK, MEA)

Layout schematic - MXD4 substations



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MULTIPLE FAMILY

ARCHITECTURE

APPLICATION DETAILS

8.7 Emergency Lighting

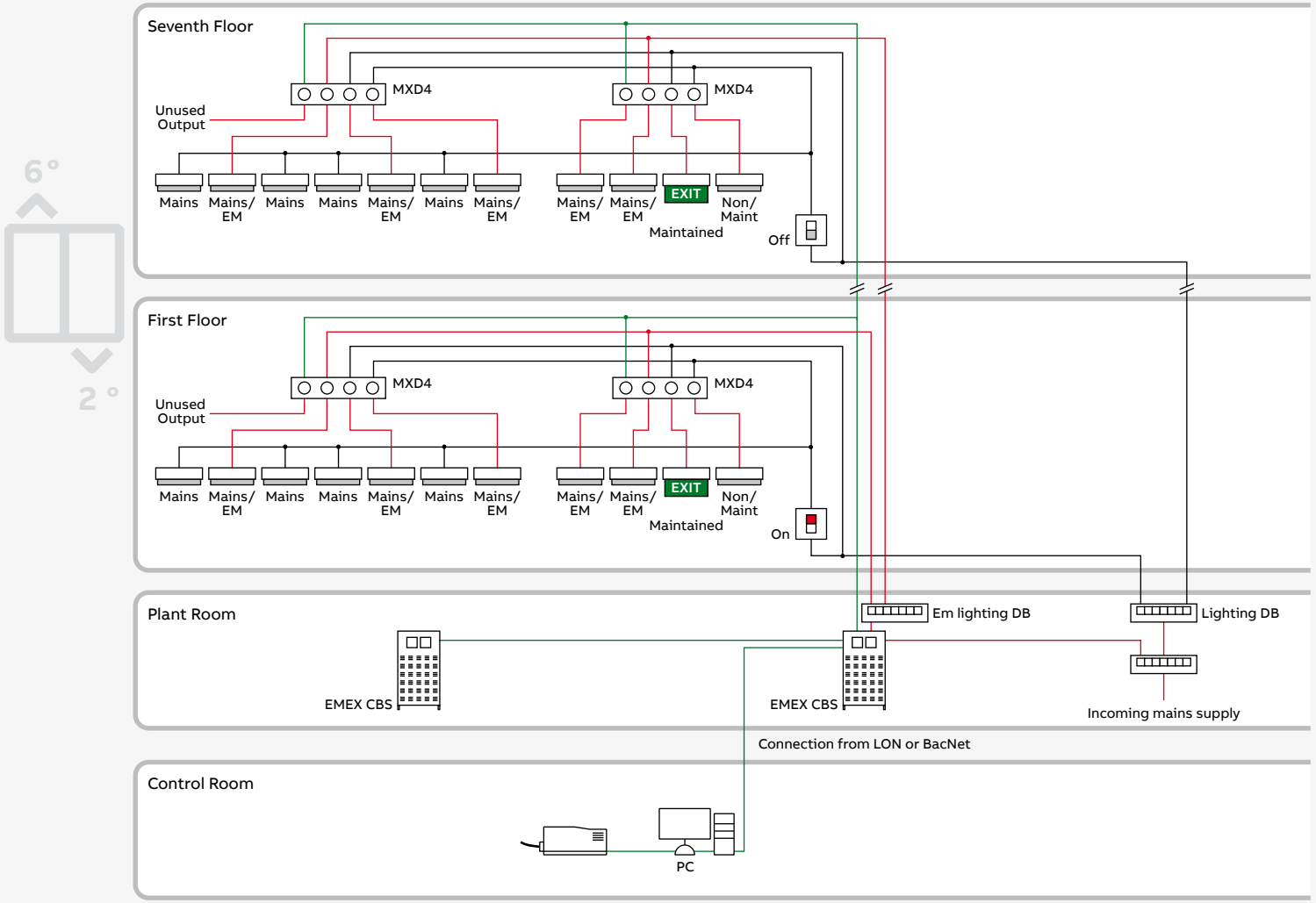
DALI (EUR)

Nexus®Pro (NAM)

Central Battery (UK, MEA)

Emergency Lighting
Central Battery (UK, MEA)

Layout schematic - MXC substations



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MULTIPLE FAMILY

ARCHITECTURE

APPLICATION DETAILS

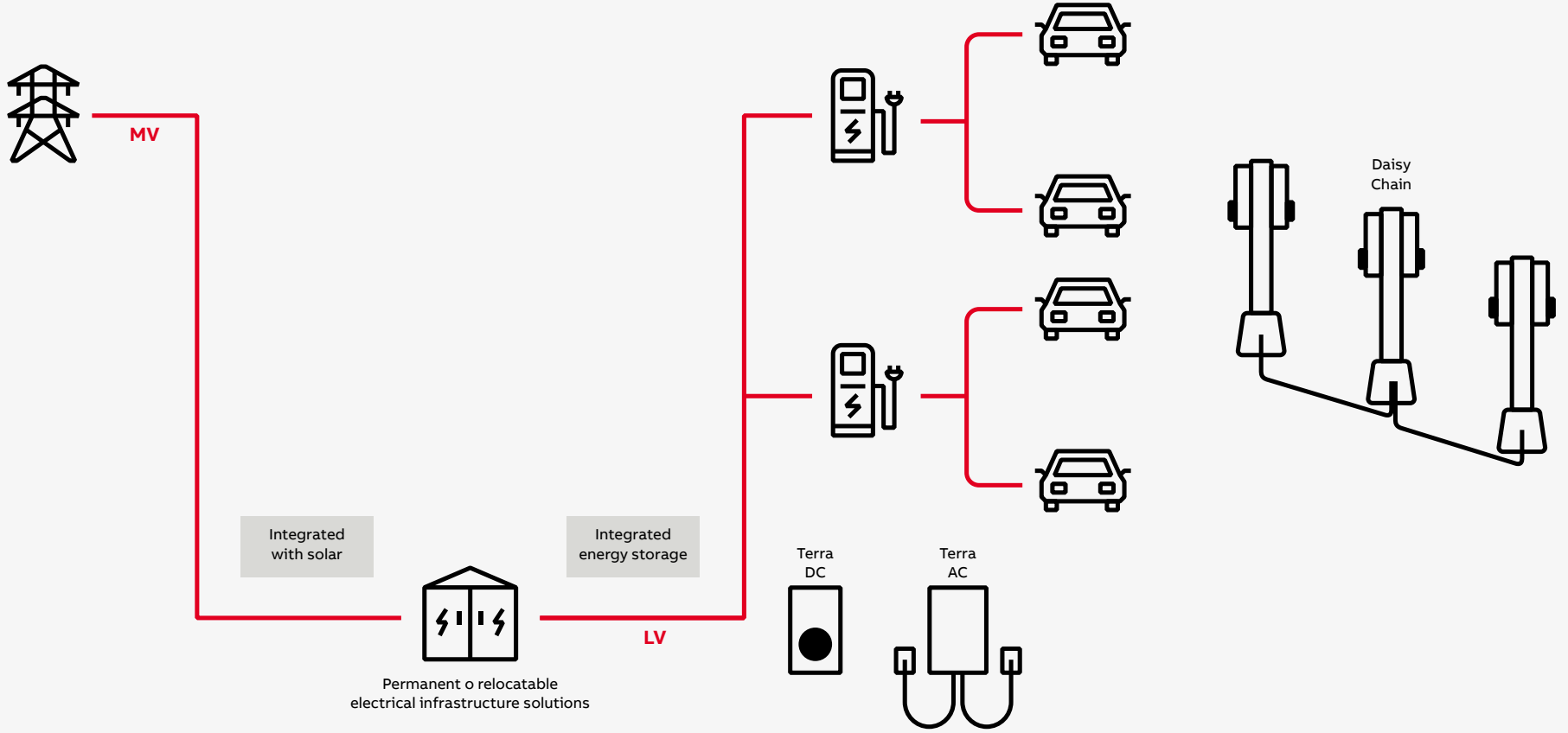
8.7 Emergency Lighting

DALI (EUR)

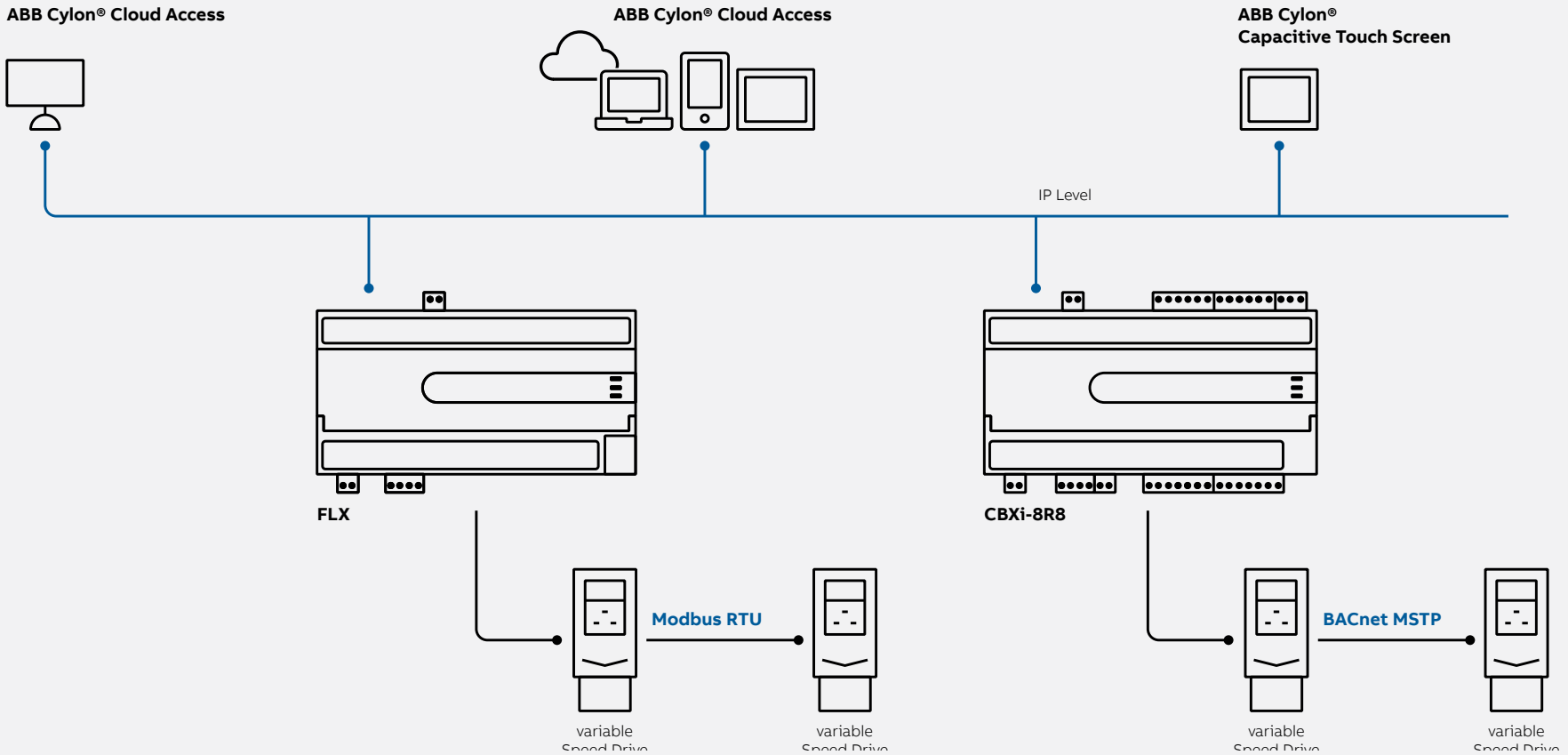
Nexus®Pro (NAM)

Central Battery (UK, MEA)

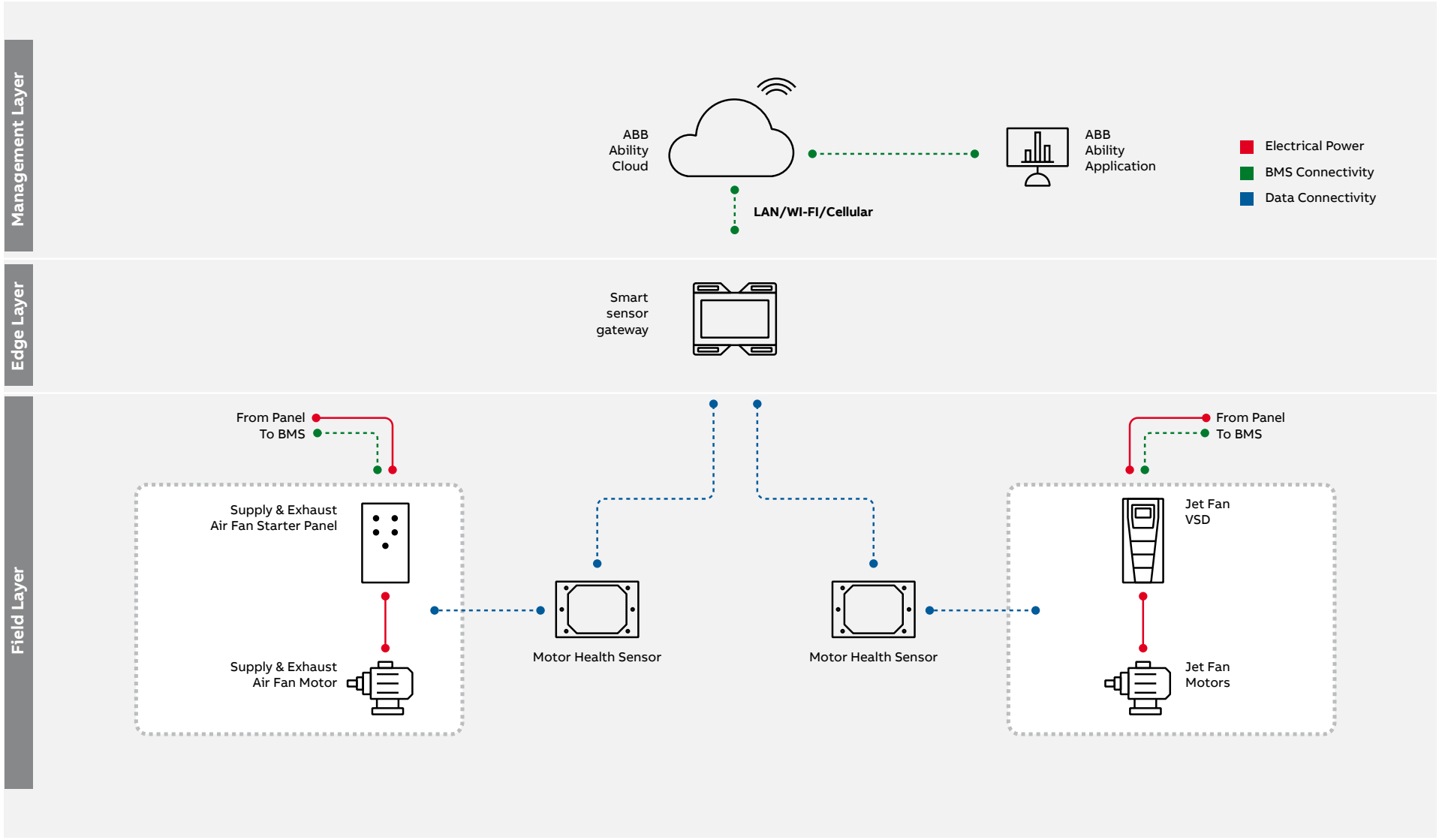
EV Charging



Drives & Motors
Overview



Drives & Motors
Smart Sensors and VFD



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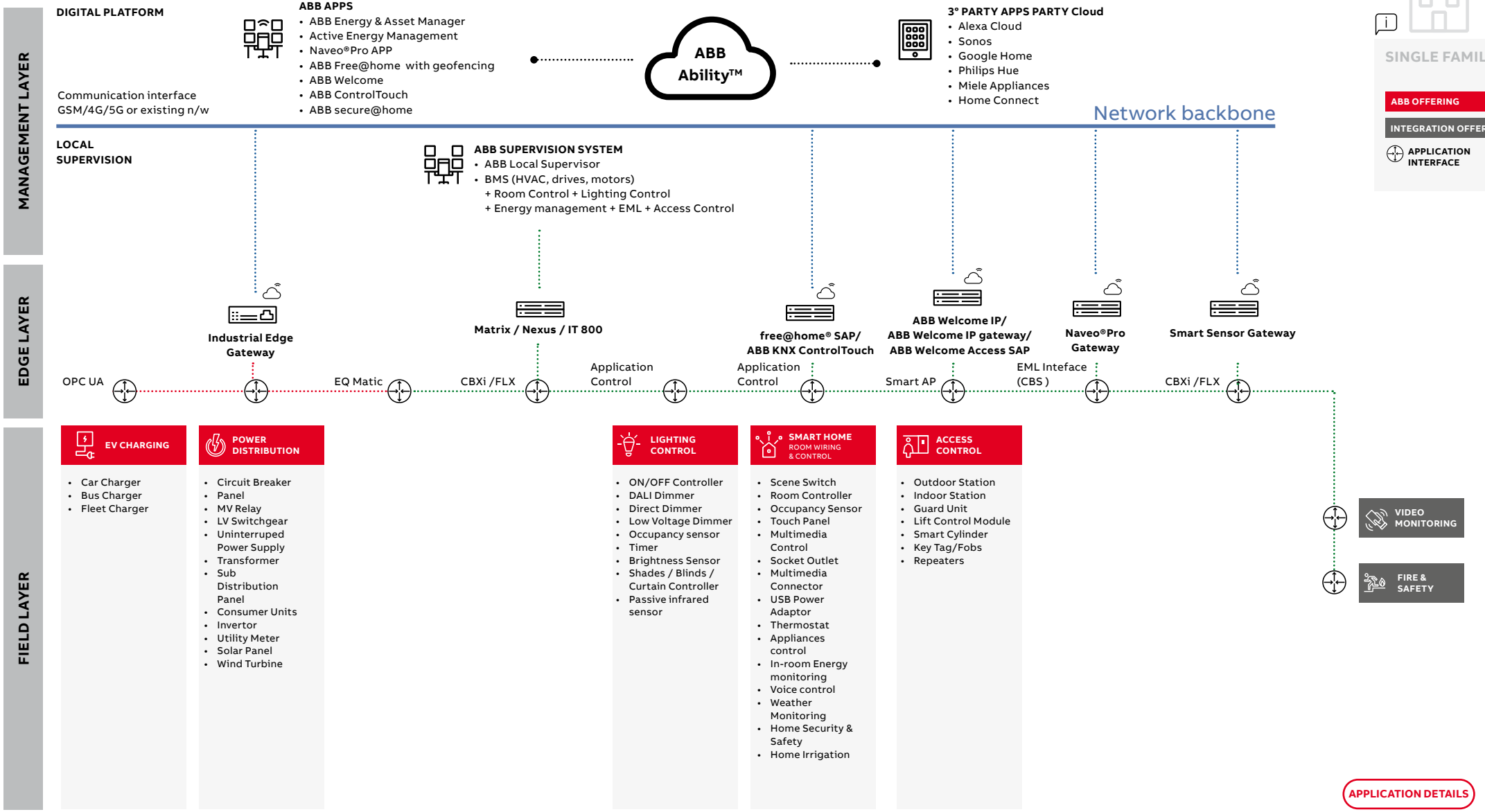
9

Residential Single Family

ENTER

Reference Architecture
Single Family



APPLICATION DETAILS

Single Family Reference Architecture
Application details

9

9.1 Power Distribution
- Overview (IEC)
- Overview (NEMA)
- Single Family (NEMA)
- Town House (NEMA)

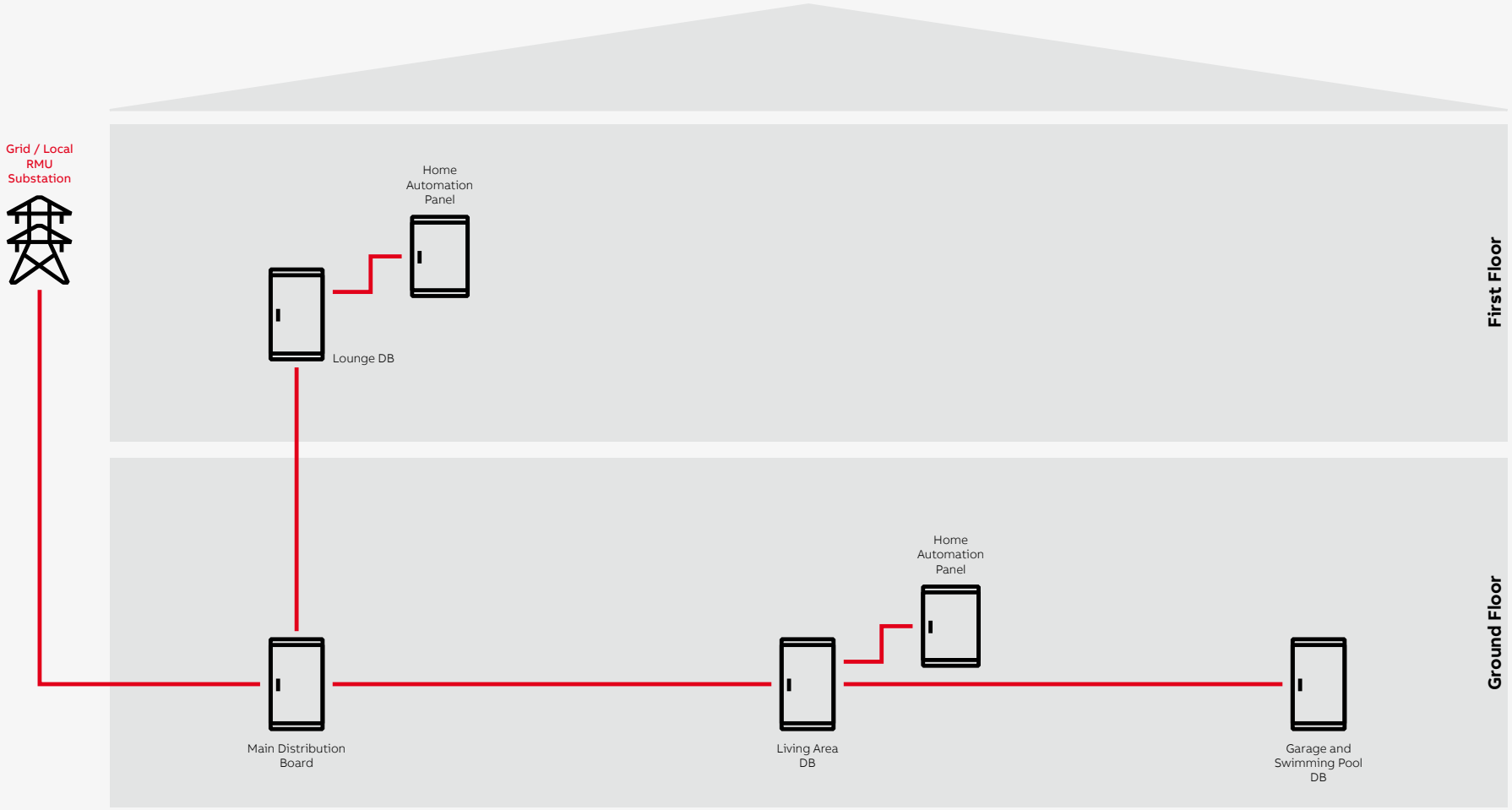
9.2 Lighting Control
- Switch Actuator
- DALI Gateway

9.3 Smart Home
- ABB-free@home
- ABB i-bus KNX

9.4 Access Control
- Welcome IP overview
- Welcome IP configurations
- Welcome 2 wires
- Welcome Access

9.5 EV Charging

Power Distribution
Overview (IEC)



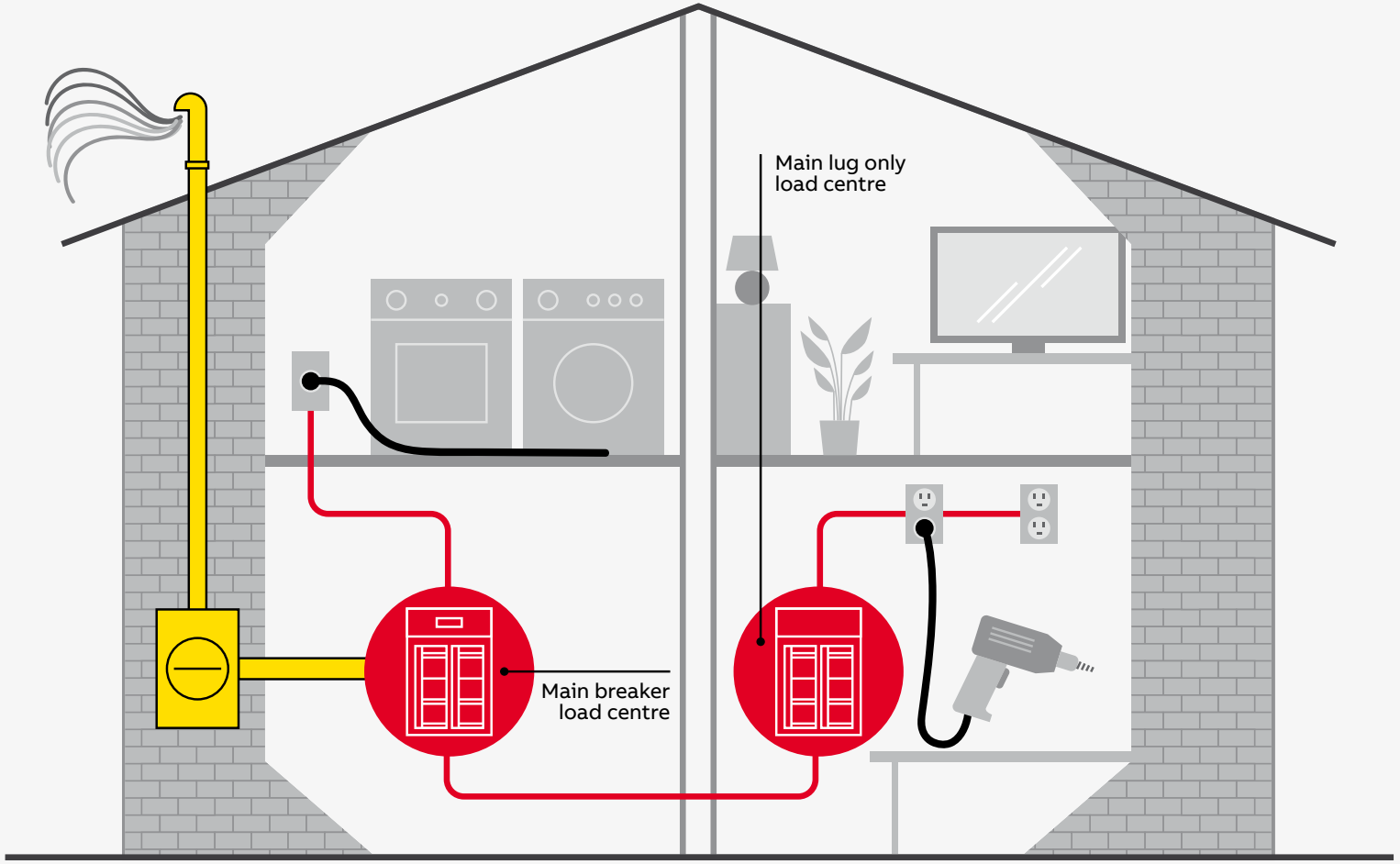
9

SINGLE FAMILY

ARCHITECTURE

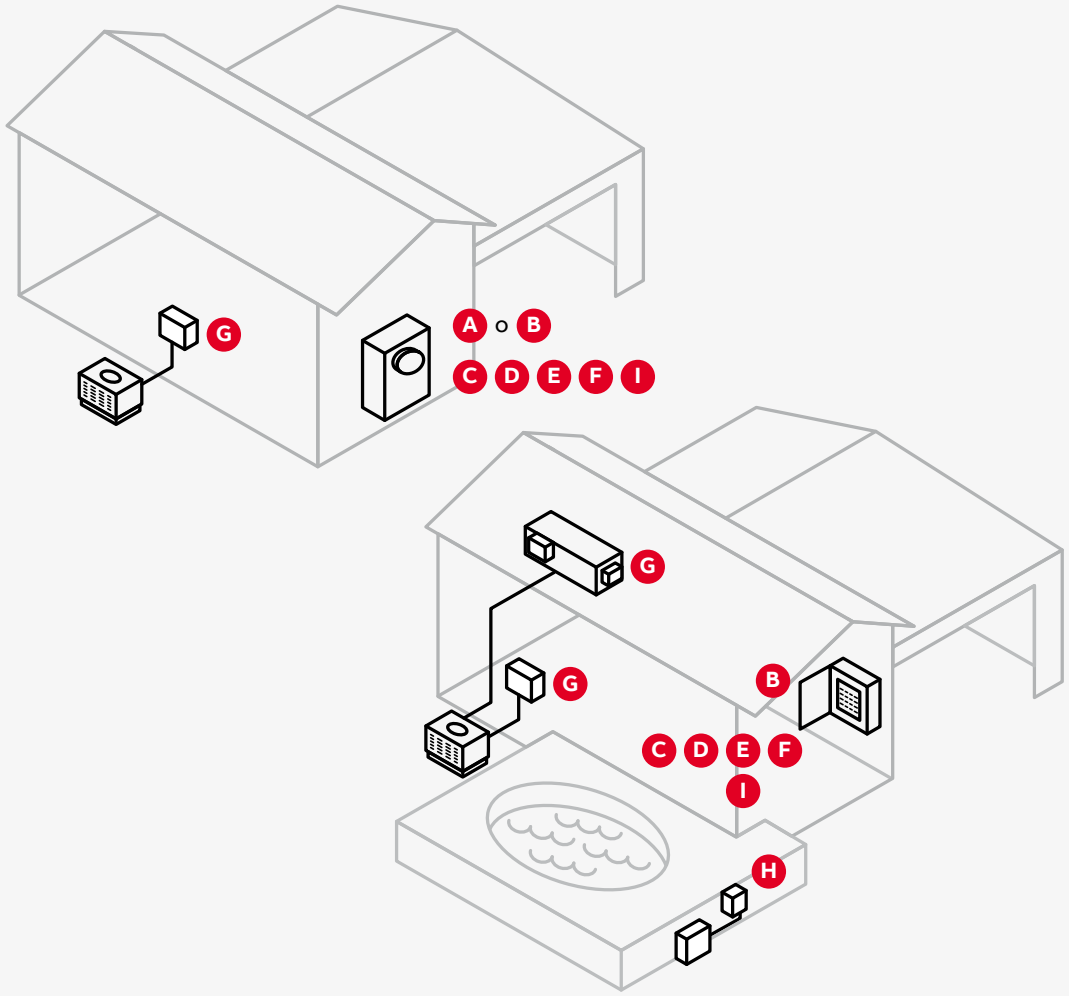
APPLICATION DETAILS

Power Distribution
Overview (NEMA)



Power Distribution
Single Family (NEMA)

Component Layout



- **A** Meter Socket Load Centers
- **B** Load Centers
- **C** Standard Circuit Breakers
- **D** Surge Suppressor
- **E** Arc Fault Circuit Interrupter
- **F** Dual Function Circuit Interrupter
- **G** AC Disconnects
- **H** Spa Panel
- **I** Ground Fault Circuit Interrupter with Self-Test

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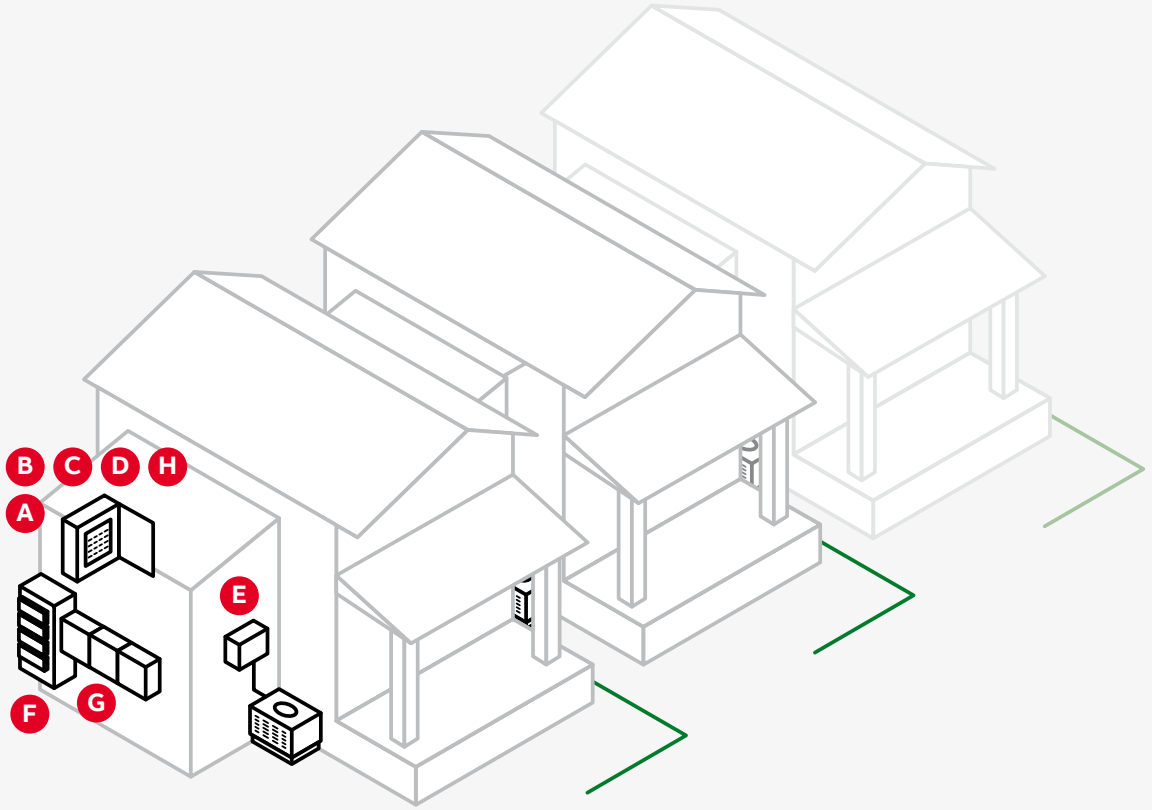
SINGLE FAMILY

ARCHITECTURE

APPLICATION DETAILS

Power Distribution
Town House (NEMA)

Component Layout



- **A** Load Centers
- **B** Standard Circuit Breakers
- **C** Dual Function Circuit Interrupter
- **D** Arc Fault Circuit Interrupter
- **E** AC Disconnects
- **F** Mini Mod III / Modular Metering
- **G** Genral Duty Safety Switches
- **H** Ground Fault Circuit Interrupter with Self-Test

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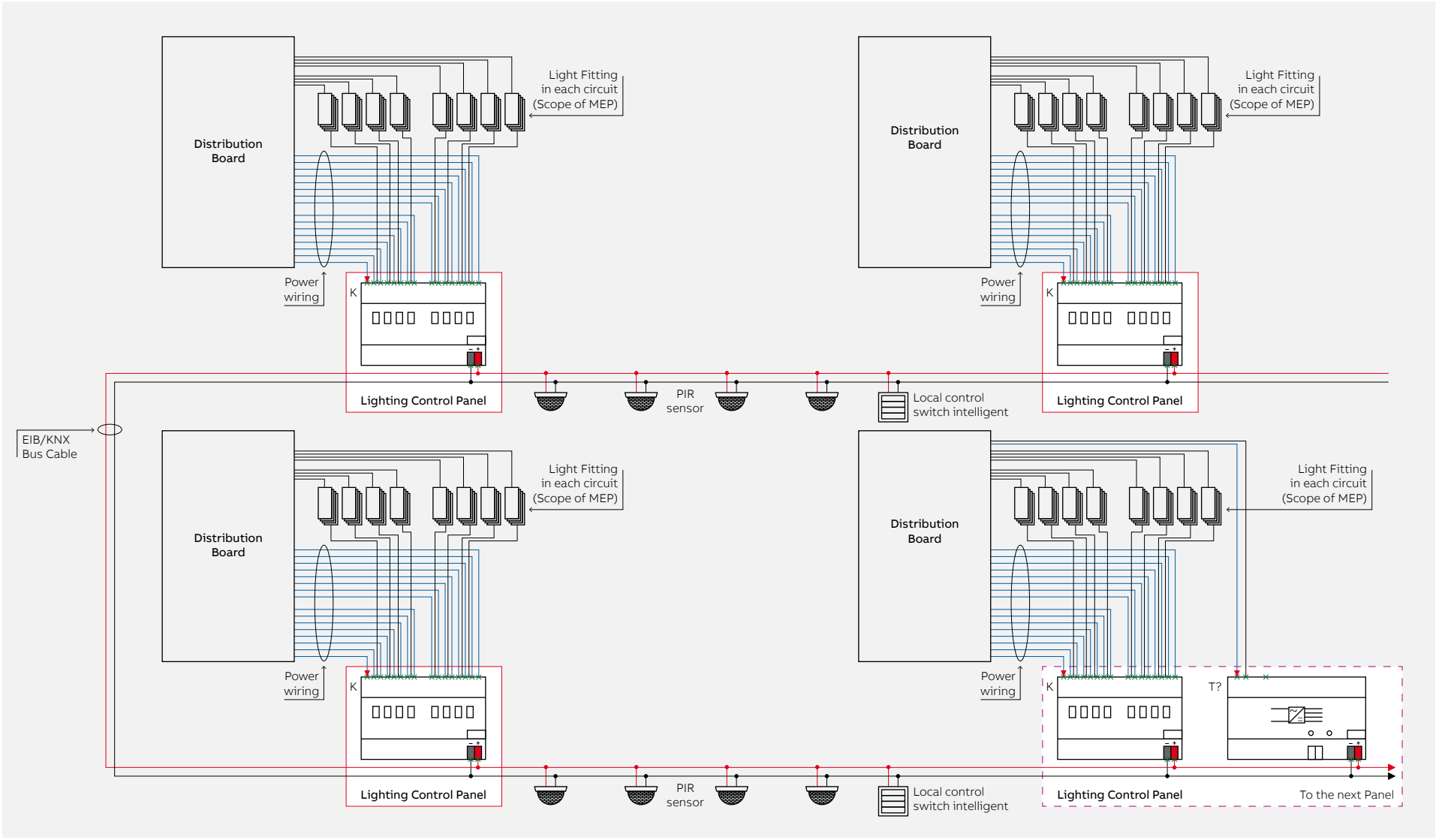
SINGLE FAMILY

ARCHITECTURE

APPLICATION DETAILS

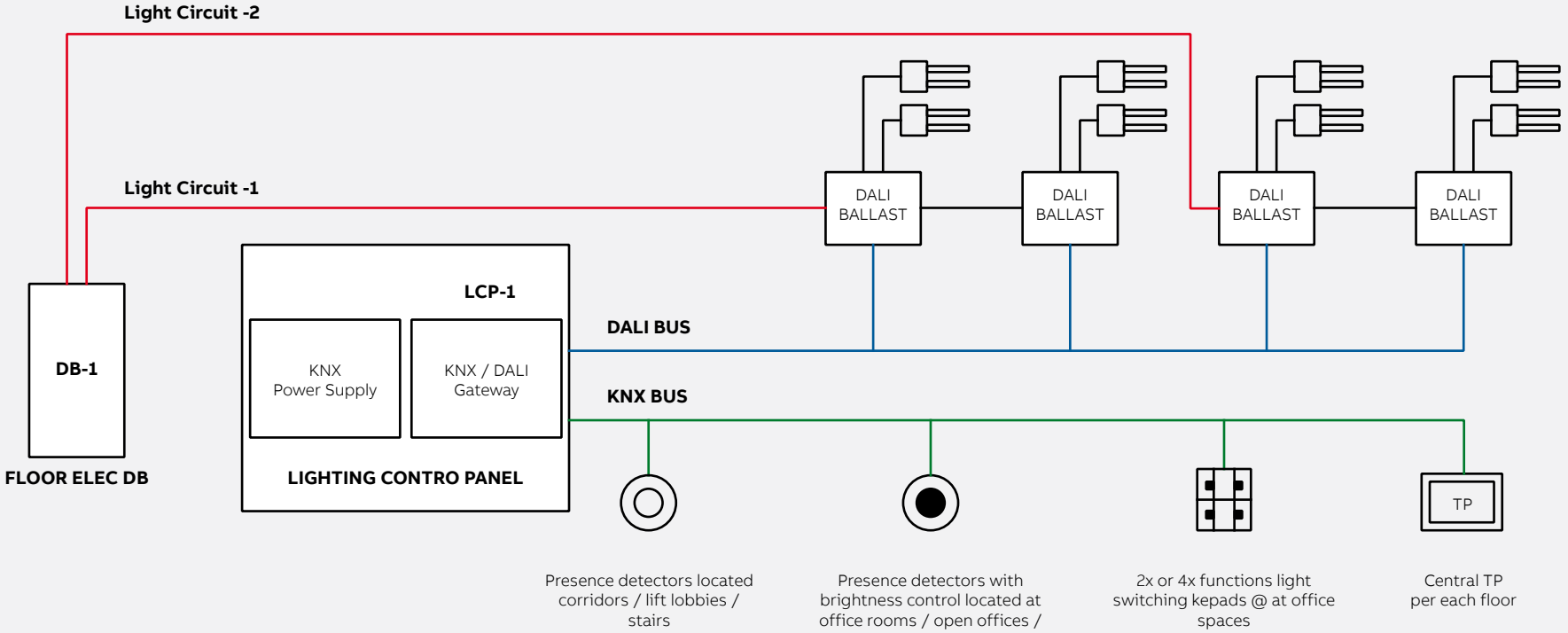
Lighting Control
Switch Actuator

Panel Schematic Switch Actuator



Lighting Control
DALI Gateway

Panel Schematic DALI Gateway



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SINGLE FAMILY

ARCHITECTURE

APPLICATION DETAILS

9.2 Lighting Control

Switch Actuator

DALI Gateway

Smart Home
ABB-free@home

9

SINGLE FAMILY

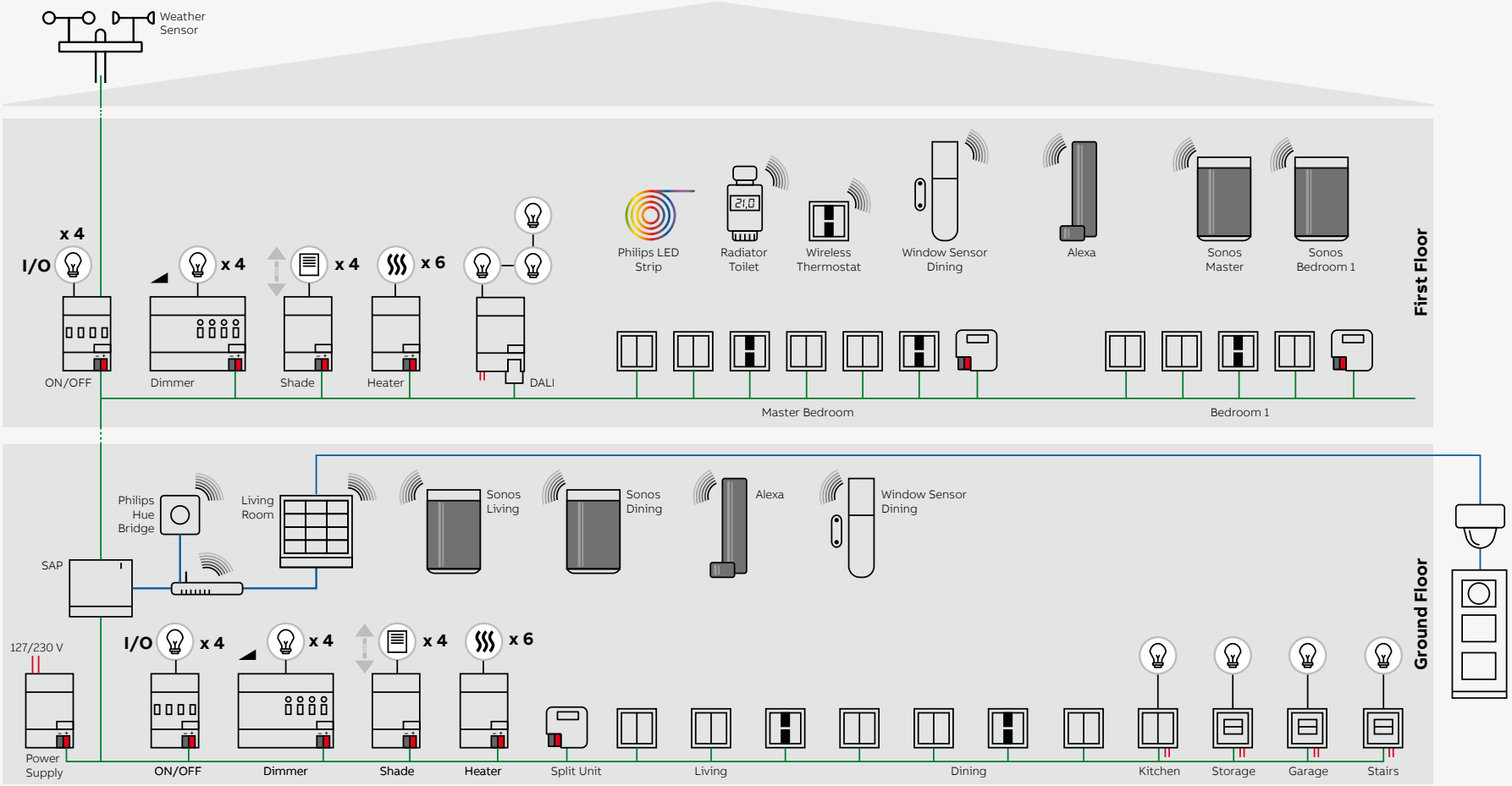
ARCHITECTURE

APPLICATION DETAILS

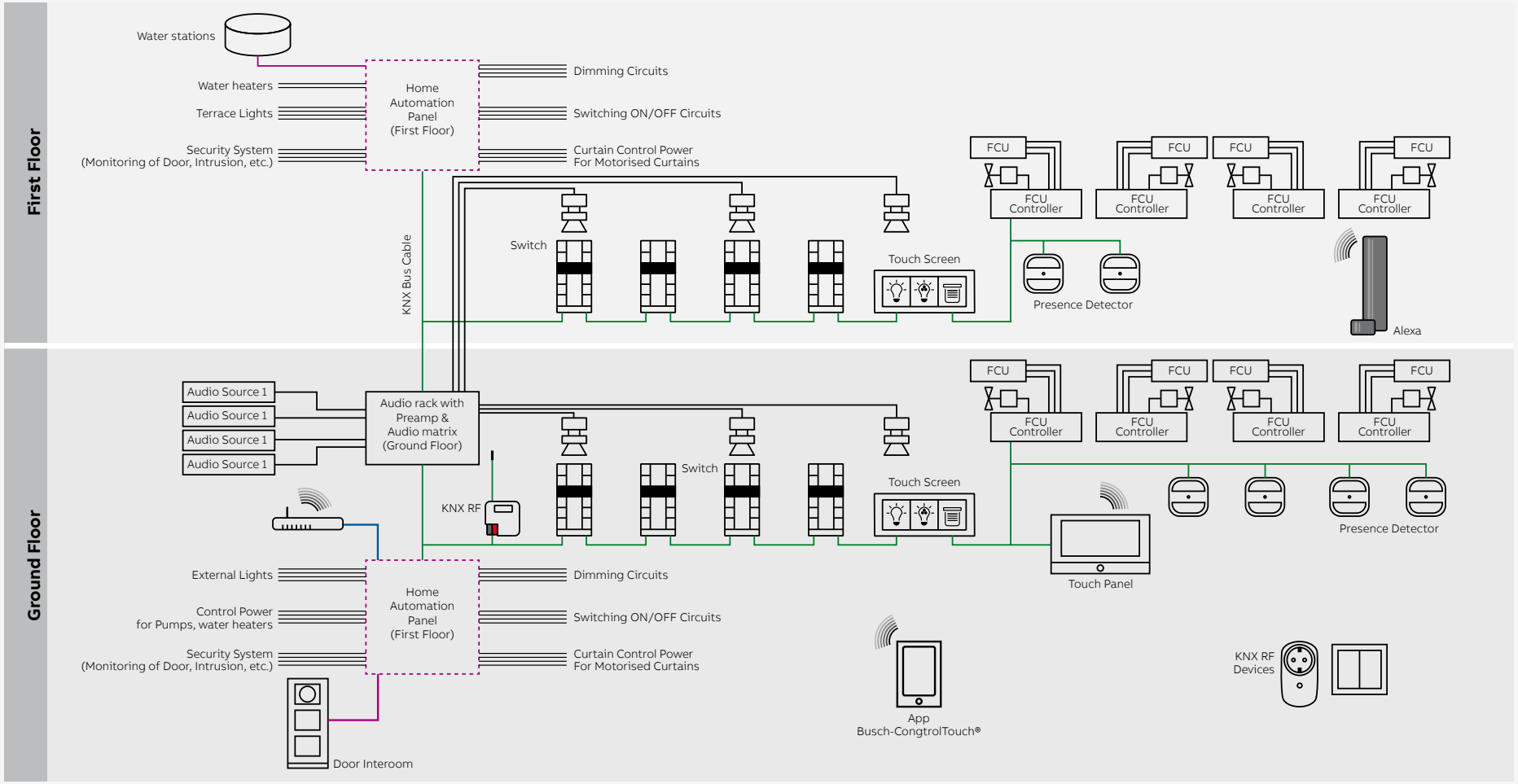
9.3 Smart Home

ABB-free@home

ABB i-bus KNX



Smart Home
ABB i-bus KNX



9

SINGLE FAMILY

ARCHITECTURE

APPLICATION DETAILS

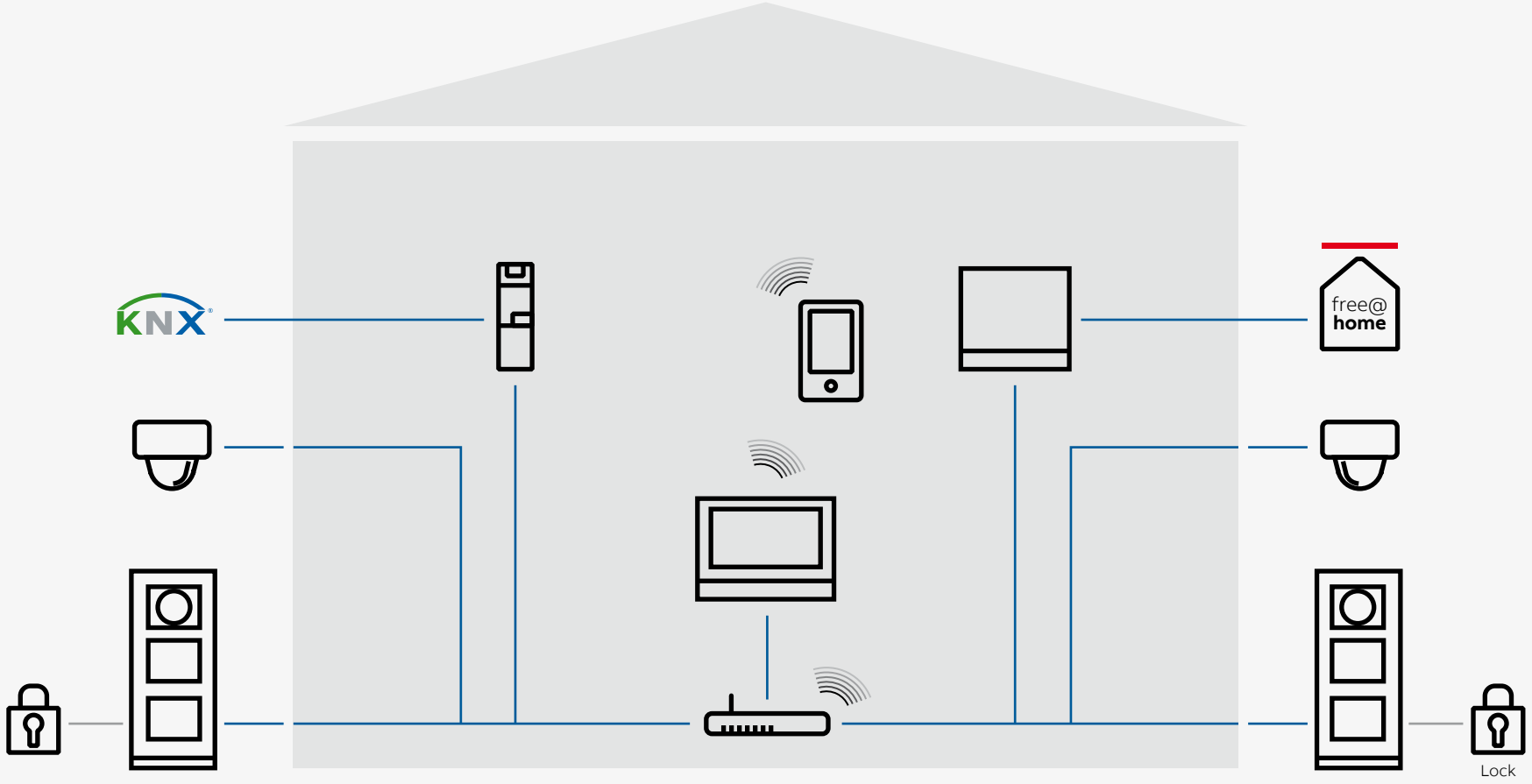
9.3 Smart Home

ABB-free@home

ABB i-bus KNX

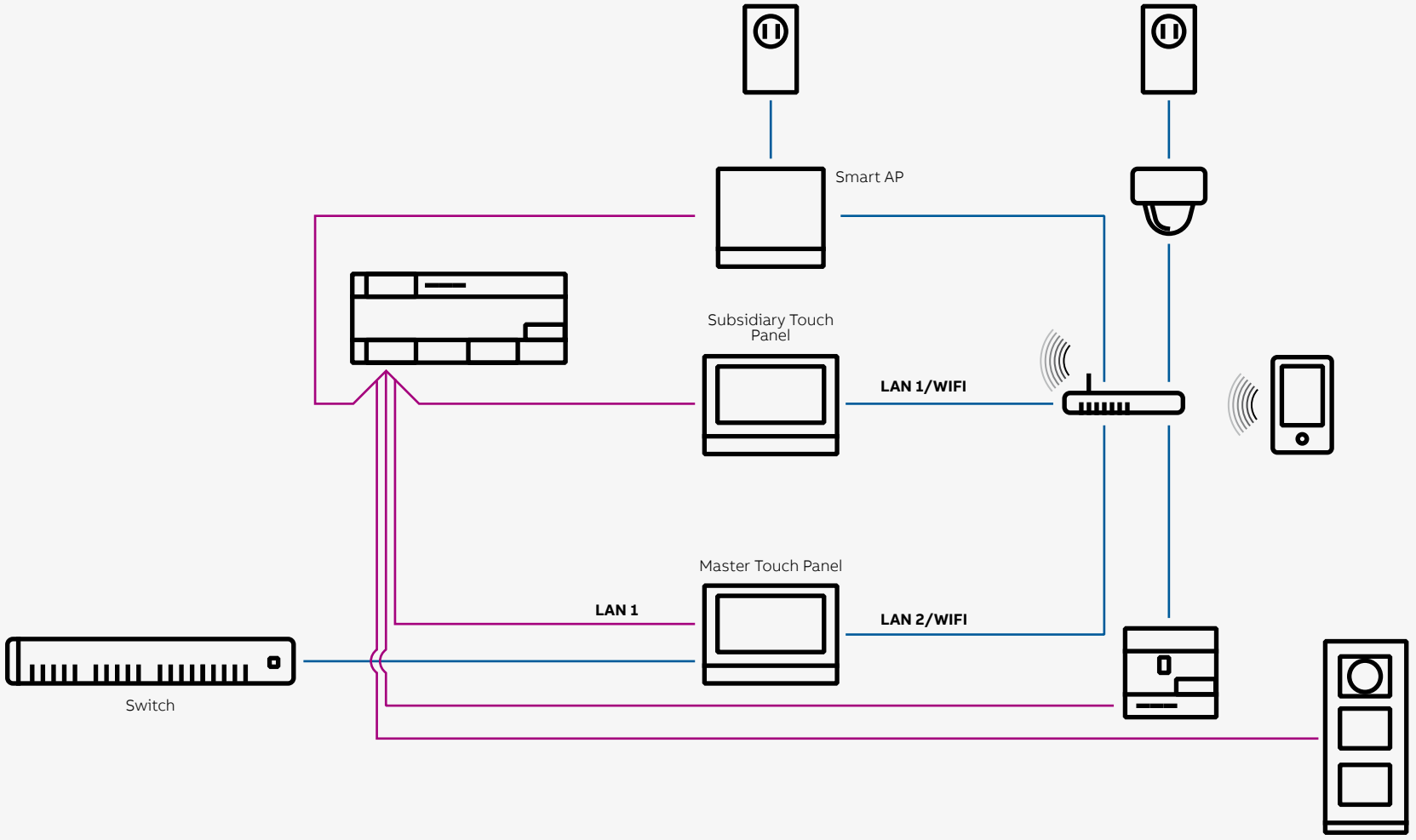
Access Control

Welcome IP overview



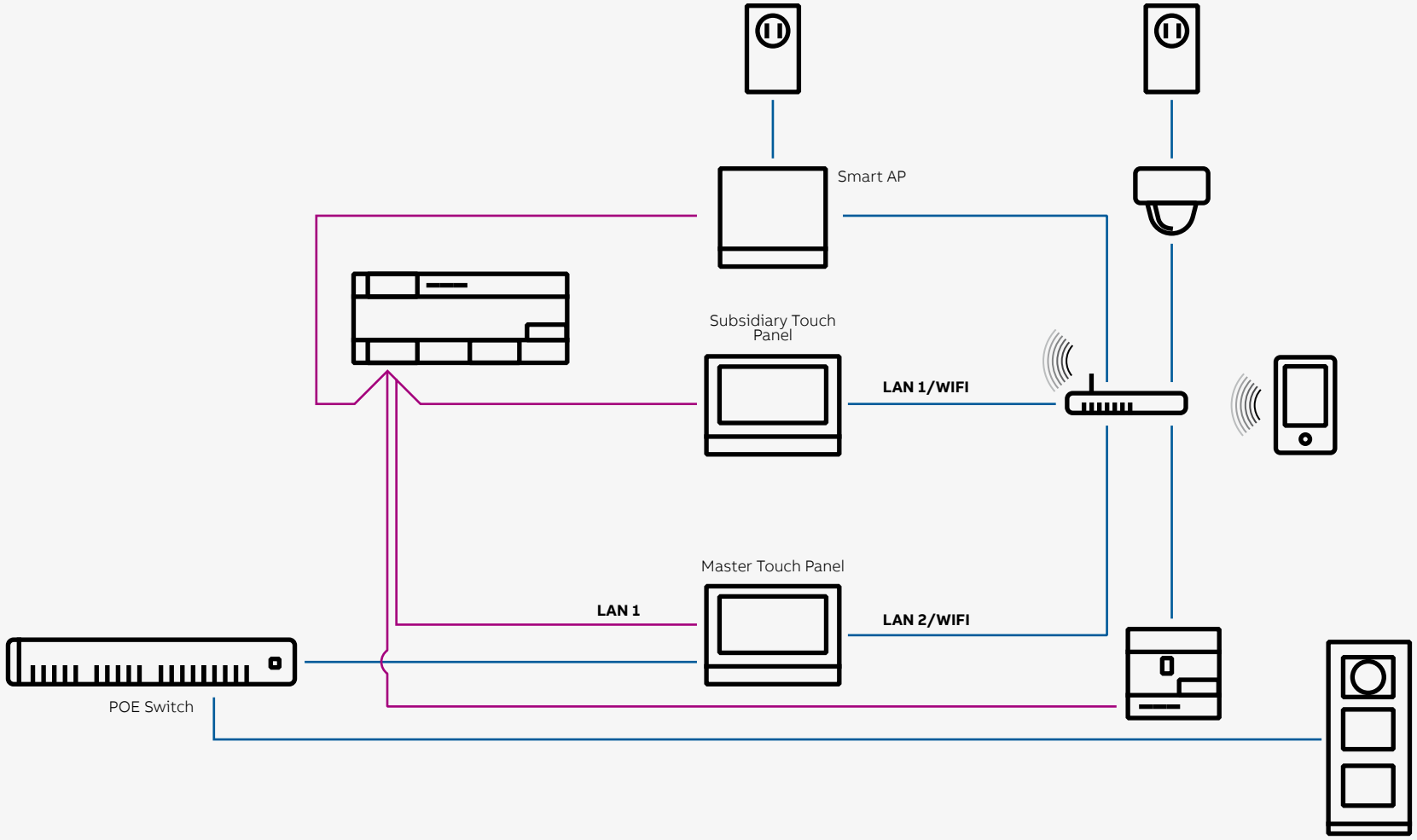
Access Control
Welcome IP configurations

ABB Welcome IP Schematic for Single Family home Internal mode

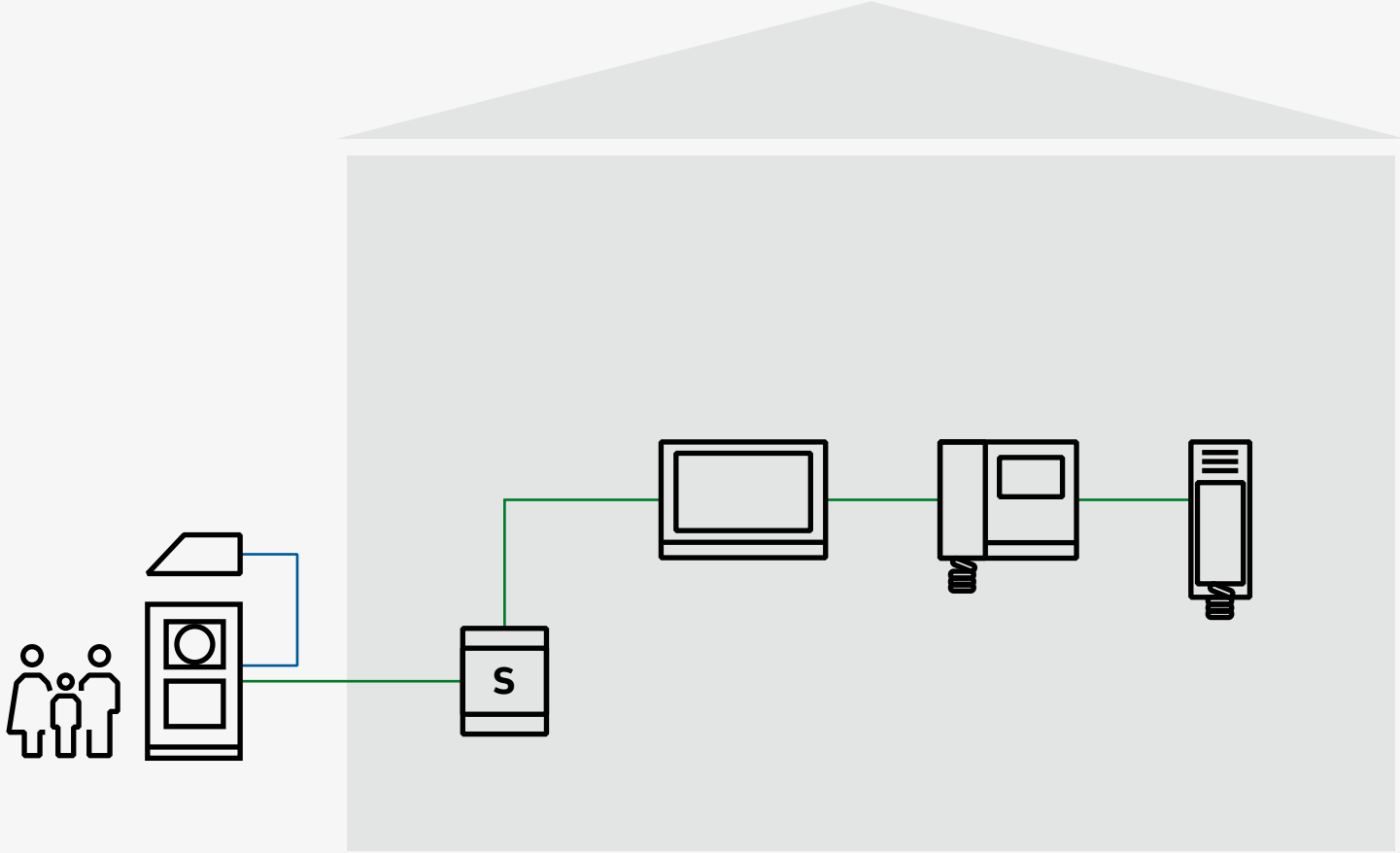


Access Control
Welcome IP configurations

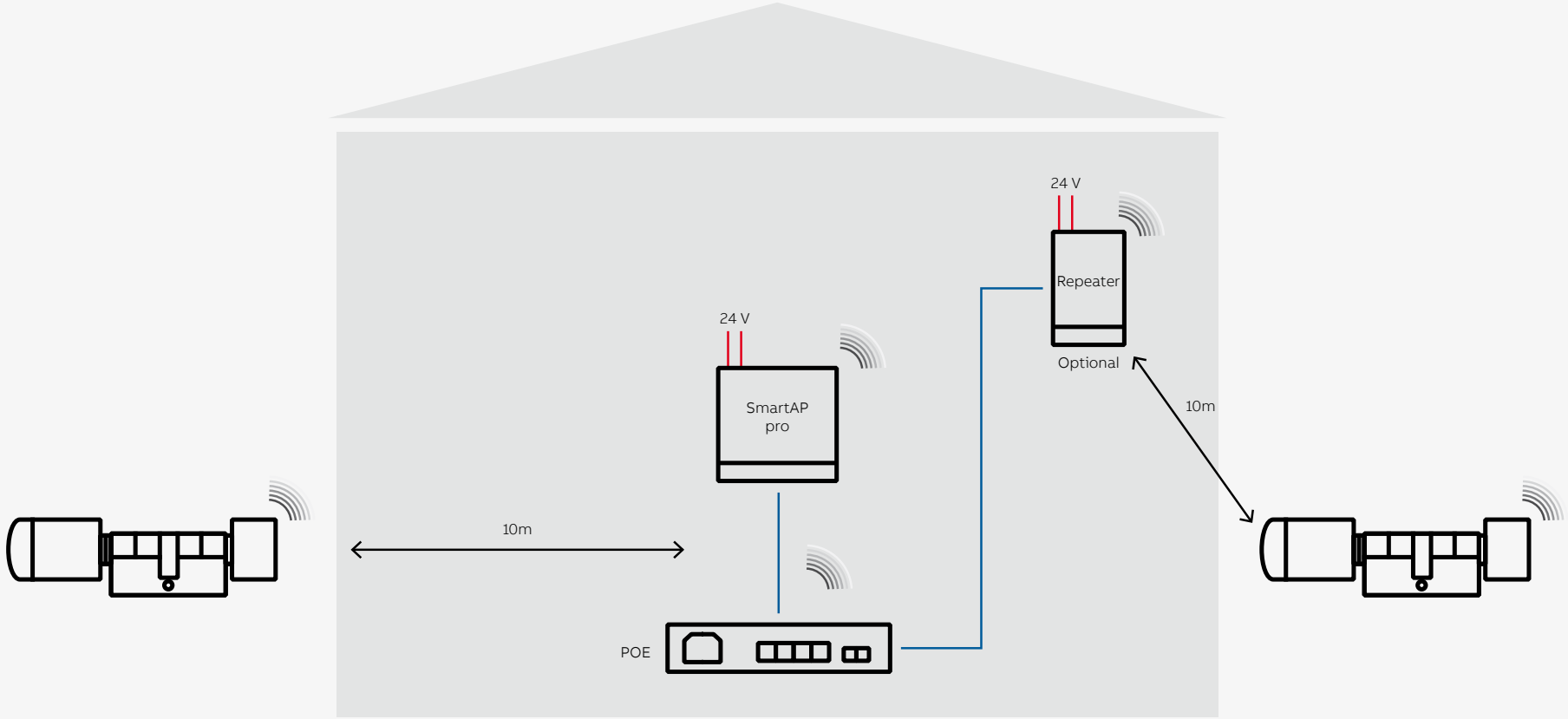
ABB Welcome IP Schematic for Single Family home External mode



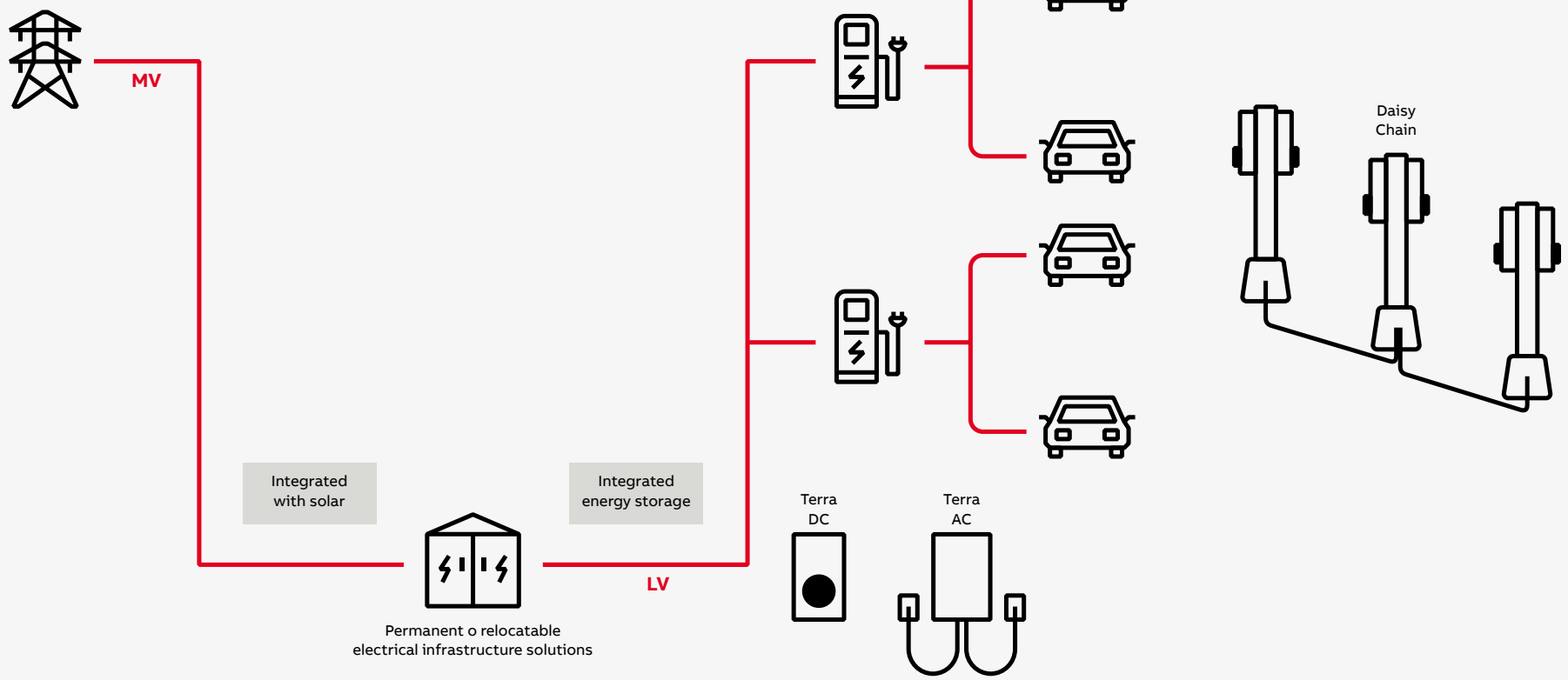
Access Control
Welcome 2 wires



Access Control
Welcome Access



EV Charging



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SINGLE FAMILY

ARCHITECTURE

APPLICATION DETAILS

9.5 EV Charging