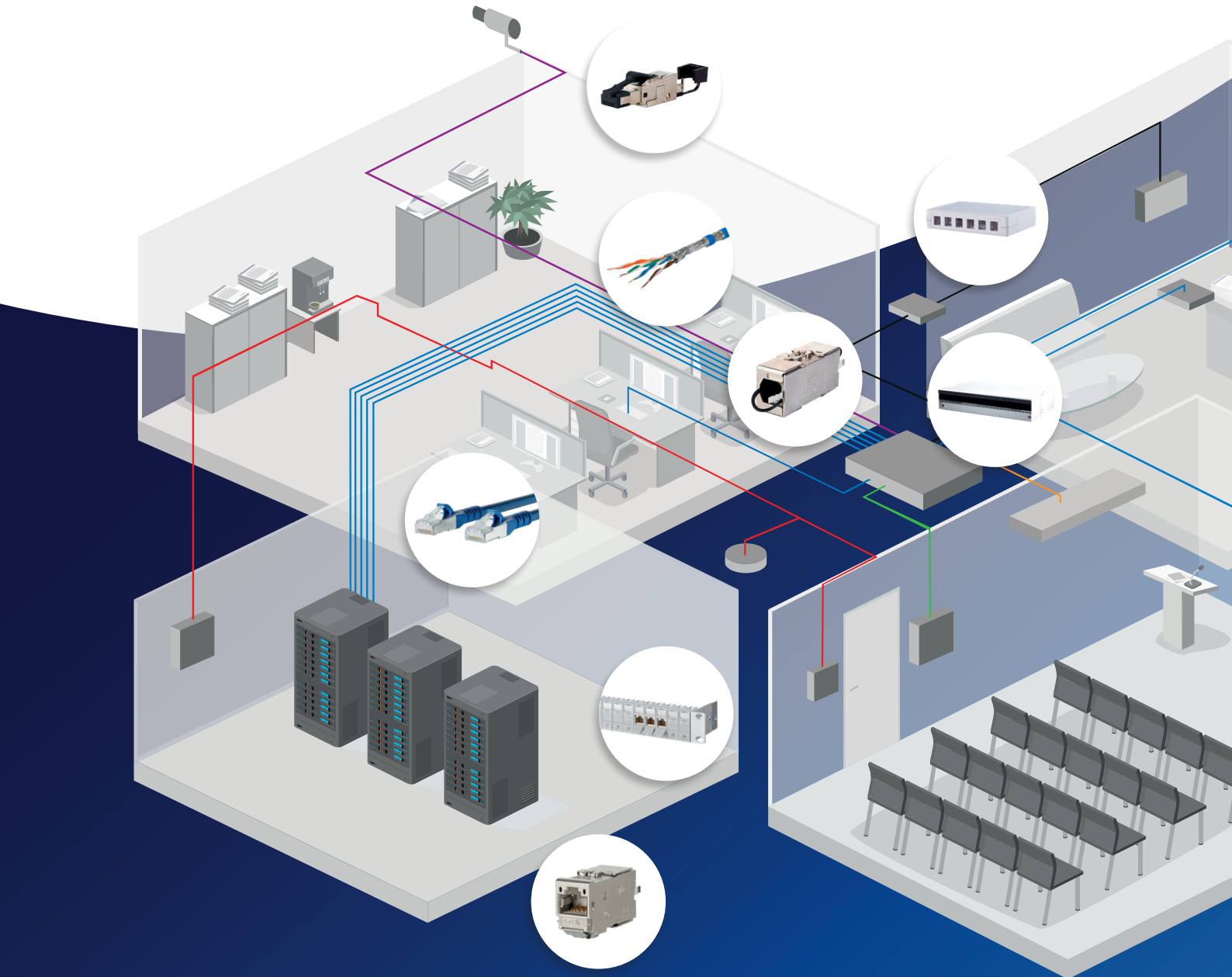
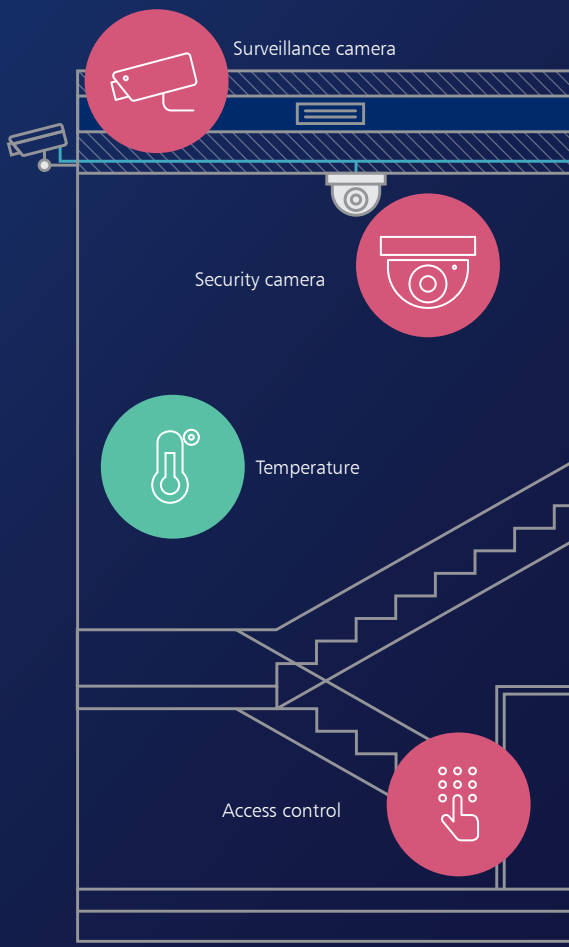
METZ CONNECT

Digital Ceiling –
Tertiary cabling in the ceiling



The use of Ethernet- & Power-over-Ethernet applications is increasing

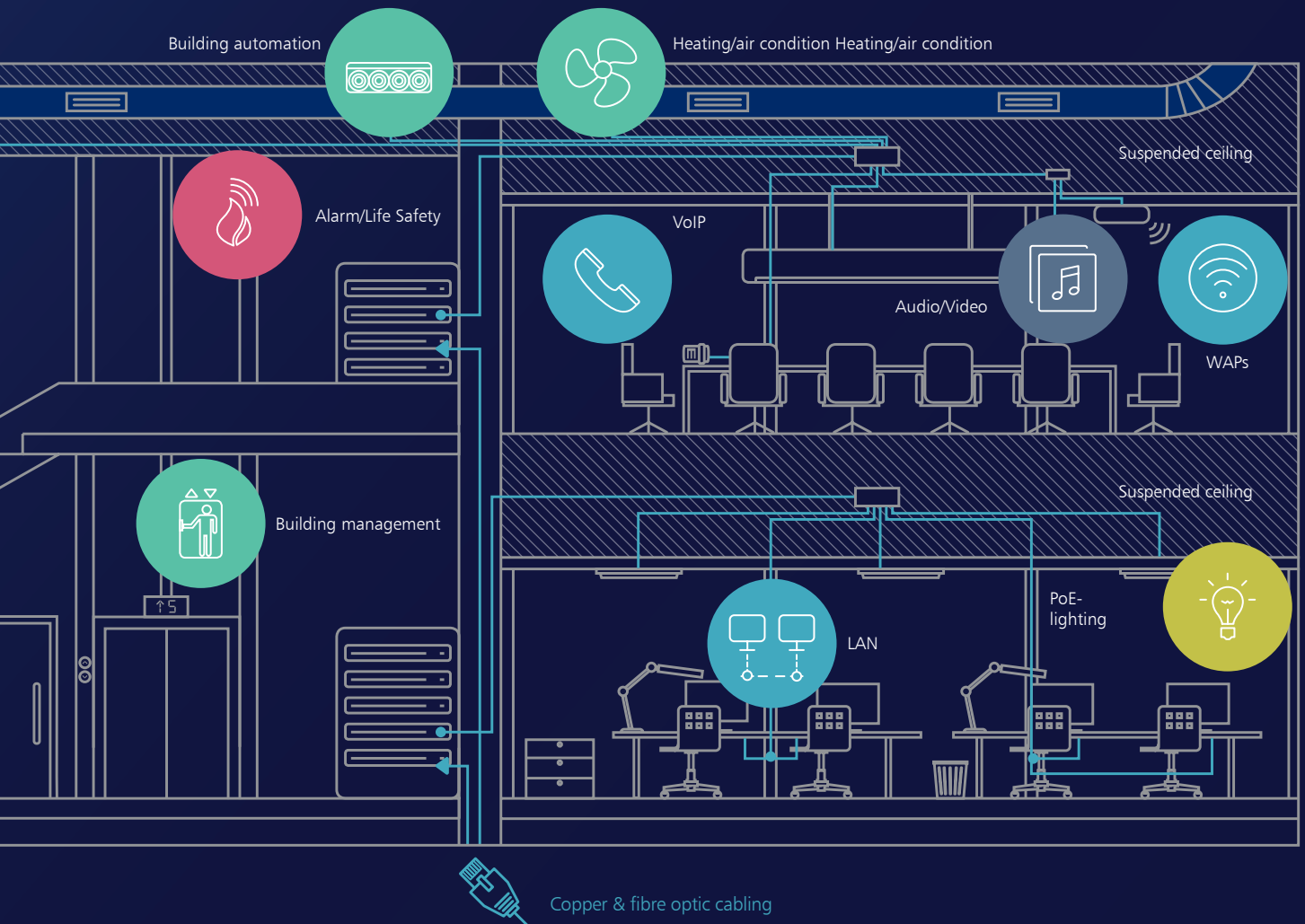


The twisted pair/copper cabling and RJ45 connectors are continuing to gain attractiveness

In many buildings, similar to private residential buildings, it appears that less network cabling based on twisted-pair installation cables and RJ45 connectors is required. The connection for conventional network devices for only a data transmission is either conducted by a wireless network or replaced by fibre optic cabling. On the other hand, there are numerous current and future applications that make copper cabling indispensable through the ability to simultaneously transmit data and power. Last but not least, the Wireless Access Point (WAP) itself needs a connection to the network in order to cover the range of mobile end devices in all areas, provide the full performance and be supplied with power via Power over Ethernet (PoE) at the same time.

PoE technology has been an essential component of network technology for some time. In addition to the data, power is also transmitted via RJ45 connectors and twisted pair cables in order to supply the end devices with power at the same time. The power supply via the network cabling tends into ever higher performance classes, currently up to 90 W. The standardization of power supply in PoE classes is being driven by more and more new devices and applications based on PoE technology. From the IP camera to the lighting, PoE saves part of the cabling through a power supply and simultaneous data transmission, and enables the intelligent building and energy management.

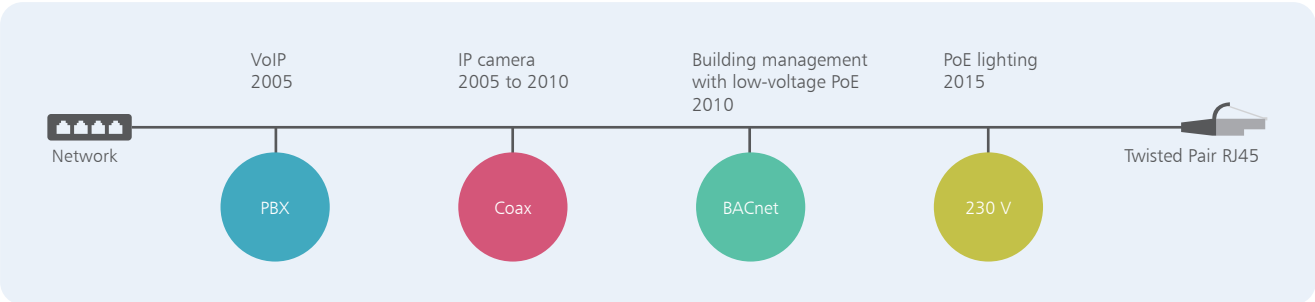
More information can be found in the PoE Application Note at **www.metz-connect.com**


Building automation
Heating/air condition Heating/air condition
Suspended ceiling
Alarm/Life Safety
VoIP
Audio/Video
WAPs
Suspended ceiling
Building management
LAN
PoE-
lighting
Copper & fibre optic cabling

Networks grow together

More applications for the structured building cabling

The following figure shows what it's all about. On the one hand, the integration of different languages in the form of transmission protocols from proprietary solutions or different bus systems into a single uniform solution – the Ethernet-IP network. On the other hand, the combination of different transport media into a uniform, widely used twisted pair cable with RJ45 connectors.



Digital Ceiling – Change in the tertiary cabling

Relocation of the network infrastructure to the ceiling

The subject of Digital Ceiling in the field of network technology can be understood as the digital ceiling to a certain extent. This means the integration of, for example, intelligent PoE LED lighting, sensors, customized WAPs for each workstation and other Ethernet- & Power-over-Ethernet applications in the suspended ceiling.

Basic components for the Digital Ceiling

Foundation

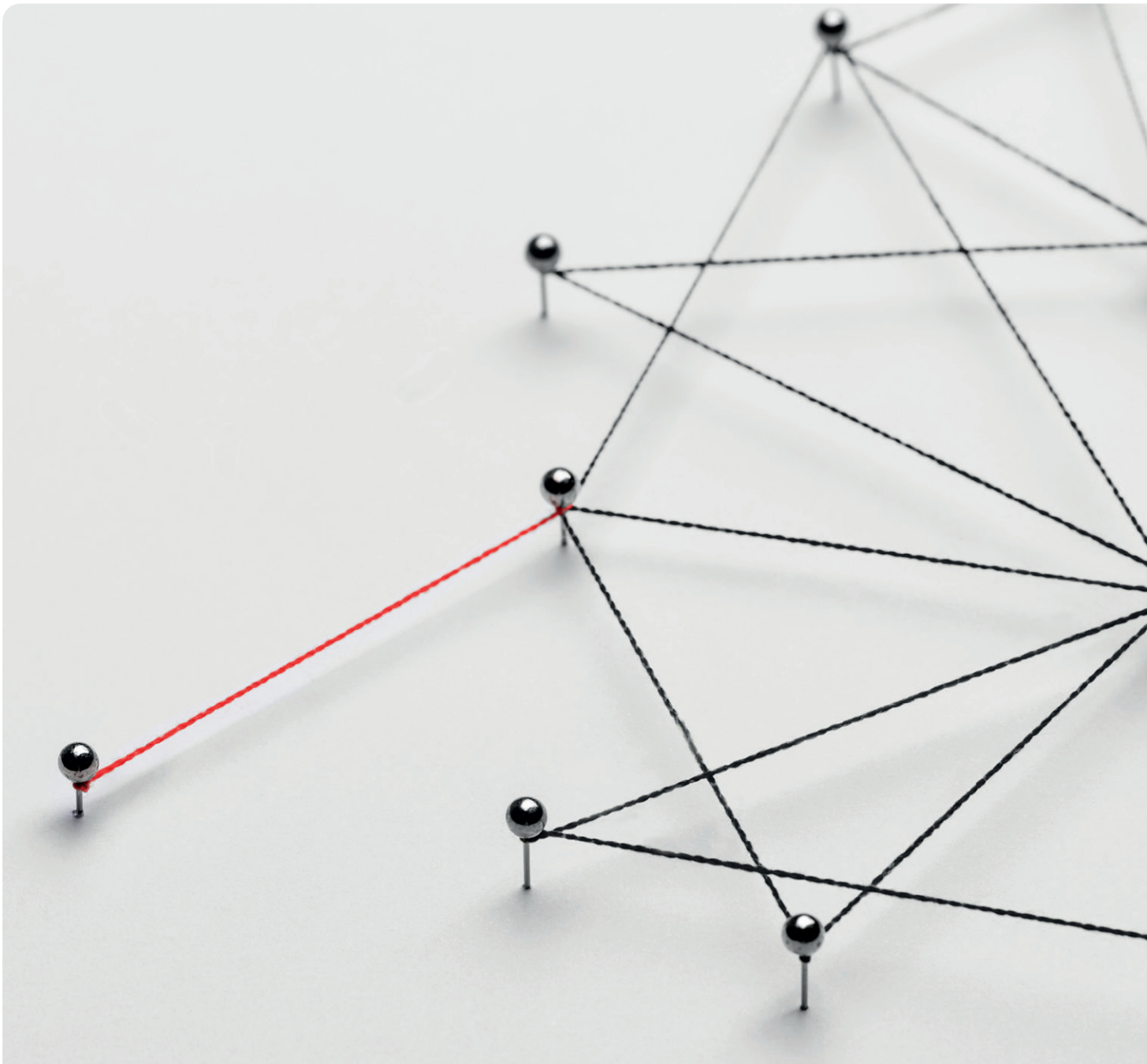
- Network infrastructure/network cabling
- Switches with PoE for data exchange and power supply as a central interface
- Network-compatible sensors and actuators with IP interface
- Software for data acquisition, analysis, evaluation and control

Actuators/devices for various applications

- Intelligent lighting
- Air conditioning, ventilation or heating
- Security systems
- Access control
- etc.

Goals and advantages

- Consolidation of many building management systems/ building automation systems into a single system
- Combination of different, proprietary cabling solutions for the respective application/systems to one
- New intelligent applications with low-voltage supply
- Increasing energy efficiency
- Cost savings
- Low installation and operating costs
- Simple ceiling mounting in the low voltage range
- Setup and configuration via software or mobile app
- Cabling for data transmission and power supply

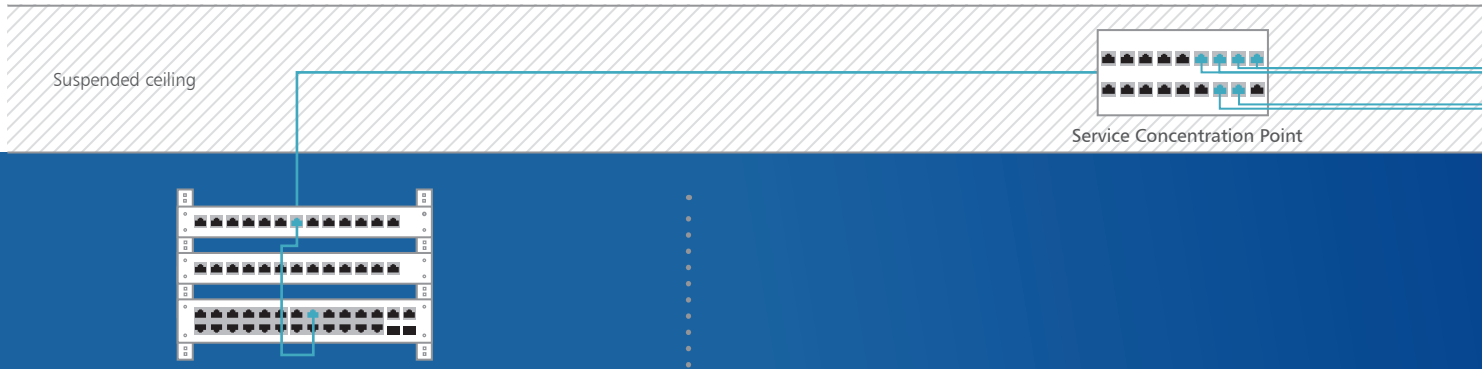


Relocation of the network infrastructure to the ceiling

In the current office environment, most network connections are placed near the workplaces in dado ducts and floor boxes. In addition to technology-driven devices with network connectivity, the increasing performance of PoE is also making the network infrastructure increasingly attractive. Many PoE applications are no longer necessarily connected to the wall outlets, the raceway, the table solutions or the floor outlets. These connections are increasingly being moved into the ceiling, e.g. for WAPs, near doors, on presentation walls, for example, for the Digital Signage, as well as outside of buildings on exterior walls or lantern poles. These unconventional connection points may require additional cabling, new cabling solutions, but also new infrastructures.

An alternative to horizontal cabling is the zone cabling in suspended ceilings. Horizontal cabling runs from the floor distributor to a specific area in the building. The service concentration point is located in this area, from where it continues to a service outlet or directly to the end devices.

For maximum flexibility and the ideal structure of horizontal cabling with Service Concentration Points, an even division of the floor into cells with the respective Service Concentration Point is recommended.



Floor Distributors

Connection between switch, patch panel and service concentration point with patch cords, RJ45-jacks and twisted pair installation cable

Service Concentration Point (SCP)/ Consolidation Point (CP)

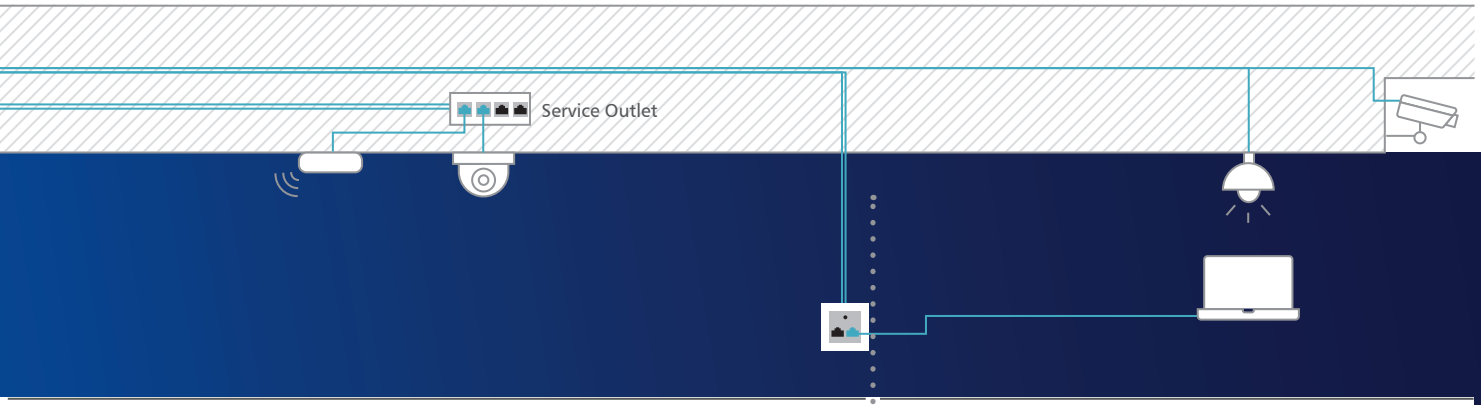
Surface mount housing for individual RJ45-jacks, patch panels or special, integrable distribution cabinets for suspended grid ceilings as consolidation points

Standard components in the floor distributor

The background is a more flexible, simpler and more cost-effective change of the cabling when moving, adding or removing end devices. The advantage lies in the shorter distances that have to be rerouted. They are more easily accessible and the intervention as well as interruption times are shorter.

Considering the PoE lighting and other Ethernet and PoE applications, the coverage radius of a zone should not exceed approx. 13 m, which would therefore be a cell of approx. 18 m by 18 m. The background to this is the high number of ports used per service concentration point, which means that over 96 ports are no longer manageable.

Connections can be changed, rerouted or removed at these points. With an increasing number of IP and PoE-enabled end devices, especially in open-plan offices, a long-term saving is achieved through the more flexible and simple changes to this structure. The Service Concentration Point should be at least 15 m away from the floor distributor, and should not exceed the link length of 100 m.



Service outlet / Subscriber connection

Wall outlets, special service outlets for the ceiling or direct connections as connection point to the terminal device

Connection to terminal device

Pre-terminated components, patch cables or field assemblable connectors for a direct connection of the end devices

Zone cabling

Twisted pair installation cables or pre-assembled zone/SCP link/patch cords

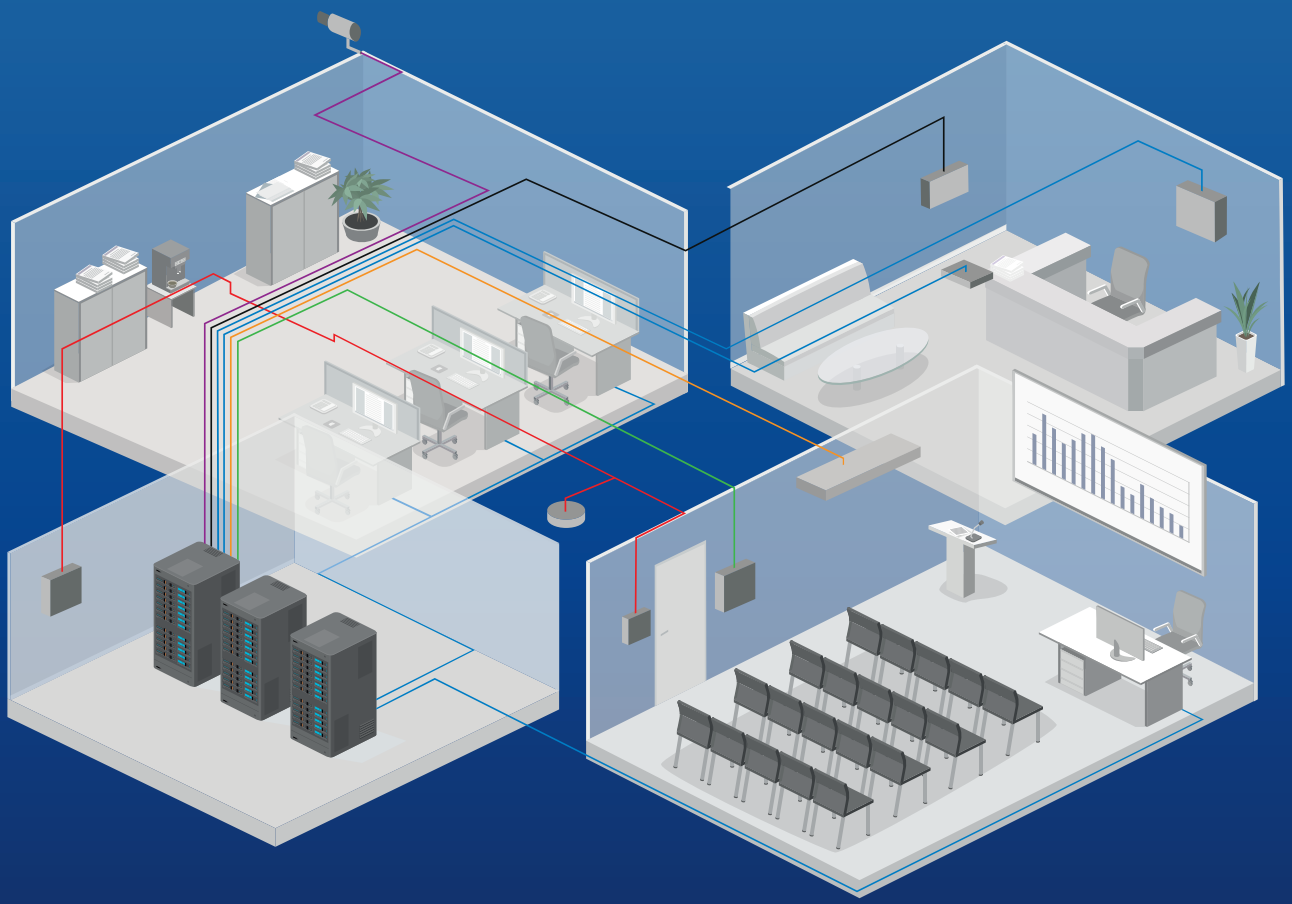
Digital Ceiling area in the suspended ceiling with zone cabling

Application-specific network cabling

For the current requirements with a view towards the future, the conventional network infrastructure for workplaces according to ISO/IEC 11801-2, and the cabling infrastructure could be combined via service concentration points for distributed building services according to ISO/IEC 11801-6.

The following figure shows the separate, application specific cabling and cabling with service concentration point for Wi-Fi applications.

Network infrastructure today



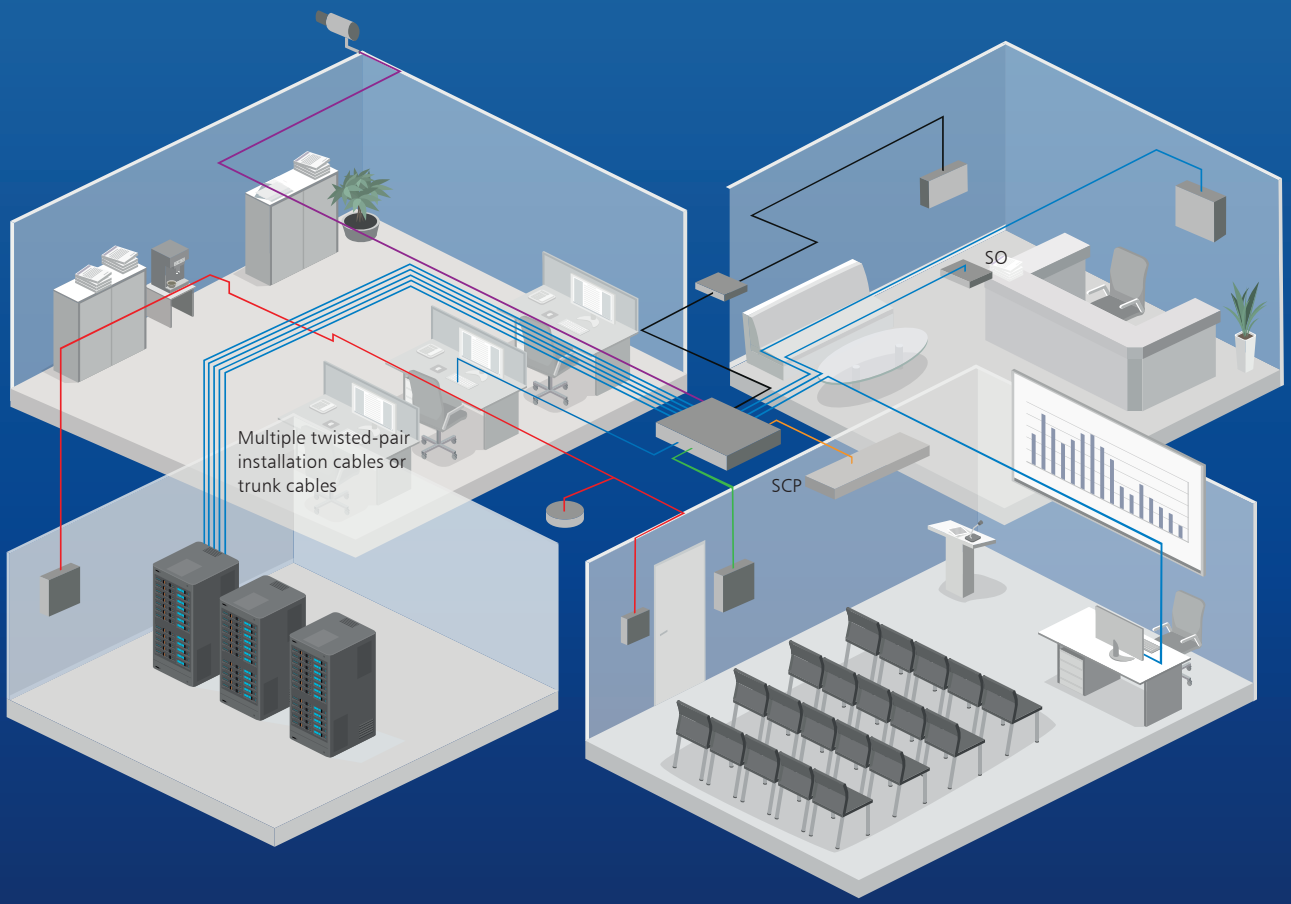
Wiring legend

- Heating / Air Conditioning / Ventilation (HVAC)
- Access control
- Lighting
- Security cameras
- Wi-Fi
- Fire alarm technology

Complete zone cabling via the suspended ceiling

A complete horizontal cabling via an SCP in the suspended ceiling could look like the depiction in the following figure. The merged applications are depicted in the network cabling through an SCP. Most applications in the ceiling could be solved as with Wi-Fi cabling and the individual workstations could be wired via cable ducts, columns or on the walls all the way up to the wall outlet.

Network infrastructure in the future



Product Overview

	Product Name	Description	Variants	P/N
	Large Service Concentration Points	In combination with one or two 1HU patch panels up to 24/48 ports, with DCCS up to 48/96 ports can be integrated. Suitable for the installation in suspended ceilings and for the wall mounting	SCP box 1RU for 19 inch patch panel, pure white	130862-1H20-E
	Small to medium service concentration points		6/12 Port Compact SCP for Keystone RJ45 modules, pure white	1309190002KE
	Small to medium service concentration points	6 Port Compact SCP. In combination with housing 130862-00-E, 130862-20-E, 1308990110-E, 854544-E or 854568-E	6 port module frame equipped with C6A module 6 port module frame equipped with E-DAT module 6 port module frame unequipped	130B11P2-E 130922-03-E 130922-00-E
	Small to medium service concentration points	6 Port Compact SCP unequipped housing for 6 port module frame. For mounting in the suspended ceiling, wall mounting or as a table solution	6 port compact SCP unequipped housing for 6 port module frame, gray 6 port compact SCP unequipped housing for 6 port module frame, pure white	130862-00-E 130862-20-E
	Small to medium service concentration points	in combination with two DCCS 6 port modules (can be integrated). Especially suitable for very compact pre-assembled links with single or multi-pair cables	Consolidation Point DCCS2 unequipped	15030D0000-E
	Small to medium service concentration points	Unequipped housing for RJ45-jacks with module design, pure white in various port sizes. Also available as a Keystone version. Suitable as a compact SCP or SO. Suitable for mounting in the suspended ceiling, direct wall mounting, workplace solution or with DIN rail adapter mini for mounting on a support rail/hat rail	3 Port SCP housing 4 Port SCP housing 6 Port SCP housing 8 Port SCP housing 12 Port SCP housing 16 Port SCP housing 2x12 (24) Port SCP housing	130861-0302-E 130861-0402-E 130861-0602-E 130861-0802-E 130861-1202-E 130861-1602-E 130861-2402-E

	Product Name	Description	Variants	P/N
	Service Outlets	Very compact termination unit for single RJ45-jacks. Can be used ideally as a service outlet for each end device. Optionally pre-assembled with a patch cord, or installation cable and RJ45 plug. Use and mounting in the suspended ceiling, wall mounting, DIN rail, etc.	Keystone SO 1 port unequipped pure white Keystone SO 2 port unequipped pure white Modul SO 2 port unequipped pure white	1309140002KE 1309150002KE 1309150102-E
	RJ45-jacks	RJ45-jacks in different types, shielded or unshielded. For mounting in any module frame, for connection to installation cables or in combination for the pre-assembly	$C6_A$module 180° jack $C6_A$module 270° jack $C6_A$module 90° jack E-DAT module Cat.6_A 8(8) jack, T568A E-DAT module Cat.6_A 8(8) jack, T568B	130B11-E 130B12-E 130B13-E 130910-I 130910-I-B1
	RJ45 plug	The field-assembly ready connectors for a direct connection to an installation cable, are one of the most important products for the Digital Ceiling and PoE applications. Together with RJ45-jacks, e.g. $C6_A$module and Installation cable as SCP link directly to the end device	$C6_A$ RJ45 field plug pro 180° $C6_A$ RJ45 field plug pro 360°, angled E-DAT Industry RJ45 Field plug black Cat.6 Class E_A	130E405032-E 130E405042-E 1401405012-I
	RJ45 field plug ultra short	As one of the shortest field-terminable RJ45 connectors in its class, it offers the ideal solution for applications where standard plugs reach their limits	$C6_A$ RJ45 field plug ultra short	130E507032-E
	Cable connector Class E_A	The cable connector joins or extends data cables without the need for special tools. Available in compact and angled versions, it is also suitable for confined spaces and maintains data links of up to 10 GBit/s	Cable connector Class E_A 180° Cable connector Class E_A 270° Cable connector Class E_A 360°	130863-04-E 130863-05-E 130863-06-E
	Cable connectors Class F_A	Cable connector suitable for field assemblyr class F_A for 8-core cables, for the connection/extension/repair/replacement of copper data cables up to Cat.7_A		130863-02-E
	Cable	RJ45 patch cords in various lengths and colours. Together with RJ45-jacks, e.g. $C6_A$module and cable as can be pre-assembled as SCP link		130845xxyy-E xx = length yy = colour

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