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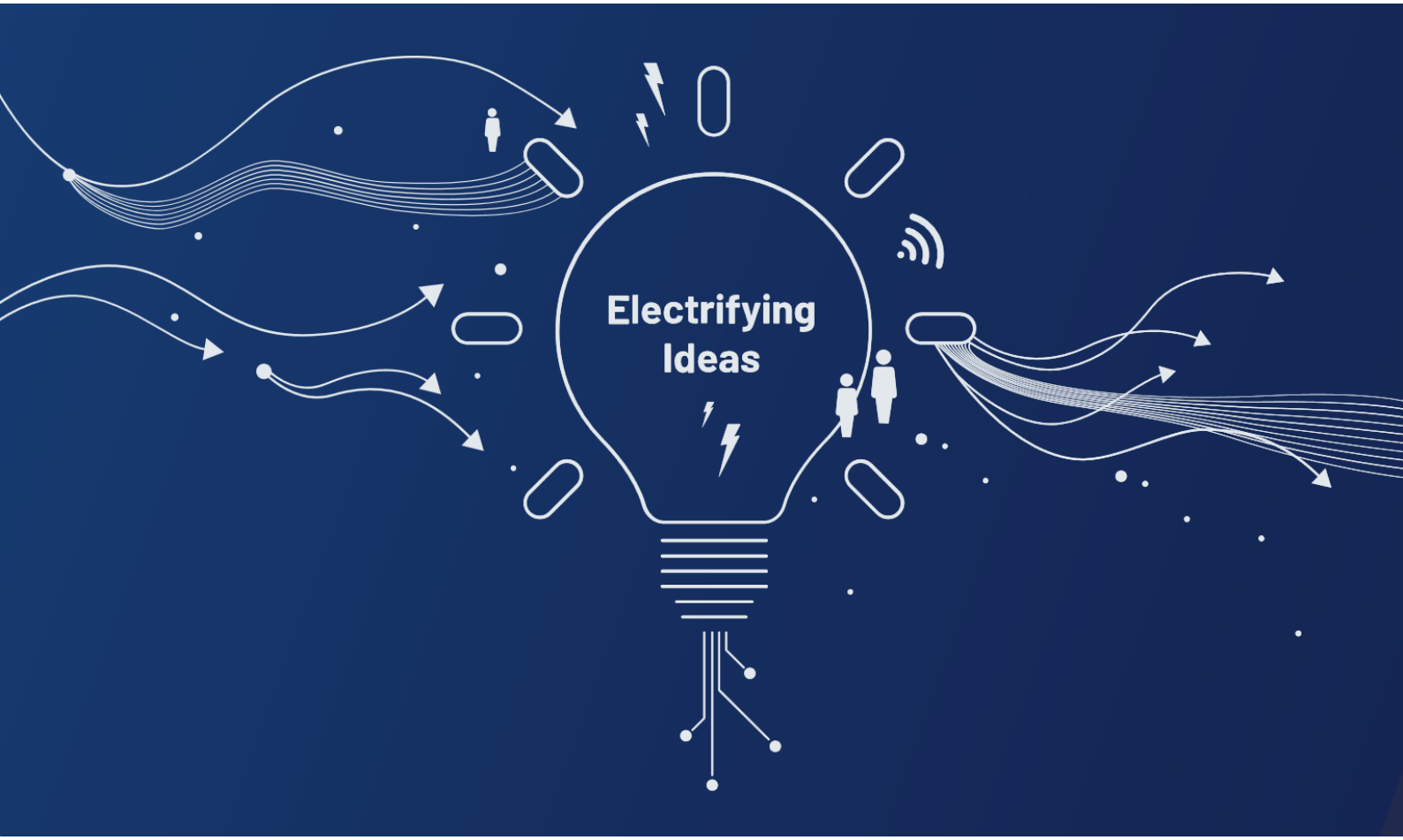

Leaflet 33021:2023-09 E

Call systems according to DIN VDE 0834 and IP networking

Third revised edition

Electro and Digital Industry Association

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The following were involved in creation of this explanatory document:

Volker Benz, Securiton GmbH
Frank Betsch, Securiton GmbH
Christian Schmidt, Tyco Fire & Security Holding Germany GmbH
Andreas Hüschemenger, hospicall GmbH
Daniel Westendarp, Tunstall GmbH
Michael Koschek, Schrack Seconet Care Communication Germany GmbH
Peter Krapp, ZVEI e.V.
Armin Neuroth
Dr.-Ing. Matthias Rychetsky, EFE Elektronik-Forschungs- und Entwicklungsgesellschaft m.b.H.
Manuel Weritz, tetronik Kommunikationstechnik GmbH

Companies in the ZVEI Section for call systems to DIN VDE 0834

EFE Elektronik-Forschungs- und Entwicklungsgesellschaft mbH, Mühltal
hospicall GmbH, Gummersbach
Novar GmbH, Neuss
Securiton GmbH, Achern
Schneider Electric GmbH, Ratingen
Schrack Seconet Care Communication Germany GmbH, München
tetronik Kommunikationstechnik GmbH, Taunusstein
Tunstall GmbH, Telgte
Tyco Fire & Security Holding GmbH, Ratingen
VAROLUX GmbH & Co. KG, Barleben-Meitzendorf
Winkel GmbH, Lüdenscheid

Foreword

This explanatory document describes the potential risks associated with the use of IT infrastructures external to the system when the current DIN VDE 0834 standard is not observed.

Call systems for alarm signalling are designed to help people who are unable to help themselves, especially in emergency situations, and to save lives and avert danger. For this purpose, DIN VDE 0834 requires these systems to have a conductor and transmission network of their own, independent of external systems and monitored and controlled by the equipment of the call system. The call function must have the highest priority and be assured at all times.

Background

DIN VDE 0834 prohibits transmission routes of other systems being used by call systems. Transmission routes of external systems may be used between organization groups and external services only if it is ensured by continuous risk management that the requirements of DIN VDE 0834 are met. Within the organization groups of the call system, no transmission routes other than those of the call system itself may be used.

Where the call system uses the building's wiring structure, the following must be observed:

- Specifications in standards (DIN VDE 0834 and EN 50173), in particular for the use of transmission routes external to the call system, must be observed, as must the specifications of the respective manufacturers regarding cable types, conductor cross-sections and cable lengths.
- Particular attention must be paid to clear labelling of junction boxes, patch cables and patch panels, to ensure that they can be assigned to the call system unambiguously and permanently.

The following must be observed when active network components are used:

- Only devices approved by the call system manufacturer may be used.
- These devices may be used solely for the call system. They must be clearly labelled as being components of the call system.
- Protective separation to EN 60601-1 with 2x MOPP: the devices must be connected to the supply voltage by a dedicated circuit with its own protection. This circuit is to be used solely for devices of the call system and must be operated in accordance with DIN VDE 0834, 5.2.2 with emergency power and protective separation.

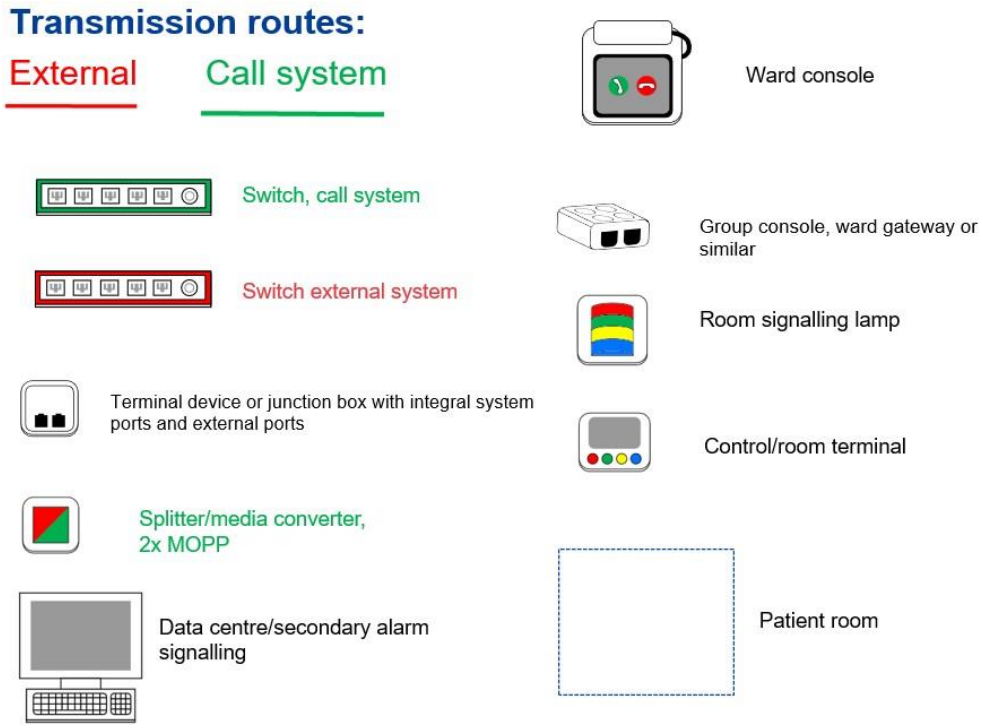
Additional services such as streaming, TV and radio signal reception, telephony and lighting controls can be managed over the call system. However, data may be exchanged with these external systems only through system interfaces supplied and/or specified or approved by the manufacturer of the call system. The call system must remain independent of connected external services, and the call functions must at all times have absolute priority over all other services. It thus follows that shutdown of the telephone extension system, failure of the TV set or short-circuiting of a bedside lamp must never impact upon the functionality of the call system (freedom from interference).

Failure to observe this standard may raise liability issues, particularly for the operator, in the event of harm.

Scenarios

The real-case examples below describe networking of call system components with each other and with multimedia and value-added services in IP-based networks. Compliance with the DIN VDE 0834 standard is evaluated and explained. The scenarios are based on a hospital, but can also be applied by analogy to other areas of application such as correctional facilities or nursing homes and in all comparable constellations.

Legend

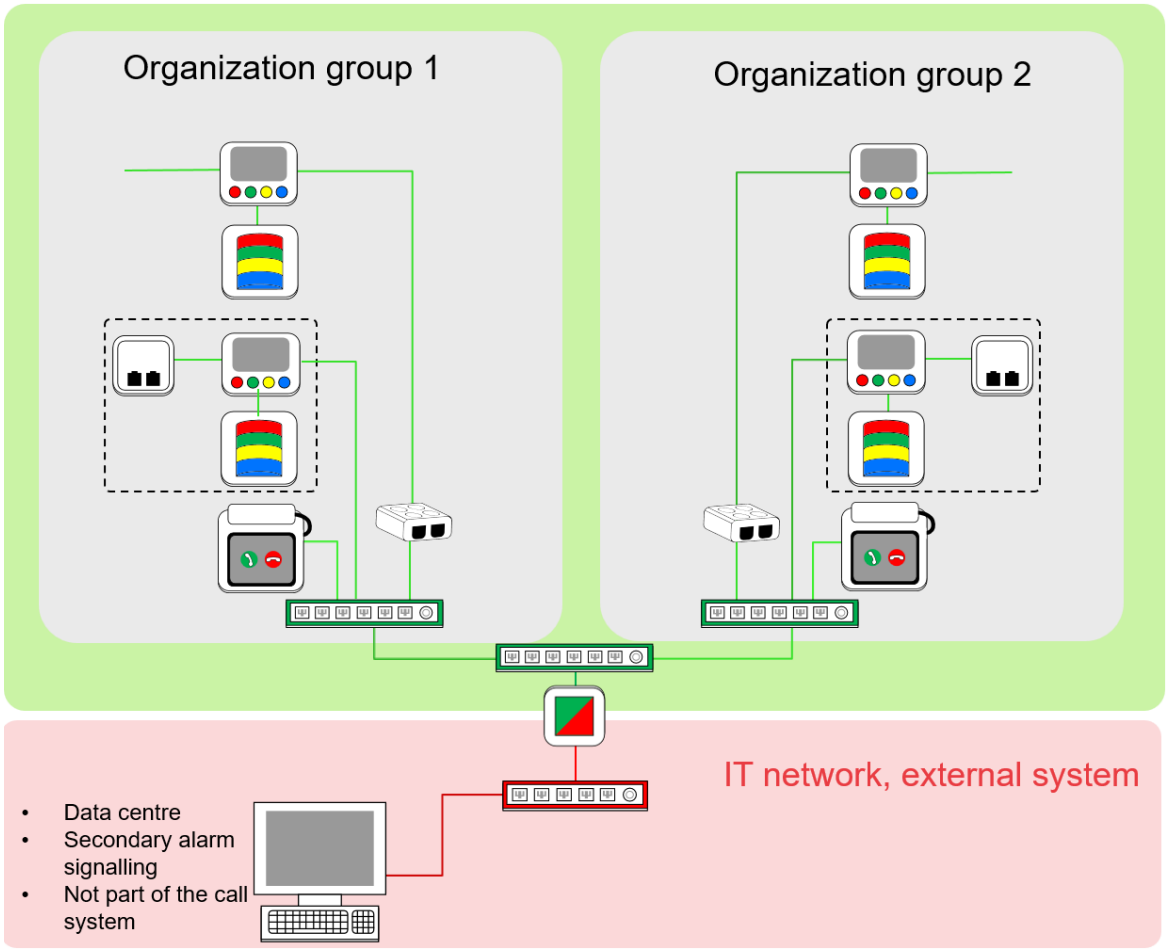


Deployment of the call system

IT network, external system

Organization group: group of rooms that are combined to form an organizational unit. A standalone organization group encompasses all rooms that can be managed by a single person under minimum staffing conditions.

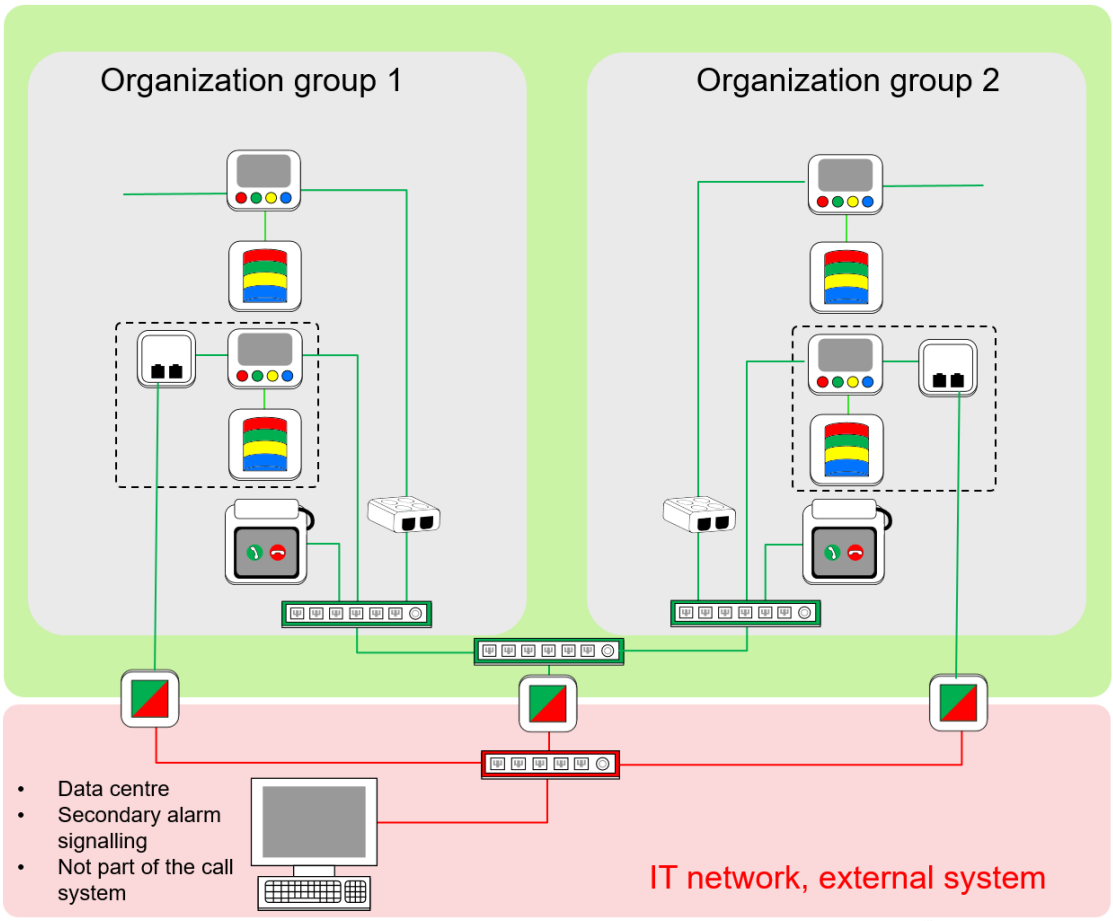
Example 1: Independent conductor system of the call system



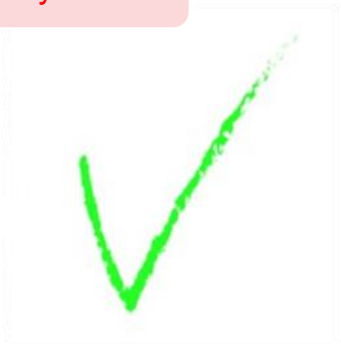
The call system possesses its own conductor system. This is independent of other systems and thus complies with DIN VDE 0834.

Devices connected to the call system require the approval of the call system manufacturer. Devices not forming part of the system may be connected to it only if interference with the call system and danger to the patient can be excluded. Where value-added services are integrated into the call system by means of connectors or terminal devices, the provisions of the standards must be observed, particularly those governing insulation (protective separation to EN 60601-1 [2x MOPP]), the reassurance lamp and orientation light, and by the functional and electrical safety of the call system.

Example 2: Value-added services delivered over LAN



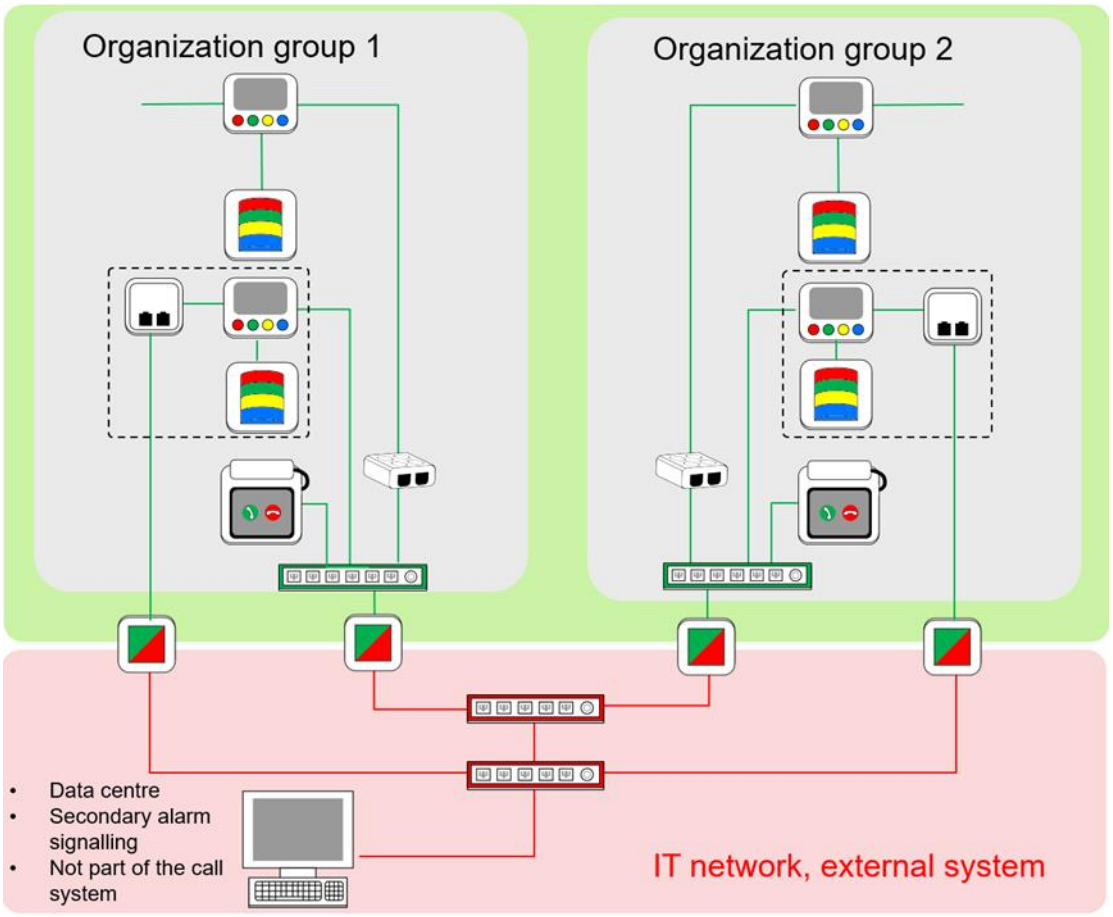
Value-added services may for example be delivered by a separate LAN link supplementing a connecting socket under the same cover plate for the terminal device concerned. Functionally, however, they remain autonomous systems. The call system thus complies with DIN VDE 0834.



Example 3: External transmission route between organization groups

The call system of each organization group possesses its own conductor system. Multiple organization groups are to be connected to each other by means of the generic IT infrastructure and standard network components, for example for the raising of secondary alarms. Logical separation (e.g., VLAN, QoS, etc.) with maximum prioritization of the call system must be ensured. Value-added services are integrated through interfaces defined by the manufacturer of the call system and need not therefore always be routed for this purpose through a dedicated wiring structure.

Example 3a: Standalone organization groups, connected by transmission routes external to the system

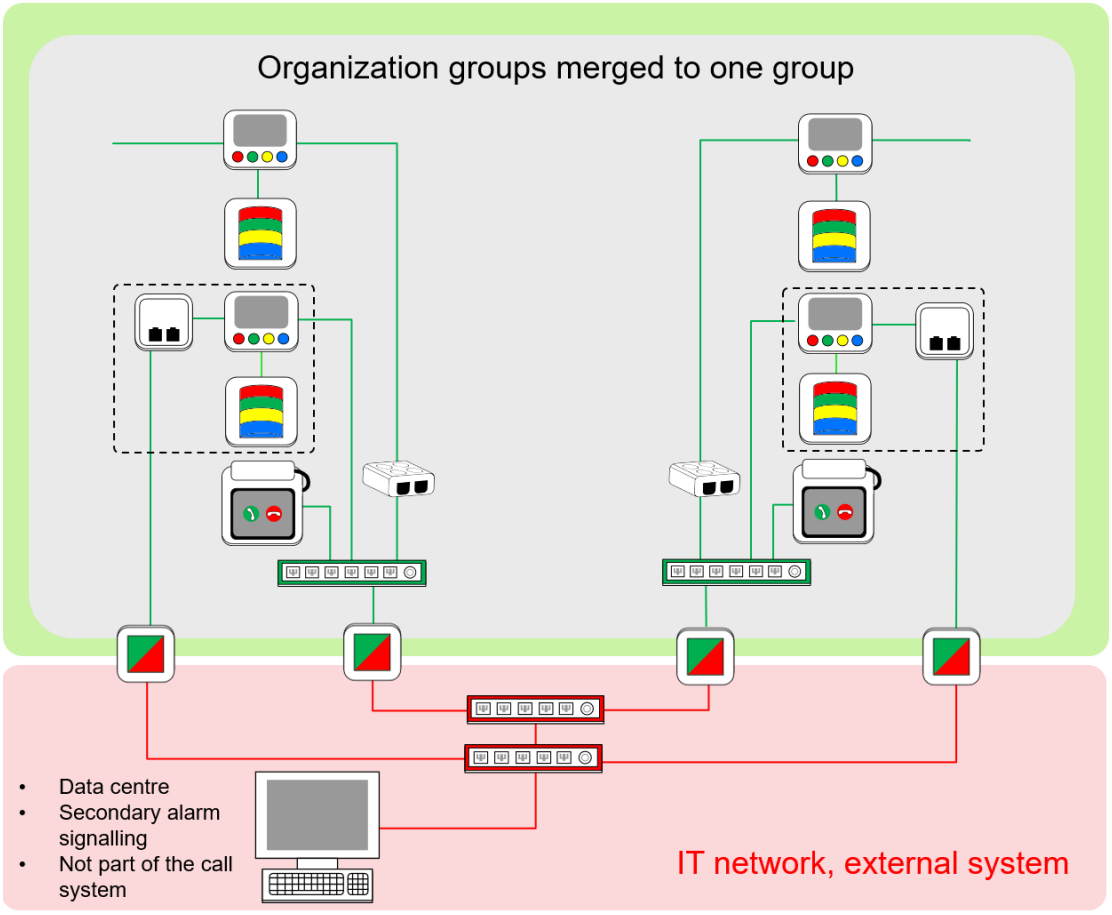


Important: Example 3a complies with the standards provided certain conditions are met.
The use of transmission routes external to the system between organization groups is compliant with the standards when:

- it is ensured that organization groups are not merged and that no conflict arises with the definition of the organization group, and
- a risk analysis has been conducted, and
- all requirements of DIN VDE 0834 (6.2.3.) are met.

Administrative work on the switches (e.g., software updates, etc.) may result in organization groups being disconnected.

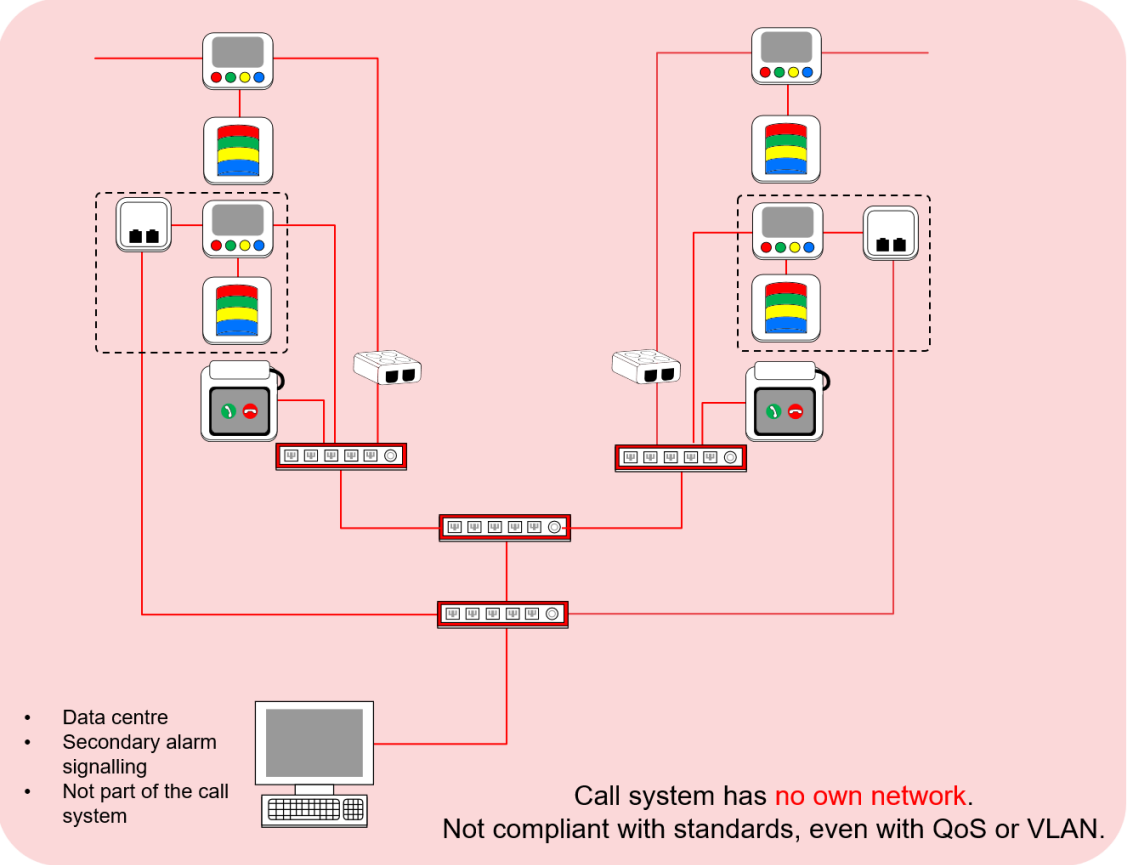
Example 3b: Merging organization groups



Important: Example 3b is not compliant with DIN VDE 0834, as it is not permissible for transmission routes external to the system to be used within an organization group of the call system.

One of the two organization groups, originally separate and merged in this example, is not staffed in this example. The definition of the organization group is not satisfied in this case.

Example 4: Call system uses generic IT infrastructure



The call system and the individual devices, multimedia and value-added services and the wards are interconnected by the generic IT infrastructure.

Example 4 is categorically not compliant with the standards, even where an adequate safety standard appears attainable by means of active components with QoS capability, VLAN technologies and managed services.

Contact
Peter Krapp • Managing Director Safety & Security Division • Section Safety & Security
Office.: +49 69 6302-272 • Mobile: +49 162 2664 927 • E-Mail: Peter.Krapp@zvei.org

ZVEI e. V. • Electro and Digital Industry Association • Lyoner Straße 9 • 60528 Frankfurt am Main • Germany
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