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PRAESENSA

System controller redundancy...

White paper

...Ensuring reliability from the moment of installation

24/7

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No single point of failure with built-in redundancy is core to the system concept

PRAESENSA offers robust and comprehensive security with a design created to ensure that there is no single point of failure. The entire system incorporates reliability from the moment of installation, with redundancy offered throughout the whole system. This includes all devices and network connections, critical signal paths and the option of system controller redundancy.

Why redundancy for the system controller?

The system controller manages all system related functions in a PRAESENSA Public Address and Voice Alarm system. It routes all audio connections between network-connected PRAESENSA audio sources and destinations. It supervises and plays back messages and tones, stored on its flash memory, either scheduled or manually triggered from a call station, control input or via the digital interface. It manages the routing of background music streams, along with business announcements and emergency calls, all based on priority level and zone occupancy. It collects all status information of connected system devices, manages the event logs and reports faults. The PRAESENSA system controller is designed for the highest levels of safety in operation. One PRAESENSA system controller can be considered as a single point of failure. Two system controllers (one duty and one backup controller) provide redundancy AND the highest level of system availability.

There is always the possibility for a network connection loss of the duty controller due to a mechanical disturbance in the IP network. This could be caused by something like maintenance work in the building. In this case the standby controller will take over the role of the duty controller.

Other theoretical faults:

- Duty controller watchdog activated
- Internal communication loss in the duty controller
  - Communication between the control application and the device application
- Configuration file corrupted
- Message file corrupted

Applications

System controller redundancy is a typical requirement for voice alarm systems in international airports, metro stations and power plants, but it could also be an option for systems in convention centers, shopping malls and university campuses.

Local, national and special vertical related standards may also require users to have no single point of failure.

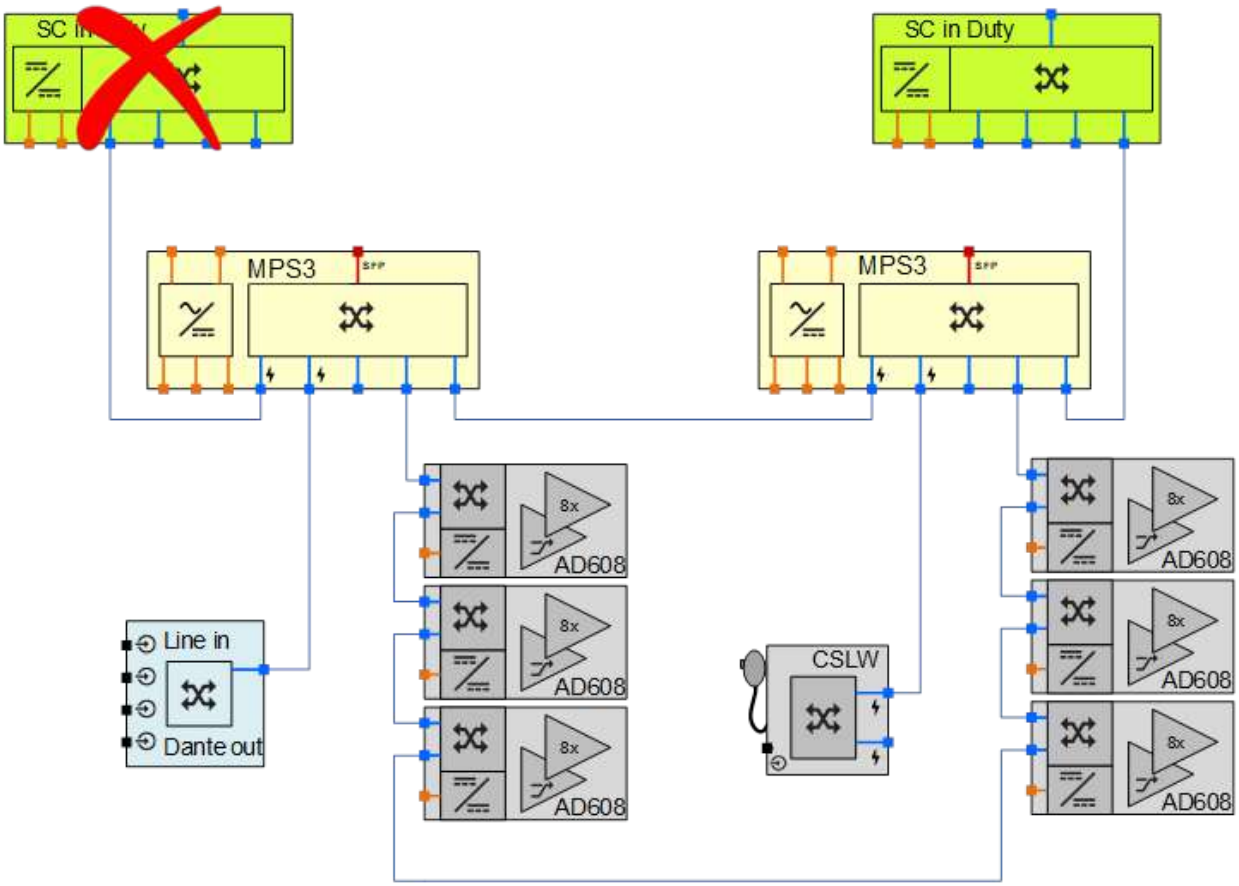
The European standard EN54-16 for fire alarm and voice alarm systems does not necessarily require redundancy for the system controller.

System controller redundancy concept

A system which has redundant controllers configured and connected will stay operational after the duty controller fails. A backup controller shall take over the role of the duty controller, re-connect to all configured devices on the network and continue to control the system.

At least one duty controller and one backup controller are configured.

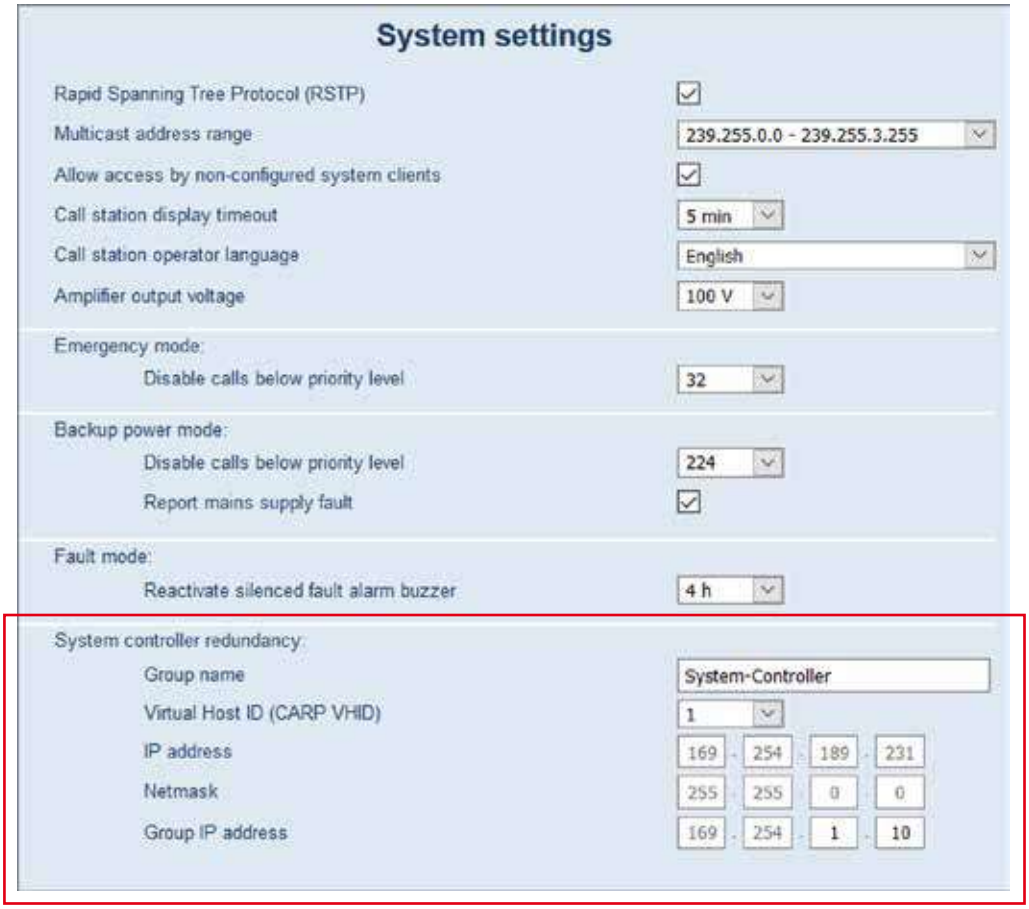
- At system startup both system controllers will start
- Automatically one system controller will be selected as the “duty” controller
  - This could be the fastest controller to startup
  - Or the controller with the lowest MAC address
  - The other controller will be the standby controller.
- Switch over time from duty controller to standby controller
  - For an average-sized system this will take approximately 30 seconds
  - When the original duty controller returns to the network there will be no switch back
  - The new duty controller will remain as the duty controller and the returning controller will become the standby controller
- Running calls started via control inputs will continue after the switch over
  - These will be restarted automatically
- Running calls started on a CST will need to be started again.
- Duty controller – standby controller network connection loss
  - Both controllers will then become duty controller of the components still connected to them. In this case the system is split up (split brain).



'Standby' controller taking over 'duty' of the system

Configuration

The basic settings of the system controller redundancy are configured on the system settings page.



The duty and standby controllers can be accessed via the Group name

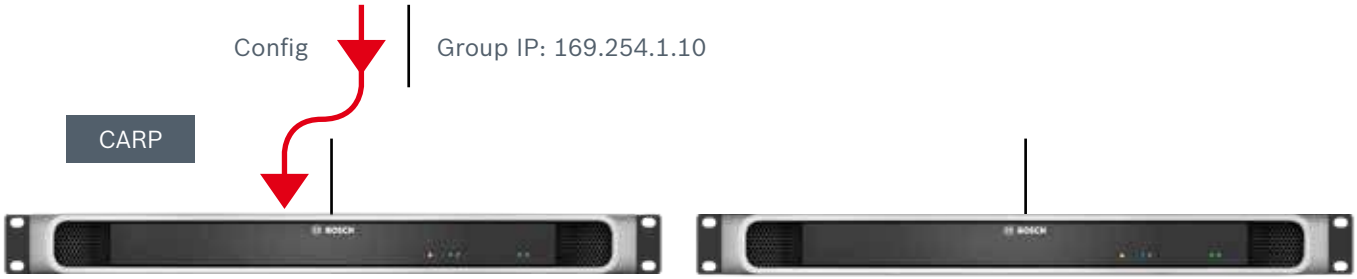
- ▷ E.g.: System-Controller**.local**

Both controllers can be accessed via the Group IP address

- ▷ E..g. 169.254**.1.10**

All further system configuration is done on the duty controller.
The following settings are copied automatically to the standby controller. This might take a few minutes, especially when a high number of pre-recorded messages have been uploaded in the system.

- Configuration
- Uploaded messages
- Event logging
- Device status information.



Duty SC IP: 169.254.189.231

StdBy SC IP: 169.254.172.45

Front panel link LED

Link to standby controller

Green: OK
Yellow: Link lost
Blue: Standby for redundancy.

Compatibility

PRAESENSA software release 1.10 onwards.

For more information and software download please visit:

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