



## Distributed Alarming System (DAS)

# Nihon Kohden's Distributed Alarming System (DAS)

**SmartPager is a Distributed Alarm System that provides doctors and Nurses specifically relevant alarm messages, with the possibility to send the notifications directly on mobile devices.**

**This improves the clinical workflow, reduces clinically irrelevant actions and thus increases patient safety. Extensive application and situation-specific configuration options are available to customize your individual needs.**

For example, it is possible to forward only certain categories of alarms or only alarms of certain beds onto the mobile devices of the assigned nurse. Individual shift-specific configurations can be set automatically or easily entered by users on a browser-based interface, even directly on the pager.

This flexibility allows the adequate allocation of nurses to patients is guaranteed at all times.

SmartPager helps the hospital staff to distinguish the important messages from the uncritical, and to

react adequately as well, thanks to the individually configurable forwarding of alarm messages to mobile devices.

Via the user interface on your phone (Android smart-phones) it is possible to accept or reject alerts, or forward it to another colleague without the need of another interaction or the knowledge of their availability. In addition, the mobile terminal can be used to directly call for help in difficult situations. That's how the system works help to distribute the workload on the ward in a targeted manner.

The screenshot shows the configuration interface for 'NICU Day Action 1'. On the left, a sidebar lists 'Department Work Shifts' with 'NICU' expanded to 'Day (Active)', where 'Action 1' is selected. The main area features a grid of 20 columns (5 rows of 4) representing different mobile devices (IDs: 1273, 10001, 10002, 10003) and various hospital beds (2 NICU, 888 NICU, BED1, BED10, BED111 NL..., BED2, BED3, BED4, BED5, BED7, BED8, n1 NICU). Green bars indicate which devices are configured to receive alerts for each bed. A red bar is visible under 'BED7' in the first column. At the top right, there are 'Save', 'Close', and 'Refresh' buttons, and an 'Actions escalation: 1' indicator. An 'Info' button is located at the bottom left.

# Functional components

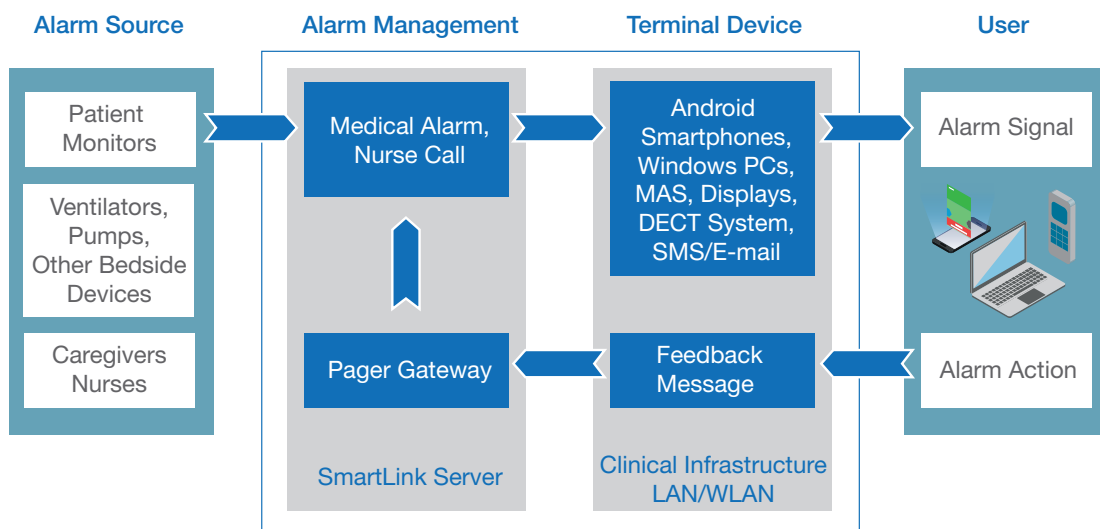
The distributed alarm system consists of several components that, together, ensure the forwarding of patient-related alarm signals to defined doctors and nurses.

**Nihon Kohden patient monitoring (Life Scope series and Vismo) and telemetry** devices: as a scalable and configurable system adopt to different Clinical environments and patient conditions – both, at the bedside and during transport.

**Communication Gateway Server** offers a variety of communication interfaces, ensuring the same Data availability and consistency for subsystems of all types.

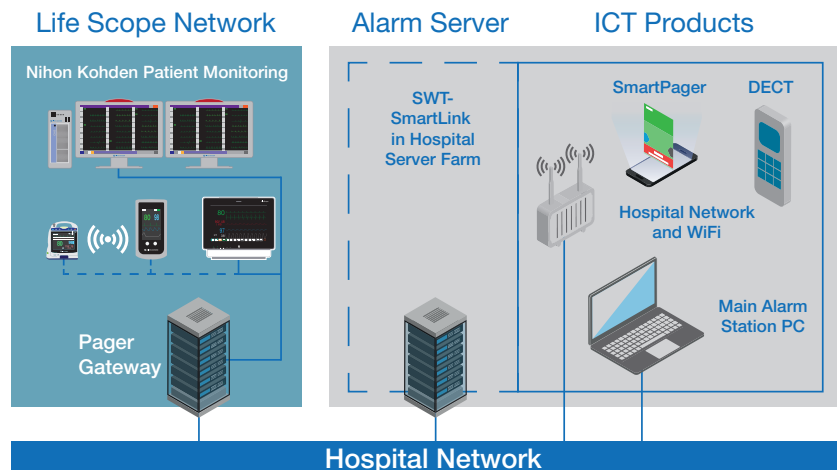
**SmartLink Server** allows, as a core device in a distributed alarm system, the generation and distribution of alarm signals remote from the patient. In addition other local Alarm sources (like pumps or ventilators) can be connected too.

**Mobile (and stationary) terminals** allows the receipt and acknowledgment of text based alarm information. Furthermore, it allows pushing help calls.



# System design

Central components of the system are the medical device SmartLink from SWT transferring alarms reliable to mobile devices (SmartPager App on Android devices) as well as the software module CGS-9001 (Pager Gateway Communication plug-in) for installation on the Nihon Kohden Unified Gateway



#### Specification SmartLink VM (alarm server)

- Processor: 2 processors
- RAM (64bit OS): 8 Gbyte
- Storage (available disk space): 80 Gbyte
- Graphic card <undefined>
- Virtualization OS: ESXi5.5.0 VMware virtualization system (or later)
- Operating System: Windows 7 Professional, Windows 10, Windows Server 2012, Windows Server 2016, Automatic Windows Updates disabled
- Web server: IIS 6 or later
- Internet Browser: Internet Explorer 9 or later

#### Specification SmartPager (mobile devices)

WLAN requirement for mobile devices:

- 100% area coverage if possible
- WPA/WPA2 PSK or enterprise
- 2.4GHz (802.11bg) or 5GHz (802.11a/n/ac, recommended),
- min. -65dBm at the cell borders, min 25dB SNR, min 20 dB co-channel separation
- Separate VLAN, dedicated SSID

## Improving Healthcare with Advanced Technology



Since its foundation back in 1951, Nihon Kohden's mission has been to improve the quality of life with advanced technology. We provide solutions for diagnosis, critical care, clinical information, and in vitro diagnostics – and we are dedicated to collaborate with you to meet the challenges of healthcare today and tomorrow.

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