



SOLUTIONS

HEALTHCARE



. . . connecting your business

Network solutions for Hospitals and Care Facilities

- Wireless LAN Internet access for patients
- Electronic ward rounds
- Food orders via tablet PC
- Constant monitoring of vital signs
- Voice-over-WLAN for doctors' telephones

LANCOM
Systems

Requirements & projects

Administrative overheads, tight budgets, limited time for patient care – the demands in today's hospital environment are tough. Modern networking solutions help hospitals and care facilities to minimize time-intensive and error-prone tasks, and to free-up more resources for patient care. They also enable clinics to cut costs and to attract patients with interesting extras such as wireless Internet access.

- Internet access for patients
- Implementation of electronic patient files
- Food orders via tablet PC
- Constant monitoring of intensive-care patients, even when they are being moved within the clinic
- Doctors can be reached more easily, and telephone costs cut by introducing Voice-over-Wireless LAN for medical personnel

LANCOM solutions

LANCOM has years of experience in equipping clinics and care facilities with wireless LAN and VPN. As a result, our portfolio of products fulfills all of the relevant approvals. Clinics can employ wireless LAN solutions from LANCOM in all relevant areas of patient care. LANCOM offers:

- WLAN access points and controllers with approvals for operation in medical environments according to EN 60 601-1-2
- Public Spot Option for easy, legally compliant operation of Internet access for guests (Hotspots)
- Web content filter for control over Internet access (e.g. blocking of illegal websites)
- VPN solutions for interconnecting multiple sites
- VLAN-capable switches for end-to-end network virtualization
- Dräger Validation for operation with Infinity® Patient Monitoring Systems

Dräger

LANCOM advantages

The LANCOM product portfolio offers high performance and several advantages for operation in medical environments, including:

- Excellent WLAN coverage and roaming, 120-Mbps net data rates
- Easy operation of the Wireless LAN hotspot; no expert knowledge required
- High-availability WLAN thanks to LANCOM's innovative "Smart Controller" architecture
- Optimum protection of sensitive patient-data through secure encryption and authentication
- Optimized VoWLAN support with QoS, prioritization & power-save functions for longer battery life
- Low operating costs from central, standardized management for all access points and routers, including those at remote sites
- Maximum investment with free lifetime updates
- **Active support in all phases of your project: Conceptualization, installation & operation**

Example: Multifunctional WLAN

Based on a single LANCOM WLAN infrastructure, the clinic achieved a long-term optimization of their processes and services: Electronic ward rounds provide the doctor with all diagnostic findings directly at the patient's bedside, current values and medications can be entered into

the system directly, and there's no need for that time-consuming and error-prone entry of hand-written notes into the computer. Food ordering has been modernized in a similar fashion: Staff use tablet PCs to take the patients' orders, and these are transmitted straight to the kitchen. The

Clinic

Patients' WLAN Clients
(2.4 / 5 GHz):
Internet access via hotspot
(VLAN 1)



VLAN 1:
Patients

VLAN 2:
Food ordering

VLAN 3:
Electronic ward rounds,
internal network

VLAN 4:
Monitoring
of vital signs

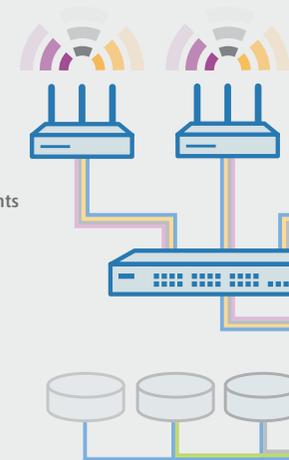


Content filter



WLAN hotspot
Administration

LANCOM access points
Single / dual radio
(2.4 / 5 GHz)



Data center

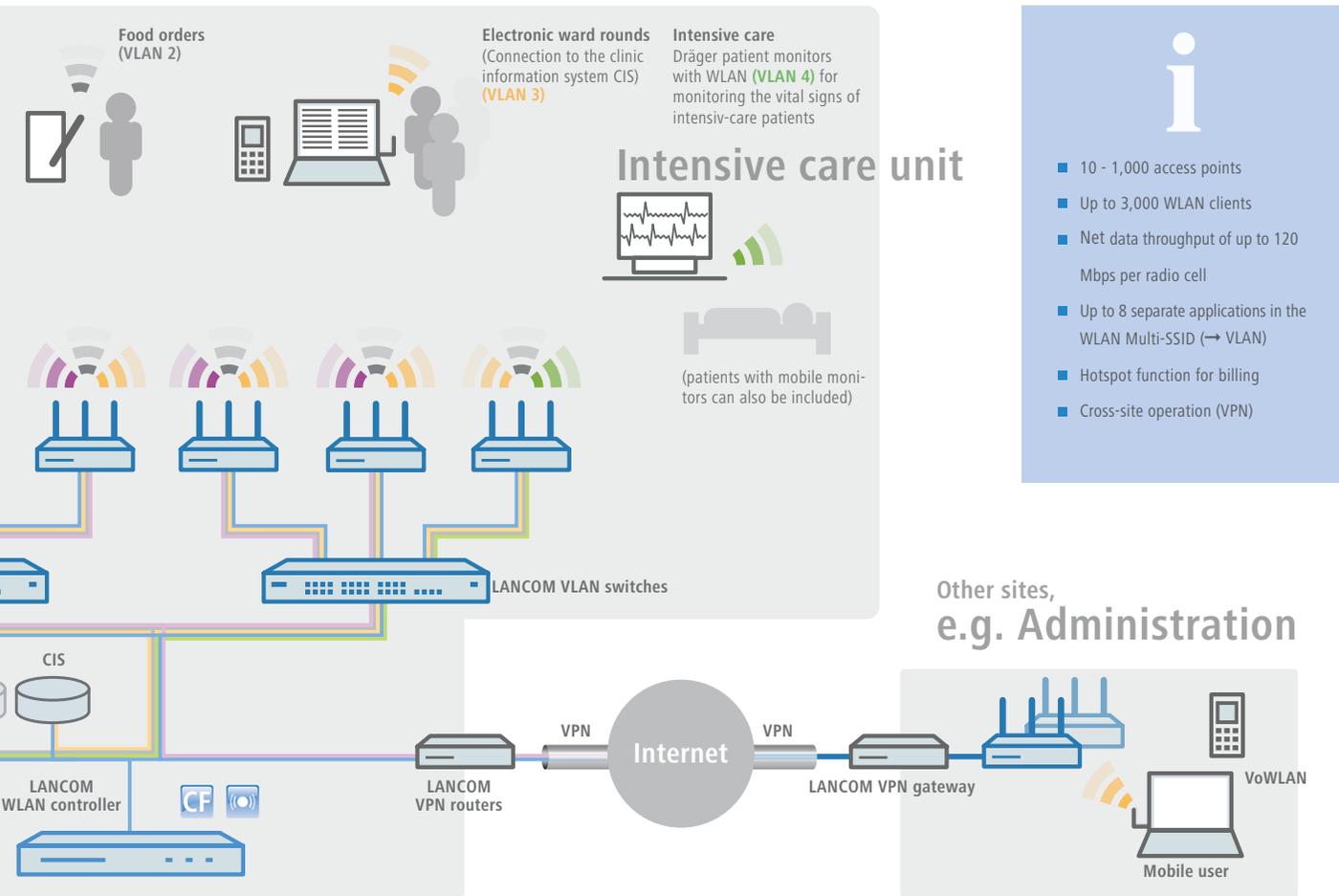
Infrastructure for Internet guest access, mobile ward rounds, etc.

benefits include quicker communications and better planning. The clinic also uses the wireless network for key tasks in intensive care: The patients' vital signs are transmitted to the central monitoring system via wireless LAN. Monitoring is continuous, even when

patients are being moved between wards. The same WLAN provides doctors with telecommunications using the latest Voice-over-WLAN mobile telephones for instant communications without connection fees. Patients enjoy WLAN-based guest Inter-

net access accounts which have been set up on selected wards. Thanks to the web content filter, the clinic is assured that the Internet access cannot be used for illegal activities. All of the services – public, internal, telephony – operate with the same infrastructure, and yet they remain strictly

separated from one another. After all, the protection of confidential patient data is a top priority. Furthermore, intelligent failsafe technologies guarantee highest availability of the WLAN. VPN can be employed to inter-connect any number of different sites.



- 10 - 1,000 access points
- Up to 3,000 WLAN clients
- Net data throughput of up to 120 Mbps per radio cell
- Up to 8 separate applications in the WLAN Multi-SSID (→ VLAN)
- Hotspot function for billing
- Cross-site operation (VPN)



SOLUTIONS FROM LANCOM MEET THE VERY HIGHEST SECURITY STANDARDS

Hospitals and care facilities must observe the very highest security standards. After all, it is highly sensitive patient data that is under protection. This is where LANCOM solutions offer maximum security:

- Complete protection of the WLAN with WPA2/802.11i encryption and authentication as per 802.1x/EAP
- Strict separation of the public and internal hospital networks by means of VLAN and Multi-SSID
- Cross-site 24/7 monitoring of WLAN security policies, including certificate-based authentication of access points
- Background scanning for rogue AP detection
- High-performance stateful inspection firewall including Denial-of-Service protection
- Assured data integrity of inter-site communications thanks to IPsec VPN



SOLUTIONS FROM LANCOM OFFER UNPRECEDENTED STABILITY

Stability of the WLAN is of utmost importance when transmitting patient vital signs. Similarly, electronic ward rounds and the use of VoWLAN for doctors' telephones can only be relied upon when the wireless network offers uninterrupted availability. LANCOM solutions offer:

- Excellent signal coverage for communication without dead zones
- Fast client roaming for uninterrupted transmission of mobile signals
- Excellent voice quality and stability thanks to Quality-of-Service (QoS) and bandwidth management
- IGMP snooping for the targeted forwarding of multicast packets (e.g. for Dräger patient-monitoring equipment)
- No single point of failure: Even if a controller should fail, the WLAN continues to work without performance loss
- Redundancy for VPN routers and gateways (e.g. via ISDN, UMTS, cluster mode)

Example: Multifunctional WLAN infrastructure for Internet guest access, mobile ward rounds, etc.

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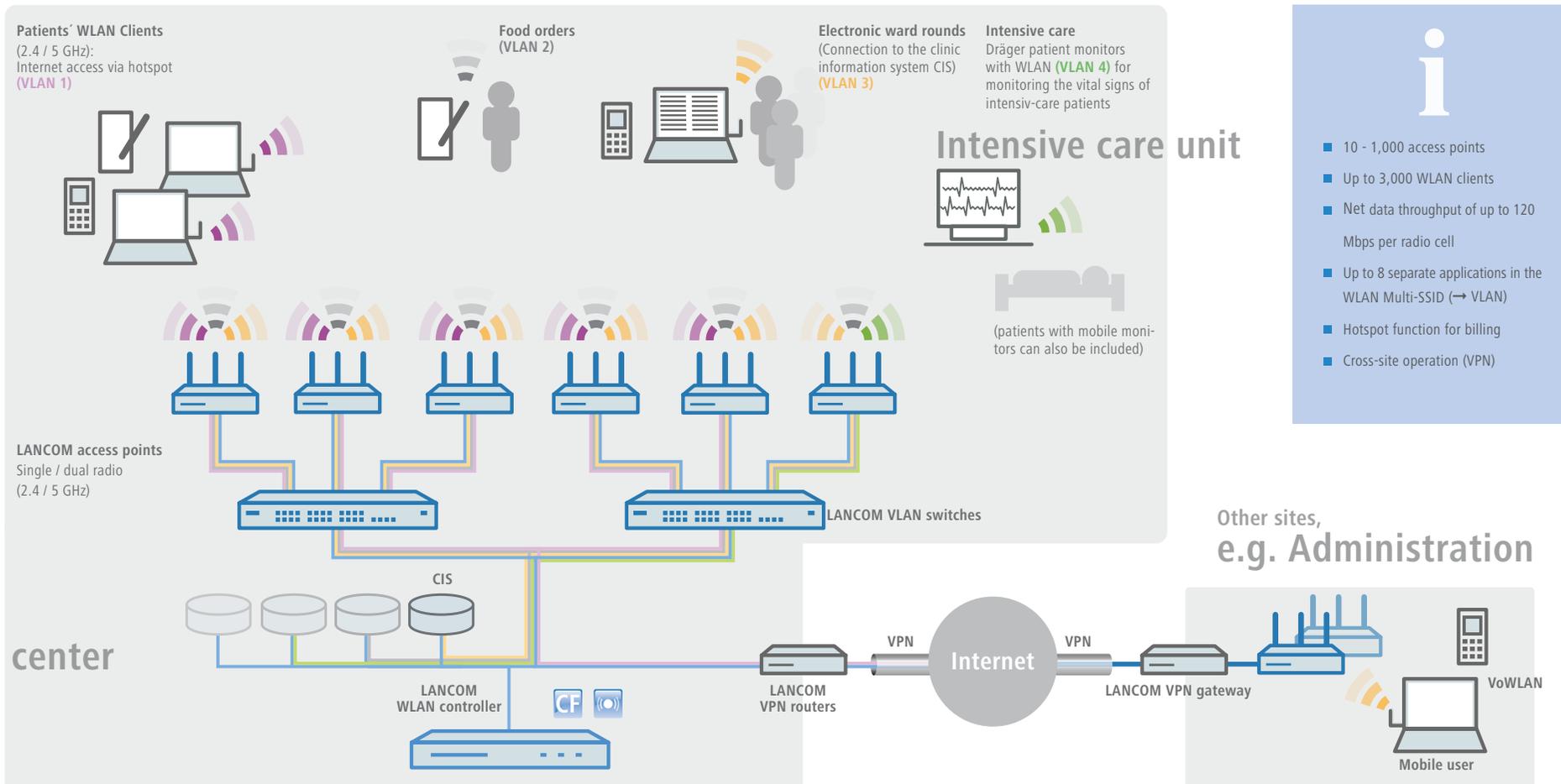
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Clinic



VLAN 1:
Patients

VLAN 2:
Food ordering

VLAN 3:
Electronic ward rounds, internal network

VLAN 4:
Monitoring of vital signs

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Numerous hospitals and care facilities all over Europe have successfully optimized their internal processes with solutions from LANCOM, including:

- Regioklinik, Uetersen
→ User Report



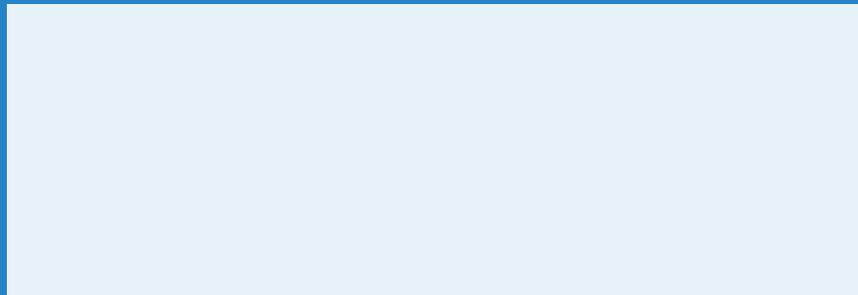
- Diakonessenhuis, Utrecht (Netherlands)
→ User Report



- Evangelisches Johannesstift SbR Berlin
- Revilidatie Centrum, Amsterdam
- Katholische Stiftung Marienhospital Aachen



More information on LANCOM solutions for the healthcare industry can be found at: www.lancom.eu/healthcare



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07/10