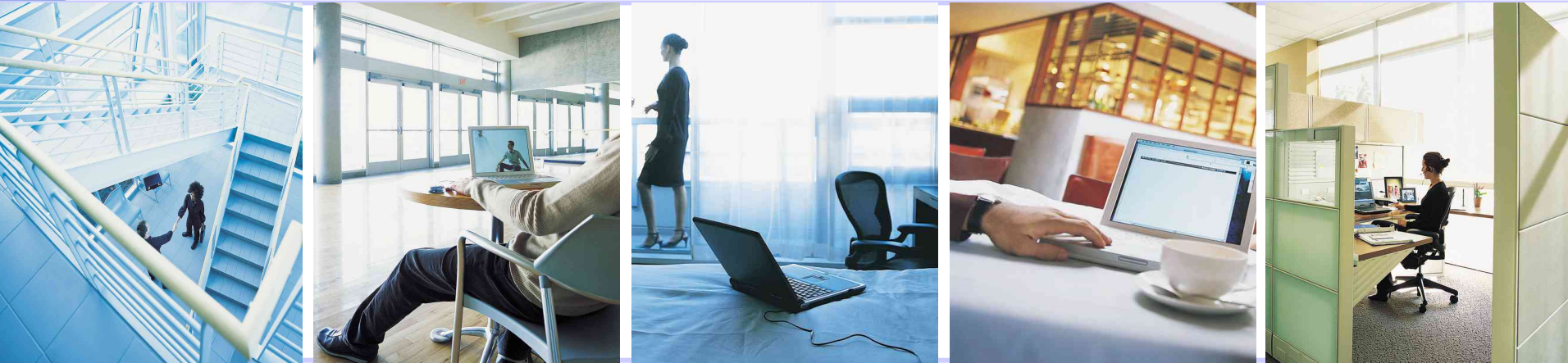


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**LANCOM Software Version 3.32**

**March 2004**

**LCOS** 3.32  
[LANCOM OPERATING SYSTEM]

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## Contents

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**On the following pages we would like to give an overview of the new features and enhancements of this new LANCOM software.**

**In particular, the following items will be covered:**

- ▶ New LCOS version 3.32 - highlights
- ▶ New LANtools Features
- ▶ Service and Support

*Regarding previous LCOS versions you will find information on the LANCOM CD: ,documentation'*

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## New LCOS Version 3.32

### Highlights:

▶ Supported LANCOM models:  
800, 1000, 1100,  
2000, DSL/10,  
DSL/I-10, DSL/1610,  
DSL/I-1611, 821,  
1621, 4000 series,  
6000 series,  
Wireless L-11/IL-11,  
7011 VPN, L-54  
Wireless, 3050 and  
3550 Wireless,  
LANCOM 1511  
Wireless DSL,  
LANCOM 1811  
Wireless DSL

▶ also for ELSA  
LANCOM and  
Telecom T-Octopus  
LAN

- ▶ VPN-Upgrade
- ▶ New LANconfig and new LANmonitor
- ▶ Extended Quality-of-Service features
- ▶ VLAN support
- ▶ N:N IP mapping
- ▶ New LANCOM Reference Manual

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## New LANtools Features

Extension for VPN gateway functions: 5 VPN channels integrated (instead of 2 channels)

▶ VPN 5: five simultaneously, 25 configurable VPN tunnel

▶ Optional: upgrade to 25 VPN channels (incl. VPN hardware accelerator for 1811/1821)

Integrated 5 channels **VPN licence by LCOS 3.32 Update:**

- ▶ LANCOM DSL/I-1611 Office
- ▶ LANCOM 1621 ADSL/ISDN
- ▶ LANCOM 1811 Wireless DSL
- ▶ LANCOM 1821 Wireless ADSL

**Free of charge and retroactive** for all products of listed series!

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**LC.OS 3.32**  
[LANCOM OPERATING SYSTEM]

## New LANconfig

### LANconfig

- ▶ Multitasking – project management and monitoring
- ▶ hardware integration and configuration
- ▶ registration of change history

The screenshot shows the LANconfig application window titled "LANconfig - \Branch\_offices". The interface includes a menu bar (File, Edit, Device, View, Tools, Help) and a toolbar. On the left, a tree view shows the project structure: LANconfig, Branch\_offices, Client01, Client02, and Internal. The main area displays a table of devices with their names, addresses, device status, and progress bars. A callout box labeled "Multitasking" points to the progress bars. Below the table is a log window with columns for Date, Time, Name, Address, and Message, showing a list of "Firmware upload started" events for various devices. A callout box labeled "Logging" points to this log window.

Name	Address	Device Status	Progress
DRESDEN	10.1.202.192	Uploading firmware .	53% (68968 Bytes/s)
GERA	10.1.202.193	Uploading firmware .	58% (69240 Bytes/s)
GOETTINGEN	10.1.202.194	Uploading firmware .	58%
ERFURT	10.1.202.198	Uploading firmware .	57%
GOERLITZ	10.1.202.199	Uploading firmware .	53%
NUERNBERG	10.1.202.210	Uploading firmware .	59%
HOERSWERDA	10.1.202.211	Uploading firmware .	53%
MAGDEBURG	10.1.202.213	Uploading firmware .	57%
KOETHEN	10.1.202.217	Uploading firmware .	55%
LEIPZIG	10.1.202.218	Uploading firmware .	32% (21644 Bytes/s)
TEMPELHOF	10.1.202.219	Uploading firmware .	46% (53706 Bytes/s)
MERSEBURG	10.1.202.220	Uploading firmware .	58% (50486 Bytes/s)
WITTENBERG	10.1.205.137	Uploading firmware .	42% (66901 Bytes/s)
ANGERMUENDE	10.1.206.211	Uploading firmware .	54% (62541 Bytes/s)

Date	Time	Name	Address	Message
27.01.2004	10:38:00	LEIPZIG	10.1.202.218	Firmware upload started
27.01.2004	10:38:00	TEMPELHOF	10.1.202.219	Firmware upload started
27.01.2004	10:38:00	MERSEBURG	10.1.202.220	Firmware upload started
27.01.2004	10:38:00	WITTENBERG	10.1.205.137	Firmware upload started
27.01.2004	10:38:00	ANGERMUENDE	10.1.206.211	Firmware upload started
27.01.2004	10:38:00	CHEMNITZ	10.1.206.212	Firmware upload started
27.01.2004	10:38:00	ADLERSHOF	10.1.206.213	Firmware upload started

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[LANCOM OPERATING SYSTEM]

## New LANmonitor

### LANmonitor

- ▶ Real-time remote monitoring per SNMP trap
- ▶ Monitoring of all relevant technical events
- ▶ Recording of all changes

The screenshot displays the LANmonitor application window. The main window shows a tree view of system components on the left and a list of device activities in the center. A context menu is open over the 'View Device Activities' option. A speech bubble points to the 'activity protocol' column in the activity list. Another speech bubble points to the 'Log Device events' checkbox in the 'Activity options for RAVENSBURG' dialog box.

In...	Date	Time	Source	Message
18	3/2/2004	7:46:2...	VPN	Connected to MAGDEBURG (via INTERNET)
19	3/2/2004	7:46:2...	VPN	Connected to MERSEBURG (via INTERNET)
20	3/2/2004	7:46:2...	VPN	Connected to NUERNBERG (via INTERNET)
21	3/2/2004	7:46:2...	VPN	Connected to OSNABRUECK (via INTERNET)
22	3/2/2004	7:46:2...	VPN	Connected to ROUTER41 (via INTERNET)
23	3/2/2004	7:46:2...	VPN	Connected to ROUTER42 (via INTERNET)
24	3/2/2004	7:46:2...	VPN	Connected to ROUTER43 (via INTERNET)
25	3/2/2004	7:46:2...	VPN	Connected to ROUTER44 (via INTERNET)
26	3/2/2004	7:46:2...	VPN	Connected to ROUTER45 (via INTERNET)
27	3/2/2004	7:46:2...	VPN	Connected to ROUTER46 (via INTERNET)
28	3/2/2004	7:46:2...	VPN	Connected to ROUTER47 (via INTERNET)
29	3/2/2004	7:46:2...	VPN	Connected to ROUTER48 (via INTERNET)
30	3/2/2004	7:46:2...	VPN	Connected to ROUTER49 (via INTERNET)
31	3/2/2004	7:46:2...	VPN	Connected to ROUTER50 (via INTERNET)
32	3/2/2004	7:46:2...	VPN	Connected to TEMPELHOF (via INTERNET)
33	3/2/2004	7:46:2...	VPN	Connected to WITTENBERG (via INTERNET)

**Activity options for RAVENSBURG**

Record

Entry Filter

- Log Device events
- Log WAN connections
- Log WLAN connections
- Log VPN connections
- Log LANCAPI connections
- Log a/b-pots connections
- Log actions of Firewall

OK Cancel

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## Extended Quality-of-Service features

Optimum Voice-over-IP for voice quality via VPN connections.

Also available to the already integrated (send-side) bandwidth management:

- ▶ **Receive-site** QoS mechanisms
  - ▶ Dynamic download „**slow down**“
- ▶ **Automatically packages adaption**
  - ▶ setting PMTU or fragmentation
  - ▶ **Jitter** reduction
- ▶ new **DiffServ-Trigger** in IP Router and Firewall

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## Quality-of-Service (QoS)

 VoIP package

 Data package



Voice...



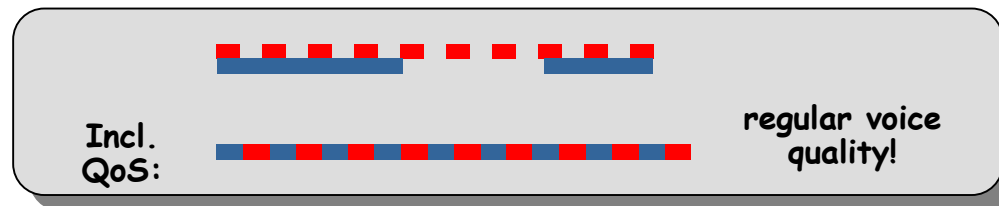
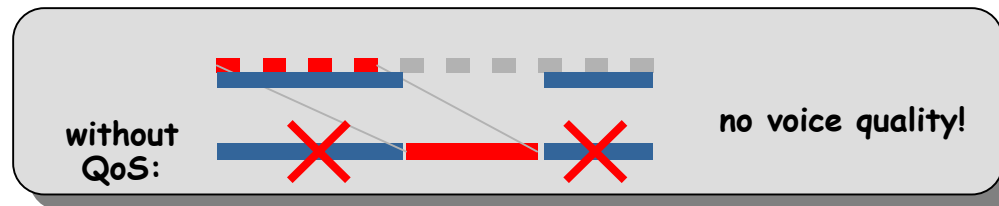
... plus Data



- Only one connections?

### Range of application

- Crosslinkink of VoIP telephone system incl. VPN location coupling
- Securing of optimum voice quality despite of transmission via standard DSL Internet links





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**LCOS** 3.32  
[LANCOM OPERATING SYSTEM]

## Dynamic download „slow down“

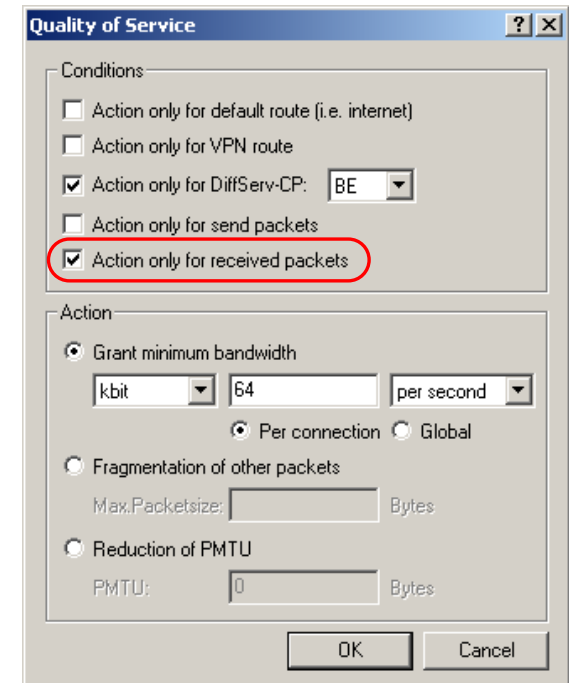
### Reservation of minimum bandwidth

- ▶ only towards transmitter
- ▶ only towards reception
- ▶ towards transmitter and reception (default)

### Receive-site minimum bandwidth

Incoming data packages (e.g. downloads from the Internet) could be delayed dynamically now.

Thus real-time connections e.g. VoIP telephony will not longer be affected by data links.



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„chop up“ great data packages

## Jitter

▶ An ADSL line with 128 kBit upstream will be occupied for 93 ms by a maximally great data package (1500 Byte)

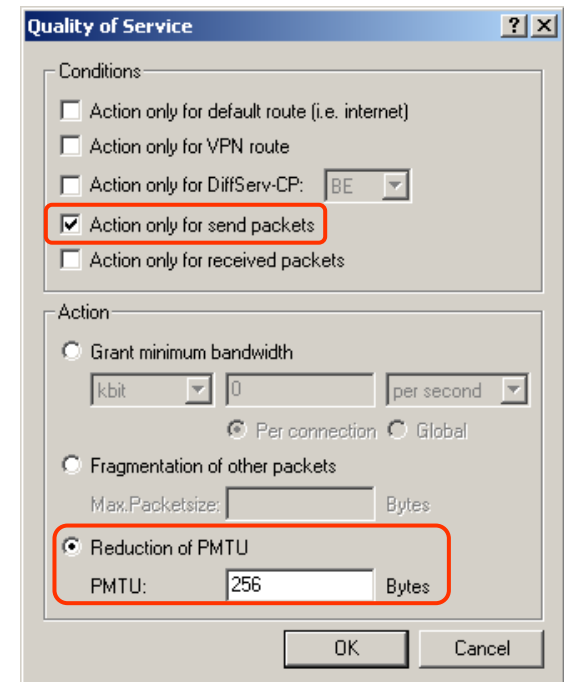
▶ During this time a VoIP package could be send

▶ This additional delay („Jitter“) could be reduced to 16 ms by reducing maximum package to 256 Bytes

## Reducing of Jitter – for connections with low bandwidth

With VoIP telephony on connections based on low transmitter speed (e.g. ADSL) it is possible that transmission of great data packages will source the route for such a large period, that speech cutouts become audible.

With PMTU reducing and automatically fragmentation great data packages can be cut up so far, that they will block no longer transmission route significant.



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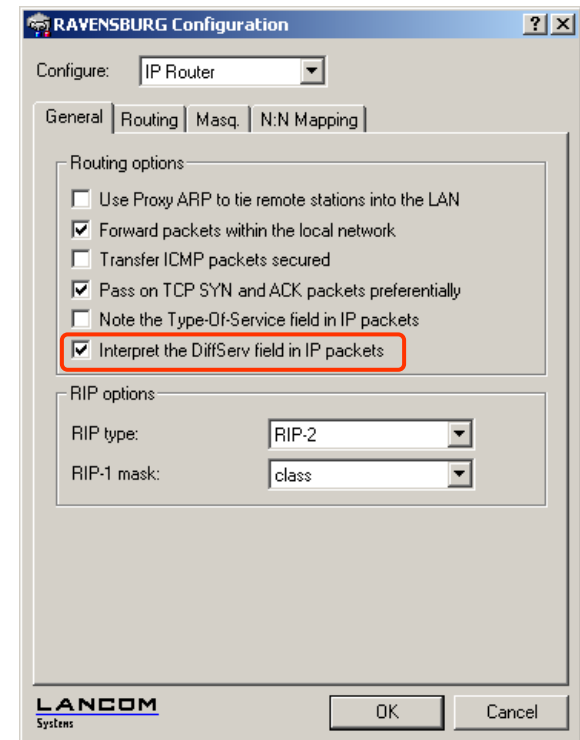
## „DiffServ“ Trigger (1/2)

### DiffServ

- ▶ Marking of IP packages with certain priority attributes
- ▶ Normal, not prioritise packages processes automatically marking BE („Best Effort“)
- ▶ These packages are rejected with data back-up as first

For the preferred transmission of packages with **DiffServ-Markierungen** via IP Router

- ▶ Highest priority: DiffServ EF *„Expedited Forwarding“*
- ▶ Medium priority : DiffServ AF *„Assured Forwarding“*
- ▶ Normal priority: DiffServ BE *„Best Effort“*



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## „DiffServ“ Trigger (2/2)

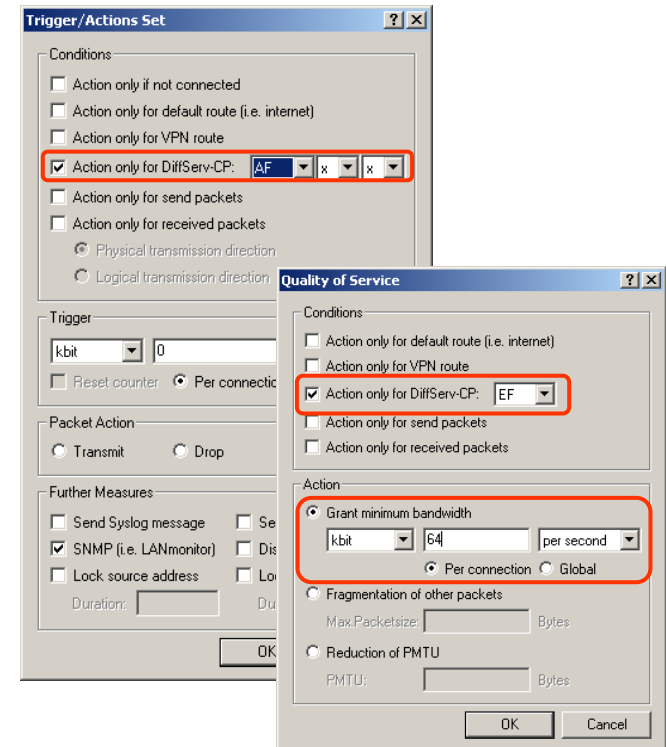
### DiffServ

▶ Terminals e.g. VoIP phones could mark data correspondingly

Evaluation of DiffServ priorities in Firewall and QoS rules, for example:

▶ secured transmission of the VoIP signaling („AF“)

▶ dynamic reservation of bandwidth for VoIP („EF“)



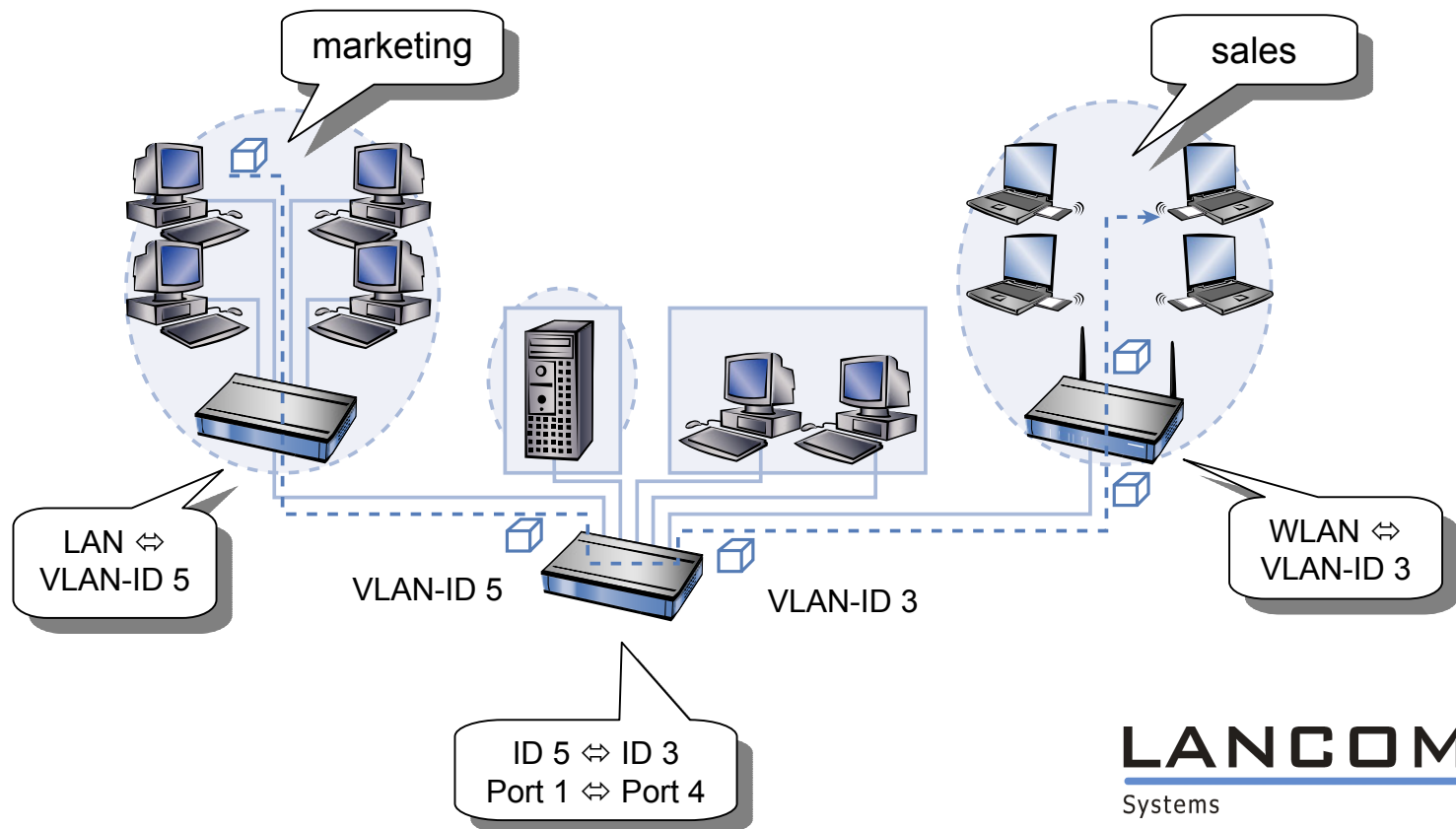
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## Virtual LANs (VLANs)

### VLAN

- ▶ „Virtuals LANs“
- ▶ Separate networks use common infrastructure
- ▶ VLAN-ID connecting segments
- ▶ Normal ethernet (LAN / WLAN) in the segments
- ▶ VLAN-Prio enabled Quality-of-Service

### Common infrastructure, separate networks



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## VLAN – application examples

### VLAN

▶ „VLAN-Switches“ couples only fixed VLAN IDs from the common net

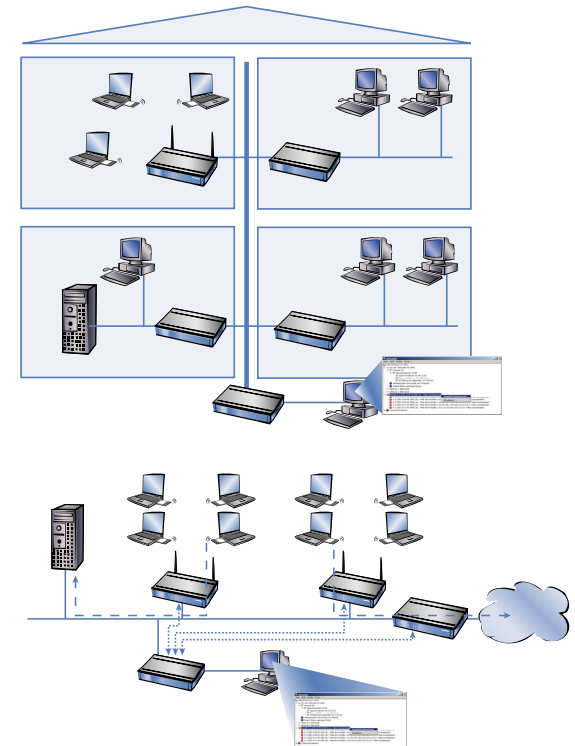
▶ Normal ethernet behind the VLAN able Switches

▶ All LANCOM products equipped with WLAN now do support VLAN

▶ Existing Ethernet cabling can be used by several companies

▶ Separation of the user data from the device management in WLAN installations

▶ Common use of Wireless radio link

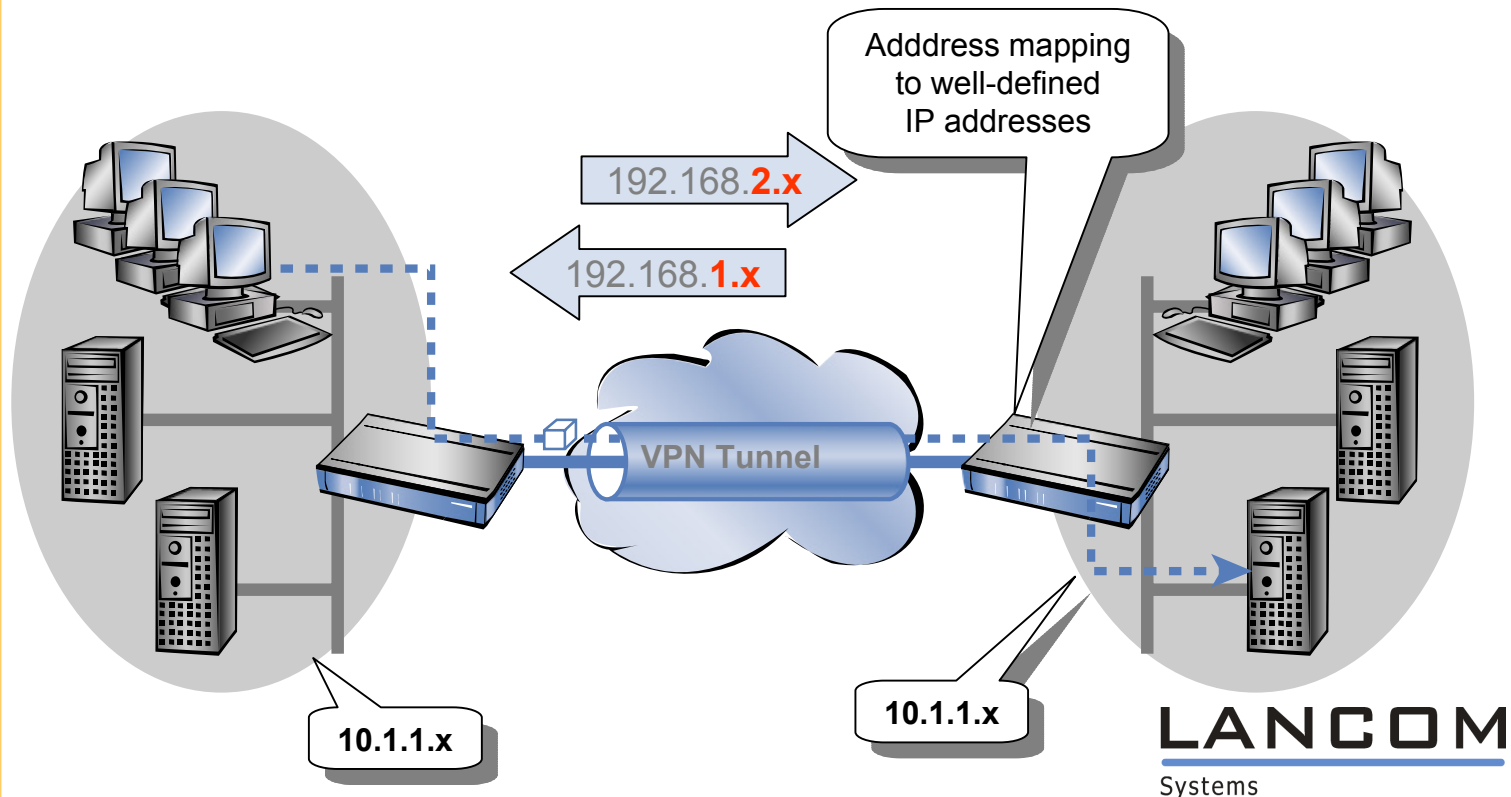


## N:N IP Mapping

### N:N-Mapping

- ▶ For all LANCOM products with VPN features
- ▶ For whole networks
- ▶ For several IP addresses
- ▶ For well-defined management addresses (,Loopback)

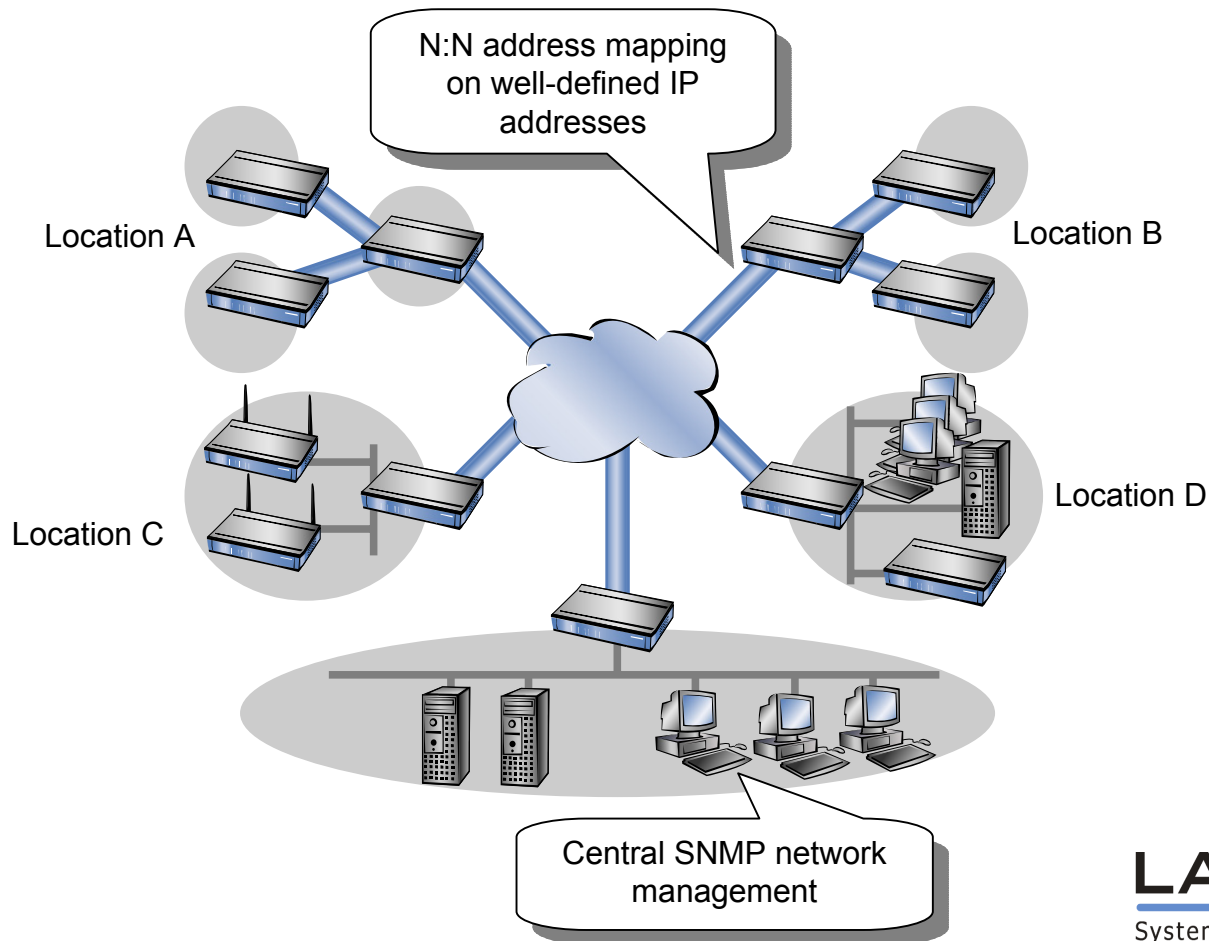
### VPN network coupling also with identic IP networks



## Central Network Management

### Central SNMP management

- ▶ All locations are connected via **VPN**
- ▶ Real time state monitoring via **SNMP-Traps**
- ▶ Well-defined IP addresses through **N:N mapping**





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## Wireless LAN Enhancements

### **Rangemanagement and 802.11g compatibility mode**

Enhanced algorithms in LCOS 3.30 give you a longer range in the radio standards 802.11a und 802.11g, as well as in 802.11g compatibility mode a higher performance.

### **Quality-of-Service for Wireless LAN radio links**

The WLAN module prioritizes data streams considering the VLAN priority field. Due to this radio links can access 8 send queues.

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## Reference Manual

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### LANCOM Reference Manual – new edition

- ▶ 270 pages of background information, tips for your realisation and detailed description of all functions
- ▶ New chapters:
  - ▶ Management, VLAN, QoS, Systemdesign, ...
  - ▶ Reworked firewall chapter
  - ▶ Feature chronology, SNMP Trap lists, RFC lists, ...
- ▶ As PDF in [download area](#) and on [LANCOM CD](#)
- ▶ Now also available as printed book!

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## Other Highlights

You can find a complete and **detailed history of changes** here:

- ▶ LANCOM CD in folder „Firmware“
  - ▶ [LCOS 332 DE.pdf](#)
- ▶ LANCOM CD in folder „LANtools“
  - ▶ [LANTOOLS 332 DE.pdf](#)

Furthermore all these documents and LCOS versions are available on our website:

- ▶ [www.lancom.de/download](http://www.lancom.de/download)

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## Service and Support

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**We wish you all the best with your new LANCOM product!**

**We would be glad to receive your feedback – either positive or negative, as well as feature suggestions via email to [info@lancom.de](mailto:info@lancom.de).**

**Please find actual support information in the enclosed support leaflet, on our Internet support site, or in our Support database (KnowledgeBase) under [www.lancom.de/support](http://www.lancom.de/support).**

**In case you were not able to resolve your questions by reading our manuals, please contact your local distributor for further assistance.**

**Your LANCOM Systems Team.**

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