



. . . c o n n e c t i n g   y o u r   b u s i n e s s

## LANCOM 1722 VoIP

Business VoIP gateway especially for ISDN and SIP telephony for small and mid-sized sites and branch offices with complex ISDN infrastructure

- Four ISDN ports (NT/TE) for 8 parallel ISDN channels
- VoIP switching functions for up to 32 SIP subscribers
- SIP proxy for registration with providers and upstream VoIP PBXs
- SIP/ISDN gateway with transparent transition between SIP and ISDN
- Intelligent call routing and number translation
- Stateful-inspection firewall and VPN gateway

The business VoIP-VPN gateway LANCOM 1724 VoIP is especially designed for integrating smaller and mid-sized sites into existing complex ISDN infrastructures.

Four switchable ISDN ports offer flexibility and investment protection for the migration of existing ISDN PBXs to Voice over IP. It can cater for up to 32 direct telephony subscribers, or it can break-out any number of subscribers to Internet SIP gateways.

It supports ISDN point-to-point connections, i.e. with a main number and extension numbers, and it supports SIP trunking as well, all of which makes the LANCOM 1724 VoIP a business solution that is ready for the future.

#### **More Telephony.**

With Voice of IP, telephone calls can be automatically directed over existing VPN connections between company sites. Not only are these calls secured from interception; by using flatrate connections, there are no additional call costs, either.

Four ISDN ports can be freely configured as internal or external connections and offer eight parallel ISDN voice channels. This allows, for example, an existing ISDN PBX to be additionally equipped with SIP and connected to an upstream VoIP PBX. Subscribers can simultaneously make calls via ISDN telephones, SIP equipment, or softphones to other SIP or ISDN subscribers, both internally and externally. Comprehensive backup and redundancy functions make communication via Voice over IP just as reliable as ever.

#### **More Security.**

The integrated firewall with the latest security functions such as stateful inspection, Intrusion Detection and Denial-of-Service protection is supplemented by dynamic bandwidth management and comprehensive functions for backup, high-availability and redundancy. The integrated VPN gateway that fulfills the IPSec standard, and the optional hardware accelerator provide optimal security for connecting telecommuters and branch offices thanks to the high-security 3-DES or AES encryption and support of digital certificates.

#### **More Benefits.**

The versatile functions for address translation and routing allow completely different networks to be connected over common infrastructure. Existing networks at partner companies, home-office workstations or subsidiaries can be integrated into the VPN without problem. The management systems LANconfig and LANmonitor are included and offer not only cost-effective remote maintenance of entire installations along with highly convenient setup wizards, but also full real-time monitoring and logging. What's more, service providers benefit from the broad range of scripting methods and professional access with individual access rights for administrators via SSH, HTTPS, TFTP and ISDN dial-in.

#### **More Certainty for the Future.**

From the very start, LANCOM products are designed for a product life of several years. They are equipped with hardware dimensioned for the future. Even reaching back to older product generations, updates to the LANCOM Operating System—LCOS—are available several times a year, free of charge and offering major features. LANCOM offers unbeatable protection of your investment!

# LANCOM 1722 VoIP

<b>Firewall</b>	
Stateful inspection firewall	Direction-dependant check based on connection information
Packet filter	Check based on the header information of an IP packet (IP or MAC source/destination addresses; source/destination ports, DiffServ attribute); remote-site dependant, direction dependant, bandwidth dependant
Masquerading	Network Address Translation (NAT), N:N mapping for the translation or masking of IP addresses
Port mapping	Provision of services from behind masqueraded computers, for example, to make an internal web server available from the outside (inverse masquerading)
Tagging	The firewall marks packets with routing tags, e.g. for policy-based routing
Actions	Forward, drop, reject, block sender address, close destination port, disconnect
Messaging	Via e-mail, SYSLOG or SNMP trap
<b>Quality of Service</b>	
Traffic shaping	Dynamic bandwidth management with IP traffic shaping
Bandwidth reservation	Dynamic reservation of minimum and maximum bandwidths, absolute or connection-related, separate settings for send and receive directions
DiffServ/TOS	Priority packet queuing based on DiffServ/TOS fields
Packet-size control	Automatic packet-size control by fragmentation or Path Maximum Transmission Unit (PMTU) adjustment.
Layer 2/Layer 3 tagging	Automatic or fixed translation of layer-2 priority information (802.11p-marked Ethernet frames) to layer-3 DiffServ attributes in routing mode. Translation from layer 3 to layer 2 with automatic recognition of 802.1p-support in the destination device.
<b>Security</b>	
Intrusion Prevention	Monitoring and blockage of login attempts and port scans
IP spoofing	Source IP address check on all interfaces: The only accepted IP addresses belong to the previously defined IP network
Access Control lists	Filtering of IP or MAC addresses and preset protocols for configuration access and LANCAPI
Denial of Service protection	Protection from fragmentation errors and SYN flooding
General	Detailed settings for handling reassembly, PING, stealth mode and AUTH port
URL blocker	Filtering of unwanted URLs based on DNS hitlists and wildcard filters
Password protection	Password-protected configuration access can be set for each interface
Alerts	Alerts via e-mail, SNMP-Traps and SYSLOG
Authentication mechanisms	PAP, CHAP and MS-CHAP as PPP authentication mechanism
Anti-theft	Anti-theft ISDN site verification over B or D channel (self-initiated call back and blocking)
<b>High availability / redundancy</b>	
VRRP	VRRP (Virtual Router Redundancy Protocol) for non-proprietary backup in case of failure of a device or remote station. Enables passive standby groups or reciprocal backup between multiple active devices including load balancing and freely definable backup priorities
FirmSafe	For completely safe software upgrades thanks to two stored firmware versions, incl. test mode for firmware updates
ISDN backup	In case of failure of the main connection, a backup connection is established over ISDN; automatic return to the main connection
Analog/GSM modem backup	Optional operation of an analog or GSM modem at the serial interface
Load balancing	Static and dynamic load balancing over up to 4 WAN connections; channel bundling with Multilink PPP (if supported by network operator)
VPN redundancy	Control of up to 16 redundant VPN gateways for high availability or load balancing
Line monitoring	Line monitoring with LCP echo monitoring, dead-peer detection and up to 4 addresses for end-to-end monitoring with ICMP polling.
<b>VPN</b>	
Number of VPN tunnels	5 IPsec connections active simultaneously, 25 connections configurable
Hardware accelerator (optional)	Activated 3DES/AES hardware encryption with the VPN 25 option
IKE	IPsec key exchange with Preshared Key or certificate
Certificates	X.509 digital certificate support, compatible with Microsoft Server / Enterprise Server and OpenSSL, upload of PKCS#12 files via HTTPS interface
Certificate revocation lists (CRL)	CRL retrieval via HTTP
RAS user template	Configuration of all VPN client connections in IKE ConfigMode via a single entry
Proadaptive VPN	Automated configuration and dynamic creation of all necessary VPN and routing entries based on a default entry for site-to-site connections. Propagation of dynamically learned routes via RIPv2, if required.
Algorithms	3DES (168 bit), AES (128, 192 or 256 bit), Blowfish (128 bit), RSA (128 or -448 bit) and CAST (128 bit); MD-5 or SHA-1 hashes

# LANCOM 1722 VoIP

<b>VPN</b>	
NAT-Traversal	NAT-Traversal (NAT-T) support for VPN over routes without VPN passthrough
IPCOMP	VPN data compression based on LZS or Deflate compression for higher IPSec throughput
LANCOM Dynamic VPN:	Enables VPN connections from or to dynamic IP addresses. The IP address is communicated via ISDN B- or D-channel or with the ICMP or UDP protocol in encrypted form. Dynamic dial-in for remote sites via connection template
Dynamic DNS (dynDNS)	Enables the registration of IP addresses with a dynDNS provider in the case that fixed IP addresses are not used for the VPN connection
Specific DNS forwarding	DNS forwarding according to DNS domain, e.g. internal names are translated by proprietary DSN servers in the VPN; external names are translated by Internet DNS servers.
<b>VPN throughput (max.)*</b>	
1364-byte packet size	24 Mbps
265-byte packet size	6 Mbps
Notice	* all VPN figures with AES encryption and active VPN hardware acceleration
<b>Firewall throughput (max.)</b>	
1470-byte packet size	72 Mbps
256-byte packet size	9 Mbps
<b>VoIP</b>	
Call router	Central switching of all incoming and outgoing calls. Number translation by mapping, numeral replacement and number supplementation Configuration of line and route selection, entry of multiple alternative routes (line backup). Routing based on calling and called number, SIP domain and line. Manual routing by the user ("outside-line access codes"); routing with line-selection keys on telephones or telephone number prefixes; targeted routing for individual telephone numbers (e.g. emergency calls via local ISDN); separate routes for internal, local, long-distance or international calls; blocking of telephone numbers or blocks of telephone numbers; inclusion of local subscribers into the number range of an upstream SIP PBX; internal standard telephone number for undeliverable calls; supplement/remove line-related prefixes or switchboard numbers
SIP proxy	Management of local SIP users with optional automatic registration/authentication. Mapping of public SIP-provider accounts as telephone lines for shared use. Connection to up to four upstream SIP PBXs including line backup. SIP connections from/to internal subscribers, SIP providers and SIP PBXs with automatic login of SIP users at SIP providers/upstream SIP PBXs. Optional shared/individual password for authentication at an upstream SIP PBX. Automatic bandwidth management and automatic configuration of the firewall for SIP connections. Default DNS entry for the local SIP domains, service location (SRV) support
SIP gateway	Transparent conversion of ISDN telephone calls to SIP calls, and vice versa. Local ISDN subscribers register as local SIP users, and local ISDN subscribers automatically register as SIP users at upstream SIP PBXs/with SIP providers. Number translation between internal numbers and MSN/DDI (including telephone number blocks) or external numbers, plus automatic adaptation of calling numbers and called numbers at the transition.
SIP trunk	Outgoing call switching and incoming call reception based on extension numbers to/from SIP PBXs/SIP providers (requires support of the SIP-DDI functions compliant with ITU-T Q.1912.5 at the central exchange) with just a single user account to register the switchboard number; mapping of entire SIP telephone number blocks
SIP link	Outgoing call switching and incoming call reception of any numbers to/from SIP PBXs/SIP providers (requires support of this function at the central exchange) with just a single user account to register the switchboard number; mapping of entire SIP telephone number blocks
SIP remote gateway	Local break-in/out of calls with any telephone number to/from upstream VoIP PBXs/SIP providers with telephone number mapping; independent of local users
Switching and call routing functions	Switching between local SIP subscribers and upstream SIP PBX or SIP subscribers and ISDN/analog subscribers (depending on connection types) initiated by SIP client
Number of local subscribers	32 SIP, ISDN unlimited (max. 40 mapping entries)
Number of simultaneous connections	2 - 16 depending on code conversion, echo canceling and load
Signaling	VoIP: SIPv2, ISDN: DSS1 (Euro-ISDN), point-to-point/point-to-multipoint; 1TR6 (only at an external ISDN connector in TE mode)
Media protocols	RTP
ISDN features	Operation direct at ISDN exchange lines or at ISDN extension lines of existing PBXs. Provision of exchange lines or extension lines. ISDN supplementary services CLIP, CLIR, en-block dial and individual dialing with adjustable wait-time until completion. Transparent pass-through of data services. ISDN-UDI calls with G.722. Pass-through of service identifiers (BC, HLC, LLC) for ISDN-to-ISDN connections. PCM bit-transparent coupling. Support for keypad facilities. Advice of charge (AOC-D, AOC-E). "DSS1 NT reverse" and "DSS1 NT point-to-point reverse" for ISDN clock synchronization with suitable PBXs. ISDN S0 buses can be collected into hunting groups. Parallel operation of point-to-point and point-to-multipoint connections
Audio properties	Echo canceling (G.168), automatic adaptive de-jitter buffer. Inband tone signaling compliant with EU standards and country-specific. DTMF support compliant with RFC 2976 (SIP info), RFC 2833 (RTP payload type/outband). Transparent pass-through for negotiated codecs. Interaction on codec negotiation between subscribers (filter, quality/bandwidth) Voice encoding with G.711 $\mu$ -law/A-law (64 kbps), G.726 (16, 24, 32, 40 kbps), G.722 high-quality codec, G.729 Annex A
Auto QoS	Automatic dynamic bandwidth reservation per SIP connection. Automatic selection of compression method depending upon available bandwidth. Voice packet prioritization (CoS), DiffServ marking, traffic shaping (incoming/outgoing) and packet-size management of non-prioritized connections compared to VoIP
VoIP management	VoIP Setup Wizard in LANconfig; status display of subscribers, lines, and connections; logging of VoIP Call Manager events in LANmonitor. SYSLOG and TRACE for voice connections

# LANCOM 1722 VoIP

<b>Routing functions</b>	
Router	IP, IPX and NetBIOS/IP multi-protocol router
HTTP	HTTP and HTTPS server for configuration by web interface
DNS	DNS client, DNS server, DNS relay, DNS proxy and dynamic DNS client
DHCP	DHCP client, DHCP relay and DHCP server with autodetection
NetBIOS	NetBIOS/IP proxy
NTP	NTP client and SNTP server, automatic adjustment for daylight-saving time
Policy-based routing	Policy-based routing based on routing tags. Based on firewall rules, certain data types are marked for specific routing, e.g. to particular remote sites or lines.
Dynamic routing	Dynamic routing with RIPv2. Learning and propagating routes; separate settings for LAN and WAN
<b>LAN protocols</b>	
IP	ARP, proxy ARP, BOOTP, LANCAPI, DHCP, DNS, HTTP, HTTPS, IP, ICMP, NTP/SNTP, NetBIOS, PPPoE (server), RADIUS, RIP-1, RIP-2, RTP, SIP, SNMP, TCP, TFTP, UDP, VRRP
IPX	RIP, SAP, IPX and SPX watchdogs, NetBIOS watchdogs
<b>WLAN protocols</b>	
ADSL, Ethernet	PPPoE, PPPoA, IPoA, Multi-PPPoE, ML-PPP, PPTP (PAC or PNS) and plain Ethernet (with or without DHCP), RIP-1, RIP-2
ISDN	1TR6, DSS1 (Euro-ISDN), PPP, X75, HDLC, ML-PPP, V.110/GSM/HSCSD, CAPI 2.0 via LANCAPI, Stac data compression
<b>Interfaces</b>	
WAN: ADSL	ADSL over ISDN compliant with ITU G.992.1 Annex B (compatible to Deutschen Telekom U-R2 connections) or ADSL over POTS compliant with ITU G.992.1 Annex A
WAN: ADSL2+	ADSL over ISDN compliant with ITU 992.3, ITU G.992.5 Annex B (ADSL2+) or ADSL over POTS compliant with ITU G992.3 and ITU G.992.5 Annex A (ADSL2+)
Ethernet ports	4 individual 10/100-Mbps Fast Ethernet ports; up to 3 ports can be switched as additional WAN ports with load balancing
- freely configurable	Each Ethernet port can be freely configured (LAN, DMZ, WAN, monitor port, off). LAN ports can be operated as a switch or separately. Additionally, external DSL modems or termination routers can be operated as a WAN port with load balancing and policy-based routing. DMZ ports can be operated with their own IP address range without NAT
ISDN	2 ISDN ports S0 bus, NT/TE mode with cross-over adapter, switchable termination, power relay and signaling pass-through (lifeline support) switchable to ISDN2
Serial interface	Serial configuration interface / COM port (8 pin Mini-DIN): 9,600 - 115,000 baud, suitable for optional connection of analog/GPRS modems
<b>USB connector</b>	
USB 2.0 printer port	USB 2.0 full-speed host port for connecting USB printers per RAW-IP and LPD; be-directional data exchange is possible (max. 12 Mbps, not for active-bus fed devices)
<b>Management</b>	
LANconfig	Configuration program for Microsoft Windows, incl. convenient Setup Wizards. Optional group configuration, simultaneous remote configuration and management of multiple devices over ISDN dial-in or IP connection (HTTPS, HTTP, TFTP)
LANmonitor	Monitoring application for Microsoft Windows for (remote) surveillance and logging of the status of LANCOM devices and connections, incl. PING diagnosis
Webconfig	Integrated web server for the configuration of LANCOM devices via Internet browsers with HTTPS or HTTP
Access rights	Individual access and function rights for up to 16 administrators
User administration	RADIUS user administration for dial-in access (PPP/PPTP and ISDN CLIP)
Remote maintenance	Remote configuration with Telnet/SSL, SSH (with password or certificate), browser (HTTP/HTTPS), TFTP or SNMP, firmware upload via HTTP/HTTPS or TFTP
ISDN remote maintenance	Remote maintenance over ISDN dial-in with calling-number check
Security	Access rights (read/write) over WAN, LAN or WLAN can be set up separately (VPN only, Telnet/SSL, SSH, SNMP, HTTPS/HTTP), access control list
Scripting	Scripting function for batch-programming of all command-line parameters and for transferring (partial) configurations, irrespective of software versions and device types, incl. test mode for parameter changes
SNMP	SNMP management via SNMP V2, private MIB exportable by WEBconfig, MIB II
Timed control	Scheduled control of parameters and actions (e.g. firewall rules or connection establishment) with CRON service
TFTP	TFTP client and server with variable file names (name, MAC/IP address, serial number)
Diagnosis	Extensive LOG and TRACE options, PING and TRACEROUTE for checking connections, LANmonitor status display, internal logging buffer for SYSLOG and firewall events, monitor mode for Ethernet ports

# LANCOM 1722 VoIP

<b>Statistics</b>	
Statistics	Extensive Ethernet, IP and DNS statistics; SYSLOG error counter
Accounting	Connection time, online time, transfer volumes per station. Snapshot function for regular read-out of values at the end of a billing period.
Export	Accounting information exportable via LANmonitor and SYSLOG
<b>Hardware</b>	
Power supply	12 V DC, external power adapter (230 V)
Environment	Temperature range 5-35 °humidity 0-80 %; non-condensing
Housing	Robust synthetic housing, rear connectors, ready for wall mounting, Kensington lock; measures 210 x 45 x 140 mm (W x H x D)
Power consumption (max)	ca. 8.5 Watts
<b>Declarations of conformity</b>	
CE	EN 55022, EN 55024, EN 60950
<b>Package content</b>	
Manual	Printed User Manual (DE, EN) and Quick Installation Guide (DE/EN/FR/ES/IT/PT/NL)
CD	CD with firmware, management software (LANconfig, LANmonitor, LANCAPI) and documentation
Cable	Serial configuration cable, 1.5m
Cable	1 Ethernet cable, 3m
Cable	ADSL cable, 3m
Cable	ISDN cable, 3m
Adapter	ISDN cross-over adapter for S0 bus
Power supply unit	12 V DC, external power adapter (230 V)
<b>Support</b>	
Warranty	3 years, support via Hotline and Internet KnowledgeBase
Software updates	Regular free updates (LCOS operating system and management tools) via Internet
<b>Options</b>	
Options	LANCOM VPN-25 Option (25 channels, 50 configurable, incl. activated VPN hardware accelerator), item no. 60083
Options	LANCOM Service Option (24h advance replacement within Germany, 4 year warranty, not for PoE Power Injector), item no. 61401
<b>Accessories</b>	
Documentation	LANCOM LCOS Reference Manual (DE), item no. 61700
19" Rack Mount	19" rackmount adapter, item no. 61501
Modem Backup	LANCOM Modem Adapter Kit, item no. 61500
VPN Client Software	LANCOM Advanced VPN Client for Windows 98SE-XP, single license, item no. 61600
VPN Client Software	LANCOM Advanced VPN Client for Windows 98SE-XP, 10 licenses, item no. 61601
VPN Client Software	LANCOM Advanced VPN Client for Windows 98SE-XP, 25 licenses, item no. 61602
VoIP Client Software	LANCOM Advanced VoIP Client for Windows 2000-XP, single license, item no. 61610
VoIP Client Software	LANCOM Advanced VoIP Client for Windows 2000-XP, 10 licenses, item no. 61611
<b>Item numbers</b>	
LANCOM 1722 VoIP (Annex A)	61351
LANCOM 1722 VoIP (Annex B)	61350 (suitable for UR-2 standard ADSL connections in Germany)
LANCOM 1722 VoIP (Annex A) UK	61352

LANCOM, LANCOM Systems and LCOS are registered trademarks. All other names or descriptions used may be trademarks or registered trademarks of their owners. Subject to change without notice. No liability for technical errors and/or omissions. 12/06