LANCOM 1781VA-4G

High-performance business VPN router with an integrated VDSL/ADSL2+ modem and dual-SIM 4G LTE for secure multi-site networking

The LANCOM 1781VA-4G is a professional, high-performance VPN router for high-speed Internet access with its integrated VDSL2/ADSL2+ modem and dual-SIM 4G LTE. These versatile connection options make it a high-performance basis for no-compromise backup scenarios and maximum operational reliability. The extensive range of IPSec VPN functions offered by the LANCOM 1781VA-4G additionally guarantees that the connection to the company network is secure. The right choice for secure, reliable and sustainable networking solutions "Made in Germany".

> Flexible business VPN routers for high-speed Internet access thanks to VDSL2/ADSL2+ modem
> Dual-SIM 4G LTE for up to 100 Mbps
> Secure site connectivity with 5 simultaneous IPSec VPN connections (25 channels optional)
> Integrated stateful-inspection firewall with intrusion detection and Denial-of-Service protection
> Network virtualization with up to 16 networks on one device (ARF)
> Security Made in Germany
> Maximum future compatibility, reliability, and security

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Professional VPN router with VDSL2 and ADSL2+ modem

Thanks to the integrated VDSL2/ADSL2+ modem and VDSL2-Vectoring, the LANCOM 1781VA-4G supports high-speed VDSL with up to 100 Mbps and offers maximum versatility for you move from ADSL to VDSL. The smart choice for the future viability of your network.

Dual-SIM 4G LTE with up to 100 Mbps

Thanks to its twin integrated SIM-card slots, the LANCOM 1781VA-4G enables intelligent mobile backup scenarios, for example if a provider network goes down or the mobile data volume is exhausted. All-in-all it is a high-performance basis for no-compromise backup scenarios and highly available networks in any industry.

Secure site connectivity via VPN

The LANCOM 1780VA-4G offers high levels of security. The standard equipment of 5 IPSec VPN channels guarantees strong encryption, secure connections for mobile employees, and protection of corporate data. The LANCOM VPN option upgrades the router to support 25 VPN channels. This ensures that your network is perfectly scalable and can grow on demand—without additional hardware components.

Stateful inspection firewall

Equipped with a stateful inspection firewall, the LANCOM 1780VA-4G protects the entire network. With features such as intrusion prevention and Denial-of-Service protection, this business VPN router provides optimal protection and secures all of the data on the network.

Advanced Routing & Forwarding

The LANCOM 1780VA-4G provides up to 16 securely isolated IP contexts, each of which has its own separate routing. This is an elegant way of operating IP applications with one central router and keeping the different communication channels securely separated from one another.

Security Made in Germany

In a market with a strong presence of American and Asian products, LANCOM offers maximum security "Made in Germany". The entire LANCOM core product range is developed and manufactured in Germany, and tested according to the highest standards of security, data protection and quality. The company's own "closed-source" operating system LCOS is developed at the company headquarters in Germany. Our in-house team of developers works in a highly secure environment as certified by the BSI (German Federal Office for Information Security), all of which is subject to the highest standards of security, encryption, and quality.

Maximum future-proofing

LANCOM products are based on professional expertise, years of experience in IT, and high-quality materials. All of our devices are equipped with hardware that is dimensioned for the future and, even reaching back to older product generations, updates to the LANCOM Operating System—LCOS—are available several times a year, free of charge. This guarantees a long service life while staying technically up to date, which represents a true protection of your investment.

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LCOS 9.20

LTE modem	
Supported standards	LTE, UMTS, HSPA, Edge and GPRS support (mode of transmission automatically or manually adjustable)
LTE-bands	800/900/1800/2100/2600 MHz (automatically or manually adjustable)
UMTS and HSPA bands	900/2100 MHz
EDGE/GPRS bands	850/900/1800/1900 MHz
Maximum transmission power UMTS/HSxPA	+24 dBm
Diversity support	Receive diversity on the aux antenna (2G + 3G); MIMO (2x2) for LTE (4G)
Supported SIM card formats	Mini-SIM (2FF), Micro-SIM (3FF) via adaptor, Nano-SIM (4FF) via adaptor
Dual-SIM support	Is supported
Multi-SIM support	Is supported
Layer 2 features	
VLAN	4.096 IDs based on IEEE 802.1q, dynamic assignment, Q-in-Q tagging
Multicast	IGMP-Snooping
Protocols	ARP-Lookup, LLDP, ARP, Proxy ARP, BOOTP, DHCP
Layer 3 features	
Firewall	Stateful inspection firewall including paket filtering, extended port forwarding, N:N IP address mapping, paket tagging, user-defined rules and notifications
Quality of Service	Traffic shaping, bandwidth reservation, DiffServ/TOS, packetsize control, layer-2-in-layer-3 tagging
Security	Intrusion Prevention, IP spoofing, access control lists, Denial of Service protection, detailed settings for handling reassembly, session-recovery, PING, stealth mode and AUTH port, URL blocker, password protection, programmable reset button
PPP authentication mechanisms	PAP, CHAP, MS-CHAP, and MS-CHAPv2
High availability / redundancy	VRRP (Virtual Router Redundancy Protocol), analog/GSM modem backup
Router	IPv4-, IPv6-, NetBIOS/IP multiprotokoll router, IPv4/IPv6 dual stack
Router virtualization	ARF (Advanced Routing and Forwarding) up to separate processing of 16 contexts
IPv4 services	HTTP and HTTPS server for configuration by web interface, DNS client, DNS server, DNS relay, DNS proxy, dynamic DNS client, DHCP client, DHCP relay and DHCP server including autodetection, NetBIOS/IP proxy, NTP client, SNTP server, policy-based routing
IPv6 services	DHCPv6 client, DHCPv6 server, DHCPv6 relay
IPv6 compatible LCOS applications	WEBconfig, HTTP, HTTPS, SSH, Telnet, DNS, TFTP, firewall, RAS dial-in
Dynamic routing protocol	RIPv2, BGPv4
IPv4 protocols	DNS, HTTP, HTTPS, ICMP, NTP/SNTP, NetBIOS, PPPoE (server), RADIUS, RADSEC (secure RADIUS), RTP, SNMP, SNMPv3, TFTP, TACACS+
IPv6 protocols	NDP, stateless address autoconfiguration (SLAAC), stateful address autoconfiguration (DHCPv6), router advertisements, ICMPv6, DHCPv6, DNS, HTTP, HTTPS, PPPoE, RADIUS, SMTP, NTP, BGP, Syslog
WAN operating mode	VDSL, ADSL1, ADSL2 or ADSL2+ additional with external DSL modem at an ETH port, UMTS/LTE
WAN protocols	PPPoE, Multi-PPPoE, ML-PPP, GRE, EoGRE, PPTP (PAC or PNS), L2TPv2 (LAC or LNS) and IPoE (using DHCP or no DHCP), RIP-1, RIP-2, VLAN, IPv6 over PPP (IPv6 and IPv4/IPv6 dual stack session), IP(v6)oE (autokonfiguration, DHCPv6 or static)
Tunneling protocols (IPv4/IPv6)	6to4, 6in4, 6rd (static and over DHCP), Dual Stack Lite (IPv4-in-IPv6-Tunnel)
Security	
Intrusion Prevention	Monitoring and blocking of login attempts and port scans
IP spoofing	Source IP address check on all interfaces: only IP addresses belonging to the defined IP networks are allowed
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

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Security	
URL blocker	Filtering of unwanted URLs based on DNS hitlists and wildcard filters. Extended functionality with Content Filter Option
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, MS-CHAP and MS-CHAPv2 as PPP authentication mechanism
Anti-theft	Anti-theft ISDN site verification over B or D channel (self-initiated call back and blocking)
GPS anti-theft	Network protection via site verification by GPS positioning, device stops operating if its location is changes
Adjustable reset button	Adjustable reset button for 'ignore', 'boot-only' and 'reset-or-boot'

High availability / redundancy	
VRRP	VRRP (Virtual Router Redundancy Protocol) for backup in case of failure of a device or remote station.
FirmSafe	For completely safe software upgrades thanks to two stored firmware versions, incl. test mode for firmware updates
LTE-Backup	In case of failure of the main connection, a backup connection is established over the internal LTE modem; automatic return to the main connection
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 (incl. client binding). Channel bundling with Multilink PPP (if supported by network operator)
VPN redundancy	Backup of VPN connections across different hierarchy levels, e.g. in case of failure of a central VPN concentrator and re-routing to multiple distributed remote sites. Any number of VPN remote sites can be defined (the tunnel limit applies only to active connections). Up to 32 alternative remote stations, each with its own routing tag, can be defined per VPN connection. Automatic selection may be sequential, or dependant on the last connection, or random (VPN 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

VPN	
IPSec over HTTPS	Enables IPsec VPN based on TCP (at port 443 like HTTPS) which can go through firewalls in networks where e. g. port 500 for IKE is blocked. Suitable for client-to-site connections and site-to-site connections. IPSec over HTTPS is based on the NCP VPN Path Finder technology
Number of VPN tunnels	Max. number of concurrent active IPSec, PPTP (MPPE) and L2TPv2 tunnels: 5 (25 with VPN 25 Option). Unlimited configurable connections. Configuration of all remote sites via one configuration entry when using the RAS user template or Proadaptive VPN.
Hardware accelerator	Integrated hardware accelerator for 3DES/AES encryption and decryption
Realtime clock	Integrated, buffered realtime clock to save the date and time during power failure. Assures timely validation of certificates in any case
Random number generator	Generates real random numbers in hardware, e. g. for improved key generation for certificates immediately after switching-on
1-Click-VPN Client assistant	One click function in LANconfig to create VPN client connections, incl. automatic profile creation for the LANCOM Advanced VPN Client
1-Click-VPN Site-to-Site	Creation of VPN connections between LANCOM routers via drag and drop in LANconfig
IKE, IKEv2	IPSec key exchange with Preshared Key or certificate (RSA signature, digital signature)
Smart Certificate*	Convenient generation of digital X.509 certificates via an own certifaction authority (SCEP-CA) on the webpage or via SCEP.
Certificates	X.509 digital multi-level certificate support, compatible with Microsoft Server / Enterprise Server and OpenSSL. Secure Key Storage protects a private key (PKCS#12) from theft.
Certificate rollout	Automatic creation, rollout and renewal of certificates via SCEP (Simple Certificate Enrollment Protocol) per certificate hierarchy
Certificate revocation lists (CRL)	CRL retrieval via HTTP per certificate hierarchy
OCSP Client	Check X.509 certifications by using OCSP (Online Certificate Status Protocol) in real time as an alternative to CRLs
XAUTH	XAUTH client for registering LANCOM routers and access points at XAUTH servers incl. IKE-config mode. XAUTH server enables clients to register via XAUTH at LANCOM routers. Connection of the XAUTH server to RADIUS servers provides the central authentication of VPN-access with user name and password. Authentication of VPN-client access via XAUTH and RADIUS connection additionally by OTP token

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VPN	
RAS user template	Configuration of all VPN client connections in IKE ConfigMode via a single configuration 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 (1024-4096 bit) and CAST (128 bit). OpenSSL implementation with FIPS-140 certified algorithms. MD-5, SHA-1, SHA-256, SHA-384 or SHA-512 hashes
Hardware NAT	Wirespeed NAT performance through hardware support (offloading) for plain IP connections (incl. DHCP) where source and destination addresses are not withn the same /20 network.
NAT-Traversal	NAT-Traversal (NAT-T) support for VPN over routes without VPN passthrough
IPCOMP	VPN data compression based on Deflate compression for higher IPSec throughput on low-bandwidth connections (must be supported by remote endpoint)
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	Enables the registration of IP addresses with a Dynamic DNS 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 DNS servers in the VPN. External names are translated by Internet DNS servers
IPv4 VPN	Coupling of IPv4 networks
IPv4 VPN over IPv6 WAN	Use of IPv4 VPN over IPv6 WAN connections
IPv6 VPN	Coupling of IPv6 networks
IPv6 VPN over IPv4 WAN	Use of IPv6 VPN over IPv4 WAN connections
Radius	Radius authorization and accounting, outsourcing of VPN configurations in external RADIUS server in IKEv2
*)	Only with VPN 25 option

VPN throughput (max., AES)	
1418-byte frame size UDP	330 Mbps

Firewall throughput (max.)	
1518-byte frame size UDP	800 Mbps

Hardware firewall throughput (max.)	
HW-NAT TCP	930 Mbps

VoIP	
SIP ALG	The SIP ALG (Application Layer Gateway) acts as a proxy for SIP communication. For SIP calls the ALG opens the necessary ports for the corresponding media packets. Automatic address translation (STUN is no longer needed).

Interfaces	
WAN: VDSL / ADSL2+	■ VDSL2 compliant with ITU G.993.2, profiles 8a, 8b, 8c, 8d, 12a, 12b, 17a ■ VDSL2 vectoring: Reduces crosstalk of cable bundles to increase the VDSL bandwidth ■ ADSL2+ over ISDN as per ITU G.992.5 Annex B/J with DPBO, ITU G.992.3/5 and ITU G.992.1 (EU, over ISDN) ■ ADSL2+ over POTS as per ITU G.992.5 Annex A/M with DPBO, ITU G.992.3 and ITU.G.992.1 (UK, over POTS / EU, over POTS) ■ Supports one virtual ATM circuit (VPI, VCI pair) at a time
WAN: Ethernet	10/100/1000 Mbps Gigabit Ethernet
Ethernet ports	4 individual 10/100/1000 Mbps Ethernet ports; up to 3 ports can be operated as additional WAN ports with load balancing. Ethernet ports can be electrically disabled within LCOS configuration. The ports support energy saving according to IEEE 802.3az
Port configuration	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

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Interfaces	
USB 2.0 host port	USB 2.0 hi-speed host port for connecting USB printers (USB print server), serial devices (COM port server), USB data storage (FAT file system); bi-directional data exchange is possible
ISDN	ISDN BRI port (S0 bus)
Serial interface	Serial configuration interface / COM port (8 pin Mini-DIN): 9,600 - 115,000 baud, suitable for optional connection of analog/GPRS modems. Supports internal COM port server and allows for transparent asynchronous transmission of serial data via TCP
External antenna connectors	Two SMA antenna connectors for external LTE antennas (Ant 1, Ant 2)

Management and monitoring	
Management	LANconfig, WEBconfig, WLAN controller, LANCOM Layer 2 management (emergency management)
Management functions	Alternative boot configuration, voluntary automatic updates for LCMS and LCOS, individual access and function rights up to 16 administrators, RADIUS and RADSEC user management, remote access (WAN or (W)LAN, access rights (read/write) adjustable seperately), SSL, SSH, HTTPS, Telnet, TFTP, SNMP, HTTP, access rights via TACACS+, scripting, timed control of all parameters and actions through cron job
FirmSafe	Two stored firmware versions, incl. test mode for firmware updates
Monitoring	LANmonitor, WLANmonitor, LSM (LANCOM Large Scale Monitor)
Monitoring functions	Device SYSLOG, SNMPv1,v2c,3 incl. SNMP-TRAPS, extensive LOG and TRACE options, PING and TRACEROUTE for checking connections, internal logging buffer for firewall events
Monitoring statistics	Extensive Ethernet, IP and DNS statistics; SYSLOG error counter, accounting information exportable via LANmonitor and SYSLOG
ISDN remote maintenance	Remote maintenance over ISDN dial-in with calling-number check
LANCAPI	Available for all LANCOM routers with integrated ISDN interface. LANCAPI provides CAPI 2.0 features for Microsoft Windows to utilize ISDN channels over the IP network
CAPI Faxmodem	Softmodem for Microsoft Windows that makes use of LANCAPI to send and receive faxes via ISDN
iPerf	iPerf is a tool for measurements of the bandwidth on IP networks (integrated client and server)
SLA-Monitor (ICMP)	Performance monitoring of connections
*) Note	Not for use with All-IP connection

Hardware	
Power supply	12 V DC, external power adapter (230 V) with bayonet cap to protect against accidentally unplugging
Environment	Temperature range 0–35° C; humidity 0–95%; non-condensing
Housing	Robust synthetic housing, rear connectors, ready for wall mounting, Kensington lock; 210 x 45 x 140 mm (W x H x D)
Fans	1 silent fan
Power consumption (max)	Approx. 18 Watts

Declarations of conformity*	
CE	EN 60950-1, EN 55022, EN 55024
IPv6	IPv6 Ready Gold
*) Note	You will find all declarations of conformity in the products section of our website at www.lancom-systems.eu

Scope of delivery	
Manual	Hardware Quick Reference (EN, DE), Installation Guide (DE/EN)
CD/DVD	Data medium with firmware, management software (LANconfig, LANmonitor, LANCAPI) and documentation
Cable	1 Ethernet cable, 3 m
Cable	VDSL/ADSL cable, 3m
Cable	ISDN cable, 3m
Antennas	Two 2 dBi Edge/UMTS/LTE-antennas

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Scope of delivery	
Power supply unit	External power adapter (230 V), NEST 12 V/1.5 A DC/S, coaxial power connector 2.1/5.5 mm bayonet, temperature range from -5 to +45° C, LANCOM item no. 110723 (EU)/LANCOM item no 110829 (UK)

Support	
Warranty	3 years support via hotline and Internet KnowledgeBase
Software updates	Regular free updates (LCOS operating system and LANCOM Management System) via Internet

Options	
VPN	LANCOM VPN-25 Option (25 channels), item no. 60083
LANCOM Content Filter	LANCOM Content Filter +10 user, 1 year subscription, item no. 61590
LANCOM Content Filter	LANCOM Content Filter +25 user, 1 year subscription, item no. 61591
LANCOM Content Filter	LANCOM Content Filter +100 user, 1 year subscription, item no. 61592
LANCOM Content Filter	LANCOM Content Filter +10 user, 3 year subscription, item no. 61593
LANCOM Content Filter	LANCOM Content Filter +25 user, 3 year subscription, item no. 61594
LANCOM Content Filter	LANCOM Content Filter +100 user, 3 year subscription, item no. 61595
LANCOM Warranty Basic Option S	Option to extend the manufacturer´s warranty from 3 to 5 years, item no. 10710
LANCOM Warranty Advanced Option S	Option to extend the manufacturer´s warranty from 3 to 5 years and replacement of a defective device on the next working day, item no. 10715
LANCOM Public Spot	Hotspot option for LANCOM access points and the LANCOM 17xx series for user authentication (up to 64), versatile access (via voucher, e-mail, SMS), including a comfortable setup wizard, secure separation of guest access and internal network, item no. 60642
LANCOM All-IP Option	Upgrade option for the operation of the LANCOM 1781 series, 1631E, and 831A with All-IP connections, support of ISDN PBX systems and telephony devices as well as ISDN voice & fax services, incl. Voice Call Manager, All-IP (TAE/RJ45) and cross-over adapters (TE/NT), item no. 61422
Fax Gateway	LANCOM Fax Gateway Option activates 'hardfax' within the router. Supports 2 parallel fax channels with LANCAPI ('fax group 3' without use of CAPI Faxmodem), item no. 61425
LANCOM Public Spot PMS Accounting Plus	Extension of the LANCOM Public Spot (XL) Option for the connection to hotel billing systems with FIAS interface (such as Micros Fidelio) for authentication and billing of guest accesses for 178x routers, WLCs, and current central-site gateways, item no. 61638
LANCOM WLC Basic Option for Routers	LANCOM WLC Basic Option for Routers for up to 6 managed LANCOM access points or WLAN routers, item no. 61639
LANCOM WLC AP Upgrade +6	LANCOM WLC AP Upgrade +6 Option, enables your WLC to manage 6 Access Points/WLAN router in addition, item no. 61629
LANCOM VoIP +10 Option	Upgrade for LANCOM VoIP router with 10 additional internal VoIP numbers (additionally up to 40), item no. 61423

Accessories	
LANCOM Large Scale Monitor	Powerful monitoring system for WLAN, VPN, and LAN infrastructures of mid-sized to large networks, upgradable for up to 1000 monitored devices, for a proactive error management, browser-based remote monitoring, intuitive user interface, graphic floorplans, configurable triggers for alarms and messages, users, roles, and rights management
External antenna	AirLancer Extender O-360-3G 4 dBi omnidirectional GSM/GPRS/EDGE/3G outdoor antenna, item no. 61225
External antenna	AirLancer Extender I-360-3G 2dBi GSM/GPRS/EDGE, 5dBi 3G, omnidirectional indoor antenna, item no. 60916
External antenna	AirLancer Extender O-360-4G omnidirectional GSM/GPRS/EDGE/UMTS/HSPA+/LTE outdoor antenna, item no. 61227
External antenna	AirLancer Extender I-360-4G, +2.5 dBi 4G/3G/2G antenna, 698-960 and 1710-2700 MHz, omnidirectional MIMO indoor antenna, item no. 60918
19" Rack Mount	19" Rackmount-Adapter, Art.-Nr. 61501
LANCOM Wall Mount	For simple, theft-proof mounting of LANCOM devices with plastic housings, item no. 61349
LANCOM Wall Mount (White)	For simple, theft-proof mounting of LANCOM devices with plastic housings, item no. 61345
LANCOM Serial Adapter Kit	For the connection of V.24 modems with AT command set and serial interface for the connection to the LANCOM COM interface, incl. serial cable and connection plug, item no. 61500
VPN Client Software	LANCOM Advanced VPN Client for Windows Vista, Windows 7, Windows 8, Windows 8.1, Windows 10, single license, item no. 61600

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Accessories	
VPN Client Software	LANCOM Advanced VPN Client for Windows Vista, Windows 7, Windows 8, Windows 8.1, Windows 10, 10 licenses, item no. 61601
VPN Client Software	LANCOM Advanced VPN Client for Windows Vista, Windows 7, Windows 8, Windows 8.1, Windows 10, 25 licenses, item no. 61602
VPN Client Software	LANCOM Advanced VPN Client for Mac OS X (10.5 Intel only, 10.6 or higher), single license, item no. 61606
VPN Client Software	LANCOM Advanced VPN Client for Mac OS X (10.5 Intel only, 10.6 or higher), 10 licenses, item no. 61607
Item number(s)	
LANCOM 1781VA-4G (All-IP, EU, over ISDN)	62066
LANCOM 1781VA-4G (EU, over ISDN)	62042
LANCOM 1781VA-4G (UK, over POTS)	62043
LANCOM 1781VA-4G (EU, over POTS)	62048

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