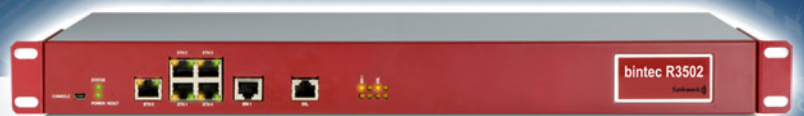


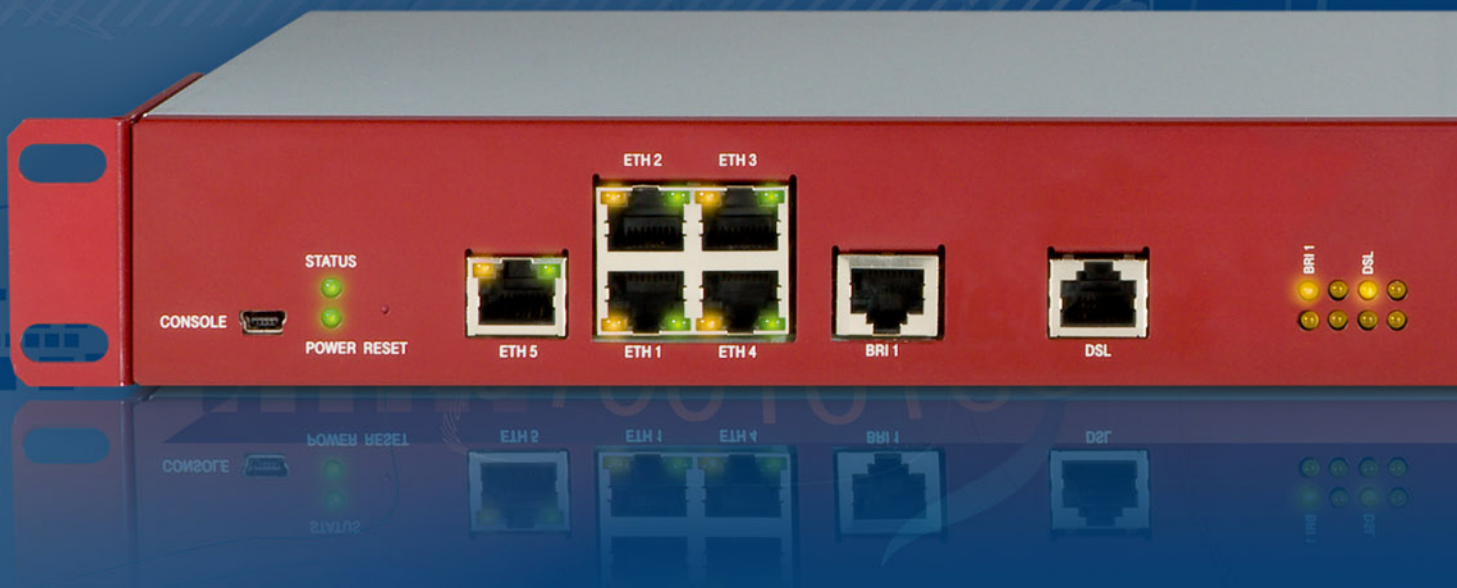
VPN GATEWAY



The modern VPN gateway with VDSL 2 modem

bintec R3502

- VDSL 2 modem - assym. bandplan 998
- 5 x Gigabit Ethernet
- 19" housing with integrated power supply
- Web-based configuration / wizards
- IPSec - 10 tunnels, opt. up to 110, HW acceleration
- ISDN - backup, remote access / maintenance



Available: 3. Quarter 2010

Professional VPN gateway with integrated VDSL2 modem

R3502

The bintec R3502 is a powerful and, thanks to its comprehensive equipment, flexible VPN gateway. The integrated VDSL2 modem on the R3502 supports the asymmetric band plan 998, which is used in Germany and the majority of European countries, including the corresponding profiles 8b and 17a. The modem also supports automatic switching to ADSL2+. This increases your investment security, as you initially operate the device on an ADSL connection and can then subsequently switch to a VDSL connection depending on availability.

With its 19-inch metal housing and highly efficient internal switched-mode power supply the gateway guarantees long-term reliability in critical corporate applications. This makes the R3502 ideal for use as a VPN gateway in SMEs and company head offices. The device has five Gigabit Ethernet ports, which can be configured for LAN, WAN or DMZ, and comes with a licence for ten hardware-accelerated IPSec tunnels. Up to 100 additional IPSec tunnels can also be enabled if licensed. The built-in ISDN BRI interface can be used as a remote configuration access and as an ISDN backup interface.

Using functions flexibly

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Comprehensive IPSec implementation

The IPSec implementation integrated in bintec R3502 works not only with preshared keys but also with certificates. This allows a public key infrastructure to be created for maximum security. (The German Federal Office for Information Security also recommends the use of certificates.)

Furthermore, the bintec IPSec implementation offers support when creating VPN connections with dynamic IP addresses: Even small branch offices can be reached without having to be permanently online. If both VPN nodes only have dynamic IP addresses, confidential information can continue. The exchange of IP addresses is carried out either over dynamic DNS providers or directly over an ISDN connection. The actual dynamic IP address is transferred either free of charge in the ISDN D-channel or, if this is not possible, in the B-channel (at cost).

By using IKE Config mode and the bintec IPSec multi user this offers the opportunity to create and manage IPSec dial-in solutions for multiple clients with minimal expense and IKE X-Auth (extended authentication) allows a connection to be secured with a one time password and thus with the highest level of security.

Load Balancing/Redundancy

In addition to the integrated VDSL modem, bintec R3502 offers the option to use two or even three Ethernet interfaces as additional WAN interfaces with external DSL modems or cable modems. As a result, there is not only more bandwidth available, but there is the opportunity to spread data traffic across individual WAN connections according to load or data type. Equally, you can use an additional WAN connection (e.g. SDSL) for the VPN connection of branch offices and use the integrated VDSL2 modem to guarantee the company's other data traffic.

Our bintec router redundancy protocol (BRRP) allows two devices to be operated so that they act as a single device in the LAN. Both devices have their own IP and MAC addresses for each interface as well as a joint virtual IP and MAC address. This is registered as the standard gateway for all computers in the LAN. Both of the switched gateways communicate over the bintec protocol and if either device fails, the other device automatically takes over the entire data traffic.

Simple configuration and maintenance

The gateway is configured over the Funkwerk Configuration Interface (FCI), using the integrated configuration wizards for example. The FCI is a web-based graphic user surface that you can use from any PC with an up-to-date Web browser via an HTTP or encrypted HTTPS connection. It also offers the opportunity to manage the devices locally and

remotely over other configuration accesses such as Telnet, SSH and ISDN login.

DIME Manager from Funkwerk Enterprise Communications (FEC) is a free tool for managing FEC devices. Dime Manager is aimed at administrators who manage networks with up to 50 devices. The software simplifies the management and configuration of gateways or access points either individually or in logical groups. When developing DIME Manager, simple and efficient operation was the primary aim. It allows, for example, software updates to be applied to individual devices or groups of devices simply by drag and drop. DIME Manager recognises and manages new devices in the network using SNMP multicasts, in other words independent of their current IP address.

ISDN Interface

| Feature | Description |
|-------------------------|--|
| CAPI | CAPI 2.0 with CAPI user concept (password for CAPI use) |
| ISDN protocols | Euro-ISDN (Point-to-multipoint/Point-to-point) |
| ISDN auto-configuration | Automatic recognition and configuration of ISDN protocols |
| ISDN leased lines | Supported leased lines: D64S, D64S2, TS02, D64S2Y |
| B channel protocols | Excellent interoperability with other manufacturers (Raw HDLC, CISCO HDLC, X.75) |
| X.31 over CAPI | Support for various connection paths: X.31/A for ISDN D-channel, X.31/A+B for ISDN B-channel, X.25 within ISDN B-channel (also leased lines) |
| Bit rate adaption | V.110 (1,200 up to 38,400 bps), V.120 up to 57,600 kbps (HSCSD) for connection to GSM subscribers |

VPN

| Feature | Description |
|------------------------------------|---|
| PPTP (PAC/PNS) | Point to Point Tunneling Protocol for establishing Virtual Private Networks, inclusive strong encryption methods with 128 Bit (MPPE) up to 168 Bit (DES/3DES, Blowfish) |
| PPP / PPTP hardware acceleration | Integrated hardware acceleration for PPP/PPTP encryption algorithms DES, 3DES, MPPE |
| GRE v.0 | Generic Routing Encapsulation V.0 according RFC 2784 for common encapsulation |
| L2TP | Layer 2 tunnelling protocol inclusive PPP user authentication |
| Number of VPN tunnels | Inclusive 110 active PPTP, L2TP and GRE v.0 tunnels (also in combination possible) |
| IPSec | Internet Protocol Security establishing of VPN connections |
| Number of VPN tunnels | Inclusive 10 active VPN tunnels, optional up to 110 IPSec tunnels |
| IPSec Algorithms | DES (64 Bit), 3DES (192 Bit), AES (128,192,256 Bit), CAST (128 Bit), Blowfish (128-448 Bit), Twofish (256 Bit); MD-5, SHA-1, RipeMD160, Tiger192 Hashes |
| IPSec hardware acceleration | Integrated hardware acceleration for IPSec encryption algorithms DES, 3DES, AES inclusive hardware acceleration for MD-5, SHA-1 Hash generation |
| IPSec IKE | IPSec key exchange via preshared keys or certificates |
| IPSec IKE Config Mode | IKE Config Mode server enables dynamic assignment of IP addresses from the address pool of the company. IKE Config Mode client enables the router, to get assigned dynamically an IP address. |
| IPSec IKE XAUTH (Client/Server) | Internet Key Exchange protocol Extended Authentication client for login to XAUTH server and XAUTH server for logging of XAUTH clients |
| IPSec IKE XAUTH (Client/Server) | Inclusive the forwarding to a RADIUS-OTP (One Time Password) server (supported OTP solutions see www.funkwerk-ec.com). |
| IPSec NAT-T | Support of NAT-Traversal (Nat-T) for the application at VPN lines with NAT |
| IPSec IPComp | IPSec IPComp data compression for higher data throughput via LZS |
| IPSec certificates (PKI) | Support of X.509 multi-level certificates compatible to Microsoft and Open SSL CA server; upload of PKCS#7/8/10/12 files via TFTP, HTTP, LDAP, file upload and manual via FCI |
| IPSec SCEP | Certificates management via SCEP (Simple Certificate Enrollment Protocol) |
| IPSec Certificate Revocation Lists | Support of remote CRLs on a server via LDAP or local CRLs |
| IPSec Dead Peer Detection (DPD) | Continuous control of IPSec connection |
| IPSec dynamic IP via ISDN | Transmission of dynamic IP address in ISDN D or B channel; free-of-charge licence necessary |
| IPSec dynamic DNS | Enables the registering of dynamic IP addresses by a dynamic DNS provider for establishing a IPSec connection. |
| IPSec RADIUS | Authentication of IPSec connections at a RADIUS server. Additionally the IPSec peers, which were configured on a RADIUS server, can be loaded into the gateway (RADIUS dialout). |
| IPSec Multi User | Enables the Dial-in of several IPSec clients via a single IPSec peer configuration entry |
| IPSec QoS | The possibility to operate Quality of Service (traffic shaping) inside of an IPSec tunnel |
| IPSec NAT | By activating of NAT on an IPSec connection it is possible, to implement several remote locations with identical local IP address networks in different IP nets for the VPN connection |
| IPSec throughput (1400) | 86 Mbps with 1400 Byte packets with AES 256 / AES 128 / 3 DES encryption |
| IPSec throughput (256) | 19 Mbps with 1400 Byte packets with AES 256 / AES 128 / 3 DES encryption |

Security

| Feature | Description |
|------------------------------|--|
| NAT/PAT | Symmetric Network and Port Address Translation (NAT/PAT) with randomly generated ports inclusive Multi NAT (1:1 translation of whole networks) |
| Policy based NAT/PAT | Network and Port Address Translation via different criteria like IP protocols, source/destination IP Address, source/destination port |
| Policy based NAT/PAT | For incoming and outgoing connections and for each interface variable configurable |
| Content Filtering | Optional ISS/Cobion Content filter (30 day test license inclusive) |
| Stateful Inspection Firewall | Packet filtering depending on the direction with controlling and interpretation of each single connection status |
| Packet Filter | Filtering of IP packets according to different criteria like IP protocols, source/destination IP address, source/destination port, TOS/DSCP, layer 2 priority for each interface variable configurable |

Routing

| Feature | Description |
|-----------------------------------|---|
| Policy based Routing | Extended routing (Policy Based Routing) depending of different criteria like IP protocols (Layer4), source/destination IP address, source/destination port, TOS/DSCP, source/destination interface and destination interface status |
| Multicast IGMP | Support of Internet Group Management Protocol (IGMP v1, v2, v3) for the simultaneous distribution of IP packets to several stations |
| Multicast IGMP Proxy | For easy forwarding of multicast packets via dedicated interfaces |
| Multicast Routing Protocol PIM SM | Protocol Independent Multicast (PIM) distributes information via a central Rendezvous Point Server. PIM Modus Sparse Mode (SM) forwards only packets to groups which have been requested |
| Multicast inside IPsec tunnel | Enables the transmission of multicast packets via an IPsec tunnel |
| RIP | Support of RIPv1 and RIPv2, separated configurable for each interface |
| Extended RIP | Triggered RIP updates according RFC 2091 and 2453, Poisoned Reverse for a better distribution of the routes; furthermore the possibility to define RIP filters for each interface. |
| OSPF | Support of the dynamic routing protocol OSPF |
| BGP4 | On request |
| Routing throughput (1518) | 199 Mbps with 1518 Byte packets |
| Routing throughput (256) | 198 Mbps with 256 Byte packets |

Protocols / Encapsulations

| Feature | Description |
|-------------------------|---|
| PPP/MLPPP | Support of Point to Point Protocol (PPP) for establishing of standard PPP connections, inclusive the Multilink extension MLPPP for the bundeling of several connections |
| PPPoE (Server/Client) | Point-to-Point Protocol over Ethernet (Client and Server) for establishing of PPP connections via Ethernet/DSL (RFC 2516) |
| MLPPPoE (Server/Client) | Multilink extension MLPPPoE for bundeling several PPPoE connections (only if both sides support MLPPPoE) |
| DNS | DNS client, DNS server, DNS relay and DNS proxy |
| DYN DNS | Enables the registering of dynamic assigned IP addresses at a dynamic DNS provider, e.g. for establishing of VPN connections |
| DNS Forwarding | Enables the forwarding of DNS requests of free configurable domains to assigned DNS server. |
| DHCP | DHCP Client, Server, Proxy and Relay for simplified TCP/IP configuration |
| Packet size controlling | Adaption of PMTU or automatic packet size controlling via fragmentation |
| X.25 Enhanced | Optional: X.25 over ISDN, XOT, X.25 to TCP Gateway, X.25 PAD, TP0 Bridge |

QoS

| Feature | Description |
|-------------------------------|--|
| Policy based Traffic Shapping | Dynamic bandwidth management via IP traffic shaping |
| Bandwidth reservation | Dynamic reservation of bandwidth, allocation of guaranteed and maximum bandwidths |
| DiffServ | Priority Queuing of packets on the basis of the DiffServ/TOS field |
| Layer2/3 tagging | Conversion of 802.1p layer 2 prioritisation information to layer 3 diffserv attributes |
| TCP Download Rate Control | For reservation of bandwidth for VoIP connections |

Redundancy / Loadbalancing

| Feature | Description |
|----------------|--|
| BRRP | Bintec Router Redundancy Protocol for backup of several passive or active devices with free selectable priority |
| BoD | Bandwidth on Demand: dynamic bandwidth to suit data traffic load |
| Load Balancing | Static and dynamic load balancing to several WAN connections on IP layer |
| VPN backup | Simple VPN backup via different media. Additional enables the Funkwerk interface based VPN concept the application of routing protocols for VPN connections. |

Layer 2 Functionality

| Feature | Description |
|-----------|--|
| Bridging | Support of layer 2 bridging with the possibility of separation of network segment via the configuration of bridge groups |
| VLAN | Support of up to 32 VLAN (Virtual LAN) for segmentation of the network in independent virtual segments (workgroups) |
| Proxy ARP | Enables the router to answer ARP requests for hosts, which are accessible via the router. That enables the remote clients to use an IP address from the local net. |

Logging / Monitoring / Reporting

| Feature | Description |
|-------------------------|--|
| Internal system logging | Syslog storage in RAM, display via web-based configuration user interface (http/https), filter for subsystem, level, message |
| External system logging | Syslog, several syslog server with different syslog level configurable |
| E-Mail alert | Automatic E-Mail alert by definable events |
| SNMP traps | SNMP traps (v1, v2, v3) configurable |
| Activity Monitor | Sending of information to a PC on which Brickware is installed |
| IPSec monitoring | Display of IPSec tunnel and IPSec statistic; output via web-based configuration user interface (http/https) |
| Interfaces monitoring | Statistic information of all physical and logical interfaces (ETH0, ETH1, SSIDx, ...), output via web-based configuration user interface (http/https) |
| ISDN monitoring | Display of active and past ISDN connections; output via web-based configuration user interface (http/https) |
| IP accounting | Detailed IP accounting, source, destination, port, interface and packet/bytes counter, transmission also via syslog protocol to syslog server |
| ISDN accounting | Detailed ongoing recording of ISDN connection parameter like calling number and charging information, transmission also via syslog protocol to syslog server |
| RADIUS accounting | RADIUS accounting for PPP, PPTP, PPPoE and ISDN dialup connections |
| Keep Alive Monitoring | Control of hosts/connections via ICMP polling |
| Tracing | Detailed traces can be done for different protocols e.g. ISDN, PPPoE, ... generation local on the device and remote via DIME manager |
| Tracing | Traces can be stored in PCAP format, so that import to different open source trace tools (e.g. wireshark) is possible. |

Administration / Management

| Feature | Description |
|--|--|
| RADIUS | Central check of access authorization at one or several RADIUS server, RADIUS (PPP, IPsec inclusive X-Auth and login authentication) |
| RADIUS dialout | On a RADIUS server configured PPP und IPsec connection can be loaded into the gateway (RADIUS dialout). |
| TACACS+ | Support of TACACS+ server for login authentication and for shell comando authorization |
| Time synchronization | The device system time can be obtained via ISDN and from a SNTP server (up to 3 time server configurable). The obtained time can also be transmitted per SNTP to SNTP clients. |
| Automatic Time Settings | Time zone profiles are configurable. That enables an automatic change from summer to winter time. |
| Supported management systems | DIME Manager, XAdmin |
| Configurable scheduler | Configuring of time and event controlled tasks, e.g. reboot device, activate/deactivate interface, activate/deactivate WLAN, trigger SW update and configuration backup |
| Funkwerk Configuration Interface (FCI) | Integrated web server for web-based configuration via HTTP or HTTPS. This user interface is by most of Funkwerk EC products identical. |
| Software update | Software updates are free of charge; update via local files, HTTP, TFTP or via direct access to the FEC web server |
| Remote maintenance | Remote maintenance via telnet, SSL, SSH, HTTP, HTTPS and SNMP (V1,V2,V3) |
| Configuration via serial interface | Serial configuriton interface is available |
| ISDN remote maintenance | Remote maintenance via ISDN dial-in with checking of the calling number. The ISDN remote maintenance connection between two funkwerk devices can be encrypted. |
| ISDN remote maintenance | A transparent mode enables transmissions of configurations and software updates respectively |
| GSM remote maintenance | Remote maintenance via GSM login (external modem and cable required) |
| Device discovery function | Device discovery via SNMP multicast. |
| On The Fly configuration | No reboot after reconfiguration required |
| SNMP | SNMP (v1, v2, v3), USM model, VACM views, SNMP traps (v1, v2, v3) configurable, SNMP IP access list configurable |
| SNMP configuration | Complete management with MIB-II, MIB 802.11, Enterprise MIB |
| Configuration export and import | Load and save configurations, optional encrypted; optional automatic control via scheduler |
| SSH login | Supports SSH V1.5 and SSH V2.0 for secure connections of terminal applications |
| HP OpenView | Integration into Network Node Manager |
| XAdmin | Support of XAdmin roll out and configuration managemant tool for larger router installations (IP+ISDN+GSM) |

Interfaces

| Feature | Description |
|-----------------------|--|
| Ethernet | 5 x 10/100/1000 Mbps Ethernet Twisted Pair, autosensing, Auto MDI/MDI-X, up to 4 ports can be switches as additional WAN ports incl. load balancing, all Ethernet ports can be configured as LAN or WAN. |
| Serial console | Serial console interface / COM port (mini USB): optional, connection of an analogue / GPRS modem is possible (supported modems: see www.funkwerk-ec.com) |
| VDSL 2 / ADSL 2+ | VDSL 2 modem with asymmetric bandplan 998, fall-back to ADSL 2+ (Annex B) |
| ISDN Basic Rate (BRI) | 1 x BRI (TE), 2 B channels |

Hardware Features

| Feature | Description |
|----------------|---|
| 19 inch | Mountable in 19 inch rack, incl. 19 inch rack mount kit |
| Realtime clock | System time persists even at power failure for some hours. |
| Environment | Temperature range: Operational 0°C to 40°C; storage -10°C to 70°C; Max. rel. humidity 10 - 95% (non condensing) |
| Power supply | Integrated wide range power supply 110-240V, with energy efficient swiching controller |
| housing | 19 inch 1 high unit metal case, screw-on 19 inch mounting-angle, LEDs and network connectors at front side |
| Dimension | Ca. 485.6 mm x 220 mm x 45 mm (W x H x D) |
| Weight | Ca. 2600g |
| Fan | Fanless design therefor high MTBF |
| Reset button | Restart or reset to factory state possible |

Content of Delivery

| Feature | Description |
|---------------------|---|
| Manual | Quick Installation Guide in German and English |
| DVD | DVD with system software, management software and documentation |
| Ethernet cable | 1 Ethernet cable, 3m |
| Network cable | Power cable |
| Serial cable | Serial cable (mini USB - DSUB 9 female) |
| ISDN (BRI/S0) cable | ISDN (BRI/S0) cable, 3m |

Service

| Feature | Description |
|-----------------|---|
| Warranty | 2 year manufacturer warranty inclusive 24h advanced replacement |
| Software Update | Free-of-charge software updates for system software (BOSS) and management software (DIME manager) |

Article number

| Feature | Description |
|--|---|
| bintec R3502; art. no. 5510000212 | VPN Gateway; 19 inch rack; incl. VDSL modem; 1x ISDN BRI; incl. 10 IPSec tunnels (opt. max. 110), certificates, HW encryption; 4+1 Gigabit Eth. switch; german and intern. version. |
| bintec R3502 - UK; art. no. 5510000267 | VPN Gateway; 19 inch rack; incl. VDSL modem; 1x ISDN BRI; incl. 10 IPSec tunnels (opt. max. 110), certificates, HW encryption; 4+1 Gigabit Eth. switch; UK version. |

Options

| Feature | Description |
|-------------------------------------|---|
| VPN-IPSec-25 | License for 25 additional activ IPSec tunnels; art. no. 5500000781 |
| X.25 | License for X.25 feature set; art. no. 5500000783 |
| Cobion Content Filter Small | License for one year Cobion content filter (small); art. no. 80551 |
| MPPC and Stac compression | Free-of-charge license for Stac and MPPC compression; registration under www.funkwerk-ec.com required |
| IP address ISDN B/D channel license | Free of charge license for IP address transmission in ISDN D or B channel for IPSec connections; registering under www.funkwerk-ec.com required. |
| Advanced Replacement | Optional (with costs) advanced replacement outside of warranty time |