

WebWay

Alarm signalling using secure IP networks

For business, corporate and public sector security

Reduce costs, not security

Protected premises, protected network

Certified to LPS 1277 Issue 3

Corporate networks

Closed networks

Private dedicated systems

Public networks

WebWay

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WEBWAY SECURE NETWORK IMPLEMENTATION

System purpose

WebWay provides an alarm transmission service using shared public or private network connections. The service reduces operational costs, increases security and provides remote fix capabilities for the security system. The system is designed to operate in any network topography, with no restriction on functionality or security.

WebWay IP/GPRS LPS I&HAS ATS5 will hereafter be called WebWay IP/GPRS in this document.

System elements

The WebWay system and the network architecture consist of the following elements:

- **WebWay IP/GPRS secure premises transceiver**
 - Configurable for DHCP or fixed IP addressing
 - MAC address available on request
- **Local router**
 - Default Gateway address
 - Subnet Mask
- **Traffic delivery options between private network and WebWay MCT**
 - Via corporate firewall(s) and public internet
 - Via VPN
 - Via private wire to shared WebWay receiving platforms
 - Via private wire to dedicated WebWay receiving platforms
- **WebWay receiving platform (shared or dedicated)**
 - WebWay Monitoring Centre Transceiver (MCT) consisting of:
 - WebWay Managed Linux OS
 - WebWay Managed GateWay software
 - 2 or 4 resilient clustered servers
- **WebWay secure management software**
 - WebWay Command Centre, for real time communications diagnostics
 - WebWay Remote Manager, for access to alarm panels via the WebWay MCT

Communications process overview

On installation the WebWay IP/GPRS device initiates an outbound UDP/IP connection to the WebWay MCT platforms.

If traffic is being passed to the WebWay MCT over the internet via the corporate firewall, the firewall will mark the connection as New/Established /Related and allow return traffic for that connection unless it has timed out.

WebWay IP/GPRS devices continually poll the IP network path, keeping the connection New/Established / Related.

The WebWay IP/GPRS device polls from the remote site to the WebWay MCT every 30 seconds. No inbound connections are initiated from the WebWay MCT. All command requests, remote service data or flash upgrade are carried in the WebWay acknowledgement packet. There is never any need to connect directly to the WebWay IP/GPRS device or customer network.

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WEBWAY MESSAGE SECURITY

WebWay Secure Private Link (WSPL)

The WebWay will only accept encrypted and sequenced messages from the assigned servers at the protected ARC(s). The WebWay Monitoring Centre Transceivers (MCTs) will only accept encrypted and sequenced messages from known WebWay transceivers. Each WSPL may include multiple Broadband and GPRS radio transmission paths. All other messages are discarded.

Encryption key management

The unique, secret, data security key for each WebWay is automatically generated at manufacture. The process assigns the randomly generated unique 128-bit key to the unique serial of each WebWay. When a WebWay is shipped to a client, it's unique key is automatically sent via an encrypted link to the associated ARC receivers.

WebWay messaging encryption

All WebWay messages (polls, alarms, flash, remote service etc) are encrypted using the AES128 standard. This process meets the requirements of EN50131-5 and the proposed EN50136-1: 2011 EN50136 European signalling standards for IP networking protocols.

Substitution protection

All WebWay messages are sequenced to insure against replay.

Device substitution protection

All WebWay devices have a unique key and cannot be cloned. A WebWay can be reassigned to a different ARC or relocated to a different location using the authorised WebWayOne re-commissioning process.

MAC address

WebWay can provide the MAC address of the WebWay device if required.

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WEBWAY BANDWIDTH AND POLLING FREQUENCY

WebWay has adopted the UDP/IP protocol for the transmission of all alarms, messages, management and polling. The WebWay higher-level protocol layers add all of the transmission and message security required for all high security application using any network technology.

The WebWay protocol implementation also includes the sequenced and encrypted encapsulation of all alarms, messages, management information, servicing, network status, and real time clocks.

UDP significantly reduces the message size to provide a round trip bandwidth of 160 bytes. This reduces the cost of GPRS and encourages an improved polling frequency of the Radio path. The preferred protocol selected by CENELEC (Europe) and SIA (USA) is UDP/IP.

WebWay polling profile (to meet UK insurance, EN standards and best practices)

- IP network path Every 30 seconds
 - GPRS network path Every 30 minutes, when IP network path operational
 - GPRS network path Every 60 seconds, when IP network path in fault
- Duration of "stepped up polling", 96 hours, or on agreement

During the morning and early evening each premises will transmit an Open and Close message, though the bandwidth impact is minimal.

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WEBWAY MCT

Scalability and reliability

The WebWay system is designed for maximum security, availability and scalability.

Each WebWay IP/GPRS communicates with multiple WebWay MCT systems. ARC's install at least one WebWay MCT per geographical location. Often ARC's include a Primary and Shadow architecture in the main ARC with a third WebWay MCT in the backup ARC.

The use of UDP/IP as our transmission protocol provides the following benefits:

- WebWay control the retry mechanisms should messages be blocked by faults or lost, resulting in faster alarm condition identification and decision making.
- Less resource intensive for the receiving platform than TCP/IP.
- Requires up to five times less bandwidth than TCP/IP, reducing network load and GPRS costs.

The use of a Gentoo Linux as our WebWay MCT OS provides the following benefits:

- Highly secure, scalable and available.
- Fewer hardware resources required.
- Remotely upgradeable and serviceable.

Availability

Each WebWay MCT communicates with its network of MCTs (at least 2). A support technician can securely log into any WebWay MCT and find the live status and history of any WebWay IP/GPRS device.

A WebWay IP/GPRS device has a concept of a Primary MCT, but the networks of WebWay MCTs are themselves fully synchronised with no Master. Should any WebWay MCT or its total network connectivity fail, the WebWay IP/GPRS devices connected to that system as Primary automatically communicate with its pre-programmed secondary or tertiary systems.

Using real time synchronisation ensures that should any system fail, that the entire history of every connection associated to that system is available at all times in any WebWay MCT.

The database synchronisation can occur either over the ARC infrastructure, internet or customers private data network.

WebWay MCT support

WebWay provides 24 hour support and maintenance of all WebWay MCT systems including the Gentoo Linux OS. There is no need, unless desired, for the ARC (or end user with private dedicated WebWay MCTs) to perform maintenance functions on the operating system.

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WEBWAY SERVICE MANAGEMENT

Access to shared WebWay MCT systems

The WebWay MCT can only be accessed by authorised remote machines running either the WebWay Command Centre or Remote Manager application.

To load either of these applications onto a machine requires authorisation and the release of license keys. These license keys lock the software to the machine. All access to the WebWay MCT is via SSH-2 with AES encryption using Public/Private Keys). Every access is recorded and stored in each WebWay ARC server.

Access to dedicated WebWay MCT systems

Where the WebWay MCT is located inside the customers closed network and private ARC, or the WebWay MCT is located in a public ARC but on dedicated machines, alternative access methods for WebWay support can be agreed should our standard methodology fall outside the customers IT security procedures.

Ad hoc access

The customer can choose to provide WebWay technical services or other authorised party's access via SSH2 on a request basis.

WEBWAY AUDIT TRAIL

The WebWay IP/GPRS device includes a local log of all events. The log has 2000 entries and is downloadable to the WebWay MCT. The WebWay MCT retains a log of all events, access etc for every WebWay IP/GPRS device. The event log can run to billions of events and is restricted only by hard drive size and archiving procedures. These procedures are standard practise for our ARC partners and we work closely with them to ensure all relevant data is retained as required.

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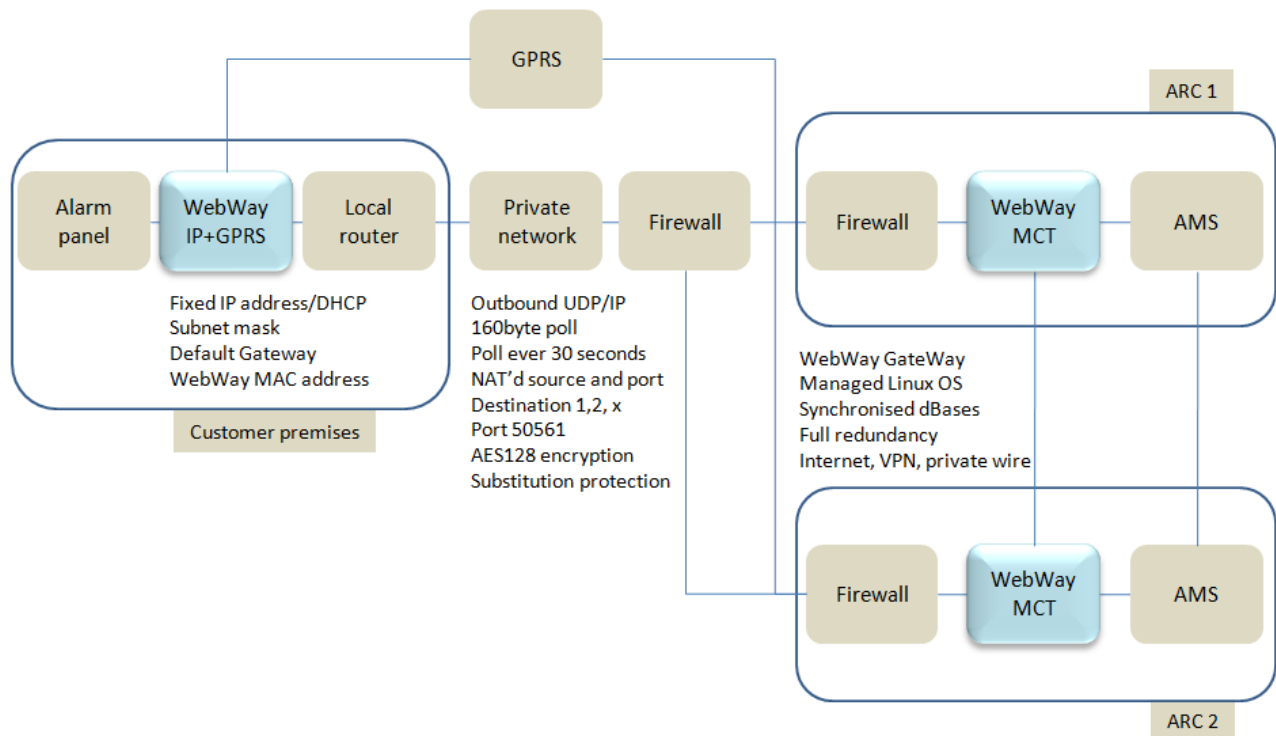


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WEBWAY NETWORK DIAGRAM

- WebWay IP/GPRS auto configures using data from pre-populated WebWay MCTS over GPRS
- WebWay IP/GPRS initiates outbound UDP/IP packet to WebWay MCT destination addresses
- Private firewall forwards UDP/IP packet and marks as New connection
- Private firewall times connection allowing WebWay UDP/IP traffic to return from destinations
- WebWay IP/GPRS continually polls, keeping connection route active to known sources
- No access to WebWay IP/GPRS from other sources over IP or GPRS
- No packets accepted if not in WebWay UDP/IP encrypted, substitution protected protocol



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WEBWAY NETWORK READINESS

Prior to a large scale project roll out a template site can be provided either at a customer location or mock store. If the network topology is to deliver traffic via the corporate firewall over the public internet the following data is required:

The location should have ready:

- A live Ethernet connection / port
- Power supplied either by the alarm panel or local mains

The corporate firewall(s) should be prepared as follows:

Firewall to forward UDP/IP traffic to:

Destination address 1 port 50561

Destination address 2 port 50561

The ARC you have chosen is

WebWay should be provided with the following local network data for the site:

- DHCP Yes / No
- Fixed IP address
- Subnet Mask
- Default Gateway
- WebWay MAC address required Yes / No

WebWay should be provided with the following data from your chosen security provider:

- Site ID
- Site address
- Alarm panel type



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WEBWAY GLOSSARY

WebWay IP/GPRS	WebWay communications device.
WebWay MCT	WebWay Monitoring Centre Transceiver. A combination of a Linux server platform and WebWay software for the management of communications and WebWay devices.
WebWay Command Centre	The WebWay management interface to the WebWay MCT.
WebWay Remote Manager	WebWay software providing a serial to IP conversion and encrypted/password protected access for connecting alarm panel management software to the remote site via the WebWay MCT.
Poll	A message transferred between the WebWay IP/GPRS device and the WebWay MCT. Verifies end to end connectivity and carries data from and to the WebWay IP/GPRS device.
ARC	Alarm Receiving Centre. Secure premises which manage alarms and the response to activation (engineering, key holder, police).
AMS	Alarm Management System. Software used by the ARC for the management of alarms.

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