

Honeywell's next generation cellular and IP platform and network design



Introduction

Honeywell is focused on providing leading edge communication solutions for the security industry. Alternative communication methods are critical in the marketplace due to VoIP, migration from POTS, and AMPS sunset clause. The growth of broadband use in homes and businesses has increased the viability of Internet communications for security. In addition, digital radio networks are the future of cellular communications. This technology migration is necessary due to the FCC sunset clause that gives cellular carriers the option of discontinuing the AMPS network in February 2008.

Honeywell will be replacing our current AlarmNet-C radio products with digital cellular products. The current most cost effective option is to use GSM. This not only addresses North American issues, but will also give Honeywell a global platform as well. Wireless communication is a global requirement that will be filled by the 7845GSM.

AlarmNet-G will be based on GSM, the Global System Mobility network. More than one billion people use GSM phones as of 2005, making GSM the dominant mobile phone system worldwide with about 70% of the world's market. In addition several new IP products will be developed. The 7845i-L for Lynx, the 7845iPD for use with Vista, and the full function 7845i-ENTV2 for use with Vista, and other panels.

The combination of communication technologies provides an added level of reliability. There is a need for a product with both Internet support for inexpensive routine operation backed up by a wireless device. The 7845i-GSM will fill this requirement for broadband communications with GSM back up. These products will be built on the same base platform. They will share common hardware, software and packaging designs.

The 7845GSM/i-GSM/i-ENTV2 is a flexible multi-function communications gateway board. The board shall be designed with I/O to meet a variety of interface requirements. It will support RS232, RS485, IB, ECP, and, zone triggers. These options shall be selected at the time of manufacture by changing stuffing options. It will have options for both external power and on board battery and power regulation. The 7845GSM/i-GSM/i-ENTV2 shall have a standardized radio module interface to allow for easy change of vendors and modem technology.

The following hardware options represent the highest level of functionality. The PCB will be depopulated to option the device per actual customer requirements. Three hardware models are planned for initial North America release:

7845GSM GSM cellular alarm communicator with serial connectivity, zone trigger capability, and ECP/ DW downloading support.

7845i-ENTV2 IP alarm communicator with serial connectivity, zone trigger capability, and ECP/DW downloading support.

7845i-GSM GSM and IP Tag team alarm communicator with serial connectivity, zone trigger capability, and ECP/DW downloading support.

7845i-L IP alarm communicator, which mounts internal to LynxRi. Also supports downloading.

7845ipd IP alarm communicator Support ECP alarm and downloading functions on VISTA. (does not support DW downloading on the High end vista)

GSM interface and functions

The GSM modem shall be mounted on a daughter board using a common board-to-board interface between the daughter board and the motherboard. This architecture provides the flexibility to change GSM platforms with out re-spinning the core design. This will also allow easy development of plug in CDMA or MOBITEXT devices on this platform in the future if needed.

GPRS (General Packet Radio Service)/EDGE data connect services

The GPRS service will be the primary method of alarm delivery. Alarms will be delivered using standard AlarmNet I protocol over a GPRS connection.

Secondary uses for the GPRS service will be connection oriented functions such as upload/download (compass connect), device management and configuration (AlarmNet direct), and in the future real time remote control functions.

AlarmNet will connect to the GPRS network via several APN's (Access Point Name). These APN's define how GPRS's devices connect. AlarmNet will have APN's that connect via 3 methods to the AlarmNet NOC. 2 private APN's will allow connection over frame relay from either of the 2 main carrier NOC's. A 3rd will report to a VPN connection, which can be brought up to support disaster recovery in the event of a loss of both frame circuits.

SMS (Short Messaging Service)

The SMS service will be the backup for alarm delivery in the event that GPRS fails. SMS delivery times are not deterministic in nature and are not as reliable as GPRS for alarm delivery. That said, GPRS service operates independent of SMS service, which means that GPRS could be down while SMS is still functional. If GPRS is down, alarm and supervision functions will be sent on SMS.

SMS will be used to reach out to devices to make them connect via GPRS for upload/download, and other session functions.

7845i-GSM/i-ENTV2 IP Functionality

The 7845i-GSM/i-ENTV2 shall have a 10/100 Ethernet adapter. It shall support the following functions and features:

- DHCP
- Fixed IP
- AlarmNet I
- Intranet
- Compass connect
- 256bit AES encryption

7845i-GSM Tag Team network and panel interactions

The 7845i-GSM will offer dual technology communications. It will support GSM and Broadband IP. On AlarmNet both radio and IP communications will share a common account number, MAC number, and AlarmNet data base record. The 7845i-GSM will appear as a single device to the control panel. This function will improve reliability of alarm delivery and account supervision because no single network failure can block a signal.

Alarm delivery

The 7845i-GSM will transmit alarms over IP as a primary path, and GPRS as a secondary path, and SMS as a tertiary path.

Account Supervision

For 7845i-GSM supervision will be sent over the primary IP path. Both paths are treated as one device by AlarmNet. This means that account supervision does not care if the message came over IP or wireless. An option shall be provided for fire applications to periodically force a supervision message to be sent over the secondary wireless path to make sure all is in order with the radio equipment. The options for path supervision shall be as follows:

- Report path loss alarms only on path loss
- Active test of back up path at a user selected rate. If active test fails alarm sent to CS
- Supervision fail over for high line security the user can choose to have supervision fail over to the wireless device