RADIONET

Apex® Portable Mission Critical Dispatch System

SYSTEM OVERVIEW

The Apex APX-1000 is a portable VoIP/RoIP radio-telecom interoperability and dispatch system housed in a rugged light weight waterproof case. The low power APX-1000 will operate on internal battery when external power is not available.

The APX-1000 system combines a Radio Dispatch Console, Conference Bridge and VoIP gateway to support talk nets between radios, smart phones, SIP phones, telephone lines, VoIP networks and PC's.

Apex supports multiple simultaneous radio patches, talk nets and intercom sessions. An embedded Call Manager provides dispatch operator controlled and/or unattended dial access to radio and conference nets from VoIP networked devices.

APX-1000 features include 6 radio ports, 2 FXO and 2 FXS ports, operator panel, SIP VoIP gateway, call manager and dispatch console client server.

APEX OPERATOR PANEL

The Apex operator panel includes a radio and telephone control keypad, status LED's, headset with PTT and ANR power and volume control. A speaker is provided for monitoring unselected radio audio and incoming telephone call alerting.

The telephone dial keypad allows operator direct dial access to VoIP networked resources, including radios, conference nets, analog telephone lines, VoIP, SIP and smart phones. The APX-1000 operator may access other networked operators via the Apex intercom feature.

VoIP AND DATA GATEWAY

The Apex SIP/RoIP gateway supports VoIP terminal devices, i.e., IP telephones, PC laptops and operator workstations. Apex also supports remote radio control from VoIP networked operator consoles.

THE APX-1000

RADIO PORTS

Apex radio ports feature transformer isolated 4-wire audio, carrier operated relay (COR) inputs and relay operated PTT transmit control. Status display indicates individual radio receive/transmit activity.

Radio interface parameters, such as input/output levels and audio delay are field programmable, providing a universal radio interface capability.

SYSTEM CONFIGURATION

Apex systems are configurable via a remote network connected administrator PC or the front panel keyboard. Configuration is stored in on-board non-volatile "flash" memory.

The APX-1000 operator may configure and join multiple conference nets in any combination of radios, telephones and SIP terminals from the front panel or administrator PC GUI.

One of the most powerful features of the APX-1000 is the ability to pre-configure the system for a variety of mission scenarios, including multiple radio talk nets and user group assignments.

FEATURES AND BENEFITS

- Software programmable radio interfaces adapt to all radio types

- VoIP Gateway interoperates with RoIP/SIP PCs, IP phones and IP PBX systems

- Call Manager allows user dial access to multiple radio talk groups, intercom nets and meet me conferences

- Configurable Voice and IP packet speech detect algorithms provide reliable operation in noisy environments

- FXO and FXS ports network Apex with PBX, PSTN, cellular, legacy POTS or SATCOM equipment

- Operator may configure the system and set up radio patches, efficiently handling group and emergency communications.

- SIP/RoIP gateway includes standard G.7xx vocoders, jitter buffering, AGC and echo cancellation for universal compatibility with VoIP terminal devices and other gateways

- Operator calling is supported by standard telephone call progress tones, allowing use by untrained operators

- Software and configuration updates are stored to on board flash memory, allowing for operation in extreme environments

- 10/100bT LAN/WAN port supports simultaneous operation of an administrative PC and SIP networked devices

- True VoIP gateway allows multiple SIP users to join the same radio or conference net

- Multiple multi-party conference nets may operate simultaneously

- IP phones may use * and # keys for PTT control

- Low power operation extends battery life and allows operation at elevated temperatures

- Operator controlled Built-in-test (BIT) and remotely activated self-test facilitates high availability operation.

- Cabling between the internal Apex modules are fully connectorized, speeding field maintenance

- DSP audio processing with programmable frequency shaping and filtering achieves high quality low noise audio

- The APX-1000 supports connections between VoIP gateways and devices over encrypted networks

APX-1000 SOFTWARE

The APX-1000 includes embedded Call Manager application software, allowing users dial access all Apex connected radios, telephone lines and LAN-connected VoIP terminals.

The embedded web server allows local or remote management and configuration of the APX-1000 features from any PC supporting a web browser.

APX-1000 CLIENT GUI

The APX-1000 Client GUI allows multiple dispatch operators to communicate via VoIP with APX-1000 controlled radios, telephones and intercom nets.

The GUI features simultaneous monitoring/mixing of multiple channels with individual gain control, multi-channel intercom, soft phone, simulcast, and personalized operator screen configurations. The APX-1000 Client GUI will run on any laptop, computer or workstation supporting standard JAVA scripts.

APX-1000 POWER

The APX-1000 requires 10 Watts at 9-56V DC from an external battery, or 110/230V AC power. The APX-1000 may also operate from its optional internal battery pack.

The APX-1000 auto-switches to battery power when AC power is unavailable.

Mobile Command Post

Portable & Team Communication
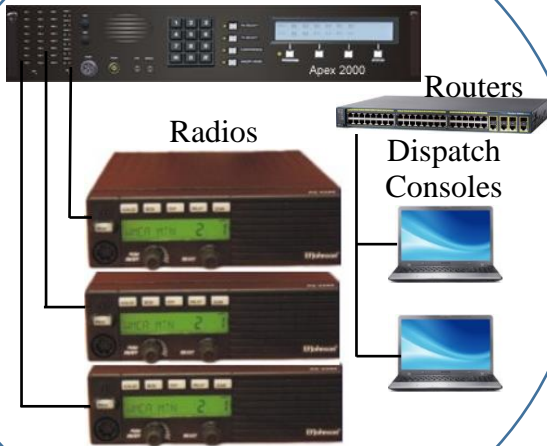
Portable Communication

Remote Site

LYNX
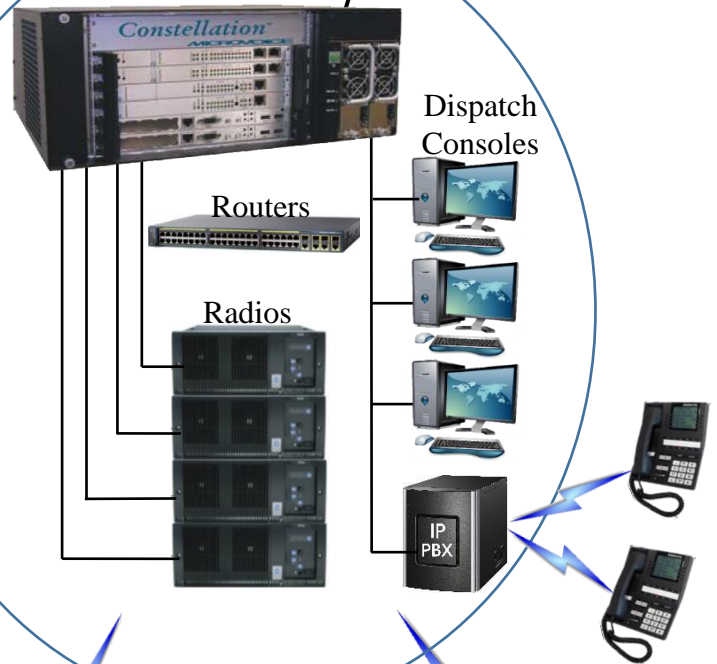
Portable & Team Communication

Vehicle Communications

IP

APEX 2000

Routers

Radios

Dispatch Consoles

Primary Communications Center

Radiodata

CONSTELLATION

Routers

Dispatch Consoles

Radios

IP PBX

APEX 1000

Portable & Team Communication

Vehicle Communications

RADIO AUDIO	APX-1000 SPECIFICATIONS
Radio Inputs	Up to 18V pk-pk, 1V typical, balanced 600ohm transformer isolated and transient protected inputs.
Radio Outputs	0-18V pk-pk, 600 ohm and 0-1V pk-pk, 150 ohm balanced transformer isolated and transient protected outputs.
Programmable Interface	Software programmable input/output gain control over an 80dB range. Programmable audio buffer delays.
Audio Bandwidth	Bandwidth 150Hz-3.4Khz, +/- 1dB.
Connectors	DB-15 connector for each radio port.
RADIO SIGNALING	**SPECIFICATIONS**
COR Inputs	Contact closure or signal logic input levels. Inputs pulled up to +5V DC through a 51k resistor. Receive status indicator. On DB-15 radio connector.
PTT Control Outputs	Normally Open relay contact closure. PTT active indicator. On DB-15 radio connector.
COM PORTS	**SPECIFICATIONS**
Dual 10/100bT Ethernet	IEEE STD 802.3 10/100bT Ethernet LAN. RJ45 connector.
FXO port	Global standard FXO operation. Ring detection. DTMF and call progress signaling. Line transient protection and status indicator. DB-25 connector.
FXS port	Global standard FXS operation. Ring voltage and loop current, DTMF and call progress (dial tone/busy) signaling. Line transient protection and status indicator. DB-25 connector.
Console port	9,600bps – 115.2Kbps RS232 serial data. Rx, Tx, signal ground. DB-9 connector.
CONFERENCE NETS	**SPECIFICATIONS**
Conference Nets	Simultaneous conference nets with any mix of radio, FXO/FXS, operator and SIP participants. Operator may dial access any conference. If allowed by system administrator, participants may dial access conferences without requiring operator assistance.
POWER	**SPECIFICATIONS**
Power	9-56V DC at 10 Watts. Internal battery option and connection for external battery with reverse voltage and fuse protection. Built-in internal battery charger circuit. Universal AC power brick. Auto switching power supply.

APX-1000 DIMENSIONS AND WEIGHT	POWER
16.0" (406 mm) L x 13.0" (330 mm) W x 6.87" (174 mm) H, 9lb (4.1Kg.) or 10lb (4.5Kg.) with internal battery	9-56V DC @ 10 Watts

APX-1000 SYSTEM COMPONENTS	MODEL
Field portable Apex in waterproof enclosure with carry handle; 6 radio ports, 1 FXO and 1 FXS port; SIP/RoIP gateway; operator panel with dial keyboard, patch panel keyboard, aviation style headset connector and volume control; internal speaker and volume control, battery charger for internal battery, 110/230 VAC power pack	APX-1000
APX-1000 OPTIONS	**MODEL**
Noise canceling headset with PTT control	APX-HDST
2 meter LAN crossover cable for administrator terminal	LANX-ADM

Specifications Subject to Change without Notice

US patents 8,442,506 and 9,154,630