Canadian Pacific Railway
Rail Communications System

Client:
Canadian Pacific Railway Company

Location:
Calgary, AB, Canada

Canadian Pacific Railway is a Class 1 railroad that provides rail transportation services throughout Canada and parts of the United States. The system provided by Trak Com provides the communications facilities to allow RTC dispatchers and other personnel to communicate directly with trains and field crews from three dispatch centers located in Calgary, Montreal, and Minneapolis. There is also a backup system located at the Business Continuity Facility (BCF), which provides the capability to control the system if any of the normal dispatch centers become unavailable.

The core software platform is the Rail Communications System (RCS), a rail dispatch center package developed by Trak Com Wireless, which offers the following features:

- TCP\IP network based connections between all major system components, which used for all control and voice-over-IP (VoIP) communications
- Interface to ATM fibre optic transmission network that is used to link all locations continent-wide
- Intuitive and flexible user interface, using mouse, keypad, and optional keyboard
- High availability through the use of redundancy and standardardized hardware
- Interface to existing remote base controllers with the ability to support many different vendors and signaling technologies
- Online database editor and configuration manager
- Remote diagnostics from any location with access to the IP network
- Utilizes industry-standard telephony hardware from Intel/Dialogic

Major hardware components include the following:

- **Base Servers**
  The redundant Base Servers provide central control for all voice communications for the entire railroad, covering more than 300 remote radio sites and 600 fixed radios. The base servers communicates with the consoles (workstations), voice servers, and radios over the IP network. The radio control functions are interfaced via multiport terminal servers, which enable the control of several hundred serial channels to the radio sites. Only one server is active at one time, with all external audio circuits switched through the switchover equipment.

- **Voice Servers**
  The Voice Servers are hybrid telephony switching servers that provide a combination of traditional PCM digital circuits (T1 and ISDN-PRI), and Voice over IP (VoIP). They provide the voice path switching, as well as conferencing, tone decoding and generation, and voice activity detection. N+1 redundancy is utilized to provide backup voice server switching in the event of equipment failure or updates. Where required, T1 channel banks are used to convert between the digital channels and individual 4W E+M circuits.

- **Switchover Equipment**
  The Switchover equipment provides reliable switching of all external PCM channels between the active voice servers and the backup server

- **Workstations**
  The system supports up to 100 workstations, which are personal computers, complete with operator headset interface, PTT switch, and separate operate and monitor speakers. Each workstation can be assigned any territory covered by the system, and will thereby receive all radio and telephone calls associated with the assigned territory.

- **Interface Equipment**
  Some existing DSP3 Radio Interface Equipment has been retained and re-deployed as required to support the RCS interfaces to the existing remote base controllers. Interfaces are also provided to the centralized alarm monitoring system and defect detectors systems.