

*Cyber Digital, Inc.*



**CRX Digital Rural Exchange**



*Connecting Instant  
Voice and Data  
Communications Worldwide*

## New Generation Digital Rural Exchange

Cyber Digital's Rural Exchange (CRX) is a small distributed digital central office exchange, primarily intended for rural, remote, suburban or community telephone applications. The CRX is used by local operating telephone companies to provide switched connections for local subscriber-to-subscriber communications and subscriber to the long distance networks. The CRX is a "state-of-the-art" digital switching and networking system utilizing distributed architecture, which permits CRX to be cost effective for applications requiring from 100 subscribers to up to 8,960 subscribers. The CRX offers the following basic features and capabilities:

- Modular, compatible and expandable up to 8,960 subscribers.
- Digital TDM/PCM, solid state, stored program based switch.
- CCITT (ITU) compatible.
- T1/E1 digital trunking and networking.
- Subscriber billing system, local or remote processing.
- Traffic monitoring and control system, local or remote.
- Flexible numbering plan up to 32 digits, software based.
- International dialing number plan.
- CO and toll trunk interfacing, analog or digital.
- Direct interfaces for microwave, satellite, fiber optic.
- Operator interfacing.
- Automatic line and trunk testing.
- Local and remote maintenance facility.

- Local and remote circuit provisioning.
- Extensive automatic self-diagnostics.
- Common control redundancy, if required.
- Standard -48V DC battery back-up.
- The CRX supports standard single line analog subscriber telephone instruments, DTMF or dial pulse type. The CRX automatically accepts DTMF or dial pulse signaling. CRX supports inter-central office and toll trunks through direct T1/E1 (1.544/2.048 Mb/s) digital trunks or dial repeating analog trunks such as DID, FX, TIE, E&M and DDD.

### System Capacity

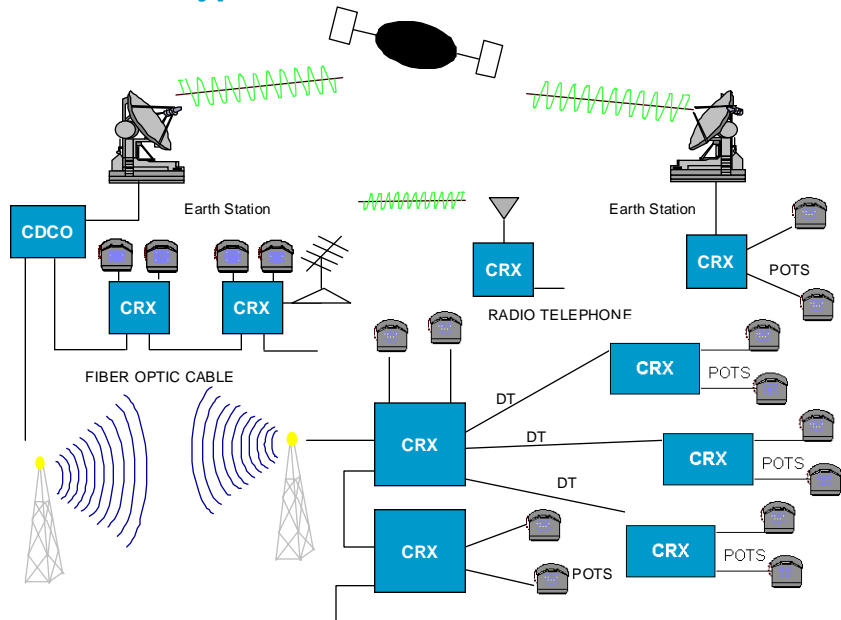
One single node of CRX supports 512 ports which can be configured for subscriber lines, toll trunks or inter-nodal networking trunks. Each node can provide voice communication service for up to 448 subscribers, and up to 20 nodes can be networked to

offers modular expansion in increments of 448 subscriber lines. All local (intra-nodal) subscriber calls are non-blocking offering 1 Erlang of traffic capacity. All long distance toll trunk (inter-nodal) traffic capacity is typically offered at 0.2 Erlang. Greater long distance toll trunk capacity up to 0.45 Erlang can be engineered by reducing the total number of subscribers. System configurations are very flexible with regard to trunking capacity and number of subscribers.

### System Architecture

The CRX employs a proprietary, distributed microprocessor hardware design and a modular, parallel processing stored software program to provide a cost effective and uniquely flexible digital switching and networking system. The CRX's hardware architecture is highly condensed.

### Typical Rural Area Public Network



provide services for up to 8,960 subscribers. Therefore, CRX

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## Maintenance and Administration

The CRX can be maintained or administered while in service from a hardwired Maintenance Terminal to the RS-232C input/output port of the CRX or remotely from the voice network via a modem. A security password must be used to gain access to the maintenance and administrative routines. The CRX can support multiple simultaneous access to maintenance and administration.



## Subscriber Billing

The CRX can collect up to 2,000,000 subscriber call records per day on its hard disk and store them for automatic or demand report processing without the use of peripheral equipment. The CRX also permits subscriber call records to be remoted on a daily basis for centralized billing and processing.

## Brief CRX Features List

- Alternate Routing of Calls-operator assisted
- Area Code Restriction
- Call Waiting
- Classes of Service
- Conference Calling
- DC Battery Back-up
- Diagnostics
- Direct Trunk Access by Operator
- DTMF Dialing
- DTMF sending
- DTMF through dialing
- Emergency Service
- Flexible System Numbering Plan
- Fully Restricted Subscriber Stations
- Hunt Group Subscriber Lines - Circular

- Hunt Group Subscriber Lines - Linear
- Intercept Treatment Tone
- Maintenance and Administration
- Multi-tenant Subscriber Group Service
- Operator Assisted Calls
- Operator Override
- Operator-less Operation
- Power Failure Restart Disk
- Remote Maintenance
- Subscriber Line Lockout
- Toll Restriction

## Cabinets and Bay Configurations

- Small size cabinet, 24" wide, 24" deep, and 42" height, can accommodate one CRX node.
- Large size cabinet, 24" wide, 24" deep, and 72" height, can accommodate two CRX nodes.
- Relay Rack Bay - Standard relay rack of 23" width, 20" depth, and 72" height can accommodate up to two CRX nodes. Multiple relay racks can be placed side by side to provide space for up to 20 nodes.



Relay Rack Bay configuration is recommended for all size applications where the equipment is installed in a secured building or access limited to authorized personnel or small central office type environment.

Relay Rack Bay set up also offers faster access to circuit card removal and replacement, and easier fault detection and administration

## Power Requirements

Standard CRX configuration uses -48V DC power input or typical central office DC power source. CRX can also be engineered to include DC battery back-up for any number of hours required by a particular application. Typical power consumption is approximately 1KW per node.

## Operating Requirements

CRX Operating Temperature Range is 30 degrees F to 140 degrees F. Relative Humidity Range is 20 to 80%.

## Cyber Digital's CRX - an Ideal Rural Exchange

The CRX's distributed approach makes CRX network extremely cost effective and flexible.

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Cyber Digital, Inc. is a publically held company and its securities are traded under the symbol CYBD.