

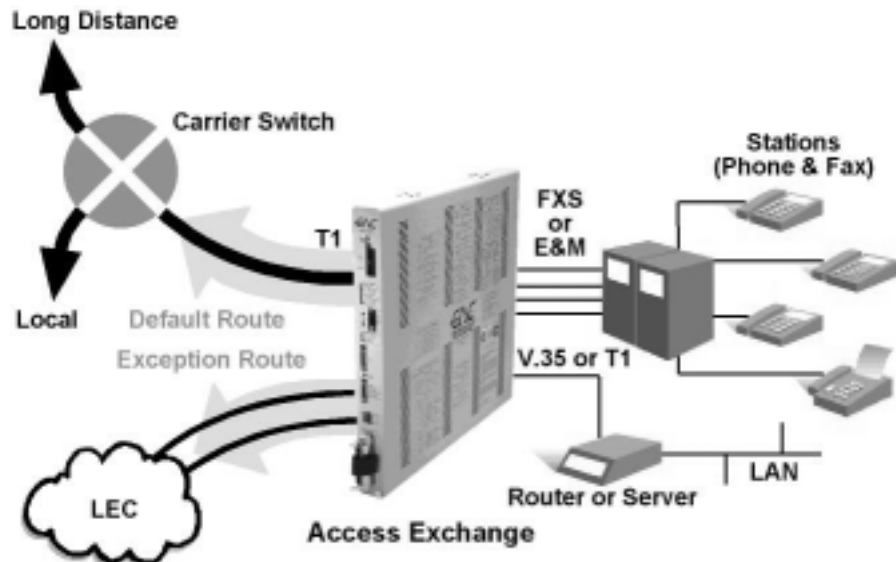
# Access Exchange™

## The Access Exchange

combines the functions of an intelligent CSU/DSU, digital access and automatic cross connect switch (DCS), channel bank, and call router in a single product. The Access Exchange terminates voice and data services provided over one or two T1 lines. Economical local, long distance, DID and high-speed data services can be accessed without changing customer telephone equipment.

## Operational Description

CAC's Access Exchange™ is the first SNMP compliant switch for optimized T1 access to competitive services. Featuring the intelligence to route and translate local and long distance calls, the Access Exchange optimizes the use of T1s. Located on the customer's premises, this switch allows the Inter-exchange Carriers (IXCs) or other network providers the ability to offer local service without deploying local switches. The Access Exchange enables customers to achieve lower rates on local, long distance, high-speed Internet, and data services from a single bundled service provider without upgrades to their existing telephone systems.



## Access Exchange Features and Advantages

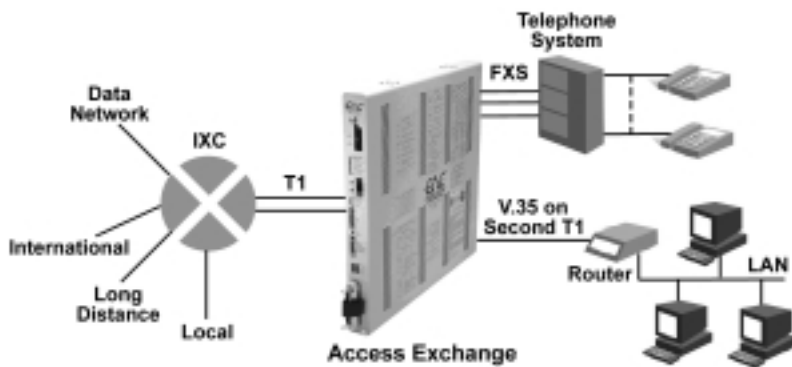
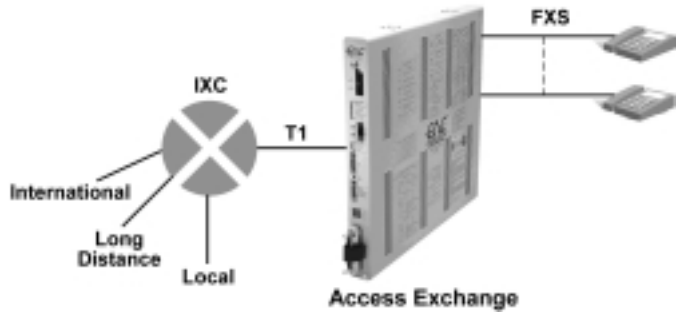
- Integrates voice and data, reducing monthly data access costs by eliminating separate 56Kbps DDS lines. Increases data speeds to 1.5Mbps economically. Packs under-utilized T1 voice access lines with SNMP/Ethernet managed data
- Provides dual T1 CSU/DSU connectivity for dual carrier connections or increasing bandwidth to 3.0Mbps
- Minimizes per minute costs of local and long distance services, while maintaining existing local number terminations, 411, 911, 8XX and other special calling
- Reduces the need for LEC analog lines, reducing monthly access costs
- Only 25% of the cost of new PBXs. No upgrades to customer phone systems needed

## Applications

### Provide local phone services from Class 4 switches

CAC's Access Exchange translates local phone numbers to 11 digit numbers, allowing local numbers to be handled by the Class 4 switch. The IXC can then offer local services along with long distance, which maximizes the use of connections and increases revenue opportunities for the carrier.

The Access Exchange minimizes capital costs to both the subscriber and the carrier. The carrier can offer local phone service directly from Class 4 switches, and the subscriber can utilize the benefits of Automatic Route Selection without having to upgrade their PBX or Key system.

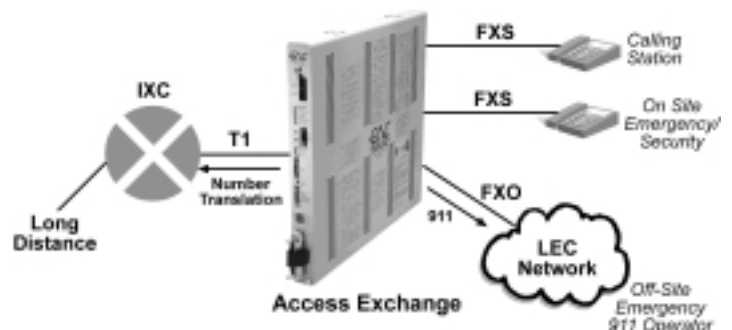


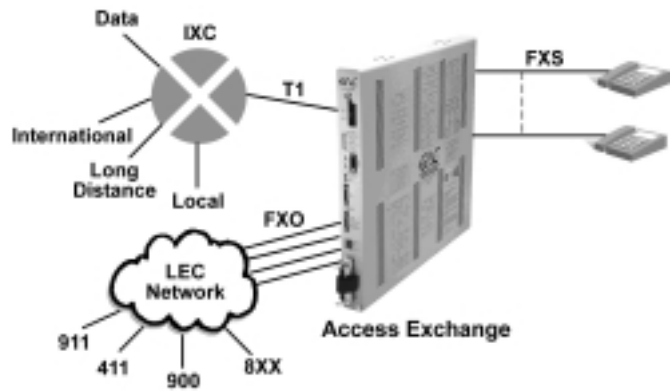
### Provide enhanced data services along with local and long distance services

If the T1 is not fully utilized for local or long distance trunks, the Access Exchange, with the V.35 interface or second T1, can fill the balance of the T1 with data. Old 56K data connections can be increased to high-speed 128 to 1536K connections, while saving monthly access costs. The Access Exchange allows carriers to "Pack the Pipe" to maximize revenue on one or two T1 access lines.

### Emergency call routing

Large complexes route 911 calls to a central point to coordinate emergency services. The Access Exchange allows number translation to change or direct the 911 call to another number, in addition to local LEC routing.





**Reduce call volume on the IXC switches**

The Access Exchange is designed to provide the features needed by IXCs in order to offer enhanced services such as local dial tone and data over the existing T1s serving the current customers.

Many local calls or non-revenue-generating calls can be routed to the local carrier to mix local and long distance services. 1-8XX, 1-900, 911, and 411 numbers and other free calls can be routed to the local switch via the Access Exchange look-up tables. In addition, revenue generating local calls, such as 411, can be routed to the carrier’s switch in the same manner. The use of Access Exchange with remote management enables the carrier to maintain control of the call routing database without making a trip to the site or having to access the customer’s PBX.

The Access Exchange enables carriers or customers to manage the routing database from a centralized location via the Ethernet SNMP management port. Database changes such as Area Codes or revenue generating services can be made from the NOC with no trip to the site, minimizing any disruption of the customer’s normal operations to facilitate the upgrades. When databases are stored in the PBX, the customer is required to make the changes or the carrier must make a costly site visit to update the database, usually during off-hours.

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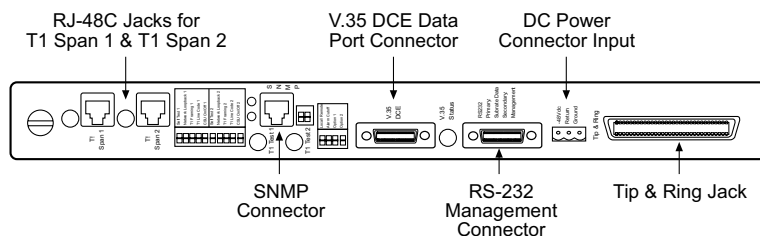
Economical local, long distance, DID and high-speed data services can be accessed without changing customer telephone equipment.

The Access Exchange is normally equipped with two 12-channel analog interface cards. CAC offers several types of cards, the most popular being 12-channel FXS, 12-channel FXO, 12-channel E&M, and a 4(FXO) + 8(FXS) combination card, to meet all customer configurations. One V.35 DCE serial data port, one RS-232 management port, and one 10Base-T Ethernet SNMP management port are included. If additional voice lines are required, an additional Access Bank® can be connected via the second T1 for a total of 48 channels of capacity to the customer’s phone system.

- Automatic digit insertion can route local calls in areas with 7-digit dialing, by inserting the local area code before the seven digits that are dialed.
- Exception calls such as 1-8XX, 1-900, and 911 can be routed to the LEC. In an emergency, when all LEC lines are in use, 911 calls will pre-empt existing non-911 calls.
- Inward routing supports Dialed Number Identification Services (DNIS) and Direct Inward Dialing (DID), as well as routing analog LEC lines to hunt groups.

All of these features enable carriers to offer services without the heavy capital costs of upgrading or replacing the customer’s current key system or PBX. The existing customer’s infrastructure can be utilized, which enables faster service deployment without service disruptions.

## Technical Specifications



### T1

Two T1s terminating 3.072 Mbps of usable bandwidth  
Fully integrated intelligent CSUs support diagnostic functions and DS1 or DSX-1 signal levels from 0 to -30dB with built-in CSU network loopbacks and QRSS for BERT fault isolation

D4 (SF) and ESF framing and conversion between T1 lines  
AMI or B8ZS line coding and conversion between T1 lines

Terminates and time slot interexchanges 24 analog interfaces and 2 data interfaces from either or both T1 lines

Clock source is internal enhanced Stratum 4 (master) or synchronized from either T1 line (Line 1 or Line 2)

### Automatic Call Routing and Switch Functions

Call routing based on DTMF digit analysis

Call progress tone generators and DTMF registers built-in  
Inbound and outbound routing tables

Programmable digit insertion for long-distance selection

72 switched channel capacity: 2 T1s and 24 analog ports

Up to 48 analog ports via T1 connection to additional Access Bank

31 user-defined hunt groups

Digit analysis for inward and outward routing

Optional group and channel call statistics recorded

Optional dynamic channel and call monitoring from Windows software

Power of T1 failure emergency bypass line

### User Programmable Digital Cross Connect and Multiplexing Functions

1 T1/CSU with 1 T1/CSU D&I port

Enables ESF to D4 (SF) conversion for PBXs with T1 interfaces

2 T1/CSU DS0 Digital Cross Connect (DCS) functionality – three frames maximum (0.375ms) T1 to T1 delay

T1 line fault alternate route remapping to second active T1 line

User-programmable bandwidth allocations of voice and data

### Data Interfaces

Synchronous V.35 data to 1.536Mbps in Nx56Kbps or Nx64Kbps steps in any channel combination from 1 to 24

Built-in V.54 data loop code generation and detection for V.35 only

### Management

RS-232 port and cable for local Windows®-based GUI management included

Embedded SNMP for local or remote monitoring via Ethernet Port, CLI via RS-232 or Ethernet Port

Front panel T1 test switches and status LEDs

Back panel analog channel option, test switches, and status LEDs

### Alarms

Dial-out notification over modem attached to RS-232 management port

### Compliance

FCC Part 68, CS-03 listed - CSU, protection, line balance, REN  
FCC Part 15, Class A Radiated Emissions Control

NRTL safety listed: UL 1459, CSA

National Electrical Code 1996 safety requirements

ANSI/TIA T1.403 and AT&T 54016 ESF reporting on facility data link

AT&T 62411 (Stratum 4 enhanced T1 CPE)

### Power

-48 VDC @ 1A input from battery source

115Vac/75W power converter included (CAC P/N 730-0124)

Optional 220Vac/50Hz to -48VDC converter module for international applications (CAC P/N 730-0083)

Solid-state (fuseless) overvoltage and overcurrent protection

### CPE Battery Backup System

Optional 120Vac to -48VDC power converter/battery charger (CAC P/N 730-0116) and battery unit (CAC P/N 730-0114) for up to eight hours of uninterrupted power protection

### Environmental

Normal operating temperature: 0° to 50° C (32° to 122° F)

Solid-state over-temperature protection prevents damage to the unit

Relative humidity: 0 to 95%, non-condensing

### Physical

Dimensions: 17" x 17.75" x 1.75" (43.2cm x 45.1cm x 4.5cm), 14.5 lbs. (6.6 kg) fully loaded

Power converter/battery charger unit: 4" x 5" x 3.25", 6 lbs.

Battery backup unit: 17" x 6.25" x 3", 30 lbs.

Flush wall mount, desktop or 19" rack mount (multi-function brackets included)

24 units can be mounted in a 7ft., 23" standard rack

Optional heavy-duty 19" (CAC P/N 710-0041) or 23" (CAC P/N 710-0130) rack mounting brackets with adjustable front-to-back offset

Optional Trimount bracket for wall mounting of three Access Banks and power converters (CAC P/N 710-0002)



5395 Pearl Parkway, Boulder, CO 80301

303-442-5455 fax 303-546-9724

800-495-5455

<http://www.carrieraccess.com>