

Cyber Digital, Inc.



CDCO Distributed Central Office



*Connecting Instant
Voice and Data
Communications Worldwide*

Cyber Digital's Innovative Solution

Telecommunications is a vital basic infrastructure for overall development of economy and industry in particular. Building telecom infrastructure using traditional monolithic centralized switching systems from multinational suppliers poses tremendous financial constraints and deployment time limitations because of outside plant underground cabling. Cyber Digital's innovative CDCO distributed switching system offer "instant installations" and "low cost" solutions to service providers for building such networks in high density areas without the need for underground cabling.

Cyber Digital offers a truly Distributed Central Office Exchange (CDCO) and a full array of digital switching systems for modern digital telecommunications applications and networks. CDCO switching systems employ uniquely a new architecture based on Flexible Information Switching Architecture designed to evolve as the core of Integrated Services Digital Networks (ISDN), wired and wireless services, microcellular services and personal communications services (PCS). The cutting-edge technology and concepts used in the CDCO switching systems are characterized by its nodal architecture, distributed control philosophy, decentralized redundant nodal processing and ultimate modularity. Although, CDCO systems are designed for the advanced digital telecommunication networks of today providing feature rich voice and data services as well as high speed Internet services, it also works efficiently with the existing analog telephone networks.

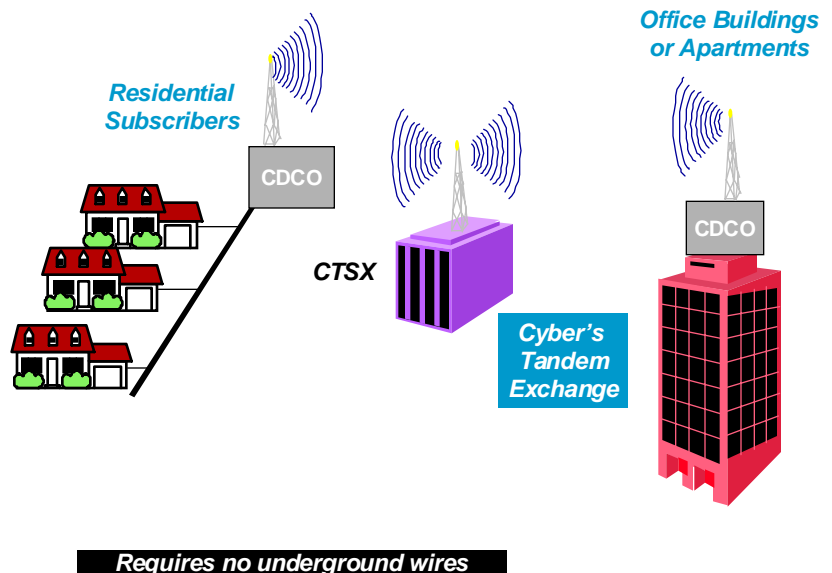
Benefits of CDCO's Nodal Architecture

The architecture of each node of the CDCO network infrastructure involves an efficient blend of circuit switching, packet switching, ATM packet technology, distributed peripheral intelligence and common control. Its hardware is compact as it is primarily driven by software and its features and functionality are easily changed by flexible software. Hence CDCO systems can meet most challenging as well as continuously changing telecommunication network requirements. The CDCO network infrastructure represents the next generation in wired and wireless communications. The CDCO is designed for long-term growth, not only in terms of virtually unlimited number of subscribers, but also in terms of features, functionality and applications.

The CDCO network infrastructure consists of many nodes interconnected through standard inter-nodal digital links which permit optimization of the network with respect to specific size, required traffic capacity, and desired applications. The CDCO is designed to provide digital voice communications to subscribers in densely populated metropolitan areas.

The modularity derived from the nodal structure of the CDCO provides an economical digital switching exchange from as low as a few hundred lines to over a million lines capacity. In addition, it offers fully integrated local, tandem, toll and transit exchange capabilities. The CDCO has interfaces for digital microwave systems, digital copper wire systems, digital radio relay systems, digital wireless systems, fiber optic systems and satellite systems.

Cyber Digital Solution



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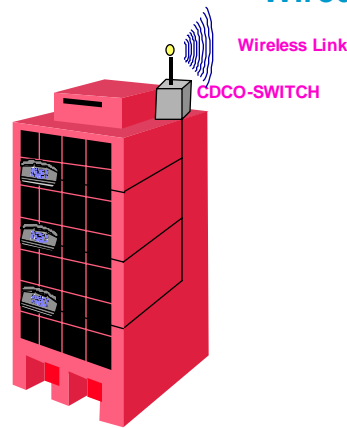
The CDCO also provides Advanced Intelligent Network (AIN) software processing capability which renders wireless networks to be seamless and fully interoperable with the services and features offered by wired networks. Within a CDCO network infrastructure, each node not only sends and receives its own traffic, but also routes the traffic of other nodes. Through Cyber Digital's advanced Cybermesh software, CDCO can function as a mesh network instead of a star network more commonly used by monolithic centralized switches. This Cybermesh approach dramatically reduces the infrastructure investment required in a given geographical area as it increases efficiency and traffic handling with fewer nodes.

The CDCO is an extremely flexible system where each node forms an autonomous hardware and software entity, or each node may be construed as a "building block". Each node provides 512 ports which can be configured for voice and data services to subscribers or trunk ports connecting to the telephone network. Each node is totally non-blocking providing 100% throughput of traffic capacity per port. Any number of these nodes can be interconnected through inter-nodal digital links to provide the required number of ports and traffic capacity.

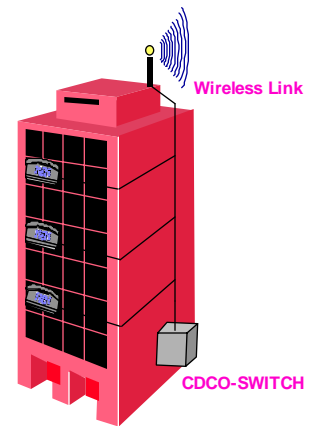
Cyber's Wired Microcell Approach For Implementing Telephone Service

Cyber's approach relies on its CDCO nodes interconnected to a Cybermesh network via a short-haul point-to-point wireless network. The costs associated with this approach is dramatically less than the installation cost associated with laying fiber or copper on the network side

Wired Microcell



Typical Wired Microcell for Apartment or Office Building
(CDCO Located on Roof or Top Floor)



Typical Wired Microcell for Apartment or Office Building
(CDCO Located on Basement or Ground Floor)

(material costs, right-of-way issues, and regulatory obstacles). Advances in RF have lowered the cost of millimeter wave radios to the point where a radio link is far less expensive than traditional digital copper lines. Moreover, such radio links permit rapid deployment and connectivity to the network resulting in instant service. On the subscriber side, CDCO connects to subscriber telephone sets by standard indoor telephone wire, typically less than 500 feet. Since, this wiring is contained within a building or a few buildings, the deployment time is minimal and cost almost insignificant. For instance, in an apartment or an office complex, a CDCO switch would be placed in a utility room (lack thereof on the roof top) and CDCO interconnecting to a Cybermesh network via a 23 GHZ radio link with a 24cm horn or 900 MHZ Spread Spectrum radio with a directional antenna. Each of these CDCO nodes with its intrinsic capabilities of local, tandem and transit switching creates a wired microcell with wireless to the network.

CDCO, when implemented as a wired microcell with wireless to the network, is ideally suited for areas

where subscriber densities are very high (5,000 to 100,000 subscribers per square mile). It offers extremely high traffic capacity at very low capital cost which are unattainable by using traditional monolithic switches offered by multinationals.

In areas where the subscriber density is 500 to 5,000 subscribers per square mile, CDCO is implemented as a wired microcell with wireless to the network as a curb side switch. The subscriber side wiring is horizontal and aerial, attached to the subscriber houses, generally limited to 2,000 feet. This task of wiring houses is easily accomplished within a few days for say 5,000 subscribers. The cost of the subscriber wiring is insignificant.



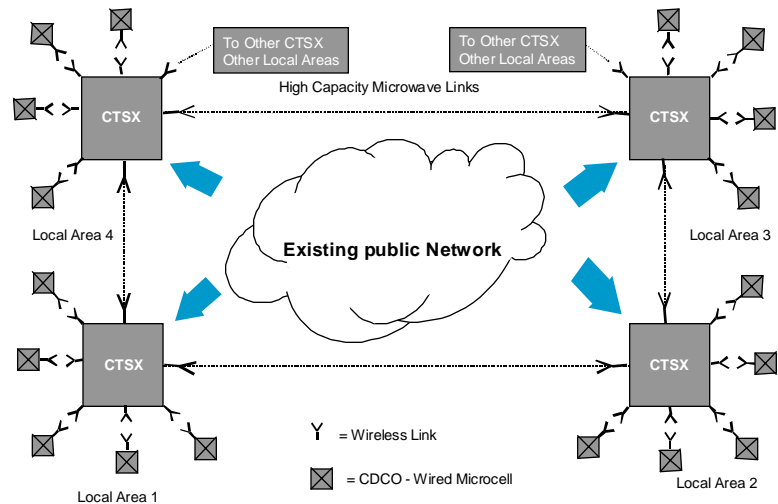
The scalability offered by the CDCO with respect to subscriber density is of great importance to service providers. It allows them to build the network according to the demand instead of building on the basis of future capacity requirements as is the case with traditional monolithic approach. The CDCO's scalability allows a service provider to deploy network rapidly as well as recover capital investment within reasonable number of years.

Each of the CDCO based wired microcells connects to the Cybermesh network by wireless means. The Cybermesh network comprises of a number of CDCO based CTSX (Cyber Tandem Exchange) with capacities from 1,000 to 500,000 digital channels. The CTSX has interfaces for millimeter wave radio for connections to microcells, long-haul digital microwave links, long-haul fiber optic links, satellite links and digital terrestrial links.

The CTSX has only digital interfaces. The CTSX and its associated digital microwave links can provide a complete wireless network eliminating the need for digging and trenching, right-of-way permissions, interfacing with regulatory bodies (who create obstacles). Cybermesh software allows all the CTSXs connected in a mesh to provide totally non-blocking service with tremendous traffic handling capacity (not possible by monolithic switches).

In the future, if fiber-to-the-node type networks are required because of high speed data traffic to subscribers, CDCO based network architecture will be the only approach. Therefore, implementing Cyber's CDCO based network today means that a service provider does not have to tear down the network tomorrow.

High Density Public Network



It is the only type of network to build on and grow today!

Ultimate Modularity

Each node which forms an autonomous sub-system of a larger system is also extremely flexible and modular. It consists of peripheral cards or basic modules which are organized in functional classes. Its modularity may best be compared to a "Leggo Block Set" where the same "blocks" or cards can be separated and later joined together to form other objects or systems. For instance, a node equipped with a particular sets of cards can be configured for digital local exchange (CDCO LOCAL), digital tandem exchange (CTSX), digital access cross connect (CDAC), digital transit exchange (CTSX), digital rural exchange (CRX), etc.

Nodes are basic system elements at sub-system level which compose a flexible telephone architecture. Nodes are configured in functional classes as follows:

- Peripheral and Switching Node
- Tandem Switching Node

Multiple nodes within a functional class are linked together through

standardized digital interfaces to form a larger module in increments of 512 ports.

Extremely Flexible

The nodal structure of the CDCO system permits changes to the functionality of the system simply by using different software while keeping the same common hardware. Such flexibility of CDCO offers a vast array of system configurations to Telephone Operating Companies and Administrations to fulfill a wide range of applications as follows:

- Local CDCO exchange serves subscribers in cities and towns.
- Tandem exchange (CTSX) serves as a regional exchange connecting to various local exchanges.
- Toll and transit CDCO exchanges are used for long distance national service and international gateway.
- Integrated local and tandem exchanges.
- Integrated local, tandem and toll exchanges.
- Integrated local, tandem, toll and transit exchanges.

- Digital Access Cross-connect (CDAC) is a network management system providing optimal routing and control of heavy traffic through software.

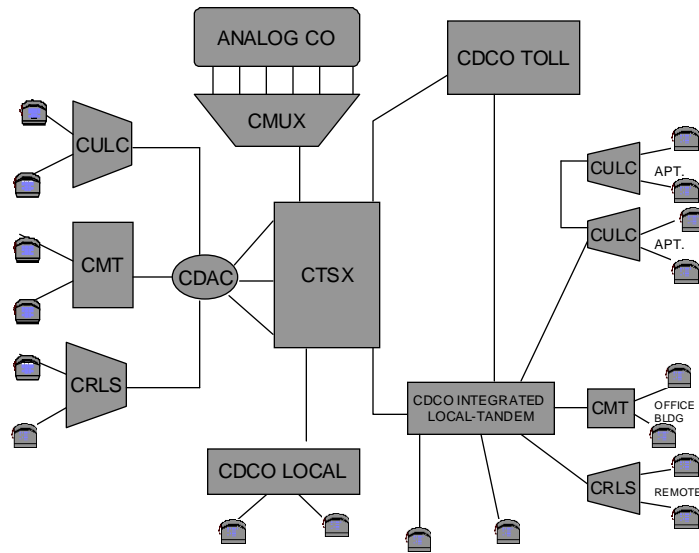
The flexibility of CDCO systems are further enhanced by software configurable Peripheral and Switching Nodes performing the following functions:

- Multi-tenant exchange (CMT) serves subscribers in large office complexes and buildings where many business tenants can be served by a resident exchange.
- Urban Line Concentrator (CULC) serves subscribers in congested areas where traffic is moderate such as in apartment dwellings and suburban communities.
- Remote Line Switch (CRLS) serves business subscribers in high growth areas such as in industrial parks and complexes, and university campus settings.

Totally Distributed

The control functions of the CDCO system are totally distributed in autonomous processing sub-systems (nodes). Node processors are loosely coupled and exchange information through standardized inter-nodal communication digital links. The distributed approach permits switching systems to be located closer to groups of subscribers or at subscriber premises, which dramatically reduces the cost of wiring and cabling. It also results in "instant" installation. Moreover, a failure in one node does not affect other nodes. In addition, the distributed approach eliminates bottlenecks as the system offers multiple routes for call completion.

Example of Metropolitan Public Network



Decentralized Redundant Nodal Processing

Nodal processing is organized into independent five level processing for control, peripheral, switching and terminal (ISDN). Extensive multi-processing is performed at peripheral level which alleviates burden on the nodal main processor unit which is responsible for general local control and processing. Since, the operating decisions are decentralized over multiple nodal main processors, the CDCO system provides maximum throughput and optimal traffic handling capacity at all times.

Each of the nodal main processor units along with its associated time switching unit is accompanied by redundant processing and switching units.

Centralized as well as Distributed Network Management

The CDCO's network management and support systems are totally computerized employing on-line transaction processing including, but not limited to, billing management,

billing collection and transfer, automatic fault and diagnostic management, remote maintenance, configuration management of network end, subscriber end, communication configuration, move add and changes, performance management, traffic metering, real-time traffic analysis on network end of subscriber end, bar graphs based traffic analytical reports, security management through multilevel password and user identification etc. Such network management and support systems are provided on centralized basis with back-up provision on distributed basis.

Hardware Universality

Shelf or card-cage is designed with universal slot concept. Any printed circuit card can be installed in any physical slot. Hardware commonality is very extensive as any combination of cards can be used in different nodes and modules of the CDCO system.

Extremely High Reliability

Combined with functional decentralization, distributed architecture, and redundancy, the CDCO system provides ultra-high reliability and overall system availability. The redundant nodal main processor unit and the redundant time switch unit operate in a master-slave operation. Typical Mean Time Between Failure (MTBF) for common control is 47,000 hours with and overall system availability of 99.999%

HOW CYBER'S LEADING EDGE TECHNOLOGY SOLVES THE TELECOM PROBLEMS FOR SERVICE PROVIDERS

Minimal or No Cabling Costs

Cyber's CDCO distributed switching approach permits switching systems to be located closer to groups of subscribers or at subscriber premises which dramatically reduces the cost of wiring and cabling compared to costs incurred by monolithic centralized switches.

Alleviate Cable Congestion

Wherever limited cable capacity exists, CDCO network infrastructure offer digital methods of multiplexing transmission channels on existing cable plant, thus dramatically increasing the channel capacity of the existing cable plant.

Ease of Building Telephone Infrastructure

Wherever lack of telephone cable infrastructure exists, distributed CDCO offer an intelligent and cost effective method of building telephone infrastructure rapidly by creating a wired microcell with wireless to the network. It is very easy to wire the inside of an apartment or an office building than to haul large number of outside cables.

Ease of Switch Installation

A CDCO wired microcell switch can be installed in a few days. Therefore, telephone service to subscribers can be provided within a few weeks rather than three or more years it takes for implementation of a monolithic centralized based switches as offered by all multinationals.

Ease of Migration to Future Digital Cellular and Personal Communication Service

Future digital cellular and personal communication service (PCS) will demand distributed switching systems such as CDCO equipped with radio telephone interface much like a digital cellular telephone of today. This will substantially reduce the cost of digital cellular service and make it more affordable.

Upgrading older exchanges

The CDCO interfaces perfectly well with 3 digit through 16 digit exchanges. It has the ability to upgrade existing older exchanges to international standards through the process of digit insertion, deletion and manipulation by software. The CDCO systems meet the requirements of all international dialing plans. The CDCO offers flexible numbering plan up to 32 digits.



Compact Size

A 1,000 line switch cabinet dimensions are 24 inches, 24 inches, and 72 inches for width, depth and height respectively.

Low Power Requirements

The CDCO system consume only 0.6 watts per subscriber and can operate from battery packs powered by solar panels or crude power supplies. All installations come equipped with 10 year guaranteed Gell Cell maintenance free batteries. Due to its low power consumption, the system does not require any air conditioning.

Resistance to Hostile Weather Conditions

CDCO system is tropicalized (meaning all printed circuit boards are protected from oxidation through a process of glass passivation layering). In addition, the system can operate in temperatures up to 140 degrees F and 80% humidity.

Easy Connectivity with National Network

Each CDCO exchange can be easily connected with CDCO based or other national exchanges and other exchanges via digital microwave links, analog microwave links, terrestrial digital transmission copper wire systems, fiber optic, satellite and wireless systems.

Remote Maintenance

The CDCO provides full auto-diagnostic capability, maintenance functions, and software database changes from maintenance facilities.

Most Economical

From every point of view relevant to a buyer such as (a) initial acquisition cost, (b) floor space



cost, (c) power requirements, (d) maintenance and repair, (e) inventory and administrative expense, (f) operating costs, and (g) life cycle costs, Cyber's CDCO is the most economical.

Continuous Expansion Capability

As the subscription needs increase, CDCO systems can be expanded to meet subscriber requirements without discarding the existing installed base. Since the system is completely modular, a 512 port system can be increased over one million lines on a gradual basis keeping pace with subscriber needs.

CDCO Offers Value Added Network Services

Beyond the basic dial tone services, CDCO offers value added network services such as voice mail services, call forward, call waiting, digital conferencing from 3 to 30 parties (with or without operator assistance), answering service, automatic beeper page, wake up call, etc. Its data services include direct

digital data, packet switched services, Internet services, ISDN, emerging video conferencing and multimedia services, etc.

Cyber Digital's CDCO - an Ideal System

The CDCO network infrastructure is economically and technologically most compelling because of no infrastructure cabling costs and the network driven by the intelligence of the subscriber nodes, which offers superior routing, queuing, call processing, billing and network management.

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

