CODEX 6000 INTELLIGENT NETWORK PROCESSORS
Typical Network Configuration

- CENTRAL PROCESSING SYSTEM NO. 1
  - CODEX 6520 FEP
  - CODEX MODEM
  - DDS INTERFACE
  - CODEX MODEM
- CODEX 6040 INP
  - CODEX MODEM
  - USER TERMINALS
- CENTRAL PROCESSING SYSTEM NO. 2
  - CODEX MODEM
  - HIGH SPEED NETWORK LINKS
  - CODEX MODEM
  - CODEX MODEM
- CODEX 6030 INP
  - CODEX MODEM
  - USER TERMINALS
- CODEX 6010 INP
  - CODEX MODEM
  - USER TERMINALS
  - CODEX LOW SPEED MODEMS
  - CODEX LOW SPEED MODEMS
The Codex 6000 Series Intelligent Network Processors (INP's) present the most advanced means of managing your data communications network. Based on an advanced multi-microprocessor architecture, the 6000 Series provides economy, distinctive performance characteristics, and advanced degrees of flexibility to solve your most demanding data communications problems.

More intelligent than a multiplexer, and more economical and efficient than a concentrator, the 6000 INP offers unique data handling functions at the nodes of your network. By distributing intelligence through the network, and by performing tasks that cannot be accomplished by traditional devices, the 6000 INP provides centralized network control and monitoring for all nodes, including the gathering of statistical measurements of network performance, and the detection and reporting of abnormal conditions when preset thresholds are exceeded.

The 6000 INP statistically combines information from a large number of terminals as traffic is offered. Dynamic bandwidth allocation allows the 6000 INP to handle more terminals than a traditional time division multiplexer for a given trunk speed. A data compression feature which substitutes short codewords for frequently used characters further increases throughput. This combination of statistical multiplexing and data compression provides overall savings by decreasing modem and line costs.

The 6000 INP is operationally transparent, and no special equipment or software engineering is required for integration into your planned or existing system. Its modular design provides for growth in both size and functionality, from line concentration up to distributed network monitoring and control. In addition, the Codex 6000 Series INP implements a full-duplex GO BACK-N ARQ (automatic repeat request) internodal protocol, assuring error-free communications.

THE 6000 SERIES INTELLIGENT NETWORK PROCESSORS FEATURE:
- Error-Free Transmission
- Operational Transparency
- Network Management and Performance Monitoring
- High Throughput Efficiency
- Modular Expandability
- Data Compression
- Network Configuration Control
- Multinode Capability
- Intermixed Data Rates and Protocols
- Autospeed
- System Diagnostics
- Capacity for up to 248 Terminals
- Multiplexed Network Interface to Codex 6500 Series Communications Front-End Processors
EXTENSIVE NETWORK CAPABILITIES

LOW COST REMOTE DATA CONCENTRATION
The Codex 6000 Series INP's provide efficient concentration and data compression, allowing you to transmit data streams from up to 248 low to medium speed terminals over one high speed line. With its error-free data transmission and high throughput, the 6000 INP reduces line requirements to substantially decrease your communications costs.

REPLACEMENT OF CONVENTIONAL TDM's
On high speed traffic links, the Codex 6000 Series INP's require a narrower digital bandwidth than a TDM, due to the INP's concentration and data compression features. The resulting transmission cost savings alone can justify the replacement of a TDM. The benefits of error control, enhanced network control and diagnostics are an added bonus.

DRAMATIC RESULTS IN BISYNCHRONOUS ENVIRONMENTS
The 6000 INP can dramatically increase the efficiency of bandwidth utilization in BSC environments. The bandwidth in terrestrial or satellite links, which ordinarily goes unused due to the half-duplex nature of BSC protocol, can be re-allocated by the 6000 INP to additional synchronous or asynchronous devices. This means that more terminals can communicate without additional costly communications links.

NETWORK GROWTH THROUGH MODULAR EXPANSION
The Codex 6000 INP offers a variety of features and hardware and software options that allow you to expand its capabilities as your data communications needs grow. To increase capacity, you can incrementally add terminal ports, throughput capability or memory storage by simply inserting additional plug-in modules. Features such as autoselect and custom data compression can also be easily incorporated at any time. And, as your system grows, the Codex 6000 Series INP's will keep pace with your requirements for sophisticated network monitoring and control.

NETWORK INTEGRATION
The Codex 6000 Series Intelligent Network Processors permit the integration of multiple applications-oriented networks under one transparent data transport system, despite an extensive mix of terminal types and host CPU's.

TURNKEY COMMUNICATIONS NETWORK FACILITY
The combination of the powerful network processing capabilities of 6000 INP's with the advanced communications features of the Codex 6500 Series Communications Front-End Processors (FEP's), presents a turnkey communications network facility that can be tailored to meet your specific applications. It allows you to upgrade your network, instead of your mainframe.

The Multiplexed Network Interface Capability of the 6500 Series FEP's permits you to extend your network capabilities to remote locations over a single physical connection to remote 6000 INP's. And, the multiplexing capabilities of the 6000 INP's allow multiple data terminals to communicate with your host computer. This interfacing scheme lets you achieve more efficient utilization of your processing resources, while increasing throughput and functionality.
**ADVANCED FEATURES**

**ERROR-FREE TRANSMISSION**
Using a highly efficient full-duplex ARQ scheme for node-to-node communication, the Codex 6000 Series INP’s assure you of error-free transmission in the network. In addition, optional features are available to automatically monitor the quality of the communications links.

**CENTRALIZED NETWORK CONTROL**
You can achieve centralized network control with the Codex 6000 INP by either of two options. An Operator Console can be used to select, examine and modify a variety of system configuration, status and performance data anywhere in the network. It also serves as a hardware diagnostic/test panel during installation and maintenance. The other system control device is a Control Terminal Port which allows local or remote monitoring, interrogation and reconfiguration. This port may be interfaced to most asynchronous terminals or directly to your Codex 6500 FEP or host computer.

**NETWORK MANAGEMENT**
The 6000 INP’s Network Management feature provides full capability for the collection, computation, and centralized reporting of statistical measures of system performance. Vital advance information of potential bottlenecks or inefficient resource utilization is therefore at your fingertips. Typical information includes: character error rates of terminals, processor loading, memory utilization, data compression efficiency, line utilization, and traffic density. In addition, the Monitoring Option supplies reports whenever abnormal conditions occur, or user preset threshold levels are exceeded, while the Statistics Option produces longer term performance data in response to operator interrogation.

**MULTINODE CONFIGURATIONS**
The Codex 6000 INP is designed to support the interconnection of two or more nodes in a network. A variety of multinode distributed configurations, where each node may be connected to one or more neighboring nodes, can be structured, permitting you to alter the interconnections of source/destination pairs.

**INTERMIX OF TERMINALS**
Each terminal port module is capable of supporting asynchronous or BSC synchronous terminals, with other packages available on special request. Configuration changes to port type and characteristics can be handled directly from the Operator Console or the Control Terminal Port. No hardware strapping or board replacement is necessary.

- Synchronous speeds (internal clock):
  - 1200, 2400, 3600, 4800, and 7200 bps
- Any external clock speed up to 7200 bps
- Asynchronous speeds:
  - 75, 110, 134.5, 150, 300, 600, and 1200 bps

Additional speeds are available on special order.

**OPTIONS**

**AUTOSPEED**
The Codex 6000 INP Autospeed Option provides automatic configuration of a terminal port to match the bit rate and character format of data from an asynchronous terminal. This feature allows a single terminal port to support a variety of asynchronous terminal speeds, without any operator intervention.

**SUPERVISORY COMMUNICATIONS SUPPORT**
The Supervisory Communications Support (SCS) Option gives you an “Engineering Order Wire” type of facility on 6030/6040 INP systems. It provides automatic message routing between network control personnel at all or at selected nodes of your network. Flow and error-control capabilities implemented by SCS route supervisory communications around link failures.

**REPORT LOGGING**
The Report Logging/Control Terminal Port (RL/CTP) Option automatically presents and logs system reports at user-selectable intervals. All reports include time stamp data, and may be output as they occur, or may be queued and output at preset intervals.

The RL/CTP is applicable with any asynchronous ASCII terminal equipment. It provides standard control terminal functions in addition to report logging.
**THE MEMBERS OF THE 6000 FAMILY**

**6010**
The 6010 INP is designed for a point-to-point communications link supporting up to thirty dial-in or dedicated asynchronous terminals. The 6010 can also perform remote concentration in multinode networks. Standard hardware includes a processor/controller, a nest to accommodate 30 port channels and a high speed interface. High speed line rates up to 9600 bps are supported.

**6030**
Like the 6010, the 6030 INP is designed to operate in point-to-point communications environments, or as a remote tail concentrator site in multinode networks. It is available in models which accommodate 28, 60, 96, or 124 synchronous or asynchronous lines. Standard hardware includes a processor/controller, a nest to house port modules, and one high speed network link interface. Autospeed is offered as an optional feature.

**6040**
The 6040 INP is designed to operate in multinode communications environments. In addition to providing all of the features of the 6030 INP, the 6040 can be expanded to support multiple high speed network link interfaces and up to 248 asynchronous or synchronous lines.
MAINTENANCE
Should your Codex 6000 Intelligent Network Processor ever require service, you will find that ease of maintenance has been designed into the product. Identification of problem areas is facilitated by extensive system and module diagnostics. And, the modular design allows you to replace individual hardware components, simply and quickly, for minimum downtime.

SERVICE
Codex provides on-site installation and maintenance service throughout the U.S. by our own factory-trained communications specialists, with comparable support provided by our distributors throughout the world. These highly skilled Customer Service Engineers will assist you with application analysis, operation training and localized maintenance, to assure that the Codex 6000 Series Intelligent Network Processors will maintain maximum efficiency in your day-to-day network operations.

With over 15 years’ experience in high speed data communications, we understand your need for prompt, efficient and reliable service, and we strive to provide the best in the industry.

ORDERING INFORMATION
Detailed specifications and ordering information can be obtained from your local Codex Sales Office. Refer to the back cover for the Codex office or distributor in your area.

WE’LL GET YOU THROUGH
Codex is a single source for the most complete range of high performance data communications systems and equipment in the industry. Our products are engineered, built, and tested to set new standards for dependable performance over local, national and international communications links. The reliability and adaptability of Codex products are the key ingredients for maintaining viable data transmission systems that will meet the rapidly changing needs of the data communications industry.

### 6000 SERIES CAPABILITIES

<table>
<thead>
<tr>
<th>Feature</th>
<th>6010</th>
<th>6030</th>
<th>6040</th>
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<tbody>
<tr>
<td><strong>Network Environment</strong></td>
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<tr>
<td>Point-to-Point</td>
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<tr>
<td>6030/6040 Network Feeders</td>
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<tr>
<td><strong>Data Environment</strong></td>
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<td>Asynchronous</td>
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<td>BSC</td>
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<tr>
<td><strong>Throughput (char/sec)</strong></td>
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<tr>
<td>To 9600 bps</td>
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<td>Yes</td>
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<tr>
<td>To 19.2 kbps</td>
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<td>Yes</td>
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<td><strong>Line Capacity</strong></td>
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<td>Standard Async Speed (all members)</td>
<td>75, 110, 134.5, 150, 300, 600, 1200 bps</td>
<td>1200, 2400, 3600, 4800, 7200 bps</td>
<td>1200, 2400, (900, 4800, 7200 bps)</td>
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<td>Standard Sync Speed (6030/6040)</td>
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<tr>
<td>To 19.2 kbps</td>
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<td><strong>Link Protocol</strong></td>
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<td>FDX ARQ Compatible</td>
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<td>Statistics</td>
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<td>Data Restraint</td>
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*Optional Features