

# CONTROL DATA® CYBER 170 SERIES NETWORK OPERATING SYSTEM (NOS)

CONTROL DATA  
CORPORATION



The CDC® CYBER 170 Series computer line utilizes a new operating system, the Network Operating System (NOS). This system is based on the proven concepts found in Control Data's operating systems developed for CDC CYBER 70 and 6000 computer series.

NOS has evolved out of a merger of the SCOPE and KRONOS® operating systems, with enhancements as required to service the new features of the CDC CYBER 170 Series. The Network Operating System supports all models of the CDC CYBER 170 product line.

Although oriented towards the support of large numbers of remote terminals, NOS retains the normal monitoring and control functions of most operating systems. In addition to interactive processing capabilities which accommodate up to 512 remote terminals, the system supports the local and remote batch processing capabilities of the CDC CYBER 170. The Network Operating System permits the speed, computational capability, and data management effectiveness of the central computer system to be distributed to an unprecedented number of users.

## MODES OF OPERATION

Multimode capability is one of the main characteristics of NOS. The modes of operation are as follows:

- Local Batch
- Remote Batch
- Time-Sharing
- Deferred Batch
- Transaction Processing

## USER FEATURES

The most important features of NOS are its concurrency of activity through the multimode subsystem design and flexibility through the modular features and capabilities that exist in the system. The following are some of the major features of the system:

- Concurrent Operation
  - Allows the different modes of operation to be active simultaneously.
  - Permits the operation of specialized tasks to occur within the system without a requirement for dedication of a resource.

- Multi-Mainframe

- NOS supports multiple CDC CYBER 170 systems located in a single site, to be linked together.
- The initial software uses extended core storage as the system's link for the common file and communication information.

- Permanent Files

- NOS supports the file family concept. File families are sets of permanent files associated with either a particular user or mainframe. File families can be dynamically loaded into an active system.
- Commands are easy to use. Macros provided by the system enable the COMPASS programmer to access the permanent files; permanent-file control cards permit access during batch processing.
- A password security system protects permanent files from unauthorized access.
- Two modes of file access are supported; indirect which interfaces with a copy of the file, and direct where the user interacts with the actual file.

- Full Mass-Storage Utilities

- Permits initializing permanent file devices.
- Allows loading permanent files from a dump tape.
- Allows dumping of permanent files.
- Permits performing selective dumps and incremental loads.
- Permits cataloging the permanent file system.
- Allows cataloging an archive tape.
- Permits copying files from an archive tape.

- Job Control

- Control language is an extension of CDC's conventional set of job commands and uses FORTRAN-type statements to test program execution and system values.

- Procedure files are primarily used for execution of jobs by non-technical personnel and to reduce job preparation time by using previously defined commands stored on permanent files.

- Resource Executive

- Builds a preview display indicating which tapes and disks are required.
- Determines whether magnetic tape or removable disk pack assignment will cause a deadlock.
- Once selected, NOS provides tape scheduling, automatic tape assignments, tape reservations, a variety of formats, label conversion and error detection.

- System Management

A critical area in a multimode system is control. This is accomplished in NOS by two features: user control and scheduling.

- User control involves two modes: validation and profile control. Validation is achieved through the user name/password for interactive terminal users and by an account card containing the user name/password for the non-terminal user. Profile control provides for mandatory charge numbers and project number validations by user number upon customer request.
- An extremely flexible scheduling algorithm is featured in NOS. Jobs are divided into five basic categories according to origin types. Each is controlled by parameters that can be set by the central site.

Control Data supports a broad category of software products to complement the Network Operating System. In addition to CDC's standard software products, there are many special application software products being implemented on NOS. In many instances, the requirements of a given user's application are so specified that an existing application package is not practical. In these cases, special tools are employed to develop the specific application or system needed to meet these special requirements.