

## INTERCOMMUNICATION

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SUBJECT: DDP 4000 Cluster  
Controller Description

Attached is an overview of the DDP 4000 System Control Software product for the UTS 4000 cluster controllers. It provides a description of the initial release of the program product (type number 6707) and includes information on pairings, functionality and configurations. This document is provided for your information and contains the latest information available at this time. Any comments and suggestions will be appreciated.

  
P.R. Gardner

## Cluster Controller DDP 4000 Overview

### 1.0 Introduction

This paper describes the initial release (1R1) of the DDP 4000 program product for the UTS 4020 and UTS 4040 cluster controller systems. The DDP 4000 System Control Software (SCS) provides an alternative operating environment for the UTS 4000 cluster controllers in addition to the UTS 400 compatible or UNISCOPE mode product currently in the field. This program product is part of a family of DDP 4000 program products for UTS 4000 hardware which also includes the UTS 30 and the Direct Connect Single Station (DCSS).

DDP 4000 represents the first major change in Sperry terminal communications protocols since the introduction of the UNISCOPE 100 in the early 1970's. Previous Sperry terminal systems have been "compatible" in that they all provide extensions or supersets of the basic synchronous protocol. DDP 4000 introduces the Sperry Distributed Communications Architecture (DCA) to the UTS 4000 terminal family. SCS DDP 4000 pairs with Telcon and CMS 1100 which also implement DCA to form a complete DCA network.

SCS DDP 4000 also provides the first implementation of Sperry's Distributed Data Processing (DDP) facilities in a terminal system and pairs with corresponding facilities on 1100 series systems. DDP has developed throughout the industry to effectively utilize the broad capabilities of information processing opened up by networks. DDP application protocols are being standardized in the "Open System Interconnect" definitions by ISO.

SCS DDP 4000 maintains most of the operational characteristics of the companion UNISCOPE product in terms of the interface provided to the terminal operator while adding significant new functionality including:

- o DCA communications pairing with Telcon and CMS
- o DDP facilities for File Transfer and Job Distribution
- o Enhanced Remote Batch output facilities
- o Enhanced local processing capability for user applications via COBOL, BASIC and TPU with the addition of disk and indexed file support.
- o Command language interface for DDP, Remote Batch, Interactive logon and user program execution.

The following aspects of the program product are discussed in this paper:

- o Basic functionality
- o Hardware support
- o Communications requirements
- o Memory and performance considerations
- o Differences between SCS DDP 4000 and the UNISCOPE product

## 2.0 SCS DDP 4000 Component Overview

SCS DDP 4000 provides a general purpose operating environment for the UTS 4020 and UTS 4040 cluster controllers. It is broken up into seven major components which provide facilities for network communications, file services, operator interface and a multiuser environment for the execution of user applications. Significant local capability is provided for the distribution of applications closer to the end user, offloading the communications of the network and the processing load of the host system.

### 2.1 Operating System

The operating system is a message oriented, multiuser, multitasking system designed to take advantage of the architecture of the UTS 4000 cluster controllers and to make effective use of a given hardware configuration. The operating system consists of the kernel, a number of kernel service processes and system initialization. The kernel interfaces with the hardware, microcode, system processes and user programs providing basic services including memory and buffer management, scheduling and dispatching and I/O control. The kernel operates at the highest priority and in a privileged state.

Kernel service processes provide common services required by users of the system including the interface to UTS 20W and UTS 40W workstations and functions necessary for operation of workstation resident user programs such as the Text Processing Utility (TPU). Also provided are various loading functions including downline load of COBOL interpretive code and UTS 40W character sets and loading of program segments and workstation resident code. The log function provides for the collection of data related to system and peripheral operations in a system log file.

### 2.2 File Control System

The File Control System (FCS) provides general purpose file services for system processes and user application programs. The FCS implements four file access methods including sequential, random, indexed and direct access to named files as well as a functions for the creation and maintenance of these files. The FCS supports the 8406 diskette subsystem and the 8409 8" Winchester disk subsystem. Printer support is also implemented as part of the FCS. Device handlers are provided for the various mass storage devices and printers.

In addition to file services for user applications, the FCS provides services compatible with previous Sperry terminal systems. Included in this category are support of Tape Cassette Subsystem (TCS) format diskette used for the direct operator storage of screen data in variable length records on diskette. The UTS 400 control page with all UTS 4000 extensions is supported as in previous systems with the exception of a user program and character set load which has been moved from the control page to the command language.

### 2.3 User Interface Process

This component implements a subset of TCRL 4000, the Terminal Command and Response Language for UTS 4000 systems. TCRL 4000 is intended to eventually replace the UTS 400 control page as the primary operator interface with the system. This initial implementation includes commands for DDP, Remote Batch printing, terminal logon and user program execution. TCRL 4000 is a significant step forward in increasing the operator ease of use of the system and provides a comprehensive set of user response messages regarding the progress of the various commands.

### 2.4 Communications Control System

Communications with Sperry hosts is provided by the Communications Control System (CCS) whose functions are in conformance with the Distributed Communications Architecture (DCA). The CCS includes those facilities required to provide interactive communications as well as facilities required by DDP, Remote Batch Services (RBS) and user application processes. Components of the CCS include Interactive Services (IS), Management Services (MS), Interprocess Communications (IPC) and the Data Transport System (DTS). Interactive Services provides program-to-terminal support using the INT-1 protocol. The CCS includes two categories of Management Services support. First, a workstation may be used as a network administrator console where commands may be entered to control communications resources at various computing systems within a DCA network. Second, a DCA layer 7B Management Services entity is provided to process control requests from the network including up, down, start, stop and status for cluster conversations. IPC provides the interface for IS, MS, RBS, DDP and user applications to the data transport facilities. The DTS component includes DCA layers 2, 3 and 4. Its purpose is to transfer data in a controlled error free manner between a cluster session entity and a session entity in a remote computing system. The protocols supported by this component are UDLC ABM and NRM at layer 2, TS/TN-2 at layer 3, and DTP at layer 4.

### 2.5 Distributed Data Processing and Remote Batch Services

DDP and RBS are implemented as Application Processes which interface to the CCS for communications services and to the FCS and user interface components for file and command interpretation services. The DDP facilities provided include file transfer and job distribution which allow for the transfer of files between UTS 4000 systems and between the UTS 4000 and Series 1100 systems as well as the submission of jobs to 1100 systems. RBS provides a viable remote printing facility with significant additional features over previous UNISCOPE terminals.

## 2.6 System Utilities

A set of system utilities are provided as part of SCS DDP 4000 which are designed to allow for the manipulation and maintenance of files and for system maintenance. Included are:

- o File Utility
- o System Maintenance Utility
- o Index Creation Utility
- o Log Utility
- o Dump Print Utility

The File Utility provides the equivalent set of services as provided for the UNISCOPE mode product with the addition of extensions in support of the 8409 disk. There are a set of functions related to named files including file create/delete, copy/concatenate, diskette initialization and displaying the table of contents of a particular volume. Another set of services provides for conversion of diskettes between file formatted and TCS format and conversion of character sets between ASCII and EBCDIC. An additional service is included in support of large disk files and allows for copying large files from disk to multiple volume diskettes for backup purposes.

The system maintenance utility provides a set of services related to maintenance of the system software. These functions include system diskette maintenance functions such as diskette initialization, patching, module replacement, generating backup copies of the system diskette, initialization of 8409 disks, data recovery/analysis for the 8409 disk and copying of the system software from the system diskette to disk.

The index creation utility is provided in support of indexed files and allows for the initial creation and subsequent maintenance of indexed files.

The Log Utility prints a formatted listing of the system log.

The Dump Print Utility formats and prints an image of cluster controller memory which was previously written to diskette as a result of a system dump.

## 2.7 Configurator

The configurator is a utility process provided for the interactive configuration of the SCS DDP 4000 system and is one of the primary features which contributes to the customer set-up requirement. The customer is guided through a series of prompts which collect information on workstation and peripheral attachment, communications parameters, network directories, DDP parameters and remote batch sites. Features are also provided for obtaining a formatted listing of the hardware and network configurations. Further information on configurations is provided in section 4.0.

### 3.0 Operator Interface

There are two aspects to the operator interface covered in this paper; the first are those operations required to install and initialize the cluster controller and the second is use of the system by a workstation operator.

#### 3.1 System Startup

The SCS DDP 4000 product is delivered on a single one megabyte 8" diskette which is used in the cluster controller integral load device. This diskette is configured with a minimum configuration consisting of one UTS 20W or UTS 40W workstation in addition to the controller. Once the controller and this one workstation are installed, the operating system is loaded either by turning on the power or pressing the load button. The system then monitors the keylock position at the master workstation. If the keylock is in the "unlocked" position, a prompt is displayed requesting if "single user mode" is desired. In single user mode the system is dedicated to one user and certain "extraordinary" functions are allowed such as execution of the configurator and system maintenance utilities.

For an initial system installation the software must be configured to match the hardware and network configuration of the particular site. This is accomplished through the use of the configurator utility running in single user mode. The system is designed to operate with the ILD as the only mass storage device. The ILD is used for loading of program segments and utility programs as well as containing configuration and system log files. Increased performance can be obtained when an 8409 disk is configured and designated as the system device. This is accomplished in single user mode through the configurator utility. Once the disk has been initialized, the appropriate system files are then copied to the designated disk using the system maintenance utility. While the system is always loaded using the ILD, since there is no load path from the disk, moving the system process segments, utility software, log and configuration files to the disk significantly improves performance of the operational system and allows for network configurations that are larger than would be available in a diskette environment.

#### 3.2 Workstation Operator Interface

Operation of the DDP 4000 system from a workstation is much the same as with the companion UNISCOPE product. The primary difference is the introduction of TCRL 4000 command language. TCRL 4000 implements a subset of the Sperry Common Command Language and is compatible with that used for IPF 1100. The user interacts with the system control software by invoking "command mode". When in command mode, a user enters commands and receives messages from the SCS as opposed to an attached host system. To enter or exit command mode, a workstation user presses the FUNCTION key and "M". Messages from SCS DDP 4000 are written freely to the screen when in command mode but are held to avoid overwriting meaningful screen contents at other times. A user is notified of a message being held by displaying "MSG WAIT" on the workstation indicator line. As an example of the message format used in TCRL 4000, the following message is displayed when the operator enters command mode:

```
UIP001 *INFO* Entering Command Mode — hh:mm:ss
```

This is followed by a command mode prompt symbol, >~C~ on line 23 of the display. Each command which is syntactically correct results in the screen being scrolled and the following message being displayed:

```
UIP003 *INFO* Command ID is <SSSSCCCC>
```

The command ID is used to request subsequent information relative to the command. Table 1 lists the commands supported in the initial release. The first group (DDP and Remote Batch) are covered in section 7.0, the second group are covered in section 5.0.

The third group of commands are related to user program loading and execution and represent changes from the companion UNISCOPE mode product. SUSPEND, RESUME and ABORT replace function keys, the LOAD PROGRAM, LOAD FONT and EXECUTE commands replace corresponding control page commands in the previous system.

Table 1 TCRL Commands

<u>Command</u>	<u>Description</u>
CREATE FILE	Causes a file to exist
COPY FILE	Duplicates a file
PURGE FILE	Deletes a file
SUBMIT FILE	Sends jobs to a host
CANCEL JOB	Aborts a job and output
STATUS JOB	Obtains status of a job
CONSOLE	DDP operator console response
CONTROL REMOTE PRINTER	Remote print control (RB-2)
STATUS REMOTE PRINTER	Remote print status (RB-2)
LOGON	Establishes a terminal to host session
LOGOFF	Terminates a terminal to host session
LOAD PROGRAM	Load program into workstation
LOAD FONT	Load character set font into workstation
STATUS COMMAND	Obtains status of a service command
SUSPEND COMMAND	Suspend a service command
RESUME COMMAND	Resume a service command
ABORT COMMAND	Abort a service command
EXECUTE PROGRAM	Execute specified program

## 4.0 Configuration Considerations

Several factors relative to configuration need to be considered for the use of the DDP 4000 system. The DDP 4000 system requires significantly larger memory than the UNISCOPE product in which to operate. This is due to increased functionality in the areas of DDP, DCA and command language support. Processing load on the cluster controller is greater than for the UNISCOPE system and as a result maximum configuration support is reduced. DCA communications support requires significant change in the network configuration information required from the user. This section discusses these topics.

### 4.1 Configurator

The configurator utility is used for three primary functions; first it is used to define the workstation and peripheral hardware attached to the cluster controller, second the network configuration is defined to allow establishment of multiple sessions with multiple host systems within a network and third it is used to obtain a listing of the configuration for reference purposes. The process for configuration of the controller hardware complement is generally the same as the UNISCOPE mode system with the addition of the 8409 disk, the network configuration is discussed in section 5.0. Unlike the UNISCOPE product, the configurator runs as a user program with the advantage that printers can be used to log the information as it is entered. The system is delivered with only a minimum configuration defined and must be configured to match the particular customer needs at the customer site.

### 4.2 Hardware Support

SCS DDP 4000 supports both the UTS 4020 and UTS 4040 cluster controllers as well as the UTS 20W (both 16K and 64K versions) and UTS 40W workstations. A maximum of 8 workstations (a UTS 40W with 2 screens configured counts as 2 workstations) are recommended on the UTS 4020 in any combination using up to 3 workstation interface line modules each supporting a maximum of 6 workstations. A maximum of 20 workstations are recommended for the UTS 4040 in any combination using up to 8 workstation interface line modules.

The DDP 4000 product supports two mass storage devices: the 8406 diskette subsystem and the 8409 8" Winchester disk subsystem. The 8406 can be configured with one or two drives and attached either to the cluster controller or to the UTS 40W workstation. The 8409 can also be configured with one or two drives with up to 24 megabytes per drive or 48 megabytes per subsystem. The 8409 can only be attached to the controller and the maximum number of drives is 8 for a total disk storage of approximately 200 megabytes. A maximum of 32 diskette and disk drives are supported by the software.

The DDP 4000 product also supports 5 printer types:

- o 0797 low cost character printer for attachment to the UTS 20W via an RS-232 interface or the UTS 40W or cluster controller via the 8-bit interface.
- o 0798 medium speed character which can be attached the same as the 0797.
- o 0789 Line Printer available in either 600 or 300 LPM versions. The 0789 can only be attached to the cluster controller via the 8-bit interface.
- o 0791 Correspondence Quality Printer for attachment to the UTS 40W or the cluster controller via the 8-bit interface.
- o 0425 Character Printer which can be attached the same as the 0797.

A maximum of 32 printers are supported with the exception that the maximum number of 0789 line printers is limited to 4. The maximum total peripheral complement including storage devices and printers is limited to 48.

### 4.3 Memory Requirements

Memory is available for the UTS 4020 up to 1 megabyte and for the UTS 4040 up to 2 megabytes. Memory requirements for SCS DDP 4000 are independent of the cluster controller model and are dependent on the size of the configuration and the functions being used. The minimum SCS DDP 4000 system requires 512K bytes of memory. This minimum requirement supports up to 8 workstation screens and 8 peripheral devices. Limited user programmability is provided dependent on the number of concurrently executing programs and their size. This minimum configuration also supports use of the configurator or system maintenance utilities operating in single user mode.

Memory for use by user programs, system utilities, DDP and RBS must be added to the basic minimum. Memory for these programs as well as buffer space is allocated dynamically as available and required. This dynamic allocation, the use of reentrant common code, use of multiple program segments and the flexibility in number of concurrent operations among multiple users make the specification of detailed sizing data difficult. In general, a small configuration of 8 or fewer workstations operating in an interactive environment will require the minimum memory. Larger configurations and those using user applications, RBS or DDP should add memory in 256K increments depending on the size of the individual programs and the concurrency desired. User processes including utilities, DDP, RBS, Sperry supplied application program products and customer developed applications may use a maximum of 128K bytes at a given time per program per user and may be much larger with the use of segmentation. DDP for example may require up to 120K bytes depending on the functions being performed.

#### 4.4 Performance Considerations

Performance of the DDP 4000 system is dependent on the number of concurrent users, the application programs competing for processor cycles at any given time, and the hardware configuration. Higher speed peripherals such as line printers and disks put a more demanding load on the processor. By contrast, performance of character printers will be limited by the peripheral speed. Host line speed, communication frame and window size etc. will all have an effect on performance in a communications environment. The total system end-to-end configuration consisting of the 1100 host systems and the Telcon network will also effect performance.

In a communications environment, the introduction of DCA is the most significant difference between SCS DDP 4000 and the UNISCOPE product. A feature of DCA is to permit off-loading of the host by shifting some of the required functionality to the terminal. Telcon previously reduced the host load by providing the adapt between the DCA host and the UNISCOPE terminal. This adapt has now been removed from Telcon and migrated to the terminal system. Significant overhead is introduced by the need for this adapt from Interactive-1 (INT-1) protocol to UNISCOPE protocol to drive the UTS 4000 workstations. This adapt plus the additional overhead in the other DCA layers significantly increases the load on the DDP 4000 processor. The resulting effect on performance will be apparent in both communications response time and in the number of processor cycles available for user application programs. Although the DDP 4000 system will show a performance degradation, the overall system performance will be improved because of the re-distribution of the data processing activities. For example, removing the Telcon adapt function will result in the ability of the DCP to support more terminals in a given network while providing the same performance level.

Performance and memory sizing information will be provided for the DDP 4000 system. This data will provide procedures for estimating memory requirements and performance characteristics for the product.

#### 5.0 Communications

Figure 1 shows the DCA protocol set implemented in the initial release of SCS DDP 4000. Hardware connection to the network is via an RS-232 interface and can be either direct connect, through a SPERRY Terminal Multiplexer, through Sperry Direct Connect Modules (DCM) or through modems. The link level protocol is UDLC and may be configured to run Normal Response Mode (NRM) or Asynchronous Balanced Mode (ABM). NRM may be used with a multiplexer or in a multidropped configuration. ABM is used for point to point connections. Line speeds to 19.2KB are supported and frame size may be up to 1021 bytes. Window size may be up to 7 for frame sizes less than 512 bytes and up to 3 for frame sizes greater than 512 bytes. Layer 5-7A uses the DTPX protocol for interactive, remote batch and network management connections. AC-1 (IPC) is used for DDP connections.

7B	RB-2V3 INT-1 V5 NMS-Ø	FT-1 JT-1
7A	NULL	AC-1
6	NULL	IT-1
5	DTPX	NULL
4	DTP	
3	TS/TN - 2	
2	UDLC	
1	RS232C	

Figure 1: DCA Protocol Support

Configuration of the communications network is accomplished using the configurator utility. The network configurator is divided into two areas; network initialization parameters and network aliases and site-ids. The network initialization area defines parameters required by the software to set-up the communications environment and includes:

- o Communications link information such as frame and window size, UDLC addresses, ABM vs. NRM and physical connection information.
- o DCA transport protocol (DTP) related information such as timers and counters.
- o Interactive Services (INT-1) related information to define logical device configuration.
- o DDP information required to initialize the DDP process.

Because detailed information required by the system to establish connections with remote systems is of little meaning to the user, alias names can be specified which are later used by the operator in TCRL commands. Through the use of the aliases established at configuration time, the system can look up required connection information in the network directory when a connection is requested. Aliases are useful in that function and destination can be clearly identified in an easy to remember way. For example in a network with both an 1100/60 and an 1100/80 host, DEMAND60 and DEMAND80 could be defined to logon to demand mode on each host. The aliases and site-ids defined in this part of the network configurator are used by DDP, interactive services, network management services, remote batch services and external computing systems to specify entity identifiers within various DCA layers and include the following:

- o Aliases used on DDP commands such as host-ids.
- o Aliases used to specify the layer 7A, 5, 4 and 3 destination protocol identifiers (TO-AP aliases).
- o Site-ids used by the external computing systems to address the cluster workstations (ENTRY SITE-ID).
- o RB-site-ids used to specify remote batch sites in terms of the aliases that define the TO and FROM identifiers for the involved console and printer.

Sign-on to a host system from a DDP 4000 terminal is different from UNISCOPE UTS 4000 terminals attached to either Telcon or a GCS and is accomplished using the LOGON and LOGOFF commands. The LOGON command can either use the keyword form or the positional form:

```
LOGON TO = {comm-alias|comm-pathname} [FROM=site-id]
```

```
LOGON ,,to[,from]
```

Some examples of the command are:

```
LOGON TO=SLC1100
LOGON TO=RSVL1100 FROM=SLC023
LOGON FROM=BH2572 TO=/DEMAND/DTP03/02
LOGON ,,/DEMAND/DTP03/02,BH2572
LOGON ,,SLC1100
```

The initial release of SCS DDP 4000 (1R1) pairs only with series 1100 systems via the DCP/Telcon network system. Connection via older communications products such as GCS, CTMC, CSP is not provided. Support of other SPERRY hosts systems (OS/3, VS/9, V-77) is also not provided. Communications delivery two is required to use DDP 4000 and consists of Telcon 6R1 and CMS 1100 3R1.

## 6.0 File System Support

The file system component along with associated utility software provides a comprehensive set of services in support of application program products and user developed applications. Peripheral devices supported include 0797, 0789, 0798, 0791 and 0425 printers and the 8406 diskette and 8409 disk subsystems. Peripherals are treated the same regardless of how they are physically attached and can be accessed from any workstation or user program. The file control system (FCS) is discussed in the following paragraphs as it relates to file access, UTS 400 mode operations and printer support.

The FCS supports named files on diskette and disk. Diskettes use IBM BDE and type H format using either ASCII or EBCDIC, the disk provides ASCII only. Each disk or diskette has a separate table of contents stored on the media. Up to 71 files can be stored on a diskette and up to 1280 on disk depending on the storage capacity, in a single level directory structure. Files on diskette must have all space to be used allocated when the file is created as it must be contiguous on the media. File space on disk is allocated dynamically as used. All named file used fixed length blocked records with a maximum record size of 4096 bytes and a maximum block size of 32K bytes. Four access methods are supported by the FCS including sequential, random, indexed and direct. Direct access allows reading and writing of physical sectors within a file to support file structures that are not known to the FCS. Indexed access is supported only on disk and

allows reading and writing of files by a key value. Initial release of the FCS supports a single key value per record and does not support multiple or duplicate keys. Indexed files are provided using a separate key file such that no index information is required in the data file. The data file can therefore contain transparent binary data which can be transferred and used on other systems without knowledge of the index structure. It also allows files to be generated using sequential or random access then indexed (using the index create utility) for subsequent use. The FCS supports sharing of files between multiple users and provides record locking mechanisms to prevent multiple users from reading records which are being updated. For sequential access, one position pointer is maintained for all users of the file whereas for random, direct and indexed access a separate position pointer is maintained for each user.

The FCS also supports UTS 400 mode operations from previous systems including TCS format diskettes and Control Page functions. TCS format provides for sequential access of variable length screen records on diskette only. The UTS 400 control page is carried forward from the UNISCOPE mode product and all functions are supported except those which relate to user program loading.

Printers are supported as sequential output only files. Two methods are provided for sending user program data to a printer. The first allows a user to send up to 4K byte blocks to the printer with the user providing all print control information within the data. The other allows a user to send line at a time data to a printer and having the FCS provide print control as specified in the interface packet. Sharing of a printer between multiple users is also provided.

## 7.0 Distributed Data Processing and Remote Batch Support

The Distributed Processing Facilities of the SCS give the user of the UTS 4000 system access to the data processing resources of the computing systems of the DDP network. The SCS implements the file transfer and job submission facilities of Sperry Level I DDP to form a heterogeneous DDP network. The SCS supports the following DDP services:

- o File creation
- o File copying
- o File deletion
- o Job submission
- o Job cancellation
- o Status determination
- o Job output return

The DDP facility allows named files to be created on the local UTS 4000 system, remote UTS 4000 systems, remote series 1100 systems or DCP/Telcon system when connected via a Telcon network. A copy command can be entered on a UTS 4000 system to transfer files to/from the UTS 4000 to a Telcon, another UTS 4000 or a series 1100 system. File transfers may also be initiated from a UTS 4000 system to copy a file between 1100 systems. Job streams can be submitted to series 1100 systems and scheduled for execution with the output returned to the UTS 4000 for printing. Job submission to the UTS 4000 or Telcon system is not supported.

There are seven commands supported by the DDP component. These commands are the same whether used for local UTS 4000 operations or for remote operations. Commands can be entered in either of two forms, either keyword or positional. For keyword notation, parameters are entered following a keyword, keywords maybe in any order. For positional notation, commas are used to separate parameters which must be in a specified order. Some examples of the various commands follow:

```
CREATE FILE NAME=/F3/MYFILE  DEVICE_CLASS=DISKETTE&
      MAXIMUM_SIZE =1024

CRE FIL,/F3/MYFILE,DISKETTE,1024

COPY FILE FROM=SLC1100::MASTER TO=/F4/LOCAL

COP FILE,/F4/LOCAL,HOST03::MASTER,EOF

PURGE FILE  HOST1::TEMP

PUR FILE,/F8/FILE08

SUBMIT FILE NAME=/F4/LOCAL  HOST=SLC1100  PRINT=P7

SUB FILE,/F1/DENVER_SITE,MAIN_SITE

CANCEL JOB NAME=SLC1100::J0005  OUTPUT=DELIVER

STATUS JOB,SLC1100::J0005

CONSOLE NAME=P7
```

The CONSOLE command is used to respond to an operator message from the DDP component requesting some action to ready a printer which is being used for job output return.

When a series 1100 system is included in the network, DDP 1100 must be installed on that system. The release level required for pairing with SCS DDP 4000 1R1 is DDP 1100 1R4.

The Remote Batch Services (RBS) component provides remote batch printing services using the RB-2 protocol. DDP 4000 supports multiple remote batch sites which must be commonly configured on a DDP 4000 cluster and on series 1100 systems. Each remote batch site consists of a single logical printer and a logical console. A CONTROL REMOTE\_PRINTER command is used to activate a remote batch site and to associate a physical printer with a logical printer and a workstation with a logical console. When a remote batch site is activated, DDP 4000 opens two sessions with a host system; one for the console and one for the printer. The printer session is related to a host print queue. Any print files on the queue are sent to the remote batch site in DDP 4000 as soon as the printer session is opened.

After a remote batch site is activated control functions are available via CONTROL REMOTE\_PRINTER commands including skip forward, reprint, requeue a print file at the host, suspend, resume and acknowledge a host requested printer operator action. Examples of various command operations are:

```
CONTROL REMOTE_PRINTER ACTION=LOGON SITE=RBS01 PRINTER=P3
```

```
CONTROL REMOTE_PRINTER ACTION=SKIP PRINTER=P3 PAGES=50
```

```
CONTROL REMOTE_PRINTER ACTION=LOGOFF SITE RBS01 DELAY=FILE_COMPLETE
```

## 8.0 Applications Support

Four separately priced program products will be available for use with the DDP 4000 system. Each of these products require additional memory in the cluster controller. The amount required will depend on the number of users and the combination of various products to be used concurrently. This information will be specified in the individual product documentation.

### 8.1 UTS COBOL

UTS COBOL 3R1 is enhanced to take advantage of the SCS file management capability and 8409 Winchester Disk. Indexed Sequential files, create/delete commands and sort capabilities are the basic functionality enhancements over Level 2R3 available on UNISCOPE mode cluster systems. COBOL 3R1 continues as a host resident compiler with downline loading to the cluster for interpretive execution of multiple programs from any workstation. User programs written in UTS COBOL on previous systems need only to be recompiled with the 3R1 compiler to execute on the DDP 4000 system.

### 8.2 UTS BASIC

UTS BASIC (DDP 4000) 1R1 provides the same functionality as the 1R1 release provided for the UNISCOPE mode product. Programs written in UTS BASIC from previous systems may be executed using UTS BASIC (DDP 4000) 1R1.

### 8.3 UTS EDIT PROCESSOR

The UTS EDIT Processor (DDP 4000) 1R1 has been enhanced from the 1R2 UNISCOPE release to support DDP facilities and the 8409 disk. 1R1 will also optionally use TPU/DSM formatter/Spooler for compatibility with text processing.

## 8.4 UTS TEXT PROCESSOR

The UTS TPU (DDP 4000) 1R1 includes the DATA STORAGE and MANAGEMENT (DSM) capability in the cluster controller of the TPU 1R1 release for UNISCOPE. A significant enhancement for TPU users is the addition of the 8409 Winchester disk and file management capability for the DSM module. Other functionality enhancements include print spooling, document transfer, mail merge, forms generation, and spell checking.

The Text Processing Utility will access and operate on all of the 8406 diskette files created by previous releases of the TPU whether used on UTS 40 or cluster controller. Files may be transferred to the 8409 disk when configured, and the extended features of TPU are of course available to operate on old files.

## 8.5 Existing Products

In addition to the four products described above, products operating either on the host system or in the UTS 40W workstation that were available for use with the UNISCOPE product will also be used with the DDP 4000 SCS. These include the UTS Host Utilities for preparation and down line load of UTS COBOL programs, the UTS Loadable Character Set Utility for generating UTS 40W character sets and CP/M which operates as a standalone control program in the UTS 40W.

## 9.0 Documentation

### 9.1 Design Documentation

Detailed information on the structure and operation of the SCS DDP 4000 product can be found in the following Component Product Software Descriptions (CPSD):

- o UTS 4000 Cluster Controller DPATS Communications CPSD (C-43407)
- o UTS 4000 Cluster System File Control System CPSD (C-43408)
- o UTS 4000 Cluster Controller DPATS Utilities CPSD (C-47409)
- o UTS 4000 Cluster System Configurator Utility CPSD (C-47410)
- o UTS 4000 Cluster Controller DPATS Distributed Processing Facilities CPSD (C-43406)
- o UTS 4000 Cluster System Process Controller CPSD (C-43409)

## 9.2 User Publications

- o UP-8850 UTS 4020 Cluster Controller Ordering Guide (International)
- o UP-9151 UTS 4020 Cluster Controller Ordering Guide (Domestic)
- o UP-9152 UTS 4020/UTS 4040 Cluster Controller Site Preparation Guide
- o UP-9222 UTS 4020/4040 Cluster Controller Guide to Customer Setup
- o UP-9400 UTS 4040 Cluster Controller Ordering Guide (Domestic)
- o UP-9401 UTS 4040 Cluster Controller Ordering Guide (International)
- o UP-9790 UTS 4020 Cluster Controller Using DDP-4000 System Control Software System Description
- o UP-9795 UTS 4040 Cluster Controller Using DDP-4000 System Control Software System Description
- o UP-9821 UTS 4020/UTS 4040 Cluster Controller Using DDP-4000 System Control Software Operator's Reference
- o UP-9898 UTS 4020/UTS 4040 Cluster Controller Using DDP-4000 System Control Software Program Product Specification
- o UP-9899 UTS 4020/UTS 4040 Cluster Controller Using DDP-4000 System Control Software Level 1R1 Software Release Announcement
- o UP-9900 DDP-4000 System Control Software Release Description
- o UP-9902 UTS 4020/UTS4040 Cluster Controller Using DDP-4000 System Control Software System Utilities User Guide
- o UP-9903 UTS 4020/UTS 4040 Cluster Controller Using DDP-4000 System Control Software Configuration Planning Guide
- o UP-9904 UTS 4020/UTS 4040 Cluster Controller Using DDP-4000 System Control Software Configuration Utility User Guide
- o UP-9905 UTS 4020/UTS 4040 Cluster Controller using DDP-4000 System Control Software Installation and Verification Guide
- o UP-9906 UTS 4020/UTS 4040 Cluster Controller Using DDP-4000 System Control Software Trouble Isolation Guide
- o UP-9907 UTS 4020/UTS 4040 Cluster Controller Using DDP-4000 System Control Software Diagnostic Software User Guide

In addition, several publications are planned which cover multiple systems and include information related to using DDP 4000 in a distributed environment.

- o UP-9676 Introduction to DCA
- o UP-9677 DCA/DDP Fundamentals
- o UP-9675 DDP Concepts and Facilities
- o UP-9740 DDP File and Job Transfer User Guide
- o UP-9672 DDP Network Installation Overview
- o UP-9678 Planning Your Distributed System
- o UP-9679 DDP Network Configuration and Verification