Software Product Description

PRODUCT NAME: DECnet/SNA Data Transfer Facility, Version 3.0 **SPD 27.85.03**

DESCRIPTION

The DECnet/SNA® Data Transfer Facility (DTF) is a layered software product that provides data transfer capabilities between IBM® MVS and IBM VM systems in a Systems Network Architecture (SNA) environment and Digital DECnet nodes in a DECnet network. DTF supports the following DECnet nodes: VMS systems running DECnet–VAX, RSX–11M–PLUS systems running DECnet–11M–PLUS, ULTRIX systems running DECnet–ULTRIX, MS–DOS® systems running PATHWORKS for DOS, and OS/2® systems running PATHWORKS for OS/2. Access between the cooperating Digital and IBM environments is provided by a DECnet /SNA Gateway or by VMS/SNA software.

The following briefly highlights the features of DTF. More detailed information is given in the *Features* section. Unless otherwise mentioned, these features are supported on both MVS and VM systems.

Client/Server-Style Operation:

The DTF product provides a client/server style of operation. The VMS/DTF server can support file operations between IBM MVS and VM clients and DECnet VMS, ULTRIX, RSX–11M–PLUS, MS–DOS, and OS/2 clients. No additional software besides DECnet software is required on the DECnet clients (except for VMS recoverable copy operations). See the *Configuration* section for more information.

Ease of Use:

DTF provides a familiar user interface for both Digital (VMS, MS–DOS, OS/2, ULTRIX, and RSX–11M–PLUS DECnet nodes) and IBM users. This feature supports easy application development and reduces staff training.

Comprehensive, Bidirectional Access from All Supported Clients:

The DTF product enables bidirectional file transfer between all DTF-supported DECnet nodes and IBM MVS and VM systems.

Checkpoint and Recovery:

DTF provides VMS and IBM users with checkpoint and recovery support in the event of a system or network failure. This feature allows DTF to resume an interrupted recoverable copy operation when the network returns to a normal state. This saves significant time and system resources when large files are transferred.

File Backup:

DTF allows VMS and ULTRIX users to target IBM disks and tapes for backup and restore operations. In large co-resident DEC and IBM sites, this capability optimizes system resource usage.

Remote Job Submission:

DTF users can submit jobs remotely from all DECnet clients (VMS, RSX–11M–PLUS, MS–DOS, OS/2, and ULTRIX).

Post-Processing:

Using DTF, VMS and IBM users can provide a post-processing file to be executed after a file transfer is completed. This feature allows VMS and IBM users to logically connect the running of a batch job to the successful completion of a DTF file transfer. This makes the implementation of distributed processing functions significantly easier to synchronize between IBM applications and VAX DECnet-based applications.

Record-Level Access:

DTF supports record-level access from VMS systems to IBM MVS and VM systems.

Supported File Types:

DTF supports multiple file types (RMS, VSAM, BSAM, CMS), allowing easy applications development.

HSM Support:

DTF supports IBM's Hierarchical Storage Management (HSM) facility. This is a DTF for MVS only feature.

IBM Enterprise Architecture and SMS Support:

DTF runs in compliance with IBM's Enterprise Architecture and will support SMS-managed data sets (refer to the *Supported IBM Configurations* section). This is a DTF for MVS only feature.

Data Translation Using Load Balancing and Performance Tuning:

DTF supports text translation from DMCS (Digital Multinational Character Set, a superset of ASCII) to EBCDIC and vice versa on a record-by-record basis. DTF supports load balancing and performance tuning between both the IBM system and the VMS/DTF server node by allowing users to select which system performs the text translation. Enhanced performance of the VMS/DTF server often results when this translation is performed on the IBM system. DTF also supports, through the VAX Common Data Dictionary product, field-level translation.

Data Security:

DTF controls access and protects valuable data with superior security capabilities. DTF supports the following industry-standard security interfaces that run on IBM machines: RACF, CA-ACF2™, SAF, and VMSECURE™.

Server Management:

The DTF product includes a management utility to manage the VMS/DTF server.

Event Logging:

DTF for IBM logs events which can be used for historical inquiry or accounting. System programmers can easily write specialized accounting and bill-back reports using DTF's logs. This is a DTF for MVS only feature.

Components

There are four components to the DECnet/SNA Data Transfer Facility product:

- Data Transfer Facility server (VMS/DTF server) software
- Data Transfer Facility utilities (VMS/DTF utilities) software
- Data Transfer Facility for IBM MVS system (DTF for MVS) software
- Data Transfer Facility for IBM VM system (DTF for VM) software

VMS/DTF Server Software:

The VMS/DTF server software can be installed on any VMS system in a DECnet network containing a DECnet/SNA Gateway or on any VMS system running VMS /SNA. The node that is running the VMS/DTF server software is referred to as the server node. All DTF file requests go through this server node which communicates with the appropriate DTF for IBM system by using a DECnet/SNA Gateway or by using VMS/SNA software. The server software also performs text translation (DMCS/EBCDIC). However, this can be done optionally by the DTF for IBM software. The VAX Common Data Dictionary (CDD) product is required on the VMS /DTF server node for the translation of data types other than DMCS/EBCDIC. The VMS/DTF server software includes the VMS/DTF utilities software described in the next section.

VMS/DTF Utilities Software:

The VMS/DTF utilities software is an optional component that can be installed on any VMS system where users wish to transfer files using the recoverable copy feature. The utilities software should also be installed if IBM users will be requesting recoverable copies involving that VMS node. The utilities software consists of a server management utility and a checkpoint/recovery utility (TRANSFER/DTF). The VMS/DTF utilities software communicates with the VMS/DTF server software to accomplish the data transfer. It is not necessary to install the VMS/DTF utilities software on the server node since these utilities are included in the VMS/DTF server software package.

DTF for MVS Software:

The DTF for MVS software can be installed on any IBM S/370-class machine system running the MVS operating system. DTF for MVS accepts file operation commands from the VMS/DTF server software and maps them into MVS file commands to perform the operation. It also provides interfaces so TSO users can issue recoverable and non-recoverable copy commands in interactive or batch mode. DTF for MVS software consists of two parts: a VTAM application program that controls the communications with the VMS/DTF server nodes for the purpose of transferring files, and user interfaces. The three user interfaces are: a TSO command processor, a single-line command interface (REXX required), and an ISPF dialog.

DTF for VM Software:

The DTF for IBM VM software can be installed on any IBM S/370-class machine system running the VM operating system. DTF for VM accepts file operation commands from the VMS/DTF server software and maps them into VM file commands to perform the operation.

It also provides interfaces so CMS users can issue recoverable and non-recoverable copy commands in interactive or batch mode. DTF for VM software consists of three parts: a VTAM application program that controls the communications with the VMS/DTF server, a CMS application for the purpose of transferring files, and user interfaces. The three user interfaces are: a TSO command processor, a single-line command interface (REXX required), and an ISPF dialog.

Configuration

A DTF for IBM component must be installed on each IBM system with which users want to communicate. The DECnet network requires one VMS/DTF server component installed on a VMS system, and may require multiple server component installations depending on the amount of use of DTF. All other nodes in the DECnet network, including VMS, ULTRIX, MS–DOS, OS/2, and RSX, do not require any additional software since DTF allows users to use standard DECnet file transfer commands to access IBM files. The VMS/DTF utilities software is required only if a particular VMS system's users need the recoverable copy feature or if IBM users desire recoverable copy operations to that VMS system. Recoverable copy works only to VMS nodes with the VMS /DTF server software or the VMS/DTF utilities software installed.

Features

Ease of Use:

The DTF product uses a variety of familiar user interfaces to make users more productive. Users do not have to learn new commands and procedures.

Users in the VMS environment can issue standard DCL commands, like COPY, TYPE, DIRECTORY, and so on. Alternatively, they can use the Record Management System (RMS) programming interface or the TRANSFER/DTF utility for data exchange between DECnet and IBM systems.

IBM MVS users can access and transfer data by using the TSO DTF command processor, the TSO ISPF panels, or the single-line interface. IBM VM users can use the CMS DTF command processor, the CMS ISPF panels or the single-line interface. The TSO and CMS command processors can also be invoked in batch mode.

ULTRIX users access files by using the standard DECnet–ULTRIX file transfer commands. MS–DOS and OS/2 users simply issue the standard PATHWORKS for DOS or PATHWORKS for OS/2 NFT commands. RSX–11M–PLUS users can use DCL commands or DECnet–11M–PLUS NFT and FTS commands.

DTF Access from VMS Clients:

VMS DTF users can initiate non-recoverable or recoverable, bidirectional file transfers between IBM DTF clients and themselves. DTF supports the following VMS DCL commands. Note that some of the qualifiers associated with these DCL commands are subject to restrictions when used with DTF.

APPEND	DELETE	SEARCH
BACKUP	DIFFERENCES	SUBMIT/REMOTE
CLOSE	DIRECTORY	TYPE
CONVERT	EXCHANGE /NETWORK	WRITE
COPY	OPEN	
CREATE	READ	

DTF Access from RSX–11M–PLUS Clients:

RSX–11M–PLUS DTF users can initiate non-recoverable, bidirectional file transfers between IBM clients and themselves. RSX–11M–PLUS users can use all three network file transfer interfaces provided by DECnet–11M–PLUS (NFT, DCL, FTS). DTF supports the following DECnet–11M–PLUS DCL commands. Note that some of these commands are subject to restrictions when used with DTF.

APPEND	DELETE	SUBMIT/REMOTE
COPY	DIRECTORY	TYPE

DTF Access from MS–DOS and OS/2 Clients:

MS–DOS and OS/2 DTF users can initiate non-recoverable, bidirectional file transfers between IBM DTF clients and themselves. IBM-initiated file transfers are supported by MS–DOS and OS/2 systems when the PATHWORKS for DOS or PATHWORKS for OS/2 File Access Listener (FAL) is running. DTF supports the following PATHWORKS for DOS and PATHWORKS for OS/2 NFT commands. Note that some of these commands are subject to restrictions when used with DTF.

APPEND	DELETE	SUBMIT
COPY	DIRECTORY	TYPE

DTF Access from ULTRIX Clients:

ULTRIX DTF users can initiate non-recoverable, bidirectional file transfers between DTF for IBM systems and themselves. DTF supports the following DECnet–ULTRIX commands. Note that some of these commands are subject to restrictions when used with DTF.

dcat	dcp	dls	drm

DTF Access from IBM Clients:

IBM DTF users can initiate non-recoverable or recoverable, bidirectional file transfers between VMS DTF clients running the VMS/DTF utilities software and themselves. In addition, they can initiate non-recoverable, bidirectional file transfer between all other DTF clients (including other IBM systems) and themselves. MVS TSO users and VM CMS users have the following commands available to transfer files to or from other DTF clients.

DTFSEND	DTFRECV	DTFRESUM
DTF command processor	DTF ISPF panels	DTF non-ISPF panels

Checkpoint and Recovery:

Checkpoint and recovery capabilities assure that data remains accurate and intact, even in the event of system or network failure. When VMS users transfer files using the TRANSFER/DTF utility, it automatically resumes an interrupted file transfer process with no loss of data when communications between sending and receiving systems are re-established. Checkpoint and recovery is supported for non-VSAM and CMS files that are disk- or tape-resident. Checkpoint and recovery is not supported on VSAM files.

IBM users have a similar checkpoint and recovery feature. A recoverable copy operation performed from an IBM system sets environment variables (CLIST in MVS, REXX in VM). If the transfer terminates with a network error, these variables contain information to allow the user to resume the transfer.

File Backup:

DTF allows VMS users to back up and restore their disks directly to IBM tapes or disks using the VMS BACKUP command. ULTRIX users can also back up and restore disks to IBM tapes or disks.

Remote Job Submission:

VMS, ULTRIX, DOS, OS/2, and RSX–11M–PLUS users can submit JCL or REXX files on the IBM system to be executed by JES or by a batch machine. These users can use the standard DECnet file operation commands to initiate the job submission. For example, VMS users use SUBMIT/REMOTE and ULTRIX users use dcp -S. Users will not get the status of the job completion. IBM DTF users can submit jobs by using the post-processing feature described in the next section.

Post-Processing:

Post-processing is the ability to submit a DCL command procedure or MVS JCL or VM REXX procedure after a file transfer is completed. IBM users can use the post-processing feature from either the command processor or the panel interface. VMS users can use the post-processing feature only through the TRANSFER/DTF utility.

Record-Level Access:

DTF allows a VMS user record-level access to IBM files by means of an RMS application, DCL commands, or DATATRIEVE. DTF does not support record-level access initiated from IBM to VMS RMS files.

Supported File Types:

All VMS file types, RSX–11M–PLUS sequential files, and ULTRIX, MS–DOS, and OS/2 stream files are supported. MS–DOS and OS/2 support only stream files. Therefore, all files copied to MS–DOS or OS/2 systems result in stream files. All files copied from MS–DOS and OS/2 systems result in sequential data sets on IBM systems.

For IBM MVS systems, supported non-VSAM file types are those with the physical sequential data set organization. This includes normal sequential files as well as partitioned data set members. Both disk-resident and tape-resident non-VSAM files are supported. Supported VSAM file types include entry-sequenced data sets (ESDS), relative-record data sets (RRDS), and key-sequenced data sets (KSDS).

For IBM VM systems, supported CMS file types are those with the physical sequential data set organization. This includes normal sequential files as well as MACLIB members. Both disk-resident and tape-resident files are supported and can be transferred. Supported DOS /VSE VSAM file types include entry-sequenced data sets (ESDS), relative-record data sets (RRDS), and key-sequenced data sets (KSDS). VM does not support creating empty files or creating null records in a file. DTF provides an option for users to overcome the null record restriction by substituting a record containing a character or value chosen by the user.

HSM Support:

DTF for MVS supports the Hierarchical Storage Management (HSM) facility and allows users to recall migrated data sets. IBM system programmers can tailor the number of concurrent outstanding HSM requests as well as device recall capability.

SMS Support:

DTF for MVS supports the MVS Storage Management Subsystem (SMS) facility.

Data Translation:

DTF provides three options for data translation: no data translation at all, DMCS (Digital Multinational Character Set, a superset of ASCII) to EBCDIC and vice versa, and field-level translation.

- Users can specify that DTF should perform no data translation during a file transfer. This option is useful for transferring image files.
- By default, DTF performs data translation from DMCS to EBCDIC and vice versa on a record-by-record basis. This is the option normally used to transfer text files.
- Users can specify that DTF use alternate field-level translation. In this case, the VMS/DTF server software translates data types such as binary, integer, floating point, packed decimal, and numeric strings using VAX Common Data Dictionary (CDD/Plus) record definitions supplied by the user. The semantics of data in the file is maintained across a file transfer. The CDD/Plus product is required on the VMS /DTF server node for alternate field-level data translation.

By default, data translation is performed on the VMS /DTF server node. To decrease the load on the VMS /DTF server, the server manager can optionally specify that data translation (DMCS/EBCDIC) occur on the IBM DTF client.

Data Security:

Files on the IBM system are accessible only to Digital users who know the valid access control information. DTF for IBM provides interfaces into the CA-ACF2, RACF, and VMSECURE security systems and a standard user exit for other security mechanisms (such as CA-TOPSECRET™) through the System Authorization Facility (SAF) interface. For Digital systems, security is maintained by using the standard file protection mechanism provided by the base operating system.

Security is also enhanced in both the Digital and the IBM environments through the use of a proxy database on the VMS/DTF server node. This database allows VMS, MS–DOS, OS/2, RSX–11M–PLUS, and ULTRIX users to avoid entering IBM passwords on the command line.

DTF also allows DECnet-style proxy information to be stored on the IBM system using standard IBM system security packages (CA-ACF2, RACF). This feature is available only in DTF for MVS software.

For ease of use, DTF for IBM allows users to perform file transfers without having to provide passwords for their files located on their own IBM system.

Server Management:

VMS/DTF provides a management utility to manage the server account database, the file definition database, and the DTF proxy databases on the VMS/DTF server. The server account database allows the server to support file transfer requests to many different IBM DTF clients. The file definition database allows users to store the IBM file specifications for frequently accessed files. The proxy database allows the server manager to set up mappings that allow users to enter requests without specifying their IBM passwords. Refer to the *Data Security* section for more information.

Event Logging:

DTF for IBM logs events which can be used for historical inquiry or for accounting usage. Historical logging can be used to characterize the use of DTF for IBM. Such information is necessary for decisions involving operating hours, performance tuning, and load analysis of the network and operating system. Account logging allows users of DTF for IBM functions to be recorded along with the resources they consume. The granularity of the information is sufficient to provide a bill-back capability. Implementation of the accounting and billing capability is handled with a user exit and can be customized on a per-site basis. This feature is supported in DTF for MVS software only.

HARDWARE REQUIREMENTS

VAX, MicroVAX, VAXstation, or VAXserver configuration as specified in the System Support Addendum (SSA 27.85.03-x).

SOFTWARE REQUIREMENTS

For VMS/DTF Server and VMS/DTF Utilities:

VMS Operating System
DECnet–VAX
VMS/DTF Server

The DECnet/SNA Data Transfer Facility software requires one of the following products. Refer to the appropriate SPD for prerequisite hardware and software.

- VMS/SNA (SPD 27.01.xx)
- DECnet/SNA Gateway-ST (SPD 29.C6.xx)
- DECnet/SNA Gateway-CT (SPD 29.76.xx)

For VMS Clients:

DECnet–VAX

For ULTRIX Clients:

ULTRIX Operating System
DECnet–ULTRIX

For MS–DOS Clients:

PATHWORKS for DOS

For OS/2 Clients:

PATHWORKS for OS/2

For RSX-llM–PLUS Clients:

DECnet–11M–PLUS

For specific MS–DOS, OS/2, and RSX–11M–PLUS Operating System Versions, refer to the PATHWORKS for DOS SPD (55.07.xx), PATHWORKS for OS/2 SPD (55.24.xx), and DECnet–11M–PLUS SPD (10.66.xx).

For IBM MVS Clients:

VTAM
MVS/ESA or MVS/XA
DFP/ESA or DFP/XA
SMP/E
Assembler H
DTF for MVS

IBM VM Clients:

VTAM
VM/SP5, VM/SP6, or VM/XA
DTF for VM

Refer to the System Support Addendum (SSA 27.85.03-x) for availability and versions of required software.

Prerequisite Support

A Network Profile and a DECnet Customer Support Plan (where applicable) covering all intended VMS nodes that will access the IBM MVS or VM environment must be prepared jointly by Digital and the customer.

For DTF to be Digital supported, the customer must have a Digital supported DECnet/SNA Gateway or VMS /SNA configuration.

INSTALLATION

To have a Digital supported DECnet/SNA Gateway configuration, Digital requires that a customer's first purchase of this software product include Gateway Orientation/Installation Service.

To have a Digital supported VMS/SNA configuration, Digital requires that a customer's first purchase of this software product include VMS/SNA Orientation /Installation Service, or equivalent thereof.

These services provide for installation of the software product by an experienced Digital Software Specialist.

Before installation of the VMS/DTF server software, the customer must:

- Previously have installed all requisite software and hardware, including terminals.
- Generate, to Digital's satisfaction, any necessary IBM host software, including DTF for IBM software that will be communicating with the VMS/DTF server software by using either the DECnet/SNA Gateway or VMS/SNA.
- Make available for a reasonable period of time, as mutually agreed by Digital and the customer, all hardware, communications facilities, and terminals that are to be used during installation.
- Be prepared to work with both Digital and IBM systems personnel to coordinate the pre-installation activities.
- Be capable of modifying IBM component generation parameters to support the VMS/DTF server software and either the DECnet/SNA Gateway or VMS/SNA.

Delays caused by any failure to meet these responsibilities will be charged at the then prevailing rate for time and materials.

ORDERING INFORMATION

VMS/DTF Software:

For VMS/DTF Server:

Software Licenses: QL-VEBA*-**
Software Media: QA-VEBA*-**
Software Documentation: QA-VEBA*-GZ
Software Product Services: QT-VEBA*-**

For VMS/DTF Utilities:

Software Licenses: QL-VEKA*-**
Software Media: QA-VEKA*-**
Software Documentation: QA-VEKA*-GZ
Software Product Services: QA-VEKA*-**

DTF for IBM Software:

DTF for MVS:

Software License: QL-1GQA9-AA
Software Media: QA-1GQAA-**
Software Documentation: QA-1GQAA-GZ
Software Product Services: QA-1GQA*-**

DTF for VM:

Software License: QL-GUYA9-AA
Software Media: QA-GUYAA-**
Software Documentation: QA-GUYAA-GZ
Software Product Services: QA-GUYA*-**

* Denotes variant fields. For additional information on available licenses, services, and media, refer to the appropriate price book.

SOFTWARE LICENSING

This software is furnished under the licensing provisions of Digital Equipment Corporation's Standard Terms and Conditions. For more information about Digital's licensing terms and policies, contact your local Digital office.

LICENSE MANAGEMENT FACILITY SUPPORT

The VMS portions of this software product support the VMS License Management Facility.

License units for this product are allocated on a CPU-capacity basis.

For more information on the License Management Facility, refer to the VMS Operating System Software Product Description (SPD 25.01.xx) or the *License Management Facility* manual of the VMS Operating System documentation set.

SOFTWARE PRODUCT SERVICES

A variety of service options are available from Digital. For more information, contact your local Digital office.

SOFTWARE WARRANTY

Warranty for this software product is provided by Digital with the purchase of a license for the product as defined in the Software Warranty Addendum of this SPD.

The DTF for IBM software described in this SPD has been written in accordance with the following IBM System Integrity Standards:

- MVS System Integrity Standard as defined in IBM Programming Announcement P81-174 dated October 21, 1981.
- VM System Integrity Standard as defined in IBM Programming Announcement 283-185 dated June 21, 1983.
- VM/XA System Integrity Standard as defined in IBM Programming Announcement 287-241 dated June 11, 1987.

Warranty Limitations

Supported IBM Configurations:

This software has been tested and is warranted against IBM System/370 (includes 30xx and 43xx series) class processor systems. While this software may function correctly with other IBM software and with equipment and software other than that supported by IBM, Digital cannot offer its standard warranty for this software unless it has been tested with such equipment and software configurations.

The DECnet/SNA Data Transfer Facility, Version 3.0 product has been tested and warranted against the following IBM software configurations:

IBM MVS Software Configuration:

MVS/SP V1.3
MVS/SP (MVS/XA) V2.0
MVS/SP (MVS/ESA) V3.1
VTAM V3.1, V3.2
DFP/XA V2.2, V2.2, V2.3
DFP/ESA V3.1, V3.2
SMP/E V1.4, V1.5
Assembler H V2.1, V2.2
ISPF V3.1, V3.2
TSO/E V2.1
CA-ACF2 V4.1, V5.2
RACF V1.8, V1.9

IBM VM Software Configuration:

VM/SP Release 5, Release 6
VM/XA V2.2
VTAM V3.1, V3.2
Assembler H V2.1
ISPF V2.2
CA-ACF2 V1.3.2
RACF V1.8.2
VMSECURE V1.4.2
Dirmaint V1.3
VSE/VSAM V1.3

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