

# digital

## Software Product Description

**PRODUCT NAME: CTS-300, Version 6.0**  
**Commercial Transaction System-300**

**SPD 12.9.10**

**DESCRIPTION:**

CTS-300 is a disk based single-user/multiuser system designed to support commercial applications on small PDP-11 based DEC Datasystems or equivalent configurations. CTS-300 applications are written in DIBOL, DIGITAL's own Business Oriented High-level Language. DIBOL is similar to COBOL in that it has a Data Division and a Procedure Division, but DIBOL is a more concise language. DIBOL provides the application programmer with the ability to do data manipulation, arithmetic expression evaluation, table subscripting, record redefinition, external calls to other programs, spooling, sequential and random access, and indexed access to files. Exception conditions cause control to transfer to a user-specified statement where the cause of the condition can be determined.

The following table illustrates the user/job capacity versus minimum configurations under each of the Datasystems:

	D150 (PDT150)	D320 (11/03)	D330 (11/23)	D350 (1134A)
Number of users	1	1-4	1-8	1-12
Number of jobs	1-4	1-4	1-16	1-16
Memory	32-60K bytes	32-56K bytes	32-248K bytes	32-248K bytes
Disk capacity	512K bytes	1-32M bytes	1-42M bytes	10-266M bytes

Although 12 users is the stated limit, most application environments should use caution beyond the eighth user, because terminal response time is likely to degrade as more users are added to the system. Particular care needs to be exercised with program size, overlay technique, file size and layout, etc.

CTS-300 is also available in fully supported mode *only* on other equivalently configured systems that meet minimum requirements.

CTS-300 is a packaged software system consisting of the RT-11 operating system, a choice of three run-time systems, and a number of utilities. Since RT-11 is included in this package, a CTS-300 licensee can order any RT-11 dependent product without reordering a specific license for RT-11.

Although CTS-300 is a layered product, it should be noted that DIBOL will not run concurrently with other languages.

*Run-Time Systems (RTS)*

**SUD** — Single-user DIBOL RTS allows one DIBOL user or job to be run on a system. It is designed for an entry level system running in 32K bytes of memory. SUD runs on all RT-11 monitors (SJ, FB, XM). SUD also runs as the background job in the FB monitor with a line printer spooler running in the foreground. Control returns to the monitor upon completion of the SUD program.

**TSD** — Time Shared DIBOL RTS allows 1 to 4 DIBOL users or jobs to run simultaneously. It is designed for a medium-sized system running in 56K bytes of memory. File sharing facilities at the record level permit multiple users to share and update the same data files. TSD is an executive that normally is run on an SJ monitor SYS-GENed for multiterminal support. TSD controls loading of DIBOL programs, allocation and recovery of memory for DIBOL programs, program scheduling, detached programs, file-sharing, record I/O, intertask communication, as well as other less visible functions. A DIBOL line printer spooler also runs in the TSD environment. Program completion, or the detaching of a program returns control to the TSD executive.

**XMTSD** — Extended Memory TSD RTS allows 1 to 12 DIBOL users or 1 to 16 DIBOL jobs to run simultaneously (up to 12 could be attached to terminals with the remainder running in a detached environment). Designed for larger systems running in 128K to 248K bytes of memory using the XM monitor, XMTSD has the same features and capability found in TSD. In addition, XMTSD offers multiuser program development. When XMTSD is loaded in the foreground of the XM monitor, the background is reserved for queuing and executing indirect command files. These files can contain compile and link instructions. Programs can be created and modified by running a CRT oriented editor called DKED, that executes as a DIBOL job. More than one copy of DKED can run concurrently.

**NOTE:** Relinking is required when changing from SUD to TSD or XMTSD or vice versa.

*CTS-300 Utility Programs*

**CTSGEN** — The CTS-300 Generator Program is an interactive DIBOL-11 utility program that tailors the system to a user's needs. It can create a SUD, TSD or XMTSD RTS to match the specific hardware and software of the installation. Through CTSGEN a user specifies such items as the total number of terminals, jobs, messages, and files open at one time. Support for DDT and forced job start-up are also among the choices available.

**DDT** — The DIBOL Debugging Technique is a system utility that allows for user/programmer interaction with a DIBOL program while it is executing. Using DDT, a programmer can set predetermined stopping points to halt the program, examine and/or alter the contents of variables, and trace through lines of a DIBOL program. These features allow a programmer to locate problems, correct data values, and test any programming errors directly, before reediting and recompiling.

**DECFORM** — The DECFORM Data Entry utility is a program generator that processes screen format directives and produces a DIBOL program that, when compiled and executed, performs specified data entry functions. In addition to defining screen formats, auto-duplication, alphabetic or decimal checking, range checking, field totaling, cross-field validation, and auto-increment characteristics, DECFORM makes possible additions, inquiries, changes, and verifications to sequentially ordered files or Indexed Sequential Access Method (ISAM) files. Deletions are possible only with ISAM files. DECFORM is primarily a tool to facilitate and reduce program development efforts. Its major use is in data file creation, modification and inquiry.

**DKED** — Is a version of RT-11's keyboard editor (K52) that runs as a job only under XMTSD. It is a text editor, designed to run in VT52 mode on a VT52 or VT100, and is used to create and modify ASCII text files.

**DICOMP** — DICOMP is the DIBOL compiler. It translates DIBOL source programs into interpretive code that, when linked, can be executed by the three RTS.

**DMS-300** — Data Management Services provide capabilities for handling sequential, random, or keyed records in files. Records in an ISAM file can be keyed by a symbolic value. DMS-300 also supports file sharing and multivolume files. Sequential and random file processing are standard in every RTS. ISAM is an option. DIBOL has special language statements to use these file access methods efficiently.

**ISMUTL** — ISAM files are created and maintained by means of the ISAM Utility Program. Its three major functions are CREATE, STATUS, and REORGANIZE.

- **CREATE** is used to create a new ISAM file. Options are provided to create an empty ISAM file, or convert a sequential file to an ISAM file. The CREATE function can be carried out without operator intervention.
- **STATUS** provides a concise view of the current structure of the file: length of keys, records, and groups, levels of indexing, and information about the use of load exclusion and overflow areas in the data file.
- **REORGANIZE** is used to reorganize an ISAM file for more efficient operation. It is used when most of the groups in the file are filled and the overflow area or append area is filled. The effect of REORG is to redistribute the records of the file so it appears to be a newly created file.

**LPTSPL** — The Line Printer Spooler is a utility program that prints data files and program source files. In response to an LPQUE statement, the spooler program receives information on the file to be printed. The spooler queues the file and begins to print it when the line printer is available. In the SUD RTS, the spooler outputs to one line printer. In the TSD and SMTSD RTS, the spooler is a DIBOL program consisting of a queue manager and four satellite programs that output to as many as four line printers.

**SORT/MERGE** — The SORT/MERGE utility permits the user to define the parameters for the sorting and/or merging of data files. A DIBOL program is then generated by the system to perform the required sort and/or merge. The user can specify up to eight key fields to control the ordering of the output records, in either ascending or descending sequence. A wide range of operating parameters, such as the number of work files to be used, is provided to enable the user to achieve maximum sort efficiency.

**STATUS** — The job and system state program, STATUS, retrieves and displays information about the TSD or XMTSD RTS. STATUS passes the information listed below to a line printer or a terminal:

- Available free core
- List of active jobs
- Detailed information of a specified active job
- Detailed information of pending messages
- List of pending line printer jobs
- Characteristics of the current RTS

**MINIMUM HARDWARE REQUIRED:**

CTS-300 is intended to run primarily on DEC Datasystem 150s and 300s; it will operate, however, on other similarly configured hardware with the following minimum:

- A VT05, VT50H, VT52, VT100, or LA36 console terminal. A VT50H, VT52, or VT100 terminal (in VT52 mode) is required for use with DECFORM, ISMUTL, STATUS utilities

The Extended Instruction Set (EIS or equivalent) for XMTSD

Memory management hardware is needed in the D330 and D350 series to use extended memory (memory above 56K bytes); it is needed, as well, in any 11/23, 1134A, 11/44 or 11/60 processor intending to use extended memory.

Memory required for SUD — 32K bytes; TSD — 56K bytes; XMTSD — 128K bytes

#### OPTIONAL HARDWARE:

The following options are available for D150 systems:

- Additional memory up to a system total of 60K bytes
- LA180 or LA120 Serial Printer
- VT100 Advanced Video Option (VT1XX-AB)

The following options are available for D320 systems:

- Additional memory up to a system total of 56K bytes
- VT100 Advanced Video Option (VT1XX-AB)
- Up to a system total of four VT05, VT50H, VT52, VT100, LA36 or LA120 terminals
- Up to four LAV11 or LPV11 line printers
- Up to four DLV11 asynchronous line interfaces (one per terminal)
- One DZV11 asynchronous line multiplexer with up to four lines
- RKV disk cartridge system with controller
- RK05 disk cartridge drives up to eight
- RLV disk cartridge system with controller
- RL disk cartridge drives up to four, two of which can be RL02 add-ons
- Up to two RXV floppy disk systems, with four drives total

The following options are available for special D323S and D325S systems:

- Additional memory up to a system total of 56K bytes
- VT100 advanced video option (VT1XX-AB)
- Up to a system total of four VT05, VT50H, VT52, VT100, LA36, or LA120 terminals
- Up to four LA11 or LP11 line printers
- Up to four DL11 asynchronous line interfaces (one per terminal)
- One DZ11 asynchronous line multiplexer with up to four lines
- RL disk cartridge system with controller
- RL disk cartridge drives up to four
- Up to two RX floppy disk systems, with four drive total

The following options are available for D330 systems:

- Additional memory up to a system total of 248K bytes
- VT100 advanced video options (VT1XX-AB)
- Up to a system total of eight VT05, VT50H, VT52, VT100, LA36 or LA120 terminals
- Up to four LAV11 or LPV11 line printers
- Up to eight DLV11 serial asynchronous line interfaces (one per terminal) for eight lines total

- Up to two DZV11 asynchronous line multiplexers for eight lines total
- RLV disk cartridge system with controller
- RL disk cartridge drives up to four
- Up to two RXV floppy disk systems, with four drives total

NOTE: Due to limited expansion space inside a base 11/23 CPU system box, additional hardware options can require an expander box and cabinet.

The following options are available for D350 systems:

- Additional memory to a system total of 248K bytes
- VT100 advanced video option (VT1XX-AB)
- Up to a system total of twelve VT05, VT50H, VT100, LA34, LA36, LA38, or LA120 terminals
- Up to four LS11, LA11, or LP11 line printers
- Up to sixteen DL11 asynchronous line interfaces (one per terminal) for sixteen lines total
- Up to two DZ11 multiplexers with up to eight lines each
- RK11 disk cartridge system with controller
- RK05 disk cartridge drives up to eight
- RL disk cartridge system with controller
- RL disk cartridge drives up to four
- RPR11 disk pack system with up to eight drives
- Up to two RX floppy disk systems, with four drives total
- RK611 disk pack system
- RK06 disk pack drives up to eight, or RK711 disk pack system
- RK07 disk pack drive up to eight

NOTE: A mix of up to eight RK06s and RK07s total is possible

- CR11 card reader
- TME11 magnetic tape controller with up to eight TU10 transports or TJE16 controller with up to two TS03 transports.

NOTE: CTS-300 will run on the 11/44 processor; but no more than 248K bytes of memory can be used by CTS-300.

#### PREREQUISITE SOFTWARE:

None

#### OPTIONAL SOFTWARE:

CTS-300 RDCP 2780/3780  
CTS-300 DICAM/3271

#### TRAINING CREDITS:

TWO (2) — Applies only to options that include support services. Consult the latest Educational Services Catalog at your local DIGITAL office for available courses, course requirements, and guidelines.

#### SUPPORT CATEGORY:

DIGITAL SUPPORTED

CTS-300 is a DIGITAL Supported Software Product.

**SOFTWARE INSTALLATION:**

**DIGITAL INSTALLED**

DIGITAL installation is required for Software Product Support. There is no charge for installation if performed at the time of system installation. DIGITAL installed software products, except for operating systems, are subject to an add-on installation fee when purchased subsequent to system installation.

**SOFTWARE PRODUCT SUPPORT**

CTS-300 includes standard warranty services as defined in the Software Support Categories Addendum of this SPD.

CTS-300 installation requires a system generation. To help customers, DIGITAL will perform the initial system generation if the system disk is an RL01, RL02, RK05, RK06 or RK07. When requested by the customer, DIGITAL will install floppy disk systems, on a time and materials basis.

**ORDERING INFORMATION:**

All binary licensed software, including any subsequent updates, is furnished under the licensing provisions of DIGITAL's Standard Terms and Conditions of Sale, which provide in part that the software and any part thereof may be used on only the single CPU on which the software is first installed, and may be copied, in whole or in part (with the proper inclusion of the DIGITAL copyright notice and any DIGITAL proprietary notices on the software) only for use on such CPU. All source licensed software is furnished only under the terms and conditions of a separate Software Program Sources License Agreement between Purchaser and DIGITAL.

Options with no support services are only available after the purchase of one supported license.

A single-use license only option is a license to copy the software previously obtained under license.

The following key (E, H, Q, T, V, X, Y, Z) represents the distribution media for the product and must be specified at the end of the order number, e.g., QJ354-AV = distribution on RK07 Disk Cartridge.

- E = RK05 Disk Cartridge
- H = RL02 Disk Cartridge
- Q = RL01 Disk Cartridge
- T = RK06 Disk Cartridge
- V = RK07 Disk Cartridge
- X = RX02 Double Density Diskette
- Y = RX01 Floppy Diskette
- Z = No hardware dependency

This software is available with a valid DEC Datasystem 150, 320, 330, or 350 that includes support services. License only CTS-300 is available only with a valid DEC Datasystem 150, 320, 330, or 350 that does not include software support services.

- D150 Floppy Disk Based (RX01)
- DS352 RX01 Floppy Disk Based
- DS356 RPR02 Disk Pack Based

- D322 RX01 Floppy Disk Based
- D323 RX02 Floppy Disk Based
- D324 RK05 Cartridge Disk Based
- D325 RL01 Cartridge Disk Based
- D333 RX02 Floppy Disk Based
- D335 RL01 Cartridge Disk Based
- D336 RL02 Cartridge Disk Based
- D354 RK05 Cartridge Disk Based
- D355 RL01 Cartridge Disk Based
- D356 RL02 Cartridge Disk Based
- D357 RK06 Cartridge Disk Based
- D358 RK07 Cartridge Disk Based

CTS-300 is also offered with full DIGITAL support services only on hardware configurations that meet minimum system requirements. A customer would order the line item:

- QJ354 -A— Single-use license, binaries, documentation, support services (media: E, H, Q, T, V, X, Y)

A partial listing of other DIGITAL packaged systems that meet CTS-300 requirements are listed below. For a more complete configuration guide, refer to the RT-11, Version 4.0 SPD (12.1).

- D532, D535, D538
- D542, D548
- DM30-LLB, DM30-HHB
- RE37-HHB
- SE30-HHB, SE30-LLB, SE30-MMA
- SE40-HHA, SE40-MMA
- SE60-HHA
- SM20-LLA
- SM30-HHB, SM30-LLB, SM30-MMA
- SM40-HHA, SM40-MMA
- SM60-HHA, SM60-HHB, SM60-LLA, SM60-MMA
- SP30-HVA, SP30-LLA
- SP60-HVA
- SR20-LLA, SR20-SSA
- SR30-LLB, SR30-SSB
- SR60-LLA
- SR-VXLLB, SR-VXSSA, SR-VXSSB
- SR-WXLLA, SR-WXSSA

*Update Options*

Users of previous CTS-300 versions whose specified Support Category warranty has expired may order under license the following software update at the then current charge for such update. The update is distributed in binary form on the appropriate medium and includes no installation or other services are included unless specifically stated.

- QJ354 -H— Binaries, documentation (media: E, H, Q, T, V, X, Y)
- QJ354 -H— Right to copy for single use (under existing license), no binaries, no documentation (media: Z)

**ADDITIONAL SERVICES:**

Post-warranty Software Product Services are available for licensed customers. Customers should contact their local DIGITAL office for additional information.