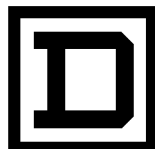


CRISP connect TM **Server** **for NetDDE**

User's Guide

§ CRISP Software Products



SQUARE D

GRUPE SCHNEIDER

CRISP connect™ Server for NetDDE User's Guide

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General

The CRISPconnect™ *Server for NetDDE* for CRISP computer-based systems enables popular desktop applications (such as spreadsheets, graphical packages, and statistical packages) to be integrated with CRISP process-management systems via an open client/server architecture. The client/server architecture is based upon NetDDE from Wonderware Software Development Corporation, which is a standard interface specifically designed to extend the DDE capabilities of Microsoft Windows across a network.

The *CRISPconnect Server for NetDDE* performs the role of a NetDDE "server". It functions as a data manager to access CRISP data on behalf of requests from "client" Windows applications running on other nodes that are DDE aware. The information exchange between CRISP and these client applications provides interactive access to manufacturing data in CRISP systems for data display, analysis and reporting. The information exchange is performed transparently for both the application developer and the end user.

This *CRISPconnect Server* offers the following NetDDE features.

- Allows users to choose the desktop application they want, run it on their own hardware, and access process data on a CRISP system.
- Supports many popular desktop applications.
- Allows desktop and other client applications to exchange data with one or more servers distributed over a network, where this *CRISPconnect Server* may co-exist with other NetDDE servers.
- Provides interactive access to process data.
- Allows the sharing and distribution of process data.
- Manages incompatibilities in a multi-vendor environment.

This *CRISPconnect Server* conforms to the NetDDE standard interface. It supports access to real-time data in CRISP systems. **Historical Data retrieval is not currently supported.**

The data model used to reference process data consists of *node*, *application*, *topic*, and *item*.

**User's Guide
Intended Audience**

The *CRISPconnect Server for NetDDE User's Guide* is intended for use as a reference document for personnel who are responsible for the system administration of the CRISP systems purchased from Square D Company. It also is intended for use as a reference document for application developers who need to have an understanding of the functions supported by this *CRISPconnect Server*.

This user's guide does not address how to use NetDDE functions in "client" applications to access CRISP data. Such information is described in the product documentation provided by each vendor whose product can be a NetDDE "client" application.

Requirements

This *CRISPconnect Server* requires installation of the following software (reference diagram on the following page entitled **CRISPconnect Server for NetDDE**).

- VMS Operating System V5.4 or later
- DECnet for VMS
- WonderWare NetDDE for VMS V1.01 or later
- CRISP®/32 System Software, V3.0

The client PC platform that will be accessing this *CRISPconnect Server* requires installation of the following software to support NetDDE:

- MS-DOS V5.0
- MS-Windows V3.1
- DEC PATHWORKS for DOS V4.0 or later.
- WonderWare NetDDE for Windows V1.1 or later.

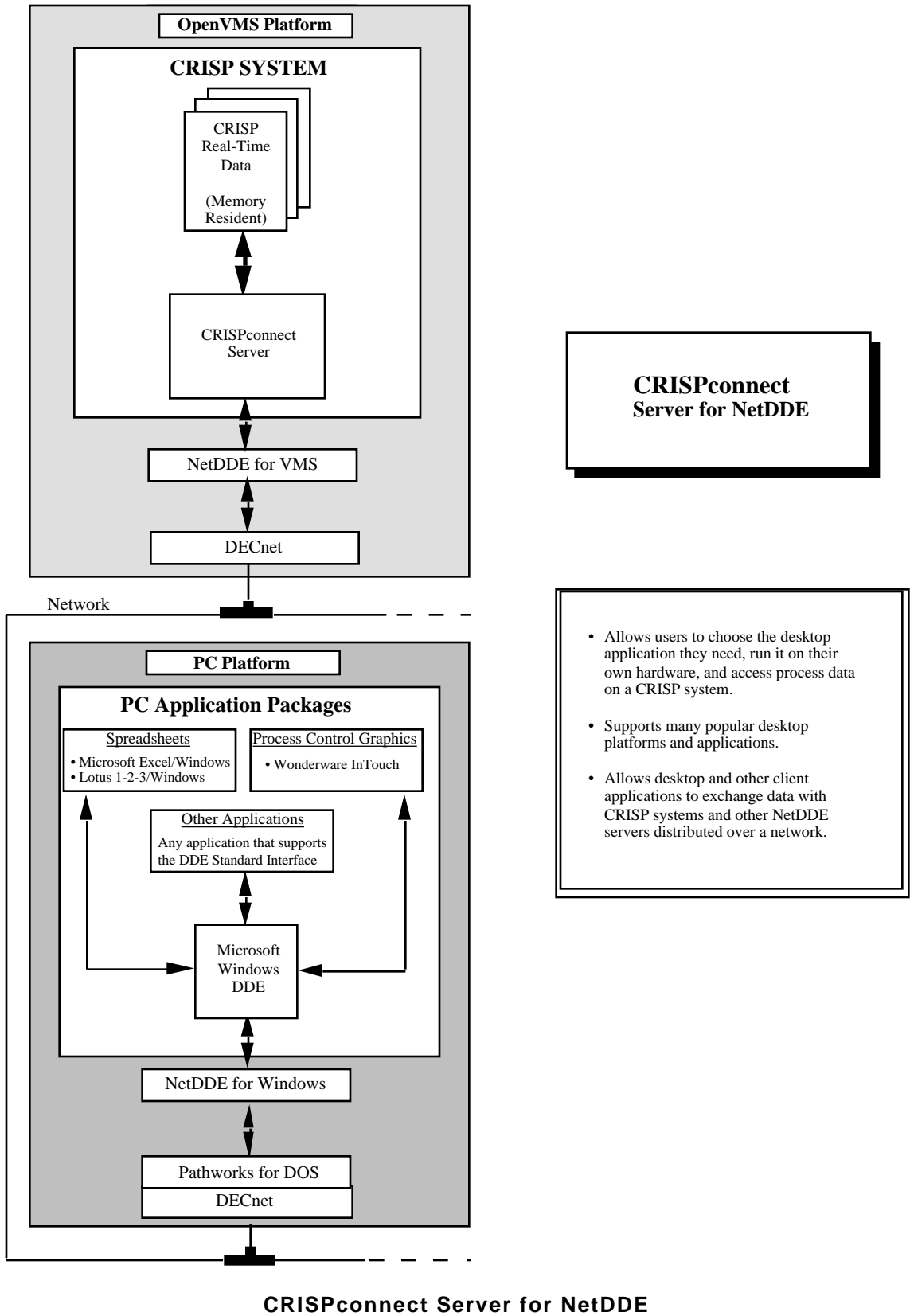
CRISPconnect Server Installation

To install this *CRISPconnect Server*, its license must be loaded and its software configured as described in the following two sections.

Register the License

Register the *CRISPconnect Server* license through the VMS License Management Facility (LMF) in accordance with the license agreement signed for your site. The license registration information you need is contained in the Product Authorization Key (PAK) that is shipped with this *CRISPconnect Server*. The PAK is a paper certificate that contains information about your license to run a particular piece of software.

You must register and load your *CRISPconnect Server* license before the server can run in a production environment. If the license is not loaded, this *CRISPconnect Server* will not run.



Register the License (cont) To register a license under VMS, log into the system manager's account and issue the following DCL command:

```
$ @SYS$UPDATE:VMSLICENSE
```

As the VMSLICENSE procedure prompts you for information, respond with data from your Product Authorization Key (PAK). For complete information about how to use the license utility, see the *VMS License Management Utility Manual* in the Base VMS Documentation Set.

Configuring CRISPconnect Server

This *CRISPconnect Server* software is configured by logging into the CRISP account and executing the CRISP_CONFIG command procedure to define the configuration of the VAX and CRISP/32 system hardware and software. The user typically executes the CRISP_CONFIG command after a new CRISP/32 system has been installed or after installing a new release of CRISP/32 on an existing system.

When executed, a portion of the CRISP_CONFIG command procedure prompts the user for the configuration of this *CRISPconnect Server* and the location of the "NetDDE for VMS" installation directory. For additional information on the CRISP_CONFIG command procedure, reference the *CRISP/32 Utilities Reference Manual*.

When the CRISP_CONFIG command procedure is complete, the *CRISPconnect Server* process will automatically start when CRISP is started. However, before the *CRISPconnect Server* process will successfully run, the Non-CRISP software identified in the next section must be installed.

Installation of Non-CRISP Software

As noted above, in addition to VMS and DECnet which most VAX systems already have installed, Wonderware NetDDE must also be installed to support this *CRISPconnect Server*.

NetDDE

To install NetDDE, follow the instructions in the *Wonderware NetDDE for VMS User Guide and Reference Manual* which guide the user through the following steps:

1. Install NetDDE for VMS.

A suggested target directory for the NetDDE installation is
SYS\$SYSDEVICE:[NETDDE].

NOTE

The NetDDE installation directory is asked for in the CRISP_CONFIG command procedure when configuring this CRISPconnect Server.

NetDDE (cont)

2. Configure the default operating parameters for NetDDE in the NETDDE.INI file.

The NETDDE.INI file resides in the NetDDE installation directory. At a minimum, the local node name must be defined in the NETDDE.INI file.

3. Define NetDDE logicals in the NETDDENM.COM file.

The NETDDENM.COM file resides in the NetDDE installation directory. In the NETDDENM.COM file, the NETDDE\$INI logical needs to be defined to point to the NETDDE.INI file and the NETDDE\$LOG logical needs to be defined to point to the NETDDE.LOG file.

NOTE

If NetDDE is installed in a cluster environment, the NetDDE node-specific files need to reside in a node-specific directory (like SYS\$SPECIFIC:[SYSMGR]). The NetDDE configuration file (NETDDE.INI) is a node-specific file and needs to be moved to a node-specific directory. The NetDDE log file (NETDDE.LOG) is also a node-specific file and needs to have its logical appropriately defined (in step 3) so that the log file is dynamically created in a node-specific directory.

Example NETDDENM.COM file (in a Non-Cluster Environment):

```
Define /System NETDDE$INI SYS$SYSDEVICE:[NETDDE]NETDDE.INI
Define /System NETDDE$LOG SYS$SYSDEVICE:[NETDDE]NETDDE.LOG
```

Example NETDDENM.COM file (in a Cluster Environment):

```
Define /System NETDDE$INI SYS$SPECIFIC:[SYSMGR]NETDDE.INI
Define /System NETDDE$LOG SYS$SPECIFIC:[SYSMGR]NETDDE.LOG
```

CRISP Startup of NetDDE

After installation and after a reboot, "NetDDE for VMS" is started automatically by the CRISP Setup command procedure. This customized startup replaces the Wonderware NetDDE startup, so that NetDDE can be started in the CRISP UIC group and be accessible by the *CRISPconnect Server for NetDDE*.

One of the current restrictions in "NetDDE for VMS" is that all NetDDE applications (like this *CRISPconnect Server*) must operate in the same group UIC that NetDDE is running in. The NetDDE startup, as documented in the Wonderware manual, is done from the SYSTEM account and uses the SYSTEM UIC. As a result, the *CRISPconnect Server for NetDDE* running in the CRISP UIC group is unable to access "NetDDE for VMS". Therefore, the customized CRISP startup of "NetDDE for VMS" is a requirement for this *CRISPconnect Server*.

General

This section describes the functions supported by this *CRISPconnect Server* to provide the application developer with an understanding of how to access CRISP process data from a NetDDE "client" application.

CRISPconnect Server Access

This *CRISPconnect Server* must be present locally on each CRISP system that is to be accessed by NetDDE client applications. At startup, this *CRISPconnect Server* registers itself with "NetDDE for VMS", which makes its NetDDE services available to all NetDDE client applications.

Client applications request access to CRISP process data by establishing a NetDDE conversation with this *CRISPconnect Server*. This conversation is based upon Microsoft's Dynamic Data Exchange (DDE) protocol which has been enhanced by the Wonderware Software Development Corporation to include network support. The general syntax of a NetDDE expression is as follows.

\\NodeName\Application|Topic!Item

Where:

NodeName is your VAX's Node name, which also must be specified in the NETDDE.INI initialization file.

Application is the registered DDE name of the *CRISPconnect Server for NetDDE*. This name is always *CSRDE*.

Topic is the name of the CRISP database you wish to access.

Item is the name of the CRISP Tag you wish to access.

The following example accesses CRISP tag MP1:V1_LEVEL on node PONCHO.

\\PONCHO\CSRDE|MP1!V1_LEVEL

CRISP Tag Access

The CRISP tag (Item) can be a single variable, or an array element. You can specify an array element as a constant numeric, or as another CRISP symbol. If the subscript is a symbol, it may also have a subscript. There is no limit to the nesting of a symbolic array reference. The following are examples of legal array references.

A X(3) X(Y) X(Y(2)) X(Y(Z))

In the above examples, "A" can be any legal CRISP symbol type. "X" and "Y" must be legal array types. "Z" can be any type except String.

CRISP Tag Access (cont)

In the case of CRISP Timers and Counters, there are some special considerations to keep in mind. When reading Timers and Counters, the value returned is the Tickdown or Count value. However, if you write to a Timer or Counter, the Reset value is modified.

This *CRISPconnect Server* supports access to tags in a CRISP system that are of the following CRISP data types.

STRING, LOGICAL, NUMERIC, LONG, FLOAT, COUNTER, TIMER

DDE Services Supported

This *CRISPconnect Server* supports the standard DDE services for a "Client" to access CRISP process data; the one service that it does not support is the EXECUTE message. Each service is briefly described below.

This user's guide does not address how to use the DDE functions in "client" applications to access CRISP data. Such information is described in the product documentation provided by each vendor whose product can be a DDE "client" application.

Initiate

The INITIATE service is used by a client to request and establish a conversation with this *CRISPconnect Server*. Once a conversation has been successfully established, additional DDE services can be accessed within the context of this client/server conversation.

Request

The REQUEST service is used by a client to request a one-time read of a specified CRISP tag and pass its value back to the client.

Advise

The ADVISE service is used by a client to request a "report-by-exception" read of a specified CRISP tag. The server adds the specified tag to an ADVISE list that it maintains on behalf of the client. On one second intervals, the server scans the ADVISE list looking for changes in the tag values. Whenever the value of a CRISP tag changes, its new value is passed to the client.

Unadvise

The UNADVISE service is used by a client to remove a specified CRISP tag from the ADVISE list for a given client/server conversation. This service is used to terminate a previously issued ADVISE request for a specific CRISP tag.

Poke

The POKE service is used by a client to request a write to a specified CRISP tag using a value that was passed in by the client.

Terminate

The TERMINATE service is used by a client to terminate a specified conversation with this *CRISPconnect Server*.

DDE Clipboard Format

The *CRISPconnect Server for NetDDE* currently supports one clipboard format. This is the CF_TEXT format, which is the default clipboard format for DDE conversations. Under certain circumstances, this may result in performance problems. If a client requires that it acknowledge all data messages, then performance is inversely proportional to the number of changes in the data.

If data throughput becomes a problem, the server can override the client acknowledge requests. This may be risky, however, and caution must be used. The logical name "CSRDEE_NOACKMAX" can be defined to any positive number n, such that n-1 messages are sent out without requiring client acknowledgment, and the nth message will be sent out requiring client acknowledgment. This can greatly improve the overall performance, however it can flood the PC client with too many messages. The number should be kept low; a value of 20 has been used with good results.

The ability to configure and define the CSRDEE_NOACKMAX logical is supported in the CRISP_CONFIG command procedure when configuring this *CRISPconnect Server* (reference *Configuring CRISPconnect Server* section). In the CRISP_CONFIG command procedure, the user can specify the number of messages to send to a client before requiring client acknowledgment; the CSRDEE_NOACKMAX logical is then defined to this value.

CRISPconnect Server Statistics

The *CRISPconnect Server for NetDDE* keeps an internal topic of various statistics during its operation that can be accessed by NetDDE client applications. The topic name is "\$STAT\$\$". The item names are case sensitive and are as follows.

Client_cnt	The current number of active clients.
Client_peak	The maximum number of clients during the life of the server.
UserAckData_cnt	The number of times a client has acknowledged the receipt of data by exception.
UserAdvise_cnt	The number of Advise messages received.
UserInitiate_cnt	The number of conversations that have been initiated.
UserNetDDETerminated_cnt	The number of times NetDDE for VMS has terminated during the lifetime of the Server.
UserPoke_cnt	The number of Poke (write) messages received.

CRISPconnect Server Statistics (cont)

UserRequest_cnt	The number of Request (read) messages received.
UserTerminate_cnt	The number of conversations that have been terminated.
UserUnadvise_cnt	The number of Unadvise messages received.
UserWantInitiate_cnt	The number of attempts to initiate conversations.