Open BSI Application Note - Using the DDE Server

Dynamic Data Exchange (DDE) is an industry-standard method for exchanging data between different Windows™ application programs. There are many types of application programs which support the DDE standard, such as:

- word processing programs
- spreadsheet programs
- data base packages
- equipment maintenance packages
- loop tuning packages

The Open BSI DDE Server allows such third-party applications, which conform to the DDE standard, to obtain data values from specified signals in a controller. In addition, these third-party Windows™ applications can write data to signals in the controller.

Starting the DDE Server

Before starting the DDE Server, Open BSI communications must be activated via NetView. Next, click on **Start–>Programs–>OpenBSI Tools–>Collection Programs–> DDE Server**. Unless configured for read-only access, or automatic sign-on, you will be prompted to enter a system password (this is the same password used for editing system parameters).[9] If the password is successfully entered, the DDE Server will start, and run in a minimized state. No additional BSI configuration is necessary.

Setting Up DDE References in the Third-Party Application

The Open BSI DDE Server supports three DDE functions:

Advise (read continuously) - each time the DDE Server receives a new value from the specified signal, it is sent to the third-party application.

Request (read) - the DDE Server sends the current value of the requested signal to the third-party application. (A **Request** requires that the **Advise** function also be active. See **Advise**, above.)

Poke (write) - the third-party application sends a value to the DDE Server, which sends it to the specified signal in the controller.

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[9]*Because of its ability to write data directly to nodes in the network, the DDE Server, like the SigWrite utility, is password-protected.*

DDE references adhere to the following naming convention:

Service|Topic!Item

For purposes of Open BSI and the DDE Server,

Service is always *BSAP*

Topic is the node name, as defined in the NETDEF files.

Item is the signal name in the node. It must include the base name, extension, attribute, and both separator periods, as shown below:

base.extension.attribute

The exact details for defining the DDE reference in the third-party application vary from application to application. The examples that follow are for two Microsoft® products: Excel and Visual Basic.

Examples - Excel

1) To issue a DDE **advise** message, which will allow you to display the current value of a signal in a spreadsheet cell, enter a formula in the cell where you would like the data to appear, as follows:

=BSAP|*node*!'*base.ext.attr*'

where: *node* is the node name as defined in the NETDEF files.

  base.ext.attr is the signal name which will provide the data value.

for example, to have the value of signal TANK3.LEVEL.01 from the node RPC2 displayed in a spreadsheet cell, enter the formula:

=BSAP|RPC2!'TANK3.LEVEL.01'

2) To issue a DDE **poke** message, which will allow you to write a value to a signal in the controller, you must create an Excel macro as shown below:

=INITIATE("BSAP","*node***")**
=POKE(*cell1,"base.ext.attr",cell2***)**
=RETURN()

where: *node* is the node name as defined in the NETDEF files.

base.ext.attr is the signal which will receive the data from the spreadsheet cell.

cell1 is the cell which contains the INITIATE command.

cell2 is the cell which contains the data value.

for example, the macro:

=INITIATE("BSAP","RPU7")
=POKE(C5,"STATION5.SETPNT.FLOW",E5)
=RETURN()

will take the value in cell E5, and send it to signal STATION5.SETPNT.FLOW in node RPU7.

Examples - Visual Basic

1)   To issue a DDE **advise**, the following properties are used for a text link:

LinkTopic   BSAP|*node*
LinkItem   *base.ext.attr*
LinkMode   1

The data is available as Caption.

2)   To issue a DDE **poke**, use the following statements for a text box label:

LinkTopic   =BSAP|*node*
LinkItem   =*base.ext.attr*
LinkMode   =2
Text   =*data*
LinkPoke

Configuring the DDE Server For Read-Only Access or Automatic Sign-On

Under normal circumstances, the user is prompted to enter the system password whenever the DDE Server is started.

If desired, however, the DDE Server can be configured for read-only access. In this mode of operation, the DDE Server can only perform **advise** or **request** functions; it CANNOT perform the **poke** function. Because no write access to the controller is provided in this mode, the user will NOT be prompted for the system password.
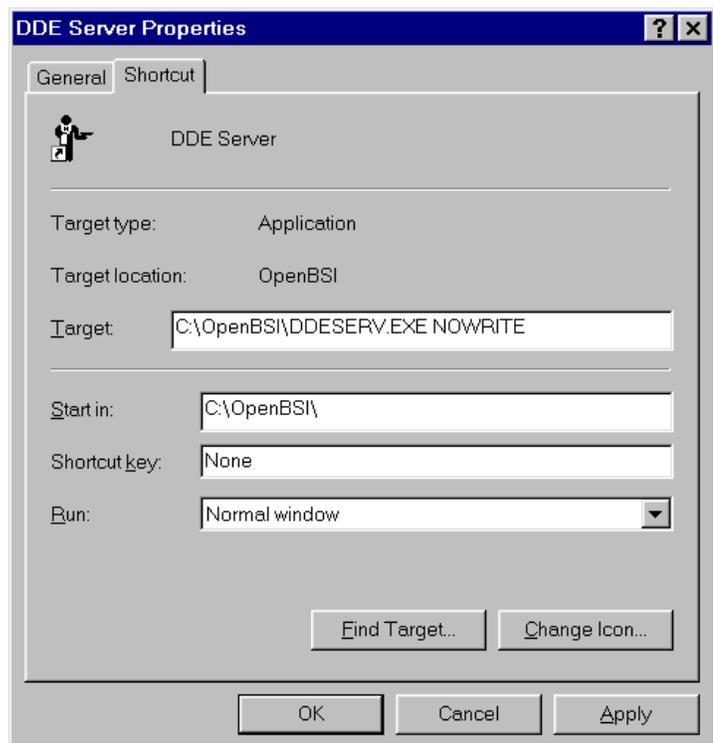
Another way to eliminate the prompt for the system password is to configure the DDE Server for automatic sign-on. This essentially causes the password to be saved and used each time the DDE Server is started.

Configuring Read-Only Access For DDE Server

Click once on the DDE Server icon, then click on **File–>Properties**. Click on the **"Shortcut"** tab in the DDE Server Properties dialog box.

In the **"Target"** field, leave a space after DDESERV.EXE, and enter 'NOWRITE' without quotes.

Click on the **[OK]** push button to exit the dialog box. The next time the DDE Server is started, it will not allow **Poke** messages; it will only support read-only access.

DDE Server Properties

General | Shortcut

DDE Server

Target type: Application

Target location: OpenBSI

Target: C:\OpenBSI\DDESERV.EXE NOWRITE

Start in: C:\OpenBSI\

Shortcut key: None

Run: Normal window

Find Target... | Change Icon...

OK | Cancel | Apply

Configuring Automatic Sign-On For DDE Server

Click once on the DDE Server icon, then click on **File–>Properties**. Click on the **"Shortcut"** tab in the DDE Server Properties dialog box.

In the **"Target"** field, leave a space after DDESERV.EXE, and enter the password without quotes.

Click on the **[OK]** push button to exit the dialog box. The next time the DDE Server is started, there will be no prompt for the system password.

## DDE Server Error / Status Messages

The DDE Server generates three different types of Error/Status messages:

Events   are reports of normal system activities.

Non-fatal Errors are problems which require attention, but which still allow some DDE Server communication to continue.

Fatal Errors   cause the termination of all DDE Server activity.

Events and Non-fatal errors are reported in the BSI DDE Server window, which is accessible by restoring the DDE Server icon from its minimized state.
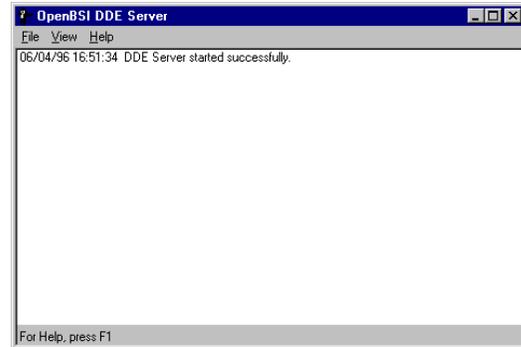
Fatal errors appear in message boxes from which the only choice is to click on **[OK]** and terminate DDE Server activity.

Message	Severity of Message	Cause
'Cannot Continue, DDE Service Failed! Try restarting Windows'	FATAL ERROR	The DDE Server failed because of a Windows problem.
'Cannot continue, BSI not active. Start BSI then restart this application.'	FATAL ERROR	Open BSI communications are not running.
'Cannot continue, BSI failure. Try restarting BSI.'	FATAL ERROR	An unexpected message was received from BSI.
'DDE Server Started'	EVENT	The DDE Server started successfully.
'Unable to create a data handle'	NON-FATAL ERROR	Windows resources are unavailable to answer a DDE request.
'Insufficient Memory for Topic'	NON-FATAL ERROR	There is insufficient memory in Windows to communicate with an additional node.

Message	Severity of Message	Cause
'Insufficient Memory for Conversation'	NON-FATAL ERROR	There is insufficient memory in Windows to collect data from an additional signal.
'New NRT detected'	EVENT	Some application has issued a new Node Routing Table.
'Non-fatal program error on BSI receive'	NON-FATAL ERROR	An inconsistent status was returned for a BSI reply.
'Unsolicited message received.'	NON-FATAL ERROR	An unsolicited message or late reply was received from BSI.
'Cannot get device address. *node* deleted.'	NON-FATAL ERROR	*node* is not recognized by BSI.
'Version Mismatch on device *node.*'	NON-FATAL ERROR	*node* has been downloaded, and the new load version is different.
'Deleting signal *base.ext.attr* of device *node.*'	NON-FATAL ERROR	The signal *base.ext.attr* does not exist in *node*, and has been deleted from the signal cache.
'Comm restored on device *node.'*	EVENT	Communication between the DDE server and *node* has been restored.
'Comm failed on device *node.*'	NON-FATAL ERROR	Communication with *node* has failed.
'Write rejected for signal *base.ext.attr* of device *node.*'	NON-FATAL ERROR	Signal *base.ext.attr* is manually inhibited.