APPENDIX D: TCP CONSIDERATIONS

This chapter shows the areas needed to use TCP to send data from one AS/400 to another.

Planning Guide

The following steps are recommended to set up TCP/IP processing on your AS/400.

Connect your AS/400 to the network. Contact your gateway for detailed information. Contact IBM and telecomm providers to acquire the required equipment if needed.

Install IBM Software. Refer to the Prerequisites section in Chapter 2, "Installation" for prerequisite IBM software.

Decide whether to use Secure Socket Layer. SSL is more secure but requires more setup and consumes more resources to transmit data.

Create/Buy/Install a Digital Certificate This step is only needed if you are running Secure Socket Layer. You can purchase a Digital Certificate or be your own CA and create/distribute/install your own Digital Certificate.

Assign Ports Determine which port each Receiving system Server will listen on.

Setup/Start the FileXfer Server Refer to Appendix A, "Tailoring FileXfer" section "The FileXfer Server Options".

The FileXfer Server

In order to receive entries from other AS/400 systems via TCP, a FileXfer Server job must be started. Prior to starting the server it must be configured. The following configuration options must be decided:

IP Addresses to listen on. Determine which IP address to listen on, or all.

Port for the server to listen on. See "TCP Port Usage" below.

Secure Socket layer. See "Secure Socket Layer" below.

User ID/Password. If set, all remote tasks sending to this system must provide matching information.

Refer to Appendix A, "Tailoring FileXfer" Section "FileXfer Server" for the Server setup options.

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Once set up, the Server must be started. We recommend the Server job be always running. Thus you should place the start command somewhere in your IPL startup stream. The STRXFSVR command has no parameters. The ENDXFSVR command has the following parameters:

WAITEND Parameter
Specifies if the command is to wait until the Server job has ended before continuing.

*NO: The command will return control to the caller immediately.

*YES: The command will wait until the Server job has ended before returning control to the caller.

WAITDLY Parameter
Specifies, if WAITEND(*YES) is specified, the amount of time in seconds to wait before reporting an error. Specify a number in the range of 1-32767.

TCP Port Usage

FileXfer/400 needs a TCP port to send from one system to another. Each Receiving system's Server job will listen on the specified port. As shipped from BDS, the receiving systems will listen on port 3650 (servers on different systems can have the same number).

FileXfer uses the IBM Service Table to reserve an unused port. You can use the WRKSRVTBLE command to view the Service Table. The service name used by FileXfer is:

    bds-xfer-tcp-server

Note: If the above service name does not appear in the service table, reenter the port values using the Tailoring Options display (BXFERSETUP, F-10).

Secure Socket Layer Considerations

FileXfer/400 can use SSL to encrypt transmitted data. The administrator must decide whether to use SSL or not. In general, if you are using the internet to communicate between AS/400s, we strongly recommend you use SSL. Otherwise, we recommend not using SSL.

Using SSL requires that a Digital Certificate be installed on both AS/400s. To set up and process Digital Certificates, additional (no charge) IBM software must be installed on the AS/400. See the Prereqs in

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Chapter 2 for more information.

SSL also adds overhead to the transmission. You will notice a reduction in throughput when using SSL.

Note: Setting up a Digital Certificate on the AS/400 is an involved process. We recommend you contact the IBM Support Center for assistance if you are new to this area of AS/400 operations.

You will install your Digital Certificate into a System Store. Each System Store can have a default certificate. If your Digital Certificate is not the default certificate for the System Store that you install it in, you will need to create an Application ID. Application IDs tell the application (FileXfer) which Digital Certificate within a System Store to use.

FileXfer provides a utility to create an Application ID. Refer to Appendix A "Tailoring FileXfer" section "Creating Application ID's". Once created, you must use IBM products such as Digital Certificate Manager to assign the Application ID to a System Store.

Setup Example

The following steps provide an example of implementing TCP using Remote SpoolPrint/400.

1) Connect your AS/400 to the network. In this example, our AS/400 is already configured to access the network. To see if your system is connected to the internet, from an AS/400 command line enter:

> **PING** *other.AS400.machine*

You should receive messages stating replies took xxx milliseconds. If not, your AS/400 is unable to connect to the other machines on the network. It may be behind a firewall or not set up properly. In this case you must have the network administrator give the AS/400 access to the other machines on the network.

Note: We have found many AS/400 administrators who are reluctant to connect their AS/400 to the Internet. We find this ironic because the AS/400 has arguably the best security features of any server on the market.

2) Install IBM Software. Refer to the Prerequisites in Chapter 2, "Installation" in this example we had TCP installed and ordered the following software from IBM:

> Digital Certificate Manager (Product Option 34)
> IBM HTTP Server for AS/400 (5769-DG1)
> Cryptographic Access Provider for AS/400 (5769-AC3)

Note: There is no charge for these products.

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To check to see if the prereqs are on your system, perform the following:
a. On the AS/400 bring up the license product menu:

GO LICPGM

b. Select option 10, Display installed licensed programs.

c. Press F11 twice to display Product Options. Verify the existance of Digital certificate Manager, 57xxSS1 option 34.

Note: xx=22 in Version 5, 69 in Version 4.

d. Scroll through the list, and verify the existance of the other prerequisites:

57xxAC3	Crypto Access Provider 128-bit for AS/400
57xxDG1	IBM HTTP Server for AS/400
57xxTC1	TCP/IP Connectivity Utilities for AS/400

If an item is not in the list, you will need to contact IBM to order it.

3) Decide whether to use Secure Socket Layer. See above for more information.

4) Create Certificate (SSL only).   Creating a Digital Certificate is an involved process, with many options. We recommend you contact IBM Support Center to assist you. You will need a Digital Certificate on each system using SSL.

5) Create/Assign an Application ID (SSL Only). In this example, we are not making our Digital Certificate the System store's default. Thus we need to create an Application ID and assign our certificate to it.

a. From an AS/400 command line enter the following:

BRODERICK/BXFERSETUP

From the "Setup Display" screen, press **F10** (Server options) and press **F10** (ApplID).

b. The Application ID screen will appear. You may change the name if you need to. Otherwise, press **F6** (Create). Press **F6** to confirm. Exit (**F3**) back to the command line.

c. From the Digital Certificate Manager Display, click "Work with Secure Applications". Click the button next to:

BDS_BRODERICK_XFER_SERVER

Click "Work with System Certificate".

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d. The Certificate you created in step 3 should appear in the list of certificates. Click its radio box and click "Assign New Certificate". Click OK on the confirmation screen.

e. Again, Click the **BDS_BRODERICK_XFER40_SERVER** radio button and click "Work with Certificate Authority".

f. For each CA in the list that you are using, click its radio button and then click "Trust". The word "Yes" will appear in the Trusted column.

6) Assign a Port. In this example, we will use the Defaults. Contact your Network personnel to have them set up the firewalls at both sites to allow port 3650 to pass through the firewall.

7) Setup the FileXfer Server. On each system that will receive spool entries, configure the Server job. Refer to Appendix A "Tailoring FileXfer", section "FileXfer Server Options" for more information.

In our example we will monitor all IP addresses, use SSL, and use the default system store:

a. From an AS/400 command line enter the following:

    BRODERICK/BXFERSETUP

From the "Setup Display" screen, press **F10** (Server options).

b. The Server options screen will appear. Fill in the following parameters:

    SSL: Y
    System store password: *(your password)*
    Application ID: BDS_BRODERICK_XFER40_SERVER

Press **ENTER** twice to return to the command line.

c. Start the Server job. Enter the following command:

    BRODERICK/STRXFSVR

Note: You should place the above command in your IPL startup stream.