Addressing FTP Connection Failures

Some MIL-Comply users may encounter an FTP failure when attempting to push EDI transactions to Wide Area Workflow. This process uses FTP to exchange files with the Mil-Pac VAN. In this scenario the user will be able to connect to the server, but the connection times out without sending the file.

The File Transfer Protocol (FTP) uses two ports. An outbound connection is established with the FTP server's Port 21, and this is rarely blocked by a firewall. The problem occurs when the FTP server attempts to send data back by initiating a connection with a TCP Port that is not expected by, and thus blocked by a firewall.

Test FTP on the PC by opening a CMD prompt, and running

```
C:\Users\...>  ftp  ftp.milpac.net
User (ftp.milpac.net:(none)):   test
Password:  <password provided by Mil-Pac>
ftp>  dir
```
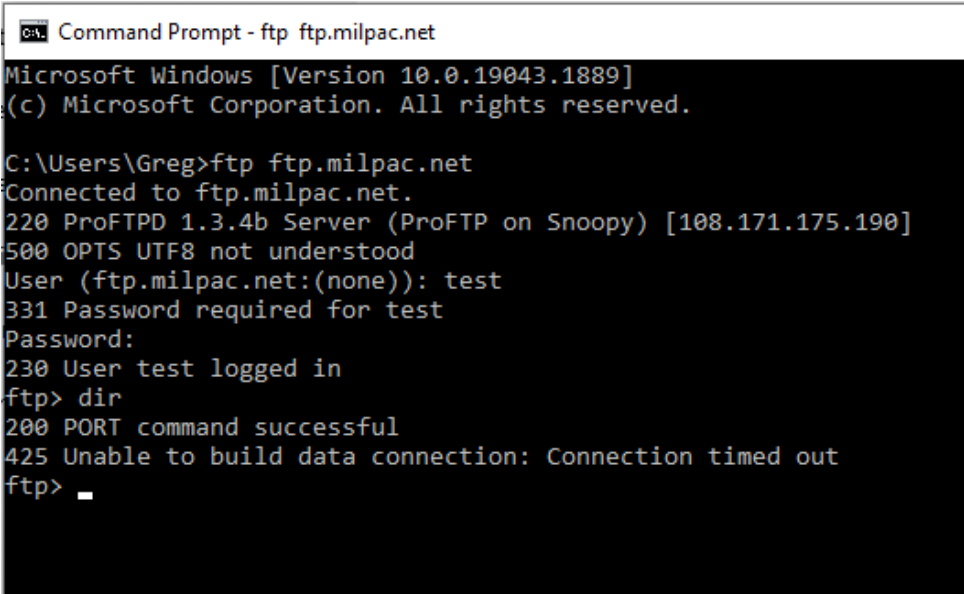
There should be an immediate response from the FTP server:

```
200 PORT command successful
```

If a directory is provided, then system can perform FTP. But, if after a few minutes the following message comes up, then it is likely that a firewall is blocking this asynchronous connection:

```
425 Unable to build data connection: Connection timed out
```

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Ports 20 and 21

Opening ports 20 and 21 are sometimes considered as possible solutions to this problem.   However, those ports are only used when operating an FTP server on your network and/or PC.   The problem is actually occurring when the remote FTP server attempts to open a data connection port.

The File Transfer Protocol uses a command channel to control transfers.   That is what is used when one connects to the server and provides username and password.   Firewalls typically allow this. However, when a DIR command is issued the FTP server builds a file for that purpose, then attempts to open a data connection to transfer it to your FTP client.   The failure occurs when that connection is refused by either your PC or network firewall, resulting in the "425 Unable to build data connection" error.

Firewalls do not like unexpected connections from unknown systems, so they simply block the connection. The solution to the problem is typically to identify ftp.milpac.net (108.171.175.190) as a trusted network connection for TCP services.   This allows connections from that address to open any available TCP port.

The Solution

There are two firewalls that may be blocking FTP from occurring. A network firewall and a personal (PC) one. The first place to check is your PC firewall, because if FTP is occurring elsewhere on your network, then your network firewall may not be the issue.

The first step is to determine whether protection is being provided by Windows or a third-party such as McAfee. Do this by entering *Firewall & network protection* into the Window search bar.   That will get you to a control panel like this one.

The *Manage providers* link shows that the McAfee Firewall is activated in lieu of the Windows Firewall.

Clicking on *McAfee Firewall* opens its configuration.

Note that Admin rights may be necessary to perform any or all these functions, and that they may vary depending on your operating system and specific configuration.
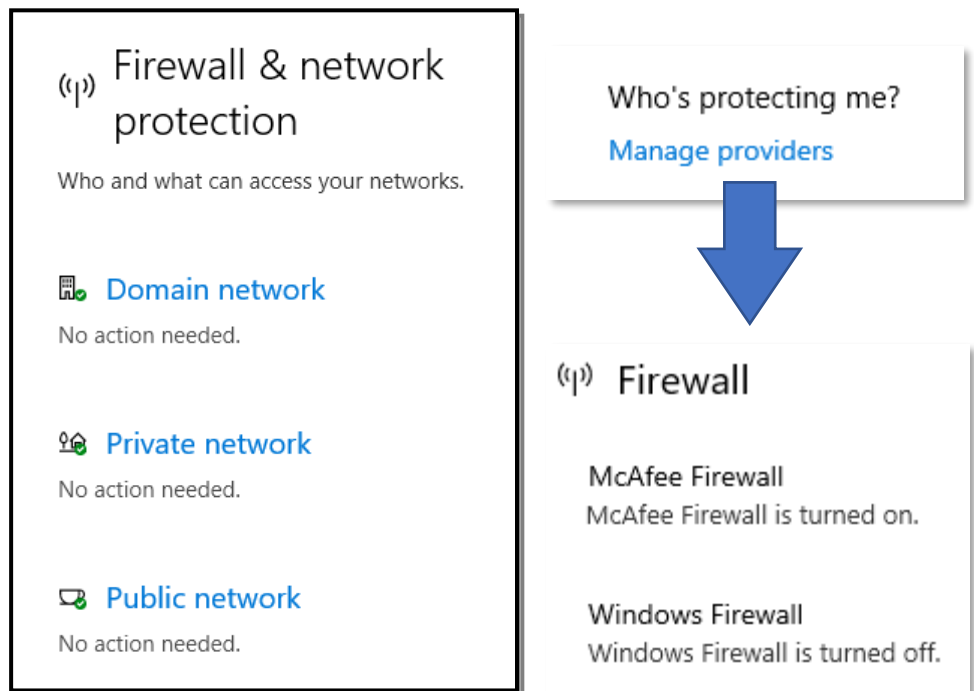
Trusting the Mil-Pac FTP Server

Getting your PC firewall to trust the TCP connection requests from the Mil-Pac VAN generally solves FTP issues. If not, doing the same with the network firewall may be necessary.

address, which is 108.171.175.190.   In McAfee that means simply adding to the list of trusted network connections:

Network		Network Type	Adapter Type
>	108.171.175.190	Work	Wired

Adding 108.171. 175.190 as a trusted connection solved the problem, allowing the FTP server to open a data connection to deliver the directory:

```
ftp> dir
200 PORT command successful
150 Opening ASCII mode data connection for file list
drwxrwx---   4 test     test          4096 Apr 25 22:25 Support
drwxrwxr-x   2 test     vanadmin      4096 Apr 20  2021 in-box
drwxrwxr-x   3 test     vanadmin      4096 Jun 10  2018 out-box
drwxrwx---   2 test     test          4096 Jun 10  2018 temp
226 Transfer complete
ftp: 255 bytes received in 0.01Seconds 28.33Kbytes/sec.
ftp>
```

Testing with Windows FTP Client

This article makes use of the Windows command-line FTP client. We do that because it is the most basic test available. It does not involve MIL-Comply or its configuration. It provides a baseline from which it can be determined if FTP is allowable on a specific machine.

MIL-Comply's FTP client uses the same underlying pathway as the Windows FTP client. Once a successful connection can be made and a directory pulled then chances are a successfully configured MIL-Comply will also work.   The contrary is also true. If Windows cannot do it, neither will MIL-Comply be able to.

Contact Mil-Pac Support should you wish to get credentials to test using the Windows command-line FTP client.