

NpToNmxp

Version 2.2

User Guide

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NpToNmxp v2.2

1 About NpToNmxp

NpToNmxp receives NP data packets streamed from a Taurus, translates them into NMXP packets, and sends them to NAQSServer. NpToNmxp also receives retransmission requests from NAQSServer, translates them into NP packets, and sends them to the Taurus.

You can view the time-series data in Waveform while NpToNmxp is running with NAQSServer. If DataServer is running you can view the data in Atlas.

NpToNmxp does not transmit SOH or log packets. You can download SOH and log information directly from the Taurus to .csv files (see the Taurus user guide).

2 Installing NpToNmxp

These instructions refer to a typical installation. For a typical installation, you would install NpToNmxp on the NAQS server, where the current directory would be the user directory (`\nmx\user` or `/nmx/user`).

On Windows:

1. Copy the files `NpToNmxp.jar` and `NpToNmxp.bat` to the `\nmx\bin` directory.
2. Optionally, create a shortcut to `NpToNmxp.bat`.

On Linux:

1. Copy the files `NpToNmxp.jar`, `nptonmxp`, and `nptonmxpconsole` to the `/nmx/bin` directory.
2. Make the file `nptonmxpconsole` executable: Change to the `/nmx/bin` directory and then enter the command `chmod +x nptonmxpconsole`
3. Optionally, create a shortcut to `nptonmxpconsole`.

3 Configuring your system to use NpToNmxp

Configure NAQSServer and the Taurus to use NpToNmxp.



Notes:

- 1) Use NpToNmxp version 2.2 with NAQSServer Version 1.9.1, which recognizes all Nanometrics instrument types. For NAQSServer versions lower than 1.9.1, use NpToNmxp version 2.01.06.
- 2) Use NpTomxp version 2.2 with DataServer version 1.5.4, which recognizes all Nanometrics instrument types. For DataServer versions lower than 1.5.4, use NpToNmxp version 2.01.06.

3.1 Add the Taurus to NAQSServer

1. Add a Taurus [Instrument Prototype] section to your `Naqs.stn` file. For example:

```
[ InstrumentPrototype ]
TypeName = Taurus           // prototype name - may be same as model
Model = Taurus             // instrument type
MemoryKB = 512             // instrument ReTx buffer size
SohBundlesPerPacket = 27  // bundles per soh packet
RequestInterval = 60      // interval between retx request messages
SohChannelName = SOH      // extension for soh file (NUL if none)
SohBufferSize = 1        // file size in MB
SohBufferPath = ringbuff  // where files are located
InetHostName = Dynamic    // return IP address for instrument
InetPort = 32000          // return IP port for instrument
```

- ▶ See Section 3.2 on page 3 for information on determining a value for *MemoryKB*.
- ▶ *InetHostName* must be set to `Dynamic`.

2. Add three [ChannelPrototype] sections for the Taurus channels. For example:

```
[ ChannelPrototype ]
TypeName = BHZ-3 // label for this type
Name = BHZ      // channel name
Component = 1  // digitizer component (refers to current instrument)
Sensor = Trillium // pointer to predefined [Sensor] characteristics
Azimuth = 90   // azimuth in degrees clockwise from North
Dip = 0        // dip in degrees (positive down)
Depth = 0     // has to be defined for each channel
BundlesPerPacket = 27 // bundles per data packet, always 27 for
                    // Taurus
RingBufferSize = 10 // file size in MB
RingBufferPath = ringbuff // where files are located
ResponseFile = none // name of SEED response file
```

```
[ ChannelPrototype ]
TypeName = BHN-3 // label for this type
Name = BHN      // channel name
Component = 2  // digitizer component (refers to current instrument)
Sensor = Trillium // pointer to predefined [Sensor] characteristics
Azimuth = 90   // azimuth in degrees clockwise from North
Dip = 0        // dip in degrees (positive down)
Depth = 0     // has to be defined for each channel
BundlesPerPacket = 27 // bundles per data packet, always 27 for
```

```

// Taurus
RingBufferSize = 10 // file size in MB
RingBufferPath = ringbuff // where files are located
ResponseFile = none // name of SEED response file

[ ChannelPrototype ]
TypeName = BHE-3 // label for this type
Name = BHE // channel name
Component = 3 // digitizer component (refers to current instrument)
Sensor = Trillium // pointer to predefined [Sensor] characteristics
Azimuth = 90 // azimuth in degrees clockwise from North
Dip = 0 // dip in degrees (positive down)
Depth = 0 // has to be defined for each channel
BundlesPerPacket = 27 // bundles per data packet, always 27 for
// Taurus
RingBufferSize = 10 // file size in MB
RingBufferPath = ringbuff // where files are located
ResponseFile = none // name of SEED response file

```

3. Add the station, and add each Taurus as an instrument with associated channels.

For example:

```

[ Station ]
Name = STN03
Description = Top of hill, new vault
Latitude = 47.48
Longitude = 16.36
Elevation = 1022.3

// These are the instruments associated with the preceding station

[ Instrument ] // instance of an instrument
Prototype = Taurus // instrument type
SerialNumber = nnnn // serial number - mandatory

// These are the channels associated with the preceding instrument

[ Channel ] // instance of a channel
Prototype = BHZ-3 // use settings from this prototype

[ Channel ] // instance of a channel
Prototype = BHN-3 // use settings from this prototype

[ Channel ] // instance of a channel
Prototype = BHE-3 // use settings from this prototype

```

► Set the value for *SerialNumber* to the serial number of your Taurus unit.

3.2 Set the *MemoryKB* parameter in the `Naqs.stn` file

The `Naqs.stn` file [`InstrumentPrototype`] section has a *MemoryKB* parameter, which is a setting for the retransmit buffer size on a remote instrument. Setting *MemoryKB* requires special consideration when streaming NP packets from a Taurus, as this parameter was designed for instruments with relatively small ringbuffers (typically up to 13MB) compared to Taurus storage capacity (up to 37GB).

You may set *MemoryKB* to any positive integer value (use 0 if retransmit request is disabled), although NAQS will impose a limit based on a maximum allowable backlog. The number of packets allowed as a backlog is approximately $MemoryKB * 2$.

Setting *MemoryKB* to too small a value will cause NAQS to abandon recent missing packets (for example, a setting of 512 would limit the interval over which packets can be retransmitted to around 1100 packets, or approximately 15 minutes of data at 100sps). Setting it to a very large value based on Taurus storage capacity, and considering that retransmitted packets have a lower priority than primary streamed packets, may result in it taking an extremely long time to get the backlog of data. In this case, it would make more sense to retrieve old data directly off the recording medium.

Instead, you may adjust the value based on how much data you want to retrieve from the Taurus Store to the NAQS ringbuffers after startup. For example, to limit the number of past packets requested before startup, initially set *MemoryKB* to a small value until the NAQS ringbuffers fill up, then set *MemoryKB* to a higher value to retrieve missing packets.

- ▶ If you change any settings in either the `Naqs.ini` or the `Naqs.stn` file, you must save the file and then restart both NAQSServer and NpToNmxp for the changes to take effect.

3.3 Configure the Taurus to stream NP packets to NAQS

1. Log in to the Taurus as `tech` or `central`.
2. Go to the Advanced Configuration > Communications > Data Streaming page.
3. Enable Stream NP Packets: Select the checkbox .
4. Type the NAQS server IP address in the IP Address field. If you are using multicast, use the multicast group address specified in the `Naqs.ini` file (see also Section 3.4).
5. If you require a different listening port number for NpToNmxp, type the new value in the Port # field. The default NpToNmxp listening port is 32004; typically this does not need to be changed. See also Section 3.5.
6. Save the configuration changes:
 - a) Click **Apply**.
 - b) When the changes have been applied successfully, click **Commit**.

3.4 Configure NpToNmxp for multicast

NpToNmxp can transmit to a multicast group as defined in the `Naqs.ini` file [`NetworkInterface`] section. To use multicast, edit the `Naqs.ini` file and Taurus settings as appropriate.

1. Edit the `Naqs.ini` file [`NetworkInterface`] section to use a valid multicast address. For example:


```
[ NetworkInterface ]
Port = 32000          // UDP port for incoming NMX data (usually 32000)
SendDelay = 250      // milliseconds to delay after each send
RetxRequest = Enabled // NAQS will send retransmit requests
```

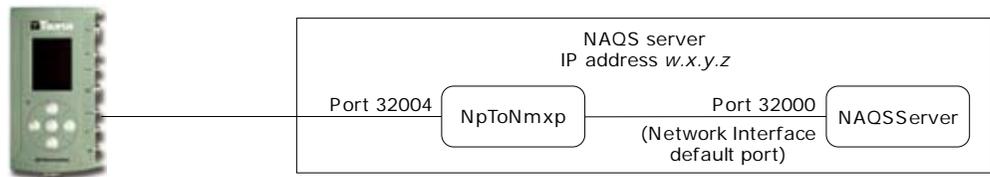
```
MulticastGroup = 229.1.2.1 // multicast group
```

- When configuring the Taurus to stream NP packets, set the value for IP address to the same value as the [NetworkInterface] *MulticastGroup* address.

3.5 Change the NpToNmxp listening port

The NpToNmxp listening port is 32004 by default, on the IP address shared with NAQSServer (for example, Figure 3-1). Typically you would not need to change this setting.

Figure 3-1 Default port assignments on the NAQS server



If you do change the listening port number, ensure that you use a different port than that set in the `Naqs.ini` file [NetworkInterface] section *Port* parameter. Otherwise NAQS will receive Taurus packets, which it will not recognize, as well as packets from NpToNmxp.

- ▶ To change the listening port, set the *port number* as an argument on the command line on startup (Windows and Linux) or in the `.bat` file.

4 Running NpToNmxp

4.1 Requirements

- ♦ Java 2 Run-time Environment (J2RE) version 1.4.2_0x or higher
- ♦ Nanometrics DLLs 1.8 or higher (Windows)
- ♦ Nanometrics Libraries 1.87 or higher (Linux)
- ♦ A `Naqs.ini` file is in the current directory.
- ♦ The path to the executable (`nptonmnp.bat` or `nptonmnpconsole`) must be specified by an absolute or relative path on the command line or through the use of the `PATH` environment variable.
- ♦ The *LogPath* directory specified in the `Naqs.ini` file must be writeable.

4.2 Start NpToNmxp

NpToNmxp will use the `Naqs.ini` file that is in the current directory.



Note If you have started NpToNmxp more than once within a short time, then the retransmit queue of the Taurus (running firmware version 2.x) may be too full to transmit OSN data immediately. If more than 5 minutes have elapsed and the NpToNmxp console log is displaying messages such as
 "I 2006-01-03 21:52:23 NpClient\$SourceD(243) Cached 4700

packets from taurus_0483 while waiting for OSN data”, then you may wish to clear the retransmit queue.

- ▶ In the Taurus Advanced Configuration > Communications > Data Streaming page, disable Stream NP Packets , **Apply** the setting, enable Stream NP Packets , and **Apply** again. NAQSServer will re-request any missing data again after successful restart of NpToNmxp.

4.2.1 Start NpToNmxp on Windows

You can start NpToNmxp via a shortcut, start it manually from the command line, or set it to start automatically with NmxWatchdog.

To start NpToNmxp from the command line:

1. Start NAQSServer if it is not already running.
2. Open a new terminal window.
3. At the command line enter `nptonmxp [port number]` where *port number* is an optional port number argument (see also Section 3.5 on page 5).

To set up NpToNmxp to start automatically with NmxWatchdog:

1. Add an entry to your `watchdog.ini` file. This example uses the typical locations for the program files and for the current (working) directory:

```
[ WatchEntry n ]
ProgramTitle = "NpToNmxp"
ProgramPathname = "java -Xrs -cp c:\nmx\bin\NpToNmxp.jar
                  ca.nanometrics.npToNmxp.NpToNmxp [port number]"
WorkingDirectory = "c:\nmx\user"
ExitAction = Restart
PingsSemaphore = FALSE
StartDelay = 6s
```

 - ▶ Optionally, you may include in the *ProgramPathname* the port number you used when configuring your Taurus (Section 3.3). The port default is 32004.
2. Edit the [WatchTiming] section *NumberEntries* parameter to include the new [WatchEntry n] section.
3. Restart NmxWatchdog.

4.2.2 Start NpToNmxp on Linux

You can start NpToNmxp via a shortcut, start it manually from the command line, or set it to start automatically with `nmxwatchdog`.

To start NpToNmxp from the command line:

1. Start NAQSServer if it is not already running.
2. Open a new terminal window.
3. At the command line enter `nptonmxpconsole [port number]` where *port number* is an optional port number argument (see also Section 3.5 on page 5).

To set up NpToNmxp to start automatically with nmxwatchdog:

1. Add an entry to your nmxrun file:

```
# Start nptonmxc.  
sleep 1  
$DIR/nptonmxc $1 &
```
2. Restart nmxwatchdog.

4.3 Stop NpToNmxp

- ▶ In the terminal window enter either `exit` or `quit`.

5 Monitoring NpToNmxp operation

NpToNmxp produces a startup log file and daily log files, and displays messages in the terminal window.

- ◆ The startup log file is created in the current directory.
- ◆ An operation log file is created daily in the directory specified in the `Naqs.ini` file [`NaqsLog`] `LogPath` parameter, with filename `nptonmxc_yyyymmdd.log`. The log verbosity is as specified in the `Naqs.ini` file [`NaqsLog`] `Verbosity` parameter.

6 Technical support

If you need technical support, please submit your request via the [Nanometrics customer support site](http://support.nanometrics.ca/), or by email or fax. Include a full explanation of the problem and supporting data (for example, log files).

Customer support site: <http://support.nanometrics.ca/>

Email: techsupport@nanometrics.ca

Fax: To: Support, at +1 613-592-5929

