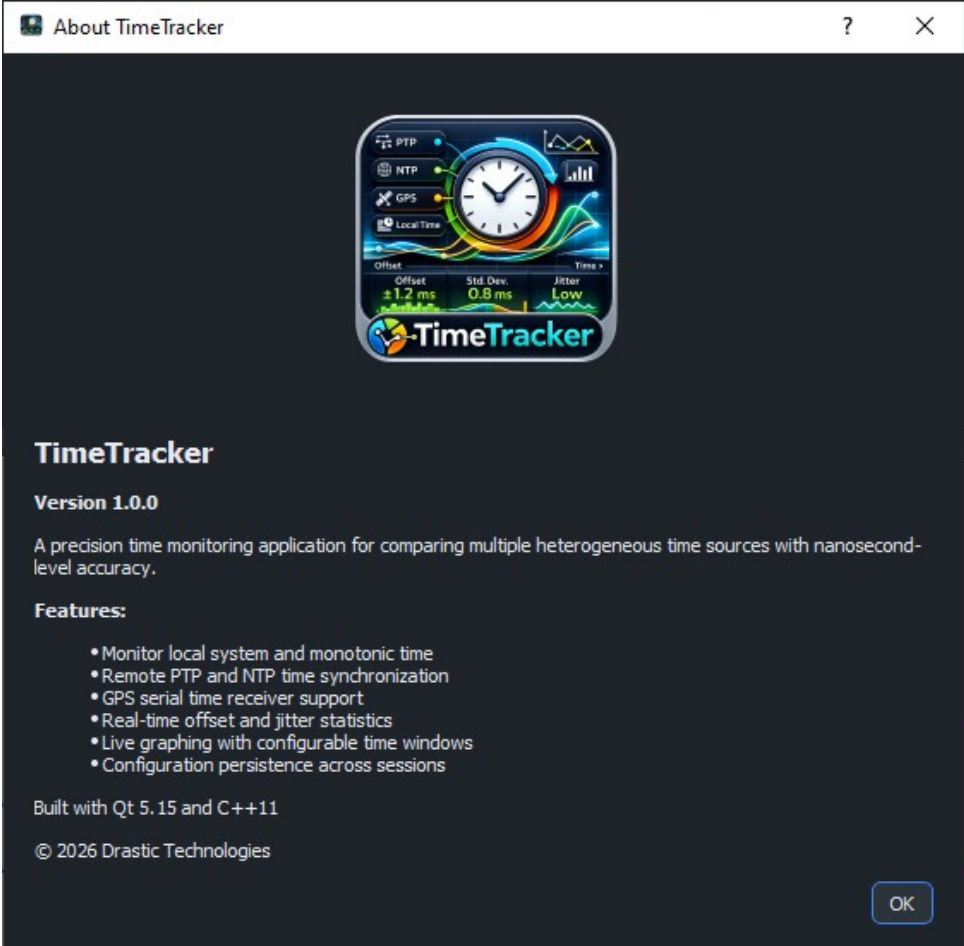


TimeTracker Utility

User Guide v1.0.0



February 18, 2026

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1 Introduction

This manual is for TimeTracker version 1.0.0 software from Drastic Technologies, Ltd.

1.1 Conventions

This manual assumes the following:

That the user knows how to operate a mouse and keyboard and perform the basic functions of Microsoft Windows, macOS or Linux operating system.

That the user is familiar with the creative software in use.

That the user has access to technicians capable of placing the device on the network and setting up any SAN systems if necessary.

The name of a control or display present on the interface will be displayed in **bold** text.

Where a portion of the manual is referred to the name of section mentioned will be displayed in *italics*.

Certain images in this document may have been grayed out where it is useful or necessary to place indicator marks to show specific controls or displays above a darker background.

1.2 About TimeTracker

TimeTracker provides a precision time monitoring application for comparing multiple heterogeneous time sources with nanosecond-level accuracy.

TimeTracker can help synchronize time sources, and has the following features:

- Monitor local system and monotonic time
- Remote PTP and NTP time synchronization
- GPS serial time receiver support
- Real-time offset and jitter statistics
- Live graphing with configurable time windows
- Configuration persistence across sessions

1.3 System Requirements

1.3.1 Recommended Environment

The TimeTracker utility is included in DrasticScope and other Drastic software. Drastic software products must be installed on a system at least as powerful as the configurations listed below.

Minimum Hardware Platform

Post 2000 multi core processor capable of running the host application.

Recommended Hardware Platform

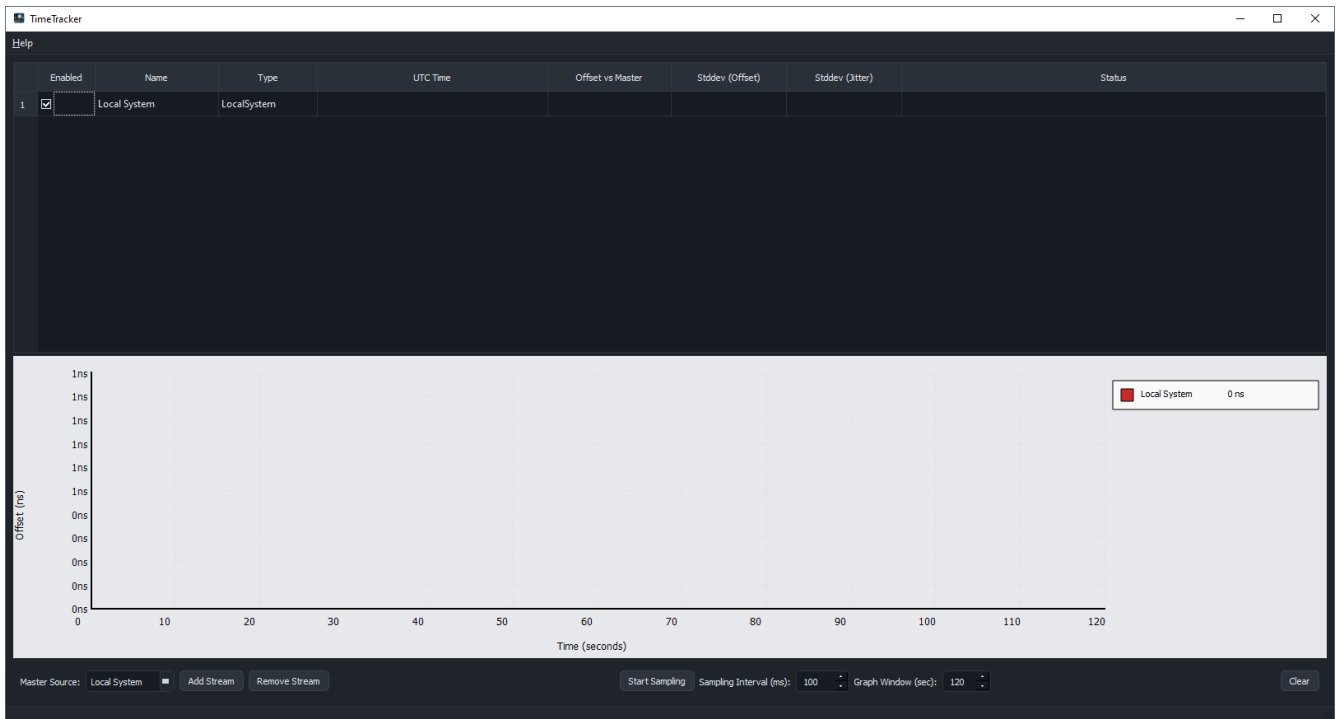
Recommend hardware from the host application vendor. Multi cores and OpenCL, Cuda and shader GPUs will be used if available, but are not absolutely required.

Demo downloads of Drastic software are available for the user to test their application and to confirm their workflow. Faster and more powerful hardware will provide better performance. In some cases, specific hardware will be required in order to enable resource-intensive, advanced or optional features.

2 Controls and Displays

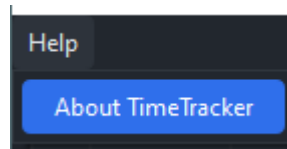
2.1 Main GUI

TimeTracker offers a streamlined interface designed solely to compare time sources typically used to synchronize the sending and receiving of IP streams such as ST-2110. On first run, it provides the main GUI.

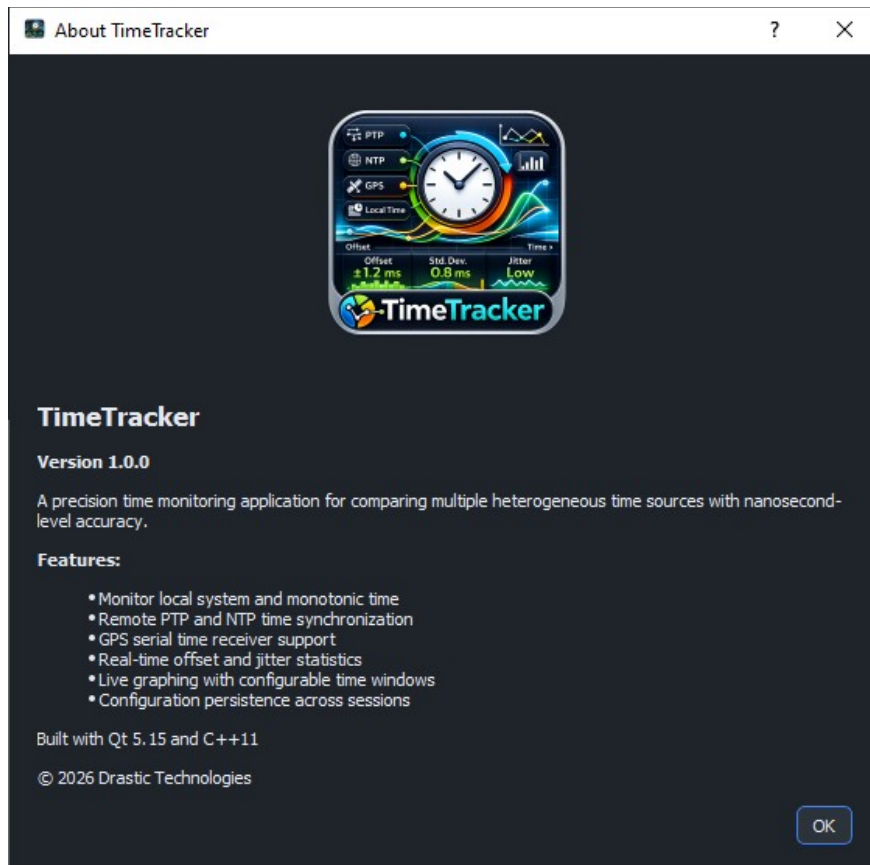


2.1.1 Help Menu

The **Help** Menu at the top currently offers an **About TimeTracker** option.



Clicking **About TimeTracker** opens the **About TimeTracker** window.



The **About TimeTracker** window provides details on the version number, the product description and features, and a copyright note.

Clicking the **OK** button closes the **About TimeTracker** window.

2.2 Time Code Sources Display

Each time source that has been added to TimeTracker will appear in the Display area. When sampling has been enabled, real time performance metrics will also be displayed.

	Enabled	Name	Type	UTC Time	Offset vs Master	Stddev (Offset)	Stddev (Jitter)	Status
1	<input checked="" type="checkbox"/>	Local System	LocalSystem	2026-02-18 16:48:23.613689000 UTC	0 ns	0 ns	0 ns	

Enabled column – offers a checkbox. When checked, the time source is enabled.

Name column – each time code source can be assigned a name when it is added. The **Name** column displays these names.

UTC Time column – displays the UTC (Universal Coordinated Time) for each time source.

Offset vs Master column – displays the offset if any, from the master time source. Any offset will be displayed in microseconds (millionths of a second, or μs). If the time source is the master, this will be 0.

Stddev (Offset) column – displays the standard deviation* of the offset for each time source.

Stddev (Jitter) column – displays the standard deviation* of the jitter for each time source.

Status column – displays the current status of each time source. Typical status returns include OK, Disabled, Connecting, etc.

* **Standard Deviation** is a measure of the amount of variation of the values of a variable about its average, commonly represented by the lowercase Greek letter σ (sigma). The standard deviation value can be displayed in:

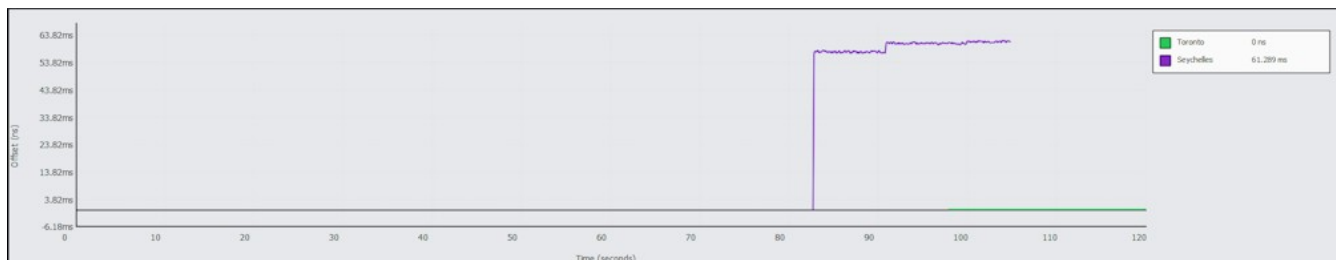
ms = 1/1000 (milliseconds – thousandths of a second)

us = 1/1000000 (microseconds – millionths of a second, also: μs)

ns = 1/1000000000 (nanoseconds – billionths of a second)

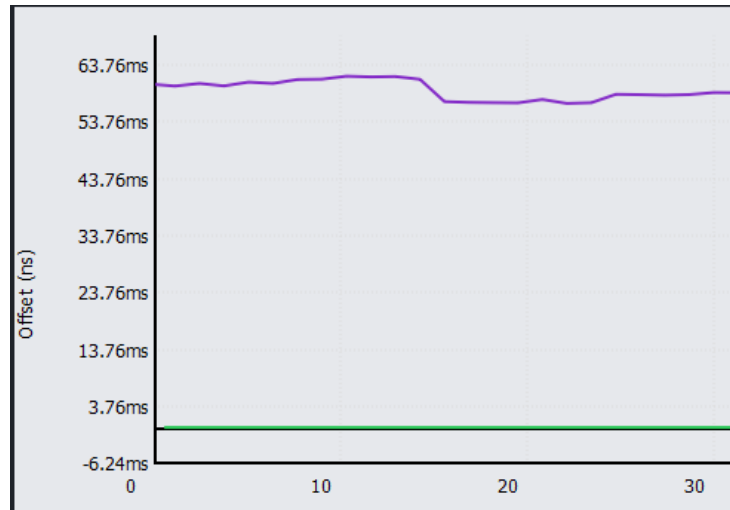
2.3 Performance Metrics Section

Once time sources have been added, the user can click the **Start Sampling** button to see real time performance metrics of each time source.



2.3.1 Offset Levels

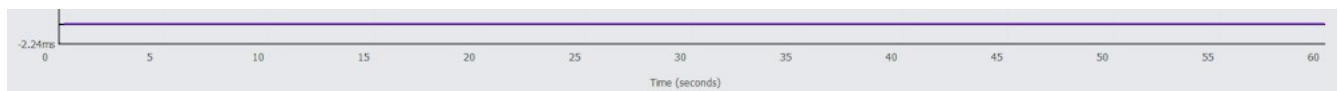
Along the left side there are dynamically populated offset levels at evenly spaced intervals. If the deviation is greater, a greater range will be allocated to the display.



In the above example, the offset is less than 65 milliseconds from the master, so values of -6.24ms to +63.76ms are displayed, in 10ms increments.

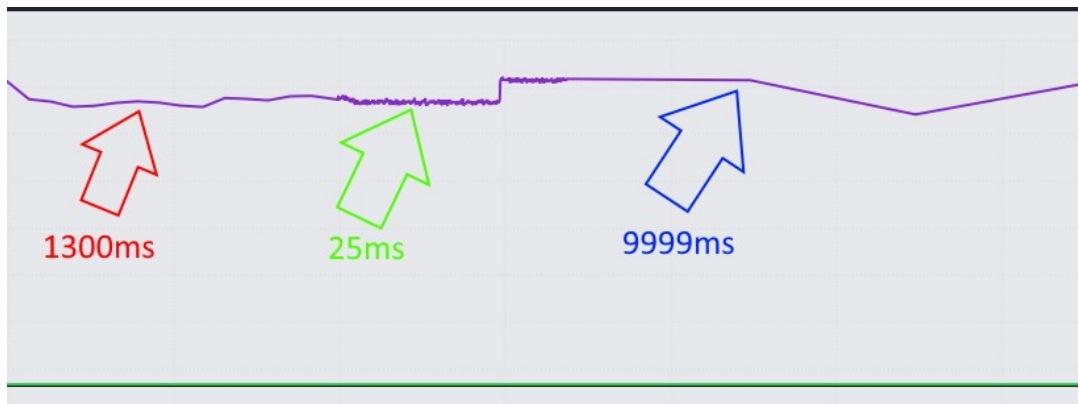
2.3.2 Graph Window

Along the bottom of the **Performance Metrics** section, there are evenly spaced second markers, based on how many seconds are set in the **Graph Window** field.



The above example shows a 60 second window. The window can be set to show from between 10 seconds, to 3600 seconds (one hour).

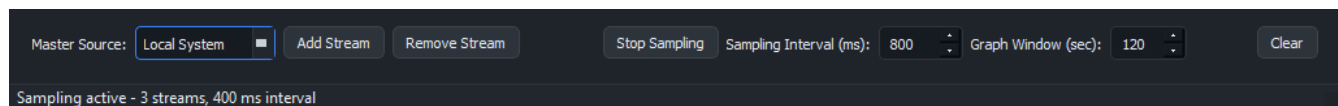
Sampling Interval - setting the sampling interval determines how often the offset is checked.



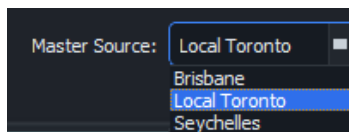
In the above example, three different sampling intervals are shown; 1300ms, 25ms, and 9,999ms. Note: ITU-T G.810 classifies deviation lower frequencies below 10 Hz as “wander” and higher frequencies at or above 10 Hz as “jitter”.

2.3.3 Stream and Sampling Controls section

Along the bottom there are controls for setting up time source streams, and to control the sampling parameters.

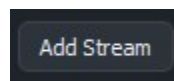


2.3.3.1 Master Source pulldown



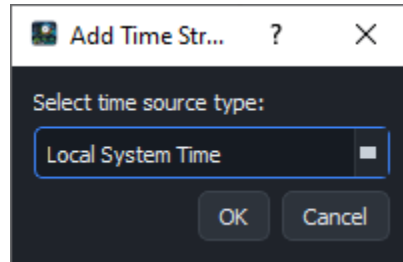
Master Source pulldown menu – each time source stream that has been added will show up in the **Master Source** pulldown menu available for selection. Typically the user will use their local preferred time server as the master.

2.3.3.2 Add Stream button



Add Stream button – add a new time source stream. Clicking the Add Stream button opens the **Add Time Stream** window. <CTRL+A> will perform the same action.

2.3.3.3 Add Time Stream window



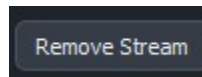
Add Time Stream window – provides controls for adding a time stream source. The following time source stream types are supported:

- Local System Time** – System time is measured by a system clock, which is typically implemented as a simple count of the number of ticks that have transpired since some arbitrary starting date, called the epoch.
- Local Monotonic Clock** – a time source provided by an operating system that guarantees the time value always moves forward at a steady rate and never goes backward, regardless of adjustments to the system's wall-clock time.
- UTC Local Time** – Coordinated Universal Time (UTC) is the primary time standard globally used to regulate clocks and time.
- PTP Remote Time** – Precision Time Protocol (PTP) is a protocol for clock synchronization throughout a computer network with relatively high precision as compared to using the earlier developed Network Time Protocol (NTP) and therefore potentially higher accuracy depending on the configuration. In a local area network (LAN), accuracy can be sub-microsecond – making it suitable for measurement and control systems applications.
- NTP Remote Time** – Network Time Protocol (NTP) is a networking protocol for clock synchronization between computer systems over packet-switched, variable-latency data networks.
- GPS Serial** – GPS signals are broadcast by Global Positioning System satellites to enable satellite navigation. Using these signals, receivers on or near the Earth's surface can determine their Position, Velocity and Time (PVT).

Pressing the **OK** button adds the time source to the list.

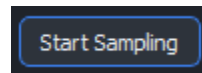
Pressing the **Cancel** button exits the Add Time Stream window without adding a time source stream

2.3.3.4 Remove Stream button



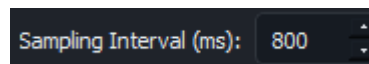
Remove Stream button – clicking the button will remove a selected stream. A stream can be selected by clicking on it. Clicking <Delete> will perform the same action.

2.3.3.5 Start Sampling button



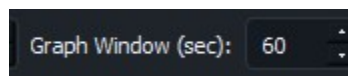
Start Sampling button – clicking the button begins the process of sampling the incoming time source streams and displaying their data in the various fields, as well as the measurements and comparisons between sources. The **Start Sampling** button turns into a **Stop Sampling** button when it is sampling. Clicking the button again will stop the sampling and the button will revert to being a **Start Sampling** button. <CTRL+S> will also perform the same action,

2.3.3.6 Sampling Interval (ms) field



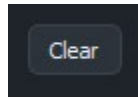
Sampling Interval field – displays the current sampling interval (how often the time sources are sampled). The sampling interval may be set to a value from 10ms to 10,000ms. Enter a value by keyboard to use a new value. The up and down arrows can also be used to increment the interval one millisecond at a time, for (very) fine tuning.

2.3.3.7 Graph Window (sec)



Graph Window (sec) field – displays the current graph window setting, or how many seconds worth of results are displayed. The **Graph Window** can be set to display from between 10 seconds to 3600 seconds (one hour). Enter a value by keyboard to use a new value. The up and down arrows can also be used to increment the interval one second at a time, for fine tuning.

2.3.3.8 Clear Button



Clear button – pressing the Clear button will remove the results from the graph window, erasing the lines drawn by the last sampling process.

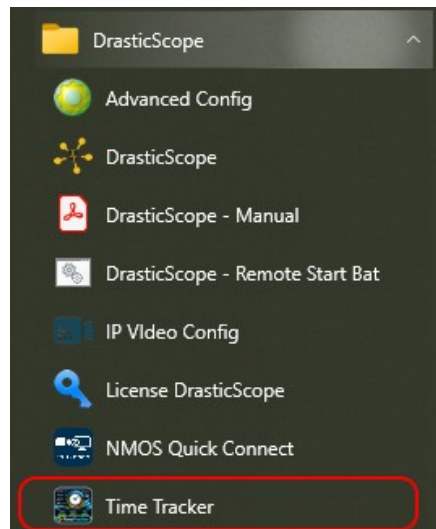
3 Using TimeTracker

The purpose of **TimeTracker** is to compare the local master time source to other time sources, at a level of accuracy as granular as microsecond.

TimeTracker is included in NetXScope and other Drastic software. This usage guide assumes the system in use has a full install of the relevant Drastic software, and a valid license.

3.1 Run TimeTracker

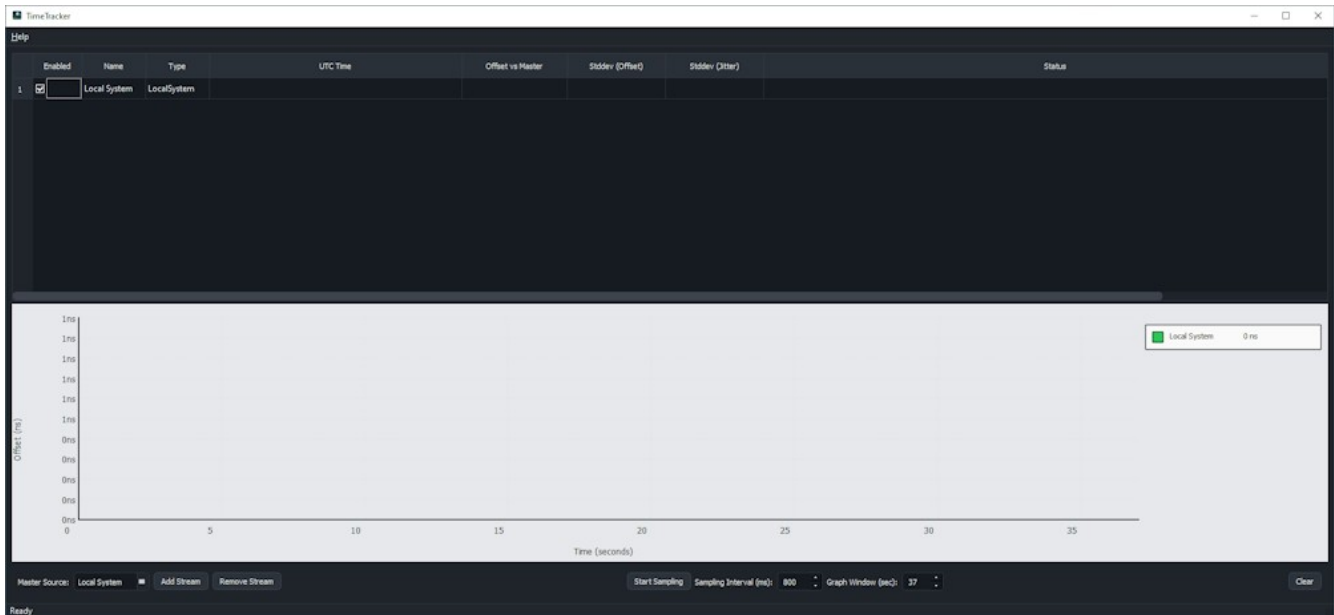
TimeTracker can be run by clicking on the icon in the Start menu. If it is included in a NetXScope install, it will be in the DrasticScope folder in the Start menu.



You can also run it from the program folder, at: C:\Program Files\DrasticScope\TimeTracker.

3.2 Add a Master Time Stream

The master time can be anywhere. For our example we will use local time, as it is near, and will likely provide a low latency time source.



3.2.1 Add Stream dialog

We will begin by adding a master time. In this case, we will use the Windows System time set to a local (Toronto) NTP server.

Click the **Add Stream** button. This opens the **Add Time Stream** window.

Use the pulldown menu to select **Local System Time**.

Click **OK**. This moves the dialog to the **Enter Display Name** screen.

Enter a display name for the time source by keyboard. In this case, since we are adding a master time source, we have entered “Local Toronto”. Press **OK**.

This moves the dialog to the **Enter NTP Port** screen. This is typically “123”.

Click **OK**.

The time source will then be displayed in the **Time Stream Sources** display. Click the **Enabled** checkbox to the left of the stream’s details to enable it.

Once enabled, the stream should be selected in the Master Source pulldown menu.

3.2.2 Add a Secondary Time Stream Source

Next, the secondary stream will need to be added. This is the stream we intend to compare to the master (local) time stream. In our example, we will use a freely available NTP server.

Click the **Add Stream** button. This opens the **Add Time Stream** window.

Use the pulldown menu to select **NTP Remote Time**.

Click **OK**. This moves the dialog to the **Enter Display Name** screen.

Enter a display name for the time source by keyboard. In this case, since we are adding a secondary time source from an NTP Server in or near Seychelles, we have entered "Seychelles". Press **OK**.

This moves the dialog to the **Enter NTP Server Hostname** dialog. Enter a server hostname. In our case, the server is at "sc.pool.ntp.org".

Click **OK**.

This moves the dialog to the **Enter NTP Port** screen. This is typically "123".

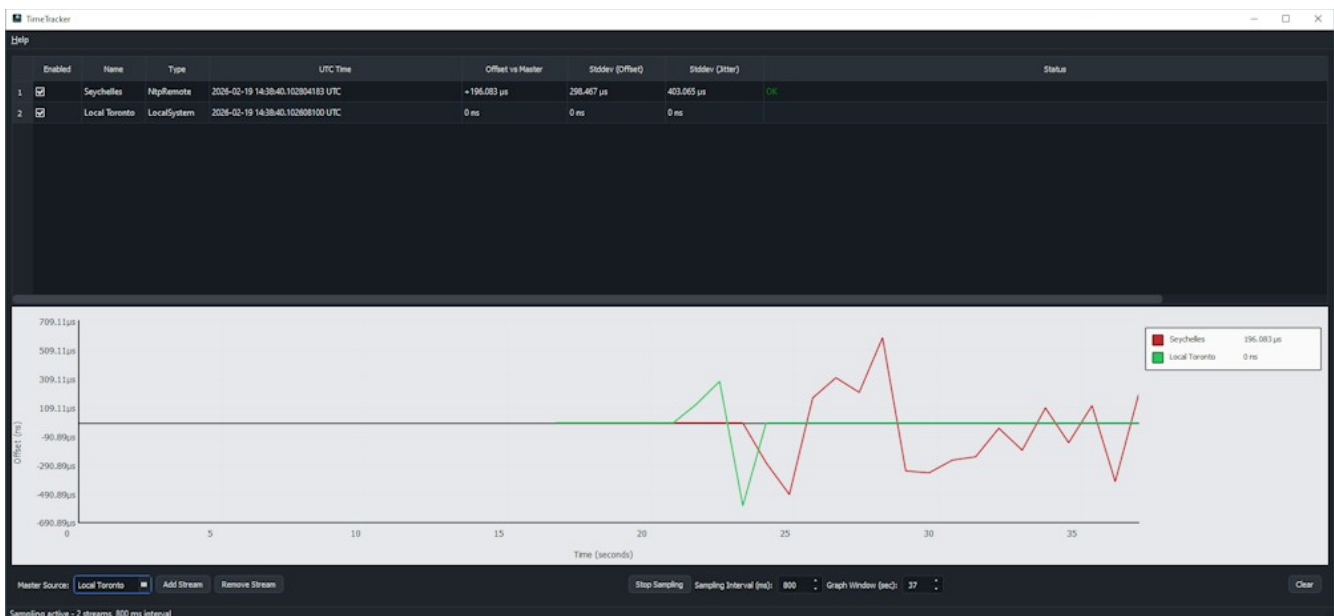
Click **OK**.

The time source will then be displayed in the **Time Stream Sources** display. Click the **Enabled** checkbox to the left of the stream's details to enable it.

Once enabled, the stream should be available in the Master Source pulldown menu.

3.3 Start Sampling

Click the **Start Sampling** button.



Once the time stream sources have been set, and the master source properly set, clicking the **Start Sampling** button should begin to provide results in the performance metrics section.

3.3.1 Removing a Stream

To remove a stream, select it by clicking on its row. It should turn blue.

Press the **Remove Stream** button. This opens the **Remove stream** window, which prompts you:

“Remove Stream x?”

To remove the stream, press **Yes** (or press **Cancel** to leave the stream where it is).

If you have pressed **Yes**, the stream should be gone.

3.4 Stop Sampling

To stop the sampling process, click the **Stop Sampling** button.

The sampling lines will stop being drawn.

The button will turn into a **Start Sampling** button.

3.4.1 Sampling Interval field

The **Sampling Interval** field shows the current setting for the sampling interval (how often the stream sources are sampled per millisecond). It can be adjusted by clicking in the field and entering a number via keyboard. For fine tuning, the up and down arrows let you adjust the setting one millisecond at a time.

It can be set from 10 ms to 10,000ms.

3.4.2 Graph Window

The **Graph Window** field shows the current graph window setting (how many seconds the graph provides for visual review of the results). For fine tuning, the up and down arrows let you adjust the setting one second at a time.

It can be set from 10 seconds to 3,600 seconds (one hour).

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