

Technical Note: Automachron

Using Automachron to test the NTP operation of Spectracom time servers

Purpose: The purpose of this document is to provide information about using the freeware “Automachron” program to test the NTP operation of Spectracom NTP time servers (such as SecureSync, as well the Model 9100, 9200, 9300 and 9400 series NTP time servers).

There is an available freeware program that can be used to determine whether or not the Spectracom NTP time server is responding to NTP requests. This simple to use and install utility is called Automachron (version 5) and can be obtained from the <http://www.softpedia.com/get/Desktop-Enhancements/Clocks-Time-Management/Automachron.shtml>. This program will display the data included in the NTP time stamps, as received from the NTP time sever.

Please note: If you are installing Automachron on newer versions of Windows, such as Windows 7 or 2008 for examples, this program will likely need to be run in **Compatibility** mode.

Once the Automachron program has been downloaded and installed, click on Host (refer to Figure 1). This will open a sub-window. In the “Network host” field, enter the IP address of the NTP time server and change the “Protocol” drop-down to “SNTP v4”. If desired, change the “Description” field to the same IP address as the one entered in the “Network host” field. Click OK to accept the values and close the sub-window.

On the main screen, in the “Hosts” field drop-down, select the IP address of the NTP time server. Then click the “Sync” box. Each time it is pressed, the fields on the right side of the GUI (click on the “<>” symbol in the lower-right corner of the GUI if these fields aren’t displayed) will fill in with the received NTP data.

The UTC time is raw data from the time server (local time is UTC time from the time server, minus the settings of the Windows computer, as set in the Windows Date/Time properties window). The time values in the “UTC Time” fields should match the values in the “System Time” page of the NTP Time Server’s browser, at the moment the “Sync” button is pushed.

Below is a screenshot of the Automachron program, with a description of its fields and buttons:

The screenshot shows the Automachron application window with an 'Add Host' dialog box open. The main window displays configuration for an NTP v4 server at 10.2.70.245. The 'Stratum' level is set to 1. The 'Options' section includes checkboxes for 'Quiet', 'Report only', 'Sync at startup', 'Close after sync', 'Wait for dialup connection', 'Broadcast client', 'On top', and 'Run at startup'. The 'Log' section has 'Log' checked and 'Verbose' unchecked. The 'Adjust...' button is used to set the maximum allowed time error for correction.

Current reported “Stratum” level:

- 1- The NTP server is in sync with GPS, IRIG, RS-485, modem, etc.
- 2- The NTP server is in sync with another Stratum 1 time server.
- 16- The NTP server is not in sync.
- 0- NTP data is not being detected. NTP may be disabled in the **NTP/General** page of NTP server’s web browser) or is being blocked (Refer to the “**Troubleshooting**” section for additional information).

If NTP data is being received from the NTP server, all of the boxes on the right side of the GUI will fill in with time and date stamps, each time the “Sync” button is pushed.

Click here to expand the GUI to the right (if the fields on the right are not visible).

Figure 1: Automachron screenshot and description of its fields/buttons

Note: The “Adjust” button is used to configure how much PC time error is allowed to be corrected. As long as the “Report only” checkbox (under “Options”) is not selected, the time error does not exceed the value shown when the “Adjust” button is pressed (the default maximum allowed error for correction is 1 hour) and data is displayed in the right-side fields, the Windows time (shown in the bottom-right corner) should be corrected each time the “Sync” button is pressed.

Troubleshooting

The right-side GUI fields (for the display of time and date information) are not visible:

Click on the “◁” symbol button in the lower right corner to expand the GUI to the right.

The right-side fields fill in with valid time and date stamps when the “Sync” button is pressed:

If all of the fields on the right side of the GUI fill in with time and date stamps each time the “Sync” button is pressed, the NTP server is responding to NTP requests. If the times and dates displayed in these fields are valid, and the Stratum box reports a value of 1 or 2, the NTP server is working normally.

If the Windows PC that is running Automachron can't synchronize to the NTP time server using the Windows Time Service (W32Time), there is a problem with this time service. For more information, please refer to http://www.spectracomcorp.com/portals/0/support/pdf/windows2000_2003_appnotes.pdf.

Note: If the NTP server's Model Number ends with an “88” (such as the Ethernet time server Models 9388, 9288 and 9188), make sure to verify that the reported date/year value in the “UTC Time field (this field may be truncated on the right, so you may have to scroll over to the right to see it) indicates the current date/year. A wrong date/year being displayed indicates a configuration issue, which may prevent the PC from being able to sync to the time sever). Please contact Spectracom Tech Support for more information, if the year value is not correct.

The “Reference” and “t1” through “t3” fields don't fill in with any time and date stamps when the Sync button is pushed:

If the “Reference” and the “t1” through “T3” fields on the right side of the GUI remain empty (they don't fill in with time and date stamps) each the “Sync” button is pressed, the NTP server may not be responding to NTP requests, the selected “Host” address does not belong to an NTP time server, or there is a network issue. If there is a firewall between the NTP server and the PC, make sure UDP port 123 is open. If this PC is on a different subnet than the NTP server, try running this program on a PC located on the same subnet, as there may be an issue with the router. Make sure you can access the time server's web browser from this PC (using Internet Explorer or FireFox).

Note: If the minutes and seconds are correct but the hours are wrong, this is likely due to settings in the Windows “Date/Time Properties” window. Click on the time of the PC in the lower-right corner to bring up this configuration window (as shown in Figure 2). Verify the “Time Zone” tab has the correct geographic location selected and that the automatically adjust clock for DST check-box is enabled if your location adjusts for Daylight Saving Time change.

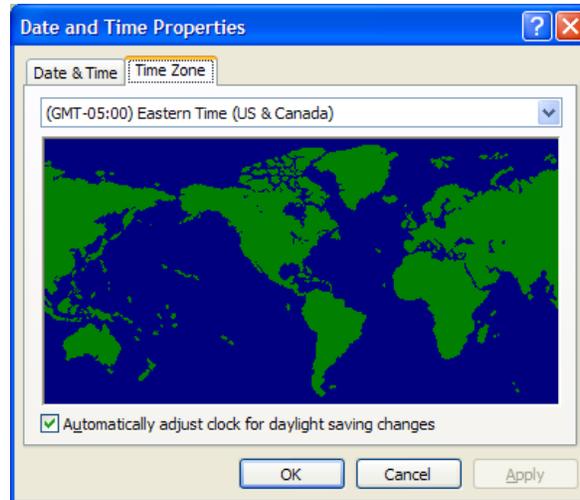


Figure 2: Windows “Date & Time” properties window

Stratum field reports a value of 16:

If the “Stratum” box indicates a value of 16, the received NTP data is not in sync. When NTP is reporting Stratum 16, most NTP client programs will ignore the NTP time server as a time reference. In order for NTP to be in sync, NTP has to be enabled and Time Sync has to be “In Sync” with GPS, RS-485 input, dial-out modem, etc).

- **(SecureSync):** Open the SecureSync’s web browser and navigate to the **Status/NTP** page. See if the Stratum field in the top table indicates the same Stratum level reported in Automachron. Then, navigate to the **Status/ Time and Frequency** page. See if the “Synchronization” field indicates “OK” (with a green fill). If it does, NTP is either disabled (**Network/NTP Setup** page) OR either the unit was recently rebooted or NTP was recently enabled.

However, if the “Synchronization” field indicates “ALARM” with red background, the SecureSync is not synced to any of its configured input references. Contact Spectracom Tech Support for additional assistance.

- **(Models 9100, 9200, 9300 or 9400 series time servers):** Open the web browser for the NTP time server and navigate to the **Status and Logs/System Status** page. The Dynamic System Information table will indicate whether or not Time Sync is In Sync. If it states “not in Sync”, the primary input is not available. To troubleshoot this condition with a GPS-based NetClock, please visit: http://www.spectracomcorp.com/portals/0/support/pdf/Models_938x_928x_918x_TTSxxx_GPS_Reception_Application_Note.pdf

Stratum 16 can be caused by a couple of factors, such as the time server not being in sync with its external time reference (GPS, modem, IRIG or RS-485 input, etc). During the initial install of the NTP server or if the time server is power cycled, NTP will report that it is Stratum 16 for several minutes after power-up. As long as it is synced to its external time reference, it should change to Stratum 1 within about 20-30 minutes.

Stratum field displays a value of 0

Valid reported Stratum levels are 1 through 16. A reported value of 0 is a default value used by the Automachron program if it is not receiving any NTP time stamps from the NTP time server.

There may be a firewall between the NTP server and the PC that is blocking the NTP port (port 123). This will prevent the NTP packets from being able to get through. Or, NTP may be disabled in the NTP server.

- **(SecureSync):** Open the web browser and navigate to the **Network/NTP Setup** page, **General Settings** tab. Verify the “NTP Service” field is set to “Enabled”. If not, select “Enabled” in the drop-down and then press “Submit”. Valid NTP packets should then be available to the network within a few minutes. Repeat the test to see if the “Stratum” field in Automachron now reports a Stratum value other than “0”.
- **(Models 9100, 9200, 9300 or 9400 series time servers):** Open the web browser and navigate to the **NTP/ General** page. Verify the “NTP Service” field is set to “Enabled”. If not, select “Enabled” and then press “Submit”. Valid NTP packets should then be available to the network within a few minutes. Repeat the test to see if the “Stratum” field in Automachron now reports a Stratum value other than “0”.

Please contact Spectracom Tech Support for assistance with the results of your troubleshooting.

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Please contact one of the global Spectracom Technical Support centers for assistance:

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