

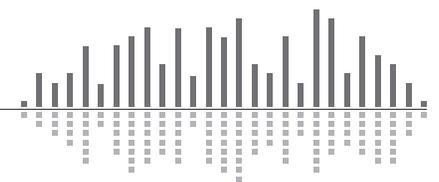
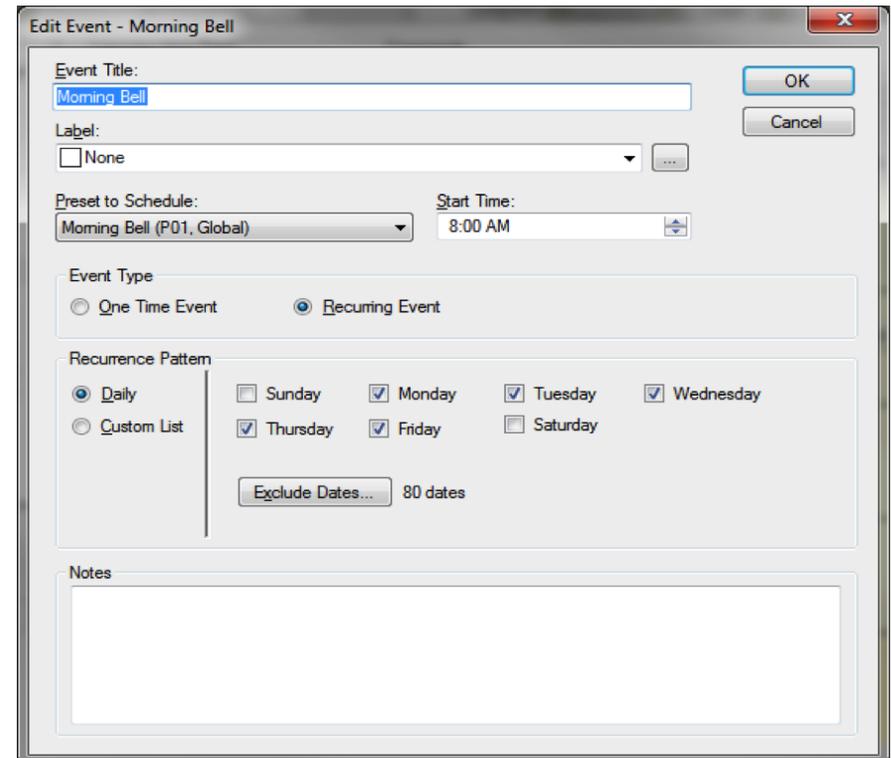
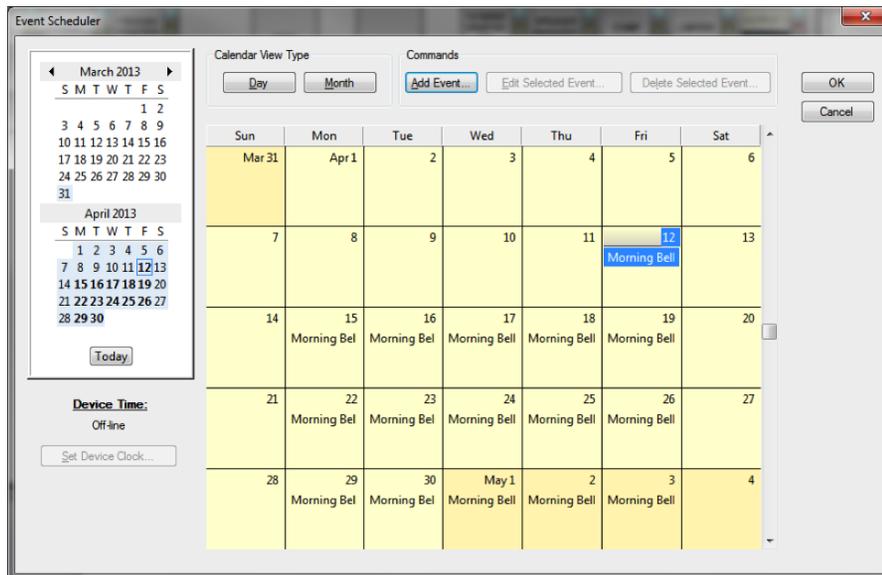
May 2015

## Keeping Time, Eliminating Clock Drift

In many A/V applications, it may be specified or simply practical to have the DSP recall a particular configuration of saved parameters, such as sources, gains, mutes, and matrix routing at a scheduled time of day or week. These stored settings are known as “presets”. Presets are a digital snapshot of a single parameter or a collection of parameters that can be triggered with one command or button press. Storing and recalling presets in a DSP is analogous to taking a snapshot of a set of parameters in the DSP, and at a later time during operation, showing the DSP the snapshot and requesting that it set the parameters back to the previous configuration exactly as they appear in the snapshot.

All Symetrix DSP hardware has the ability to trigger presets at a particular time and day when the presets are scheduled using the Event Scheduler in the DSP setup and configuration software. Once a preset has been stored, it can be scheduled to trigger on a single date or as a reoccurring event. Exclusions of dates can be made to accommodate a changing schedule.

For example, in a high school at 8am Monday through Friday a bell may be scheduled to sound; however, during spring and summer break this bell would not need to ring while students are not attending school, so these spring and summer dates can be excluded from the schedule. In this example, most of June, and all of July and August (80 dates) have been excluded from triggering the Morning Bell preset.



May 2015

There is a problem that can arise when presets are scheduled to be triggered at a particular time and day, and this problem is called “clock drift”. In order for the DSP to trigger a scheduled event, the DSP must keep a real-time, internal-running clock, so that it knows the current time and day. This clock is generated by an internal oscillating crystal, which over time “drifts” ever so slightly away from the actual time of day. This drift is usually quite small, on the order of 10 ppm (20 ppm worst case) or 6 seconds/week. This means however, that after one year of operation the internal clock could drift by 314 seconds, and as such the Morning Bell preset in the previous example would be triggered 5 minutes early after one year. After 5 years the preset would sound approximately 26 minutes early, which in most cases would be unacceptable.

What can be done to fix or stop clock drift?

The best approach is to synchronize the DSP to an NTP Server

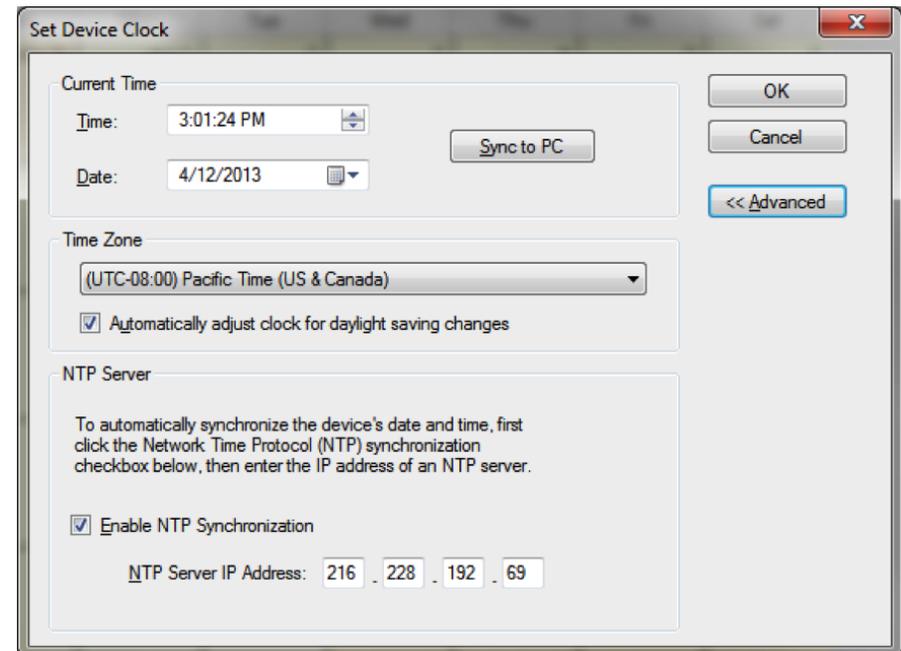
## Synch the DSP to an NTP Server:

Network Time Protocol (NTP) is a networking protocol for clock synchronization between computer systems over packet-switched, variable-latency data networks. In operation since before 1985, NTP is one of the oldest Internet protocols in use.

If the DSP resides on a network that contains a server providing NTP services, the DSPs clock can sync with that server by Enabling NTP Synchronization and entering the NTP server’s IP address. If the DSP has a valid network route to the internet, any publicly available NTP server may be used.

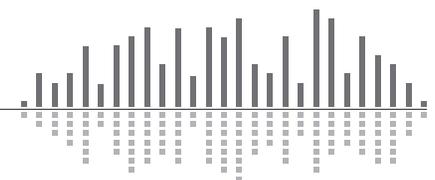
Click this link for a list of public NTP server IP addresses hosted on the Internet: <http://tf.nist.gov/tf-cgi/servers.cgi>

In the Symetrix Jupiter and Zone Mix 761 software, the NTP server IP field is accessed in the Event Scheduler by clicking the ‘Set Device Clock’ button and then the ‘Advanced’ button.

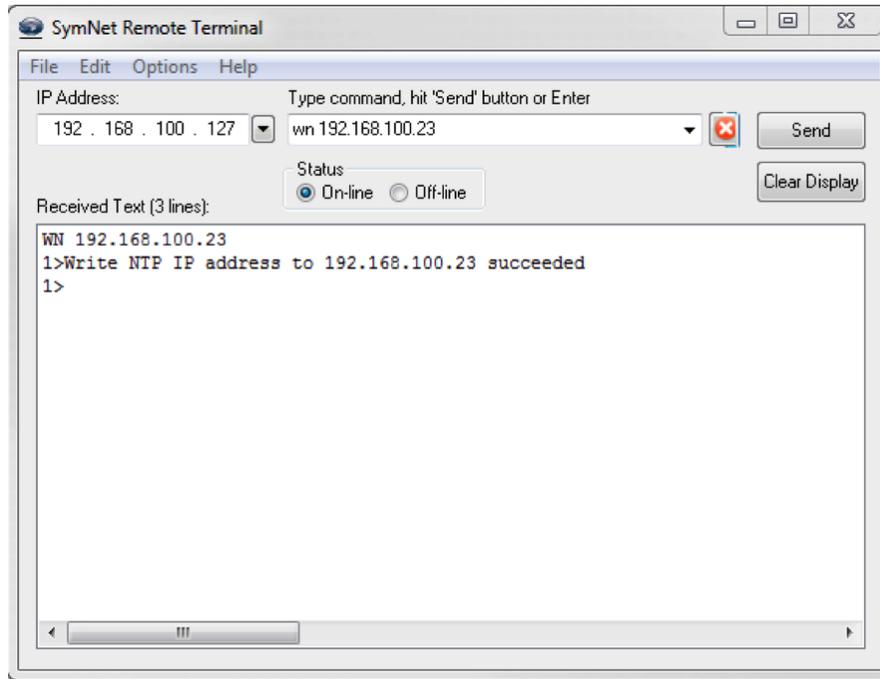


In Symetrix Solus, the NTP server IP must be entered using SymNet Remote Terminal and the “Write NTP” command.

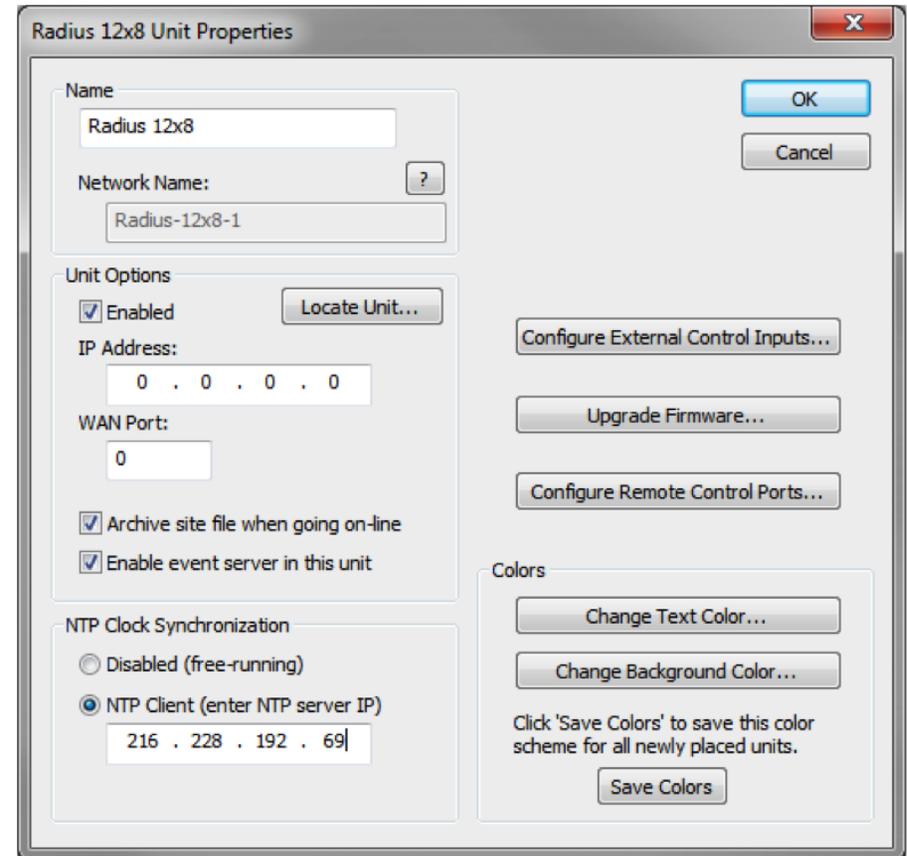
Locate SymNet Remote Terminal (c:>Program Files>Symetrix>SymNet Designer 10.0) and then type “WN <IP Address of NTP server> (Example: WN 192.168.100.23)



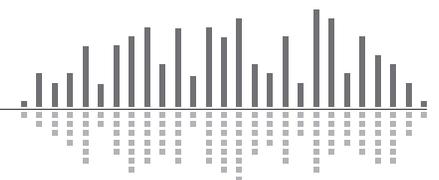
May 2015



In SymNet Composer each DSP can be set to a NTP server by accessing the unit properties.



**Note:** Symetrix Legacy and Express hardware does not support NTP clock sync



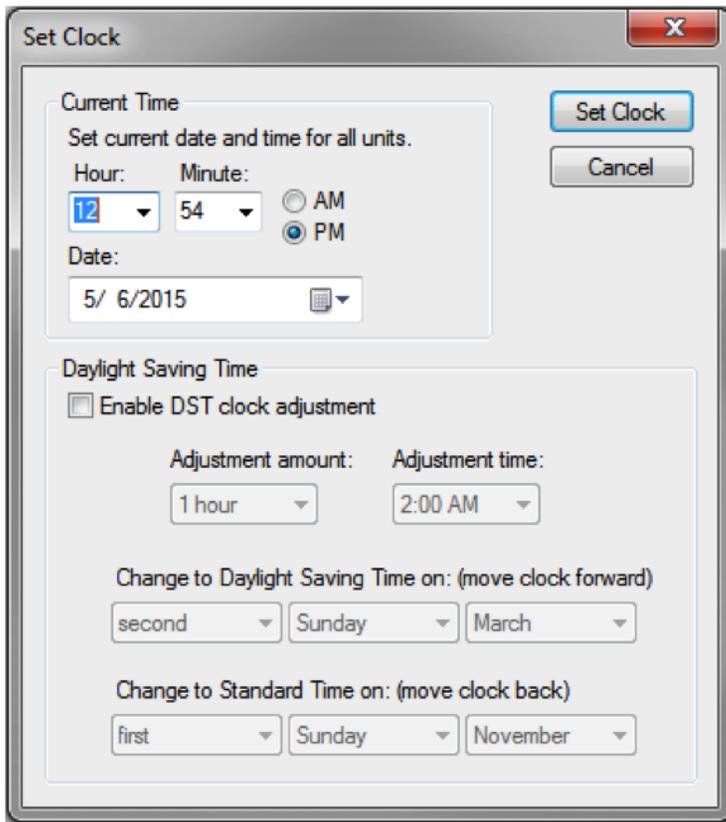
May 2015

## Reset Clock using Set Clock:

The DSP clock can be set or reset without downloading or pushing a file to the DSP using either SymNet Designer or SymNet Composer. Make sure the DSP has been located then select “Set Clock” from the “Hardware” menu.

## SymNet Designer:

Time, Date and Daylight Saving Time can all be set using the “Set Clock” window. Once the desired setting has been entered click the “Set Clock” button.



## SymNet Composer:

Sync to PC Clock or a specific date and time can be set using the “Set Clock” window. Daylight Savings Time can also be enabled. Once the desired setting has been entered click the “Set Clock” button.

