

NCast Product Specification

Telepresenter Scheduler Implementation

Revision 1.0

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1. Introduction

1.1. OVERVIEW

The NCast Telepresenter Scheduler is a software tool that allows the manager of one or more Telepresenter Capture Appliances to schedule these appliances through a Google calendar or through industry-standard iCalendar files. The manager can start and stop each Telepresenter at a predetermined time, load unique settings for each individual presentation, send serial control commands to each Telepresenter to provide additional functionality, and specify how and where the Telepresenter sends its output, all without touching the actual Telepresenter user interface. All that is required is one or more Telepresenters, each with a connection to the Internet, and access to a Google calendar or an iCalendar file, no matter where in the world the equipment is located.

1.2. COMPONENTS OF THE SOLUTION

The NCast Telepresenter Scheduler Implementation uses three components to allow automatic start/stop scheduling of one or more Telepresenters in a network. These components are:

- An administrative interface based on Google Calendar or other Calendar system using iCalendar
- A scheduler program which queries the calendar information and activates the Telepresenters.
- The Telepresenter IP serial link and command set which receives commands at the scheduled times.

This document describes how to use these components to automatically schedule sessions for one or more Telepresenters in the customer's network.

1.3. DOCUMENT OVERVIEW

The following sections describe how to use a Google Calendar account or iCalendar file to setup a schedule for one or more Telepresenters, how to launch the scheduler program, and how to enable a Telepresenter interface to receive the start/stop and other commands.

Additional information about setting up a Telepresenter may be found in the user manual, "*NCast Telepresenter Reference Manual*".

Complete documentation for the serial command set is in the "*Telepresenter Serial Interface Specification*". Please refer to this manual for a more complete description of commands which may be used. This guide lists a few basic commands which allow the user to start and stop a unit from the Calendar interface.

2. Scheduling with Google Calendar

2.1. CALENDAR OVERVIEW

Google Calendar is a web-based interface used to enter calendar events such as meetings and appointments. It allows multiple personal calendars (e.g. business and home) and allows sharing of public and private calendars with friends and associates.

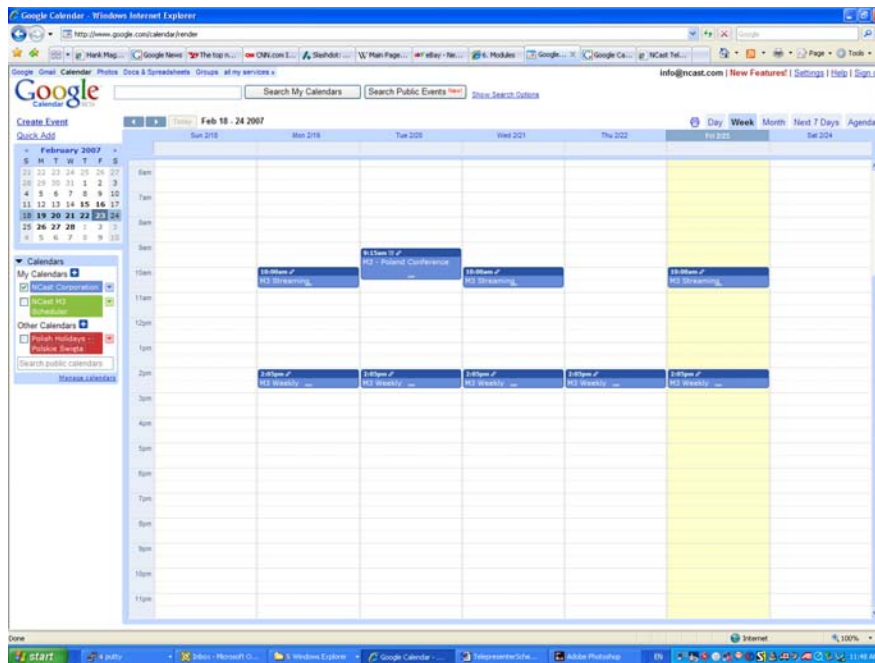
One interesting and important aspect of this calendaring system is that Google has defined a standards-based software API which allows programmatic access to the calendars and the events contained within them. The API is implemented in Java and several other languages, and allows outside programs (e.g. clock widgets, PDA's, other calendar systems) to access and create events within a Google calendar.

NCast has taken advantage of this programmable API to implement a scheduling system for Telepresenter where the web-based Google Calendar is the administrative interface for defining session start/stop times for one or more Telepresenter within a customer's network.

The process works in three steps:

1. An administrator enters one or more scheduled events for a Telepresenter
2. The scheduling program queries the calendar at regular intervals and captures these events.
3. Commands sent to the IP Serial Interface of a Telepresenter starts and stops the unit.

The calendar interface allows an administrator to setup single or repeating events. The example below shows a single event scheduled for Tuesday, a Monday-Wednesday-Friday repeating event, and a Monday-to-Friday repeating event. An event is associated with a single Telepresenter listed in the "Where" field. Two events with the same start/stop times on the same day can be directed to two different Telepresenter simply by changing the contents of the "Where" field. The "Description" field (discussed below) allows customization of the actions executed at scheduled start time.

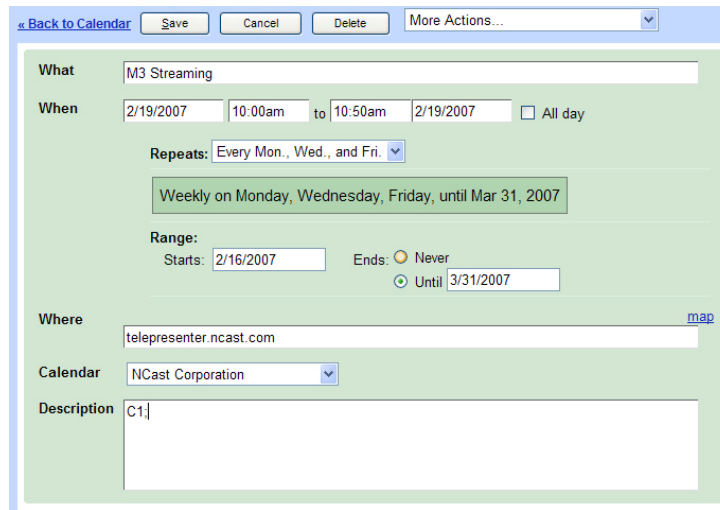


So to get started, an administrator must establish a Google Calendar account (different from a Google mail account) and provide a password for this account. Multiple accounts can be established for multiple Telepresenter, but this requires multiple copies of the scheduler program to be running.

Only the primary or default user calendar is processed. The program is not able to deal with secondary calendars at this time.

2.2. CREATING SCHEDULED EVENTS

To create an event click on a time-slot and fill in the following fields:



The screenshot shows a web form for creating a scheduled event. At the top, there are buttons for 'Back to Calendar', 'Save', 'Cancel', 'Delete', and a 'More Actions...' dropdown. The form fields are as follows:

- What:** A text field containing 'M3 Streaming'.
- When:** Two date/time pickers. The first is set to '2/19/2007' at '10:00am', and the second is set to '2/19/2007' at '10:50am'. There is an 'All day' checkbox which is unchecked.
- Repeats:** A dropdown menu set to 'Every Mon., Wed., and Fri.' Below it, a text box says 'Weekly on Monday, Wednesday, Friday, until Mar 31, 2007'.
- Range:** A section with 'Starts:' set to '2/16/2007' and 'Ends:' with two radio buttons. The 'Until' radio button is selected, with the date '3/31/2007' entered next to it. The 'Never' option is also visible.
- Where:** A text field containing 'telepresenter.ncast.com' with a 'map' link to its right.
- Calendar:** A dropdown menu set to 'N*Cast Corporation'.
- Description:** A text area containing 'C1;'.

The "What" field must contain (anywhere in the field) the letters "M3" to identify this as a Telepresenter event. Additional words can further describe the nature of this entry (e.g., "Chem 101", "Weekly Staff", etc.).

The "When" field is used to delimit the start/stop times for the event. The drop-down menu only shows hour/half-hour entries, but by clicking again on the time field arbitrary times may be entered. The repeat options allow multiple occurrences of this event. If a stop time of 11:00 am is listed, the program uses 10:59:59 as the actual stop time. Thus, events may be scheduled back-to-back.

The "Where" field is the DNS name or IP address of the Telepresenter to be controlled. Only one Telepresenter may be listed.

The "Calendar" field must be the primary or default calendar for this account.

The "Description" field is a series of serial IP commands to be issued to the Telepresenter at the time of the Start event (see below). In the example above, "C1" starts the Telepresenter session on Channel 1.

2.3. SCHEDULED EVENT COMMANDS

The "Description" or content field is a series of serial IP commands to be issued to the Telepresenter at the time the Start event is processed. Each command is terminated with a ";" character. For example:

C10;

This is the only command needed to start a Telepresenter ("Start on Channel 10 with all other settings unchanged"). A more complicated example:

G3; V1; p1; C88; R1; RP,The CEO; RT,Weekly Performance Review;

where:

G3 Set the Main input to the VGA input connector

V1	Set the PIP input to the Composite video input connector
p1	Turn PIP on
C88	Start session on Channel 88
R1	Turn recording on
RP	Set presenter information to "The CEO"
RT	Set title information to "Weekly Performance Review"

Commands are case-sensitive and must be written exactly as shown. The commands are processed in the order given.

The presenter and title information are stored by the Telepresenter in an XML file associated with archived MPEG-4 file. This XML file will normally be uploaded to the content server and can be used to provide additional details about the content for archiving and indexing.

The "*Telepresenter Serial Interface Manual*" lists all the commands available on the serial IP interface. Please check that document for additional setup commands that might be issued.

At the end of the event period, the program issues the "End Session" command "PE". No other commands are sent.

The scheduler program queries the calendar approximately every ten minutes. Changes to the schedule may be entered up to ten minutes prior to an event. After that the event is committed and no changes to the calendar will have an effect. At this point, the event can only be stopped by going directly to the Web interface of the Telepresenter and stopping it manually.

The scheduler program does not check for conflicts or overlapping events. If times overlap for a given Telepresenter the results will occur in the order scheduled

3. Scheduling with iCalendar

3.1. iCALENDAR OVERVIEW

There are many different calendar applications in use, both PC based and Web based. NCast provides a facility to utilize these other calendar applications to generate schedules through a file interchange standard known as "iCalendar".

Another situation where use of an iCalendar file would be needed is when immediate access to Google Calendar is not available. For example, if Telepresenter are being utilized to record a conference on a closed network at a hotel without Internet access, the scheduler file can be created for all tracks of the conference and used to run all machines during the event.

3.2. THE iCALENDAR STANDARD

iCalendar is the name for an Internet industry standard from the Internet Engineering Task Force (IETF):

- [RFC 2445: Internet Calendaring and Scheduling Core Object](#)
- [RFC 2446: iCalendar Transport-Independent Interoperability](#)

These standards specify the format and contents of a file (usually a ".ics" file) which contains text strings describing calendar events. The sample below is a small portion of a typical iCalendar file:

```
BEGIN:VCALENDAR
PRODID:-//Google Inc//Google Calendar 70.9054//EN
VERSION:2.0
CALSCALE:GREGORIAN
METHOD:PUBLISH
X-WR-CALNAME:NCast Corporation
X-WR-TIMEZONE:America/Los_Angeles
BEGIN:VTIMEZONE
TZID:America/Los_Angeles
X-LIC-LOCATION:America/Los_Angeles
BEGIN:STANDARD
TZOFFSETFROM:-0700
TZOFFSETTO:-0800
TZNAME:PST
DTSTART:19701025T020000
RRULE:FREQ=YEARLY;BYMONTH=10;BYDAY=-1SU
END:STANDARD
```

The iCalendar file interchange standards are not associated with the popular Macintosh program "iCal" or any other specific calendar application. The files provide a standard way to export, import and exchange calendar events, ToDo's, meeting invitations and blog entries between different computer applications, and indeed, many different programs now support this standard (including Google Calendar).

The NCast Scheduler can read standard iCalendar (.ics) files containing scheduled events, and can control one or more Telepresenter based on the contents of these events.

3.3. USING AN iCALENDAR FILE

There are three basic steps to use an iCalendar file with the NCast Scheduler:

1. Create the schedule in a calendar application
2. Export a ".ics" file with the event information
3. Start the scheduler program with this file.

It is possible to use both iCalendar and Google Calendar at the same time. The scheduler program reads the file first and extracts up to one month's worth of events from the file, then checks for a Google Calendar account and utilizes any additional event information coming from Google Calendar. Overlapping or conflicting event information is not checked for and could cause scheduling errors.

Entering the event information is similar to the process described above using Google Calendar:

- Summary field – must contain “M3” somewhere in the field
- Location field – must contain the IP address of the Telepresenter
- Description field – contains serial commands to be sent to a Telepresenter

3.4. IMPORTING iCALENDAR FILES

An alternate way of utilizing iCalendar files is to first import them into a Google Calendar account, and then use the Scheduler program only with Google Calendar.

To import an iCalendar file into Google:

1. Go to the “Settings” link (upper right corner) and click on it.
2. Select the “Import Calendar” tab and click on it.
3. Browse for the “.ics” file on the PC and select it.
4. Choose the default or primary calendar for the account.
5. Click “Import”
6. Verify that the events have been properly imported and that all required fields are present.

This facility allows Telepresenter scheduling from almost any calendar application in use.

3.5. EXPORTING iCALENDAR FILES

Each calendar application should have an “Export” or “Save” command to create an “.ics” file for backup or use by other applications.

To do this in Google Calendar:

1. In the “Calendars” sidebar/block on the left side, click on the menu pop-up for the primary calendar.
2. Select “Calendar settings”.
3. In the “Private Address:” details, click on the green “ICAL” button. A pop-up window should come up.
4. Right click on the “basic.ics” and do a “Save as ...” function in your browser, saving the .ics file to a known location in your PC.

If you simply click on the link, your calendar application will probably come up, and that is not the way to save the file. It will, however, allow you to import the file into your calendar and look at the contents locally.

4. The Scheduler Program

4.1. LAUNCHING THE SCHEDULER PROGRAM

The scheduler program is written in the Python programming language, a popular language that has been implemented on many different programming platforms, including Windows, Linux and Macs. It requires installation and use of the Python programming language. The most recent versions of the language may be installed by visiting "<http://www.python.org>" and downloading the correct binaries for Windows, Linux, Macs or other platforms.

To start the program issue this command:

```
tmsschedule.py account password
```

This starts the program running with the given Google Calendar account and password.

The complete specification for running this program:

```
tmsschedule.py -d -f calendarfile -h -i icsfile -l logfile -p port -q -t timezone -v -w pswd --debug --file=calendarfile --help --ics=icsfile --log=logfile --port=port --quiet --time=offset --version --word=password googleaccount googlepassword
```

where:

-d, --debug	Turn debug statements on
-f, --file=calendarfile	Calendar file (Google account and password information)
-h, --help	Print usage information
-i, --ics=icsfile	.ics file to be used for event input
-l, --log=file	Log file
-p, --port=port	Use "port" for the Telnet connection
-q, --quiet	Quiet mode (no console messages)
-t, --time=offset	Timezone, as an offset "-08:00"
-v, --version	Report program version
-w, --word=password	Password for the Telepresenters
googleaccount	Google Calendar account
googlepassword	Google Calendar account password

The calendar file is a file with account and password (and optionally offset, log file) information:

```
# Google Account Information
acct=myaccount
pswd=mypassword
time=offset
log=logfile
ics=icsfile
```

To run this program under Windows you may use a command line, such as:

```
C:> "C:\Program Files\Python24\python.exe" tmsschedule.py ... options ...
```

A simpler alternative is to create a shortcut to "tmsschedule.py" and then using the Properties tab for the shortcut enter the required arguments:

"C:\Documents and Settings\owner\My Documents\Python\tmsschedule.py" ... options ...

The scheduler program must have HTTP access to Google and TCP/telnet access to each Telepresenter to be controlled.

4.2. SCHEDULER PROGRAM FUNCTIONS

Every ten minutes the program queries Google for 7 days worth of event data. Each event to be included must have "M3" in the title. If the query is successful, all previous event information that has not been committed to action is discarded. Thus, any late cancellations or additions made ten minutes or more prior to an event will be processed. If communications to Google is lost or intermittent, the 7 day sweep will guarantee continuous scheduling over an outage lasting several days.

At approximately 5 minutes prior to the start time of an event the event is removed from the event list and placed as a pair of entries (a Start entry and a Stop entry) on the active list. Once this happens the scheduler program is committed to process these start/stop events, even if they are removed from the Google calendar. There is nothing a user can do at this time except manual intervention. When a Start or Stop action is completed (or expires) it is removed from the active list and discarded. The program tries to Start or Stop the unit for about ten minutes and if not successful during that period, removes the action from the active list.

The Stop action occurs 1 second prior to the time listed in the Google calendar. If The event lasts until 11:00 am, the Stop will be activated at 10:59:59 am, allowing for a clean break with a new event which might be scheduled for 11:00 am.

All actions and errors are optionally recorded in a log file to verify activities performed.

4.3. iCALENDAR FILE USAGE

If an iCalendar ("ics") file is specified, the file is read in during startup and up to 31 days of events are generated from the contents of this file. These events are put into the event queue after the file is processed.

After this initialization, any Google account events are added to the event queue. Conflicts in the schedule are not checked, and if present may introduce scheduling errors.

To change or add additional events from an .ics file, the program must be restarted with new file information.

4.4. SAMPLE LOG OUTPUT

The log file lists the ongoing events of the scheduler program:

```
2007-02-22 16:13:05 (tmsschedule) Using Google Calendar account demo@ncast.com, password mypswd
2007-02-22 16:13:05 (tmsschedule) checking event list
2007-02-22 16:13:05 (tmsschedule) checking with Google for these queries: ['M3']
2007-02-22 16:13:06 (tmscal) Authorized - account and password information accepted
2007-02-22 16:13:13 (tmsschedule) Title: M3 Schedule
2007-02-22 16:13:13 (tmsschedule) Where: 204.89.223.33
2007-02-22 16:13:13 (tmsschedule) Content: C100
2007-02-22 16:13:13 (tmsschedule) Id: http://www.google.com/calendar/feeds/default/private/full/
2007-02-22 16:13:13 (tmsschedule) Repeats: 7
2007-02-22 16:13:13 (tmsschedule) Start time: 2007-02-28T22:30:00.000-08:00, End time: 2007-02-
28T23:30:00.000-08:00, UTC 1172730600.0 1172734200.0
2007-02-22 16:13:13 (tmsschedule) Start time: 2007-02-24T22:30:00.000-08:00, End time: 2007-02-
24T23:30:00.000-08:00, UTC 1172385000.0 1172388600.0
2007-02-22 16:13:13 (tmsschedule) Start time: 2007-02-22T22:30:00.000-08:00, End time: 2007-02-
22T23:30:00.000-08:00, UTC 1172212200.0 1172215800.0
2007-02-22 16:13:13 (tmsschedule) Start time: 2007-02-27T22:30:00.000-08:00, End time: 2007-02-
27T23:30:00.000-08:00, UTC 1172644200.0 1172647800.0
2007-02-22 16:13:13 (tmsschedule) Start time: 2007-02-23T22:30:00.000-08:00, End time: 2007-02-
23T23:30:00.000-08:00, UTC 1172298600.0 1172302200.0
2007-02-22 16:13:13 (tmsschedule) Start time: 2007-02-25T22:30:00.000-08:00, End time: 2007-02-
25T23:30:00.000-08:00, UTC 1172471400.0 1172475000.0
2007-02-22 16:13:13 (tmsschedule) Start time: 2007-02-26T22:30:00.000-08:00, End time: 2007-02-
26T23:30:00.000-08:00, UTC 1172557800.0 1172561400.0
```

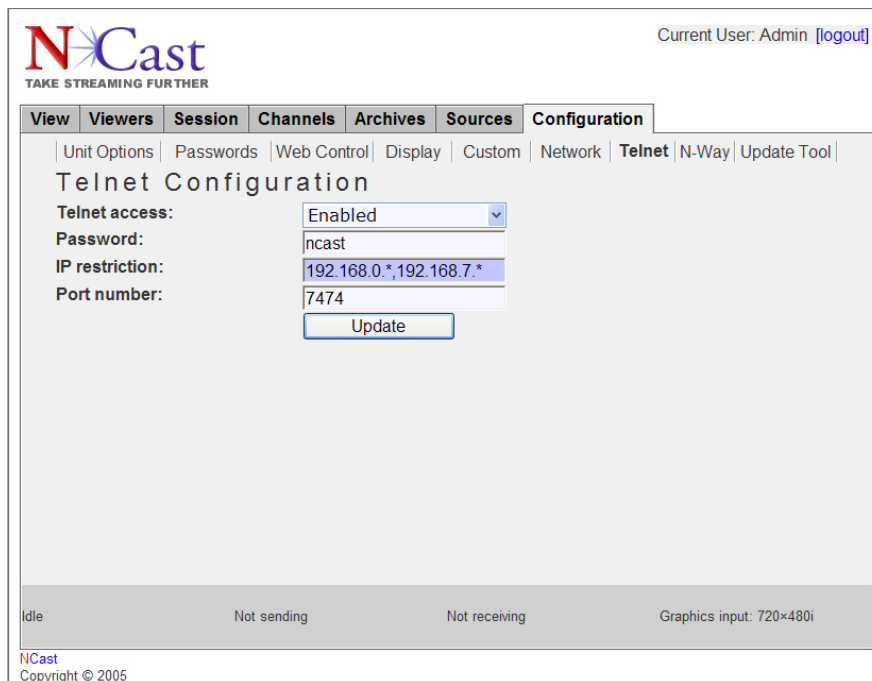

5. Telepresenter Serial Interface

5.1. ACTIVATING THE SERIAL INTERFACE

The IP serial interface on a Telepresenter must be enabled to receive the session start/stop commands from the scheduler program. By default this interface is “Disabled”.

5.2. SERIAL IP PORT INTERFACE TAB

To enable the IP serial interface, bring up the web interface and log into the Telepresenter under the “admin” administrative account, and go to the Configuration/Telnet screen tab:



5.3. SERIAL IP PORT INTERFACE FIELDS

The fields on this page are set as follows:

- Telnet access Must be “Enabled” for IP access
- Password Set a password to allow Telnet access
- IP restriction Set this to the IP address of the machine running the scheduler
- Port number The given port “7474” is a non-standard port for telnet protocol access

When all fields are filled, click on the “Update” button.

For additional information about this page, consult the “*Telepresenter Reference Manual*”.

6. Revision History

Revision 1.0 – Initial documentation release.