

NetSched Digital Signage

System Overview

NetSched Family

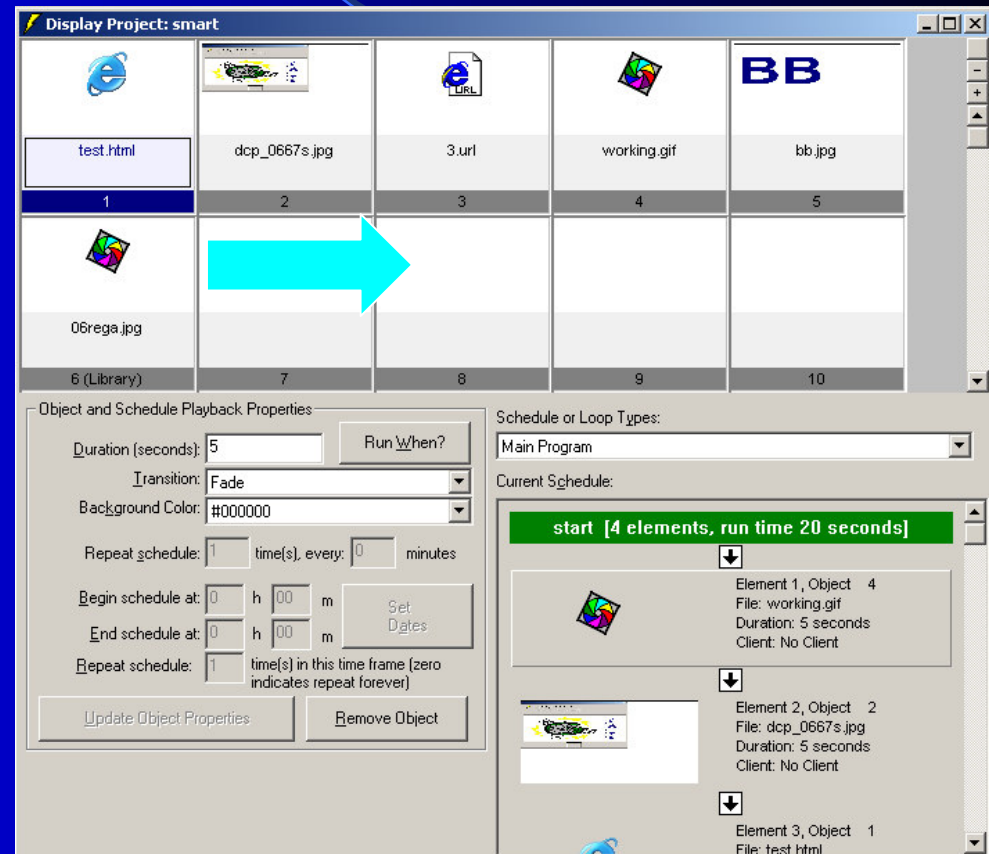
- NetSched Generator
 - supports creation and maintenance of schedules, content, and file management plus FTP and/or peer to peer support for schedule upload and accounting
- NetSched Player
 - supports playback and accounting
- NetSched Download Utility
 - supports background polling and download for new schedules and content

NetSched Generator

- Management of sign profiles for communications purposes
- Support for multiple schedule projects
- Schedules consist of a group of “advertisements”, plus the ordering of these advertisements in one of 3 schedule types: main loop, timed and repetitive

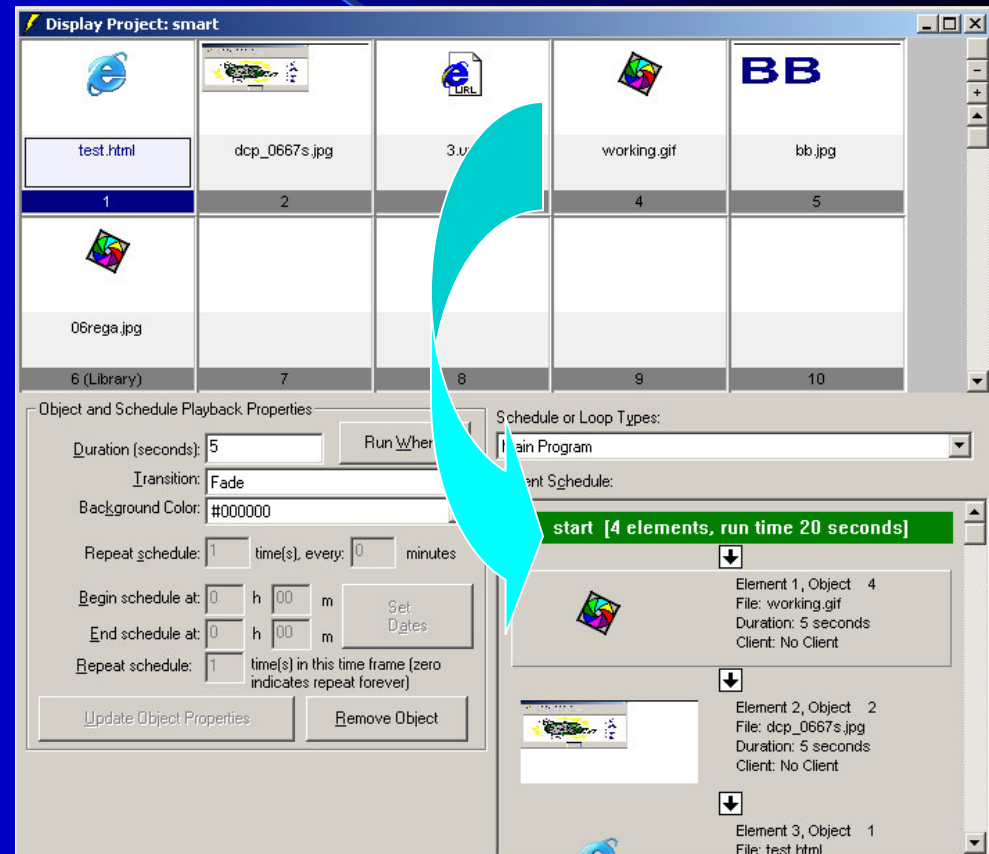
NetSched Generator

- Generator is “drag and drop” ready, allowing the user to drag files from the desktop to the current schedule’s “browser” of available media



NetSched Generator

- Once media has been assembled, the media can be dragged into the “programming area”, for easy management of schedule ordering, etc.



NetSched Generator

- Once an ordering has been generated, the project can be saved.
- Schedule projects can then be uploaded to a sign, but first, a sign profile must be created.
- The Remote File Management menu supports this.

The screenshot shows a dialog box titled "Remote Sign Properties" with a close button (X) in the top right corner. The dialog contains the following fields and controls:

- Sign Identifier:** A dropdown menu showing "Local Test Sign [id: 0]".
- Sign Properties:** A group box containing:
 - TCP/IP Address:** A text box with "maxwebster".
 - Port/Path:** A text box with "3334".
 - FTP Login information:** Two text boxes labeled "uid" and "pw", both currently empty.
 - Machine ID:** A text box with "pc1".
 - Display Type:** A dropdown menu with "NetSched" selected.
 - Display ID:** A text box with "sign1".
- NOTE:** A text block stating: "NOTE: the properties you enter above will be used to select a specific REMOTE SIGN. Ensure that you have entered the appropriate data. NetSched cannot verify on its own that the data entered is suitable for the remote Sign."
- Disclaimer:** A text block stating: "It is your responsibility to ensure that the data entered is meant for the remote Sign."
- Buttons:** Five buttons are located at the bottom: "New Sign", "Copy Sign", "Remove Sign", "Apply", and "Done".

NetSched Generator

- A remote sign profile consists of the following information:
 - Sign name (to assist in selection)
 - Display ID (assigned at remote end)
 - Machine ID (to help differentiate multiple signs at one location)
 - TCP/IP address (name, or dotted IP address)
 - Port Number or FTP path
 - userID and password for FTP support
 - Selection of either “NetSched” or “FTP” property type

NetSched Generator

- Normally, a remote sign can be communicated to directly, via peer to peer communications (the Player is a “listener” (server) while Generator is a “sender” (client)).
- However, not all sign installations will allow for external access to the private network that the sign is hosted on. Thus, the Player can instead **poll** for updates by looking for NetSched Schedule data on either a web or FTP server.

NetSched Generator

- If an FTP server is the destination of the schedule project, Generator supports the configuration of the FTP server address, the path to the folder that will hold the content, and the userID/password combination to gain access to that site.
- This allows for automated distribution of content to many machines from one single FTP server, totally eliminating the need for peer to peer communications.

NetSched Generator

- Once the sign profiles are completed, schedule projects can be uploaded to the selected signs. Choose File | Upload to initiate this.
- More than one sign can be selected here.



NetSched Generator

- Schedules and associated data will be automatically transferred to all signs selected. Progress indications will be shown to illustrate communications.
- Upon completion, a status indication will inform the user of successful transfer.
- Projects can be uploaded as often as you wish, and in many cases, a single project can be “tweaked” indefinitely, with many uploads of the project to the remote Player system.

NetSched Generator

- Remote File Management menu supports secondary communications operations with the remote Players (as defined via their sign profiles).
- Operations include:
 - Listing files at remote schedule and/or library
 - Local and remote library management
 - File transfer operations
 - Remote configuration operations
 - Remote reboot and command execution operations

NetSched Generator

- Accounting subsystem allows for peer to peer queries of logging information that details exactly when scheduled media had successfully executed at the remote Player
- Accounting criteria can be configured for either a full “report” style display of playback information, or an Excel spreadsheet style download of raw data

NetSched Generator

- Accounting criteria management uses a simple yet powerful interface to specify which signs are being interrogated, and what date/time ranges are needed.

Retrieve Accounting Data

Select Sign (hold CTRL key to select more than one):

0	Local Test Sign Machine ID: pc1 Display ID: sign1 TCP/IP Address: maxwebster:3334
1	dmd100 Machine ID: pc1 Display ID: sign2 TCP/IP Address: 192.168.0.135:3334

NOTE: Ensure that you have selected the appropriate signs. NetSched cannot verify on its own that the operation you are performing is suitable for the remote Signs selected.

It is your responsibility to ensure that the accounting data retrieval operation is meant for the signs selected.

Clients: No Client Assigned [0] Report on All Clients

Thumbnails: Use Thumbnails?
Folder: []

Filter by Media Name: []

Select Date Range: 1/29/2007 to: 1/29/2007 [Load]

Select Time Range: 12:00:00 AM to: 11:59:59 PM [Save]

Calculate Cost Per Run Value: 0.00

[OK] [Cancel]

NetSched Generator

- Currently, only peer to peer support is available
- Upon request, Solution Tech can be contracted to create accounting log information distribution support for large scale networks that require data from potentially dozens/hundreds/thousands of signs on the network.

NetSched Generator

- All media that is played within the Player can be tagged as “owned” by a 3rd party (the “client”), for accounting purposes. This tagging allows for filtering of accounting information on a “client” by “client” basis.
- If client tracking is not needed, a default “no client” tagging can be applied.

NetSched Generator

- For remote file distribution support, Generator can tag every media element as having a default location to download content, if the content is “missing” at the time the content is requested to play.
- NetSched Generator schedules can be created to host “placeholder” objects, which do not exist at design time, and will be fetched during runtime at the Player end.

NetSched Generator

- Each media element can be told to fetch “missing” schedule data at the Player end from one of 6 different locations, fully configured at the Player:
 - the “missing media” server (a default “catch all”)
 - Level 1 through Level 5 servers
- The Level 1 through 5 can be thought of as a hierarchy of content: Level 1 could be “universal” content, played by all machines that have tagged an item of that level, while Level 5 could be viewed as “localized” content, specific to a particular Player.

NetSched Generator

- These servers are simple web server or FTP server specifications (with support for userID and password for authentication).
- When the Player finds a piece of media that's missing, it'll check the tagging data, and pull down that content from the appropriately specified server that matches the tagging level.

NetSched Generator

- This facility allows for large scale distribution and management of where content comes from.
- This also creates the potential for Generator to manage a **TEMPLATED SCHEDULE**, which contains only placeholders of content that will eventually be automatically downloaded by the remote Players.

NetSched Player

- The Player is an automated schedule and content playback system, designed for the Microsoft Windows 2000 or better operating system.
- Since Windows is the supporting OS, Player can take advantage of ALL media types that Windows has to offer, including 3rd party media objects such as Flash, QuickTime, etc.
- It is assumed that all required 3rd party support will be present at the Player

NetSched Player

- The Player is configured by subdividing the video display into “Panels”. By default a single panel is available. This can be changed to a maximum of 26 panels (depending on the version of Player running).
- A panel can be thought of as a “mini” Player. Each panel runs an **independent** schedule, thus, each remote Player can support many simultaneous schedules playing in harmony.

NetSched Player

- Panels can be configured to be “tiled”, in that all screen real-estate is assigned to one or more panels.
- Panels can also be hosted “off screen”, which allows for the scheduling of non-visual content, such as music files, external commands, etc.

NetSched Player

- Player can be configured to automatically reboot the remote computer at a specific time of day (or multiple times a day if necessary), or can be disabled from daily reboots.
- Player supports the ability to act as a “topmost” window (covering up all others in the system). However, this can be disabled for testing purposes if necessary.
- Player also will automatically reposition the mouse in case the mouse cursor appears on top of the display. This prevents potential screen burn in for Plasma style monitors.

NetSched Player

- Finally, Player can be configured with a set of 6 unique specifications for “missing data” serving. As discussed earlier with Generator, the ability to tag a specific media object with its server location allows the Player to automatically download the missing content from the appropriate server, thus automating large scale distribution of content.

NetSched Player

- Player configuration is done once, and Player will run automatically if configured as a startup utility.
- Since Player runs as a GUI application in the Windows environment, the Player computer should auto-boot into an account in Windows, with Player configured as an auto-run application (Startup menu).

NetSched Player

- Player assumes that all standard IT practices have been taken into account in terms of configuring Windows for situations like:
 - Disabling of screen savers and auto-power-shutoff of disks and monitors
 - Automated boot into an account to run Player
 - Network security (firewall, virus checking) has been enabled to prevent unauthorized remote tampering with the Player system.

NetSched Player

- For each panel available, Player will execute the available schedule.
- Schedules are either distributed via **push** - peer to peer (Player “listens” to port 3334 by default) communications from Generator (push), or via **pull** – where new schedules are pulled at a specified frequency from a remote web/FTP server.

NetSched Player

- As schedules are executed, all played content will be logged on an automated basis.
- Playback Log files are stored in simple CSV format, and can be manually extracted from Player using file transfer operations built into Generator, or can be queried using the Accounting support built into Generator.
- Future support will allow for log files to be automatically uploaded to a 3rd party FTP server for storage external to the Player. This will be a new configuration option for Player.

NetSched Player

- Player supports the ability to execute external commands.
- Thus, 3rd party control software can be scheduled to run, such as turning on/off LCD or Plasma panels, to control lighting in a room where a sign is mounted, to control an internal DVD player, etc.
- Support for 3rd party LED billboard technology is available.

NetSched Player

- Player also supports live video playback via video capture devices, if available at the Player end.
- Generator can indicate a live video object to play within the schedule, thus live TV or video camera content can be added to any schedule!

NetSched Download Utility

- NSDL takes over where Firewalls prevent external software (Generator) from talking to a Player behind the firewall.
- Since the default configuration of a sign is to “listen” to port 3334 on the Player’s IP address, some sign installations may disallow this means of communications, as some view external access of this type as a security issue.

NetSched Download Utility

- To eliminate problems, NSDL can instead poll, at a specific frequency, an external Web or FTP server, looking for specific schedule and content to be downloaded to the Player.
- NSDL will then initiate a “behind the firewall” communications session to install the schedule/content, as if Generator had done the work itself.
- This utility thus forms the backbone of a large scale distribution network, where peer to peer transmission of schedules/content is impractical.

NetSched Summary

- The NetSched family of software provides a robust, flexible, and inexpensive content and schedule generation, playback and accounting system for digital signage networks.
- The software is configurable, and can be customized by contracting Solution Tech Systems for add-ons that enhance the value of the solution for your digital signage needs.