

Public Information Display System
Descriptive Document



Introduction

This document describes the different functions of the dZine display information system, consisting of a hardware and a software component.

Hardware component: dZine DISPlayer

Software component: dZine DISPlayStudio + software plugins

Environment

Introduction

The dZine display information system operates with the following components:

- Server running DISPlayStudio
- Network (UTP (min) cat.5) providing TCP/IP connection between server and DISplayers
- dZine DISplayers

PC requirements for the server

The dZine IDS server software (DISPlayStudio component) needs to be installed on a Stand-alone PC with a Windows XP Pro, VISTA operating system. dZine IDS server is also compatible with windows 2003 or VMware based platforms in case rack mounts servers or blade servers are used. The server pc requires the following minimum configuration:

- Pentium 4 processor or higher
- 1 Gigabyte RAM
- 80 Gbyte Hard-disc
- Ethernet 10/100 Base-T Interfacecard
- Usb-portal
- Graphic card with at least 32MB VRam
- Mouse
- OS: XP PRO

Communication-interface

The server PC will make use of a TCP/IP Ethernet-network to send information to the DISplayers.

Network requirements:

The server PC communicates with the DISplayers according to one or a combination of the following network technologies:

- 10/100 Base-T Ethernet using (minimum) UTP class 5 cables.
- Wireless Ethernet a/b/g
- GPRS
- UMTS

DISplayStudio Software

Introduction

DISplayStudio consists of 3 modules : Page Editor, IDS server and API editor.
The modules enable the creation & distribution of content templates to DISplayers.

- **Page Editor** allows creation and storage of single content template pages and playlists.
- **IDS server** application distributes the pages or playlists to the DISplayers.
- **API editor** allows advanced editing and creation of pages with respect to interactivity

Each module of the DISplayStudio software will run on a standard desktop PC or laptop using XP PRO or Windows Vista as operating system.

Page Editor

The following functions are available to create a content template or playlist:

- background colors of the page use a standardized color which can be selected from several prime colors or can even be created from new colors by using RGB or HSV-values, gradients or an image fill (tiled, stretched), video, flash.
- draw a line with different styles, thickness, ...
- draw a rectangle
- draw an ellipse
- insert an image (GIF, animated GIF, TIFF, BMP, JGP, JPEG, PNG, JPE)
- insert a text window, able to be altered anywhere on the network
- display an actual time (synchronization with IDS-server)
- display an actual date (synchronization with IDS-server)
- display a User-made database WITHOUT a link to the actual database
- display multiple independent tables from ODBC-databases on the network providing real time links without user interaction
 - Supported ODBC back end systems for real time table information:
 - MySQL
 - MsSQL
 - Oracle
 - MDB
 - XLS
 - TXT
 - CSV
 - DB2-DB4
 - DBF
 - FOXPRO
 - XML
 - ...
- Display multiple text tickers from ODBC-databases on the network, in which case the displayed text ticker info on the DISplayers automatically changes when alterations are made on database level.
- Supported ODBC back end systems for real time text ticker info :
 - MySQL
 - MsSQL
 - Oracle
 - MDB

- XLS
 - TXT
 - CSV
 - DB2-DB4
 - DBF
 - FOXPRO
 - XML
 - RSS Feeds from the internet or the intranet
- When inserting databases/ creating an ODBC link with a database, the following features are available to format and manage the database content:
 - Double sorting on content
 - Define the amount of rows to display, when necessary even an automatic show of several slideshows within the database.
 - Possibility to skip lines
 - Update frequency of the DB: none, automatic, fix interval and on the level of data source and File
 - Possibility to change to an alternative mode: in case there is no content available in the DB, another (part of the) playlist must be activated.
 - Skipping mode (skipping of pages with an empty DB)
 - Power mode (power off of screens in a playlist with an empty DB)
 - Possibility of SQL filtering (AND – OR - NOT)
 - Possibility of Conditional Filtering (end result is dependable on the condition)
 - Advanced features for DB are: UNI CODE support – Header Enabler – Rotated orientation
- Insert a live video feed (either as a Picture-in-Picture or full screen) coming from
 - External CVBS or S-VHS source
 - TV tuner
 - Streaming video
- Insert a video (either as a Picture-in-Picture or full screen) coming from video-clips in MPEG1/2 format or DVD format.
 - Videos can be retrieved from a database using an ODBC interface.
 - apply “cropping” on video clips. (removing of ‘black’ borders) + defining the aspect ratio of the video you want to insert. (16/9 – 4/3 – Free format)
 - Inserting multiple text sequences, that can be altered through any pc + connection
 - with a database using an ODBC interface
 - Inserting multiple picture sequences, that can be altered through any pc + connection with a database using an ODBC interface
 - Inserting of Mpeg/DVD-sequences + connection with a database using an ODBC interface
 - Inserting of multiple tickers, that can be altered through any pc + connection with a database using an ODBC interface
 - Inserting of Streaming Video
 - Inserting of multiple Flashfiles (flv, swf) + connection with a database using an ODBC interface
 - Inserting of multiple Flashvideo files + connection with a database using an ODBC interface
 - Inserting of multiple independent text-, image- or video-objects.
 - Inserting audio (wave, mp3)
 - Inserting of Event-API in which case the user can perform a partial programming/ make an entire screen fully interactive.
 - Inserting of scripts through RS232 / Telnet-server
 - Inserting of appear and disappear effects on texts – images – videos – flash
 - Creating complete playlists in which case one or several pages is completely database-controlled (full page from database).
- Defining of several DISplayer output resolutions.

- 4/3 resolutions up to 1600x1200
- 3/4 resolutions up to 1200x1600
- 16/9 resolutions up to 1920x1200
- 9/16 resolutions up to 1200x1920
- Ability to define a non VESA standard DISplayer output resolution typically for
 - Video-Wall resolutions
 - LED resolutions
- Page editor allows to share content between different page editor users. Resulting content templates are immediately synchronized with the IDS server repository for further distribution.
- The order of the pages in a playlist can be altered at all times, the same is possible for deleting and adding pages in the playlist.

IDS Server

The IDS server application ensures the connection and communication with several DISplayers. All DISplayers have a unique IP address allowing them to be individually addressable by IDS server.

IDS server will distribute content by a store and forward principle. Content templates themselves are typically a size of a few kb which can be send anytime to the DISplayers without loading the network bandwidth too much. Media objects used in the content templates like videos, images, flash,... can be send either immediately to the DISplayers with the content templates, or separately at a different time.

The IDS server application must be able to support the following actions:

- Setting up different display networks each using a different TCP/IP connection
- Grouping and sub-grouping of displays
- Firmware and OS updating of players + reboot by sending one file to each DISplayer
- Logging of:
 - IDS server DISplayer communication
 - Scheduling
 - Played content for billing

Application must be able to operate as service with individual client GUI's for the administrators

- When the user logs out, the application must be able to keep operating.

Calendar function

- Manual input
- Automatic extern input through database
- Script-function tool (for communication with extern equipment) allowing integration of external triggers like fire alarm, evacuation messages etc
- Notification of error messages for the administrator/user
- Full remote control of the DISplayer
 - All functionalities/settings of the DISplayer must be able to be retrieved or altered by
 - a webinterface
 - IDS user interface
 - SNMP
 - INI-files
- The server must also be able to trigger on telnet commands (taken from extern network equipment) + process this triggers to change content displayed on the DISplayers.

- Bandwith throttling : limiting the outgoing bandwidth for each display network configured on the IDS server
- Intelligent file transfer : IDs server can be configured in such a way that one DISplayer can act as a master to receive content, and locally distribute the same content to other Displayers in the same subnet.
- IDS server can send out time sync messages allowing DISplayers to be synchronized at any time for content playback.
- IDS server allows an Autosend function on the DISplayers:
 - Limiting the size of the files to be send automatically
 - Limited the type of file to be send automatically
- IDS server allows for an Autoclean on the DISplayers
 - Removing all or certain types of media objects after a specified number of days during which they are unused

The schedule function must be able to support the following options:

- Automatically turning on and off the display
- Automatic transmission of large files (for example at night when the 'network load' is low)
- Planning tasks daily, weekly, on weekends, monthly, yearly.
- Insert holidays
- Overview through a calendar view
- Insert start and end date
- Insert start and end time
- Add recurrence patterns

The schedule function allows the user to automatically send pages/playlists through the server application. The user must be able to make a complete list for one or more days/weeks, where everything must be programmed (from turning the displays on/off to the transmission of pages and slideshows) by display/ by group of displays or for all displays.

The server application has a security manager allowing the administrator to create several administrator profiles. For each profile, read/write/access rights can be restricted wrt

- projects
- schedule
- DISplayers
- logs

The administrator can add or remove certain persons and adjust the rights at all times, users can be defined from an existing Active Directory or manual.

IDS server has an SDK library available for customized integration of the IDS server into existing display networks.

API editor

API Editor is an advanced content template editing tool for professional users. You can go beyond the possibilities provided by Page Editor by editing the pages manually. API Editor also supports Event API which you can use to create interactive pages that support user input (keyboard, mouse, touch screen, etc.).

This program automatically applies syntax coloring and provides the option to check for syntax errors. API Editor provides information about API function parameters, so data can be inserted more easily.

Formerly inserted parameters will be recognized automatically and functions and parameters can be auto-completed. API editor is an extension to Page editor.

DISplayer Hardware

The Display board consists of 2 modules: The first one is the processor core board making use of the COM-Express standard. The second module is the carrier board which contains all peripheral devices and connections. The advantage of this concept is that upgrades to new processors and PC core devices will be possible without replacing the whole motherboard and keeping the solution mechanically compatible.

Technical specification

- Intel 915GM chipset for mobile computers
- Intel Mobile processor
- Standard 1024 MByte DDR2 SDRAM 533MHz memory devices
- 400/533 Mhz front side bus
- Integrated video controller up to 2048 x 1536 pixels
- 64 Mbytes Shared Video memory
- Compact Flash 1024 Mbytes for Operating System !
- 40 Gbytes 2,5 inch SATA HD for mediafiles
- Ethernet 10/100baseT on RJ45 for connection with UTP network
- RS-232 interface on subD9 connector
- RS-485 connector on RJ11 connector
- 4 x USB port Version 2
- Internal serial com port on TTL level
- I²C interface
- Hardware watchdog
- LED indicators for Ethernet Link and operating
- Mini PCI interface
- Express Card Interface 34/54
- Audio Codec Surround output to 2 dual jack connectors.
- CMOS configuration under battery backup
- Compact Flash interface for diskless systems with module capacities ranging from up to 8 Gbyte,
- SATA 150 Interface port
- Analog and DVI video output connectors on a combined DVI connector.
- Internal Digital video connection to the display
- Temperature control devices for Processor and board temperatures
- Power control circuit.
- Single operating voltage: 12VDC input
- Power consumption: typ.: 40 Watt (Pentium-M 1.8Ghz) with Compact Flash
- Dimensions: 265 x 155 mm (W x D) (Card Only)
- Dimensions: 440 x 201 x 59 mm (WxDxH) (Device)

BIOS configurable features

- Enable and disable Watchdog
- Enable and disable Boot from Network (PXE)
- Enable and disable Wake-up from LAN

Software

- Real-Time OS Operating System (no MS Windows or LINUX Operating System!)

Options

- TV-Tuner module
- Express cards

Features

- 1 device = 1 multimedia platform
- The same hardware device for all POS/POI
- Non-Windows/Linux OS stored on a solid state disk
- Security risk free / No bluescreens / no viruses / no hacking
- Firmware update possible over the network, max file size for OS and Displayer software is 6Mb.
- Passive cooled player hardware 24/7 rated
- Reboot and auto restore content <30s after power failure
- System power can be cut during non-operation (energy saving- no standby power needed)
- 10y Backwards compatibility SW + stable HW platform
- Wide connectivity (RS232/485/LAN/WIFI/TV-Tuner/3G)
- Can be used as a stand-alone player to connect to any type of screen (LCD, plasma, projector, LCD-wall, ...)
- Can be integrated into different type of screens
- Indoor, indoor for industry, outdoor (ip54/66)
- Can be integrated into different sizes of screens 7" to 82"