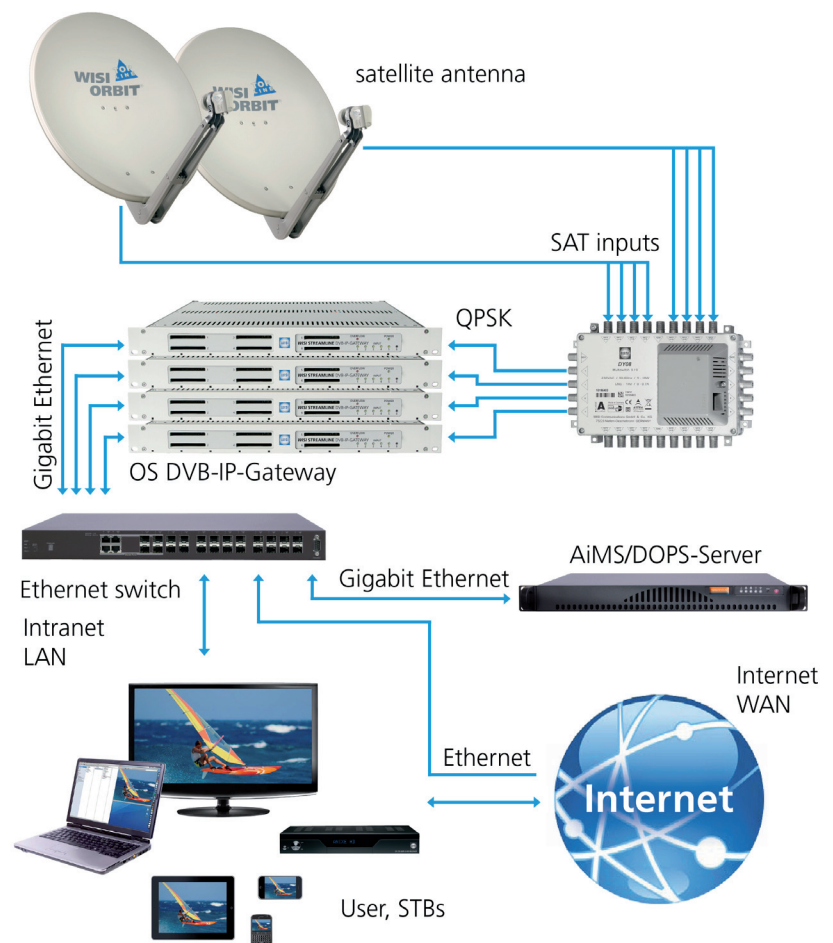# AiMS
Avanced TV Content Management Suite

WISI

TECHNICAL INFORMATION

Product description

AiMS is an open platform and CMS for the distribution and management of content (video, audio, pictures, data, etc.) and of services from the areas of information, communication and entertainment in digital networks (LAN, WAN). For each hardware component of a system a choice between several products of different manufactures is offered and therefore dependency on specific brands or manufactures or types is prevented. AiMS combines all different components to a complete system and uses all features of hardware according to the specifications of the manufacturers.

satellite antenna

SAT inputs

QPSK

Gigabit Ethernet

OS DVB-IP-Gateway

Ethernet switch

Intranet LAN

Gigabit Ethernet

AiMS/DOPS-Server

Internet WAN

Ethernet

Internet

User, STBs

Open architecture „S to XXL"

AiMS was developed for application in hospitality (hotels from more than 10 rooms) as well as for city carriers (> 1 mio. households). The server can be any standard hardware.
The software can be installed with the following operating software: CentOS, Debian/GNU, FeeBSD on PC-Hardware (Server System), UNIX/Linux (e.g. IBM, Sun, HP, Apple).

Optional components: (e.g. DHCP/TFTP). AiMS also supports several IP-STBs and PC-platforms as user interface.

Open standard based

AiMS is a stand-alone application software which communicates with the interfaces of different STB manufacturers and is therefore STB manufacturer independent. It was designed to support a maximum number of devices and operational systems as desktop PC platforms (Windows, Apple, Linux) with market common

SW components like Mozilla FireFox, VLC Player, Internet Explorer, Windows Media Player, Windows XP media center, Windows Jabber Clients with video, Opera and STBs like Amino, Strong, XaVi etc.

The integration is incorporated in existing network environments and supports components of different manufacturers (e.g. WISI OS streamer, DRM-systems, etc.).

Functions

The following web services are available in SD, HD and PC resolution:

IPTV, PVR, internet access, VoIP, EPG, Teletext, unified messaging, keymapping (depending on clients), multi language user interface (because of the open architecture the user interface can be displayed in different languages).

IPTV in SD and HD

AiMS manages all common standards: live TV over DVB-S, DVB-S2, DVB-T, CCTV (IP Cameras), Radio over DVB-S, DVB-S2, DVB-T, radio over internet, time shifting (multicast), PVR (personal video recorder), VoD (Mpeg 2 program stream, Mpeg 4 avc), MOD (MP3).

AiMS supports parental control (PIN), authorization (booking of chargeable services).

Database

The logic of AiMS is mapped in a database. This database is running in a generic version on a LAMP system (Linux/Apache/MySQL, PHP) and contains all data from different areas:

• User data – changeable anytime by the user
• System data – will only be changed through software update
• Dynamic data – will be created through running the software

The interface outwards is XML. Each further display (HTML, SNMP, etc.) is based on XML data. Thus the complete logic of AiMS system is included in the database server. The XML data will be generated by the modification of the database, thus an effective caching with http caches and http load dispatcher is possible.

Set top boxes

AiMS uses all common STB features:

Session
• IGMP Version 2
• HTTP
• RTSP (optional)

Transport / reception of a transport stream
MPEG-2
• through UDP-Multicast
• through RTP (optional)
• through HTTP
MPEG-4
• AVC Streams (HDTV)
• WMS, Windows Media Streams (optional)

Content
• MPEG-1
• MPEG-2
• MPEG-4
• DVB-S compatible
• DVB-C compatible (optional)
• DVB-T compatible (optional)
• DVB-S2 compatible (optional)
• DRM (optional)

AiMS fulfills all international standards and engineer standards.

AiMS services

TV recorder: network PVR (manual) or EPG, supports HD recording in STBs.

Operation: provisioning, management and monitoring, logging, SNMP/XML/http interface, auto-configuration of the clients and server applied, CMS, mandate capable.

Powerful Editor, in particular for IPTV applications with interfaces for the connection of accounting and billing systems.

User interface - GUI

As interface for configuration and development as well as for STBs, we use a web browser on a PC. The bases of this interface are again the XML data of the server.

The display on the STBs or in the browser is dynamic (at the time of the request) or static (at the time of data changing). The conversion of XML data from the server is done in AiMS, through the respective web browser (XSLT, AJA) if PCs are used.

AiMS supports multi mandate. Each mandate can have its own private menu for its connected clients. Additionally an official menu is available which can be reached from the clients of other mandates but and also via the internet.

System architecture

The system consist of an AiMS server (optionally also cluster), and components like the WISI DVB-IP-Gateway OS, VoD-server and clients/user devices (e.g. STB). AiMS manages (over http) the whole setup of the systems, configurates all end-user devices and manages the streams and data to the correct end-user devices (server client architecture).

The configuration of end-user devices is done with e.g. protocols like SNMP, TFTP, http and assures the centralized configuration of all components via the AiMS server. There is a real „plug-and-play" on the system level.

Video on demand

VoD reads the list of all available movies on a selectable VoD server and displays them on a menu on the screen. The possibilities of display comply with the navigation of the IPTV but are independently definable in its layout. Additionally, if the parameter has been selected, a thumbnail of each movie can be displayed. Depending to the size of the menu lines only a few numbers may be displayed on each site.

The display of the movie lists is preceded by a menu which allows the listing according to attributes (Action, SciFi, Documentation, etc.), languages, actors, year of publication as well as special features like: free of charge, with costs or ban for young people.

Music on demand

This service has the same functions as a common playlist of an MP3 player. Programs can be assigned to different areas.

EPG

When zapping channels either EPG data or optional the information of another provider can be displayed. The display is adjustable in size and position and in type of data displayed.

Management of services

Attributes will be assigned to all services which allow the user and the provider to select and sort for them. The definition of attributes is done by the provider and can be defined according to the content of a program as well as to the availability of different user groups. Further comments on the attribute system can be found in the description of the database.

IPTV function

The programs are IP-streams and are delivered in unicast (1 to 1) or multicast mode (1 to any). The stream is addressed via the IP address and will be displayed in the available player.

Individualization: By using more attributes, the TV portfolio can be configurated. This allows differentiation between different services in different levels and thus the creation of an user-own, individual channel list.

Basic radio basic function

The functionality complies with the IPTV function. Depending on the attributes, channels, a standard graphic / animation, a movie or any information in HTML format can be displayed on the screen. The radio hotkey, a freely selectable (colour-) button can be defined through the Editor. In all audio-free services (information services, encyclopedias, etc.) a frame for radio channel selection is opened. This function can be activated per service. Background radio: a selected channel can be played and disabled any time in all such services that accept this service.

Teletext (Videotext)

Using Teletext during running TV services equals the common usage (button „TXT" and inserting according numbers), the content however will be temporarily stored on the AiMS server, thus the request is processed without the usual time delay. The reading out of content is done through XML interface. The function is only available during running TV mode.

Logging

Logging for accounting, management and maintenance is done through a generic logging system with XML interface.

Existing protocols, like e.g. syslog, will be converted. The logging data will be written into the AiMS database and are available through according queries. At the same time automatic logging data can be used (after explicit clearing by the customer) to transmit them to other systems (e.g. networking monitoring) e.g. by mail, fax, sms, SNMP trap. An automatic delete of logging data applies only for unimportant debug information (see syslog level). All other data can only be deleted manually.

Provisioning

Provisioning is available with the unique WISI DOPS system. The XML interface is applicable as master as well as slave (also part slave) in hospitality and city networks.

System requirements

1. Server

Operating System:
- CentOS, Redhat Enterprise Linux
- Debian/GNU
- FreeBSD, Linux (e.g. Debian 3.1, Fedora Core 6, Open Suse 10)
- Microsoft Server 2003, Microsoft XP Professional (only for small systems)

System software:
- Webserver with PHP-integration (e.g. Apache 2.0 or IIS)
- MySQL 5.0.x or higher
- PHP 5.2.x or higher with following extensions (ctype, curl, date, dom, hash, libxml, mysql, xml, xsl, zlib, ore more)
- IonCube

2. Network

Streaming Network:
- Each transponder or DVB-Gates 1000 Base-T or 100 Base-T Ethernet
- 1 x DOPS Server 1000 Base-T Ethernet
- 1 x IGMP Dummy Querier over AiMS/ DOPS Server (if there is no IGMP Querier in the network) 1000 Base-T
- Each Set-Top Box 100 Base-T Ethernet

Management Network:
- Each Transponder or DVB-Gate 100 Base-T Ethernet
- 1 x AiMS/DOPS Server 100 Base-T Ethernet
- 1 x Remote access (optional)
Both networks can be realized as VLAN, but must be different IP networks.

Switches:
- Multicasting and IGMP Snooping for streaming networks
- QoS (if the IPTV services is provided additional to other services like internet or VoIP on the same network)
- IGMP Querier function on one of the switches is an advantage

3. Clients

Set Top Box:
- HTML-Browser with CSS2 support (obligate)
- Javascript-interface to manage the functions of the box and of the media player (obligate)

PC:
- Web browser (Mozilla Firefox, Safari, Internet Explorer)
- VLC Player or Windows Media Player with Plugins for MPEG TS and H.264 decoding