Carrier-Class Content Management for Streaming Video over IP Services

HotStreams™ provided by the Siemens Information and Communication Networks division represents an advanced JAVA 2 (J2EE) based content management and delivery platform for on-demand IP streaming video services.

HotStreams provides a highly scaleable WEB based platform for content aggregators to offer personalized video content, interactive video advertisements, and additional WEB information to end-users.

HotStreams JAVA 2 software can be deployed on SUN Solaris, Windows 2000. HotStreams targets ISP/carriers, hosting providers and corporate content aggregators that deploy IP streaming video services to distribute on-demand personalized rich-media content over xDSL access networks.
Real Benefits for Content Providers and end-users

- Rich-media integration on PC Internet browsers or advanced set-top-boxes.

- **Rich-media** (Video, Audio, combined with traditional WEB content) integration on-demand: the WEB/Video information you want, when you want and how long you want.

- **Interactive video service.** Video-clips are linked to "more info" WEB site.

- Customers enjoy real interactive IP video services.

- Customers view videos according to their selected profiles. So they access directly the video content they are looking for.

- End-users primarily enjoy videos first and get on-request additional related content from the Internet.

**Advertisement is a real end user choice.** Video ads can be accepted or refused by the end-user. The content delivery price may change dynamically according to the content owner business model

An effective **way to win quickly new customers:** customers click the “buy now” button in the video, and off they access the WEB site to get information or directly order the product

**IP based Content Management and Distribution platform for**

- Video breaking news
- Corporate news
- On-site employees’ training (product, marketing)
- Customer care and video based help desks
- ISP streaming video hosting service in broadband xDSL access or wireless LAN networks.

**e-Commerce engine for content providers and aggregators**

**Dynamic video advertisement** insertion into video content, allow content owners to generate revenues out of traditional video advertisement not only WEB banners.

**Content aggregation:** ISP and new carriers can aggregate video and WEB content of small companies and localized video advertisements. This is a valuable extension to their actual WEB hosting service.

**New revenues out of specific video ads,** which may not find the right audience in prime time TV networks.
An advanced content management and delivery platform for IP streaming services

Click on the “MoreInfo” button to access the WEB.

Customer friendly access to the WEB site from the video commercial.
Just click on the “Buy Now” Hotspot in the video.

HotStreams offers an advanced JAVA 2 Content management and delivery platform for video / audio IP Streaming services with:
- Dynamic video content generation
- Interactive videos over IP
- Content Personalization
- Dynamic Advertisements

Added-value Service platform for Internet Service Providers

HotStreams targets ISPs, large corporates that roll-out large xDSL based networks, corporate LANs or cable networks and are willing to differentiate their service approach by offering customer friendly B2B added-value IP-based applications.

E-commerce and B2B enabled

HotStreams offers optionally the integration of an E-commerce payment server like X*Pay 2.1 from Brokat AG. This international credit card payment server is integrated with HotStreams JAVA 2 software using the JAVA Enterprise Java Beans (EJBs) as JAVA 2 transaction services.

Brokat X*Pay 2 as a major credit card payment server software is certified by VISA and MASTERCARD. Brokat server can interface more than 100 commercial payment Gateways worldwide and can be used to handle the SET/SSL payment gateways with internal banking transaction networks.

Scalability based on the de-facto Java 2 platform

HotStreams rely on the SUN Java 2 Enterprise Edition platform (J2EE) E-commerce and application server platform adopted by international vendors like IBM (WEBSphere), BEA WEBLogic, Inprise/Borland, Netscape (iPlanet ), SilverStream, etc.

Therefore HotStreams can be deployed on a scalable standard IT platform based on major operating systems like Microsoft Windows 2000 / Windows NT 4.0, SUN Solaris and LINUX.
Customers enjoy the WEB from a new perspective: by surfing from videos to videos

Electronic commerce is becoming an important factor in today's market place. Currently, large amounts of goods and services are sold over the Internet every day. The Internet is also an important source of electronic information. Most of the information on the Internet today is for free, and electronic information commerce is yet to develop as a significant business. This is largely due to lack of technologies for distribution, lack of tools for content preparation and distribution, and for lack of payment systems that customers really trust.

This is changing now, however. Digital video storage and access to video information over the Internet are more and more becoming commodities with the advent of the new streaming technology. At the same time, the network bandwidths are increasing with the introduction of ADSL, cable modems, digital broadcasting satellites, etc.

These, and other technologies, are competing to deliver broadband for interactive video, voice and audio, and computer data traffic.

Electronic payment systems are also being developed.

Content providers and agencies are still facing the challenge of providing electronic information services that really will attract potential customers that are willing to pay for access to their content.

Customization and personalization for digital (video) content over the WEB

To differentiate themselves from traditional TV broadcasting companies, it will be important for video content providers and agencies to be able utilize the interactive potential of the Internet technology to provide interactive video content and to offer personalized content. Internet users are getting used to not only have information pushed to them but also to actively pull information they find interesting from the Internet. Their skills, interests and, of course, time available to view video information or entertainment clips and/or commercials will determine how much they are willing to pay for the content being offered.
HotStreams to host and personalize Media Content

The Siemens HotStreams application provides customers a versatile platform for video content hosting and personalization. It provides an interactive service for delivering media-rich content over IP networks. The HotStreams application integrates the RealNetworks Real8 streaming server, and Windows Media Server Windows 2000-platform, and offers unique personalization and billing added-value features. Corporations on their Intranet, Internet Services Providers or that provide Internet hosting and access services can greatly benefit from all advanced HotStreams services.

In all cases, HotStreams offers unique solutions (US patent pending) for digital content personalization and payment-based streaming audio/video services. It builds on top of the World Wide Web standards and hence provides an easy way to access potentially huge amounts of videos and WEB information.

Customers define their own profile and video versions.

Basic Services
• Traditional WEB hosting (standard) +
• Dynamic Video Advertisement
• Video Encoding Services
• IP Video streaming hosting

Value-added Services
• Remote Content Management Services
• Video Content Replication Service (multicast)
• Payment Server hosting (billing)
• Interfacing to payment / accounting gateways

HotSpot: Link to Information or other videos

First sequence or video combination
A B C D E
10 $  
Second sequence or video combination
A B D E
6 $  
Third sequence or video combination
A D E
0 $ For free
Fourth sequence or video combination
A D E
2 $  

President Clinton

Watch the latest video online, it's FREE!
Key features of the HotStreams application components are:

- No need for application specific software on the client side.
- The media service provider can combine the primary video streaming service with any “media-rich”, value-added information.
- It can deliver hypervideo including video “hot spots” and hyperlinks to create rich and interactive video content. Media companies may use the hyperlinking technology between video clips to offer valuable interactive video information. In the same way an advertiser may provide direct access from his video advertisement clip into the company’s Web site, which would allow the customer to directly order products. This immediate interactivity between end-users and product maximizes marketing investments and branding.
- The system may offer various “version” of a hypervideo product – each product tailored to the needs an interest of the customer. The various versions may include different sequences of the video, man provide a different number of hotspots, and may have different destinations for the same hotspots.
- It supports content re-purposing without media data replication by generating XML/SMIL script files on top of the media files.
- Customers can decide whether or not commercials are to be inserted in the video information.
- It performs an intelligent selection of where to insert commercials into the video stream (always between news stories, for instance, and never within a story). It offers a variety of payment models, such as payment based on subscription, on-demand payment, (that is, customers only pays for the parts of the video they actually play back).
- The system is build on top of a media asset management system and thus provides content owners a low-cost way to port rich-media content on the Internet or Intranet.
- The system can easily be adapted to the interest of the content owner regarding “product definition” and pricing.

In summary, the interactive and personalization functionality of HotStreams, its rich support for various payment models, and its flexibility will provide an excellent platform for content providers in facing future’s challenges.

Application areas for HotStreams

Entertainment (games and films on-demand)

In video entertainment, dynamic video re-purposing provides obvious capabilities and advantages. A video server can deliver an “airline version” or an “adult” version of the same movie without any content duplication. Revenues can be generated by advertisements, shared revenues or by credit card transactions.

“More info” in-video kickable buttons allow the provisioning of value-added information about the immediate video content, game results, “fan club” related news etc.

Employee training, product briefing, and maintenance

By accessing the same video database, different product descriptions can be offered to corporate employees, sales people, for instance, view only marketing videos while maintenance teams may get access to presentations that contain more technical details or dynamic pricing information.

Training services on-demand

Third party companies offering training services can adapt their Internet training videos to each of their corporate customers. Each user or business unit can select the service that offers the best cost/benefit ratio.

Financial breaking news and videos on-demand

Business TV videos for investors can be enhanced by the addition of content related to the investor’s favorite companies. Investors can thus receive customized and value-added and have more knowledge to decide to purchase new or sell their shares in a selected company.

Political and economical content access restriction

Using the Siemens patent protected filtering capabilities, it is possible for a media company to stream (deliver) customized video or WEB content over the Internet worldwide to any credit card holder. As each credit card number gives information about the origin country, video content can be “adapted” in real time from the server to each political, legal or cultural situation.
HotStreams Platform Components

A WEB based Content Management interface allows content aggregators to access remotely to the content hosting server (Panel Overview)

Several servers build up the Siemens HotStreams content management and distribution platform. The architecture scales according to the JAVA 2 Enterprise Edition (J2EE) SUN specifications endorsed by many JAVA 2 Applications servers like WEB Sphere (IBM Corp.), iPlanet (Netscape-SUN alliance), SilverStream 3.7 (SilverStream Software Inc.) or WebLogic (BEA Systems Inc.).

IP Streaming Server
HotStreams integrates the RealNetworks Real8 server and Microsoft Media Server as IP streaming server. Any other IP streaming servers might be supported in the future. This server interfaces the J2EE HotStreams server used for generating personalized video and WEB content by using standard XML scripts. On option, the integration of other IP streaming platform vendors (e.g. Streaming21, nCUBE streaming engine) can be envisaged.

Content Generation Server
The Siemens HotStreams J2EE software constitutes the kernel element of the content delivery process. A database stores necessary meta-data and is accessed by this J2EE server to create dynamically a personalized version of the content that fulfills the customer’s interest and payment selection. The database manages payment information to determine the price for any given (personalized) video content. The content generation process generates dynamically XML files for each registered customer session on the J2EE Server by using Enterprise Java Beans™ (EJBs).

Open Database Interface
The JDBC interface to a database server (e.g. Oracle 8i) allows HotStreams to scale on any J2EE conform database supported by major Java Application Servers.

Accounting / Billing Server
Legacy systems for accounting and/or billing can be integrated with the HotStreams JAVA 2 software.

Advanced Remote Content Management Workstation
HotStreams includes a J2EE based management application that allows remote content and advertisement managers (content brokers) to access the media asset through standard WEB browsers like Netscape 4.7 or Microsoft Internet Explorer 5.0.
HotStreams J2EE servers

- Dynamic content distribution and management server software
- Deployment using Java Enterprise Java Beans (EJBs), Java Server Pages (JSPs), and Servlets
- Java 2 based management workstation for
  - Authoring, logging and indexing
  - Video /Audio content selection
  - Commercial ads management
  - Content pricing management
- Integration with Brokat Pay@Once transaction server to support billing services initiated from any mobile device.
- Interface to third-party payment gateways accredited by major credit cards organizations.
- Broadcasting over IP supported by the third-party software of RealNetworks and EMC2 MPEG-1 software for Real8 servers

Key Features
- Support of the de-facto-standard Internet video/audio streaming over IP platform over RTSP (e.g. RealNetworks Real8 audio/video streaming servers, Microsoft ASF)
- Set-Top-Box enabled for broadband based Internet TV services
- Individual on-demand video customization
- Direct access from the video commercials in the WEB site using hypervideo HotSpots.
- No video content duplication on the storage server; no re-encoding
- Full screen mode in MPEG-1 and MPEG-2 video standards
- Database independent using JDBC database interface
- Option for Brokat X*Pay® 2.1 SSL/SET payment server (optional payment server)
- Integration option for additional specific accounting system

Application and usage
- Business TV (rich-media: video + WEB content)
- Corporate training on-demand
- Advanced WEB/video Hosting services for ISPs
- Entertainment-on-demand including video games and commercials

Standard IT Platform
- SUN Solairs 8
- Microsoft Windows 2000 Server
- Netscape 4.7 or I E 5.0 browser
- RealNetworks Real8 Streaming Server on Solairs8, Linux or Windows 2000 platforms
- Windows Media Server (Windows 2000 Server)
- Oracle 8i Std. Edition Database
- SUN Java 2 Enterprise Edition (J2EE) including JSP, Servlets, XML, JDBC 2.0 and EJBs 1.1

Recommended Java 2 Application Server
- SilverStream 3.7.3 J2EE Application Server on Solairs or Win2000 Server

Hardware Platform
- Operating systems
  - Intel Pentium III, IV
  - Siemens Fujitsu server computers or Sun Solaris Sun Enterprise
- Option on Linux for the Streaming Video servers
- Networking Interfaces
  - 1000T or 100T Ethernet interfaces
  - xDSL, ADSL or cable modem
- Streaming over IP bandwidth
  - 56 Kbps to 400 Kbps (RealMedia RealPlayer 8 format, Windows Media ASF, Apple QuickTime)
  - 150 Kbps to 3.5 Mbps (MPEG-1)
  - 2.5 Mbps to 8 Mbps (MPEG-2)
- Application Server Computer
  - Minimum RAM: 521 MB
  - Recommended: 1GB MB

To get more information about the HotStreams application for xDSL based access networks, contact:

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