

Benefits of Circuit-Switched Video Streaming

Streaming services are a key part of any service offered by today's mobile operators. Services originally offered on 2.5G GPRS networks are being expanded to take advantage of the additional bandwidth available on 3G UMTS networks, however in addition there is a growing trend to also make use of the circuit-switched video telephony facilities to enable additional services and to reach new customers than those which can be delivered purely by packet-switched network interfaces.

With the advent of UMTS networks, an additional method for delivering video content has become available over those already deployed that are based on packet-switched streaming. These services will build on the information and content services already available, but offer key advantages over packet-switched delivery methods for many applications and customer types, including ease of navigation, quality of video and speed of access to content.

Circuit-Switched Services

Portal-based services can be easily deployed using a combination of a multimedia 3G-324M gateway, an XML application server and a RTSP streaming server. This builds on the well-established content and infrastructure already used for IP-streaming applications. The video gateway handles the conversion of media from the packet-based streaming server to the circuit-switched mobile terminals while the XML application server is used to control the customer navigation based on user inputs from the keypad during a video call.

In order to access streaming services customers dial numbers that may be programmed into the phone or USIM as with voicemail and IP portals. Different numbers can be assigned to different

types of content such as traffic cameras, news feeds and entertainment. Each of these access routes may be charged separately depending on the type of content, including the option to have services delivered by third parties.

A user's adoption of mobile content services depends on two key factors: the ease of access and simplicity of the usage model and the quality and reliability of the service. The use of 3G video telephony addresses both issues.

Access Speed

With fast session setup enhancements being introduced into mobile terminals and video gateways, the issue of fast access to content is addressed. Instead of the five seconds that it normally takes to access a web-based portal, content can be accessed in one second or less after call signaling is completed. In addition, since 3G-324M terminals are intended for use in real-time conversational services there is no buffering of media making the channel change behavior of the portal service very fast.

Quality

Services based on 3G-324M have a guaranteed quality with a low-latency connection; whereas packet-switched-based services have a variable bitrate connection to the network. Additionally, CS video protocols include sophisticated error detection and recovery mechanisms that are not available in IP-based media delivery protocols (RTSP/RTP) leading to higher quality and also lower latency.

VideoRefresh is a feature that allows multimedia gateways to provide improved quality for streaming services by delivering a clean video bitstream when the remote terminal indicates that it has experienced

network errors, meaning it can no longer correctly decode the received video. In some cases the packet-switched-based service may have a higher bandwidth available, however the protocol overheads are significantly higher than with H.223-based delivery requiring substantially higher bitrates to deliver the same video quality. The variable bitrate nature of the connection means that content must normally be buffered before it is delivered.

Content Control/DRM

One of the key issues with any content-based service is making sure that content only reaches authorized users, and that it cannot be distributed or copied illegally. For services based on 3G-324M these issues can be addressed directly by the delivery method. Digital rights management (DRM) is addressed by phones that are not able to record to file any received video, making it impossible for content to be redistributed.

Since calls are presented to the circuit-streaming service with both called and calling party numbers, as well as redirected numbers, there is the opportunity to provide customized content or services targeted to a specific user, and other specialized network services.

Potential Applications

Once in place this infrastructure can also be used for a range of other services. One obvious application is for the support of network-based video announcements indicating that an incorrect number was dialed.

Other applications may take advantage of the fact that each mobile terminal is uniquely addressable (by phone number), and also that by default mobile terminals are able to both send and receive when making video calls. ■

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