

Live event WebCasting

There was a time when broadcasting on to the Internet would have being an onerous task. Fortunately the technology have moved on to where utilising streaming media technology is a great way to take advantage of a global means of communication at a fraction of the cost of traditional broadcast mediums. Streaming media is the term used for Internet broadcasting where the receiver plays the received audio and video information as the information is received. You can broadcast live on to the Internet events such as sporting events, breaking news, corporate announcement, investors relations financial updates, fashion show, new product launches, etc. Alternatively you may want to record a live event and make it available for later distribution. To take advantage of the rapid changes in Internet broadcasting (webcasting or livecasting) you will require an understanding of some of the basics.

Understanding the Basics

From a technical perspective it is important to understanding what is involved in a live event be it live casting or recording for later casting. Typically a live event is broken down into three main components consisting of the following:

- Audio and Video capture
- Content encoding
- Distribution

Audio and Video Capture

The first step in any live event is being able to film and record the event, otherwise known as “capture”. Once the content is captured it needs to be relayed to a location where it will be encoded. Typically this process was accomplished by using outside broadcast equipment with a satellite link, microwave link, or leased line back to the control centre. The technology has now moved on such that the audio and video capture and encoding can all be done at the event. Because the event is being encoded on site the signal can also be sent via WLAN, DSL or in some cases through the telephone line to your ISP.

Content Encoding

After the signal has been captured it needs to be encoded for distribution on to the Internet. Encoding the content consists of taking the audio and video signal and transforming it into a streaming media format ready for distribution. If the event is being recorded for later transmission then the content needs to be saved in a media format such as MP4 file format. There are many formats that the media could be converted to such as Apple QuickTime, Microsoft Media or Real Media.

Fortunately the ISMA have adopted the MPEG4 standard for streaming on to the Internet and this may obsolete the need for encoding to multiple multimedia streaming formats and for the clients to support multiple multimedia players on their devices. For mobile access on 2.5G and 3G networks MPEG4 has become the video standard for video casting while a low bit rate audio encoder such as GSM-AMR may be the optimum choice for the audio content.

Distribution

Now that the content has being captured and encoded, it is ready for delivery, which also can be referred to as “distribution or streaming”. The traditional method was once the signal is encoded, it would be sent to servers that sit on a distribution network. These servers would transmit the content to viewers over the Internet. For most service providers, the distribution of your content on the Internet is the largest cost associated with a live event. The technology has sufficiently advanced to where the server technology is integrated with the capturing and encoding technology giving the master of ceremonies almost complete control over the event broadcast.

Bandwidth and number of viewers

In many situations there will be a requirement to trade available bandwidth, the quality of the multimedia stream and the maximum numbers of users who can access the event. The method of network access *multicast* or *unicast* will determine how many simultaneous views the webcast can support. In a multicast network all viewers similar to a TV broadcast will receive one live stream. Unfortunately not all networks are multicast enabled and unicast has to be supported where each viewer receives a separate stream. For example in a unicast network if a live stream requires 64Kbps and there are 100 viewers then the bandwidth required between the event and the ISP network is $64\text{Kbps} \times 100 = 6.4\text{Mbps}$.

Not all events will have access to wired bandwidth and few can afford to have 2Mbps direct access to the Internet. With the explosion in WLAN hotspots that supply up to 2Mbps local access to the Internet and with the emergence of WLAN IEEE802.11g providing 54Mbps and distances of up to 20km innovative solutions can be put in place to enable web event casting of local events at moderate expense.

How many are viewing the event?

You would like to have some feedback on the live cast so it is necessary to know how many people are logging in to view the event. By integrating the server technology with the capture and encoding technology it is possible to get instant feedback as to the number of users viewing the event. Note that this is only possible when the transmission is unicast.

Revenue generating potential

As the event is a local event that is accessible from the Internet and from next generation mobile devices it is an ideal opportunity for local and international traded businesses to avail of the opportunity to advertise on the Internet to a targeted audience. For advertising revenue the live stream can be surrounded with adverts indicative of the event being live casted. For example if the event is a football match with home and way fixtures then hotels and travel agencies may avail of advertising opportunities.

Conclusion

The *i-Serve* product developed by HomeNet Communications Ltd is an embedded, Internet Protocol (IP) based, distributed media streaming server (DMSS) that combines content generation, content distribution and content access features in one unit which measures 300 X 150 X 60mm.

i-Serve enables the early low cost delivery of media streaming without the expensive network upgrades required when attempting to deliver archived material and video on demand services. *i-Serve* is designed to be located where the source of the content originates such as local sporting events or in enterprise LANs or traffic camera networks,

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