sandvine
Intelligent Broadband Networks

White paper

Analysis of traffic demographics in Broadband networks

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Background

Sandvine conducted a survey of broadband traffic trends across several leading North America service providers during March 2008. This study spanned both cable and DSL networks and assessed usage trends for broadband consumers. A period of one month was chosen to ensure that statistics accurately represented North America consumer Internet usage without being unduly affected by temporary application usage or network conditions. All data was specifically measured at the access network so that all subscriber traffic could be categorized regardless whether the traffic was local to the service provider network or exited to the broader Internet via transit and peering links.

This study analyzes service provider traffic by looking at aggregate traffic trends, then separating upstream and downstream traffic. Each is its own section followed by a summary.

Aggregate Traffic Trends

When combining upstream and downstream consumption rates for a broad indicator of network activity, P2P now accounts for 42% of the traffic, while Web Browsing and Video Streaming (video playback AND video streaming) represent 26% and 15% of network traffic respectively.

Tunneling protocols for VPN applications account for 7% of traffic while Newsgroup file downloads (NNTP) are 4%. We observed that the NNTP traffic was generated by less than 0.1% of users implying that a small number of users are consuming a very disproportionate amount of network resources with respect to this protocol.
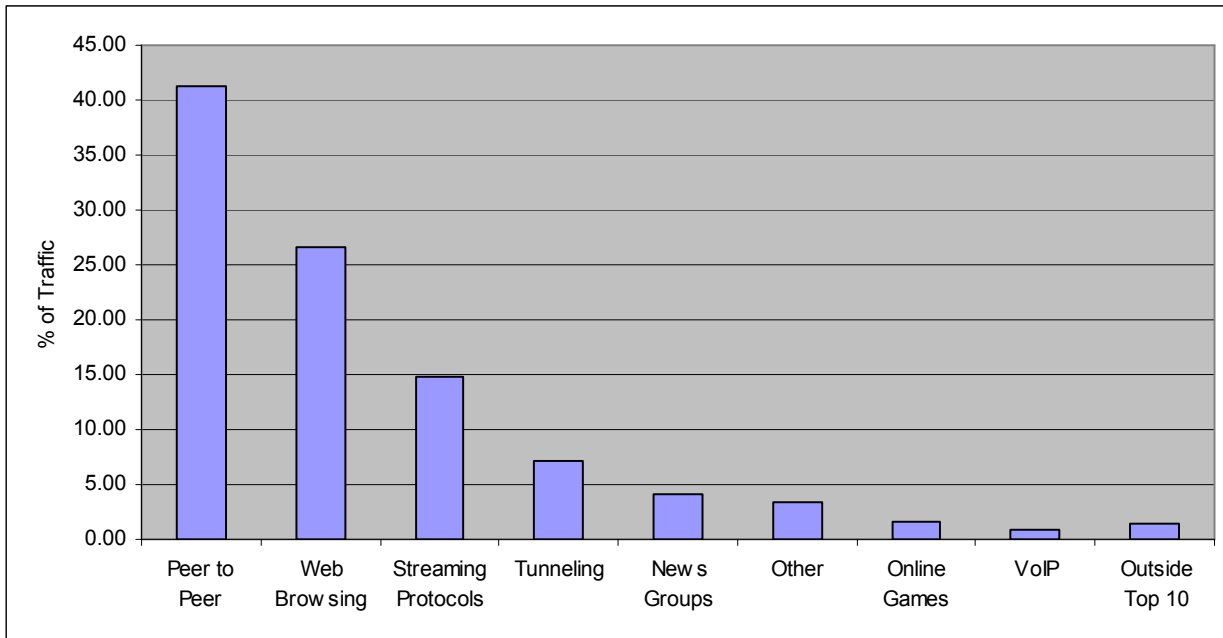
Figure 1: **Aggregate Bandwidth by Categories**

These findings are broadly consistent with industry analyst forecasts, yet they mask the significant impact of bandwidth intensive applications on the network and ultimately upon the Quality of Experience across the subscriber base. This impact is more clearly shown by examining the upstream and downstream separately to highlight how bandwidth usage varies by direction for each application.

Upstream Traffic Trends

The primary use of upstream traffic is P2P at 72%; the single largest category of applications by a very wide margin. Gnutella and BitTorrent account for approximately 45% of upstream traffic. The remaining upstream traffic is a mix of other minor peer to peer protocols. This includes UDP and encrypted versions. Next to Peer to peer the largest category is Tunneling at 9% followed by Upstream Web applications at 8% for both HTTP and SSL.

Peer-To-Peer continues to have a very significant impact on the network performance and quality of experience for subscribers on the shared infrastructure.
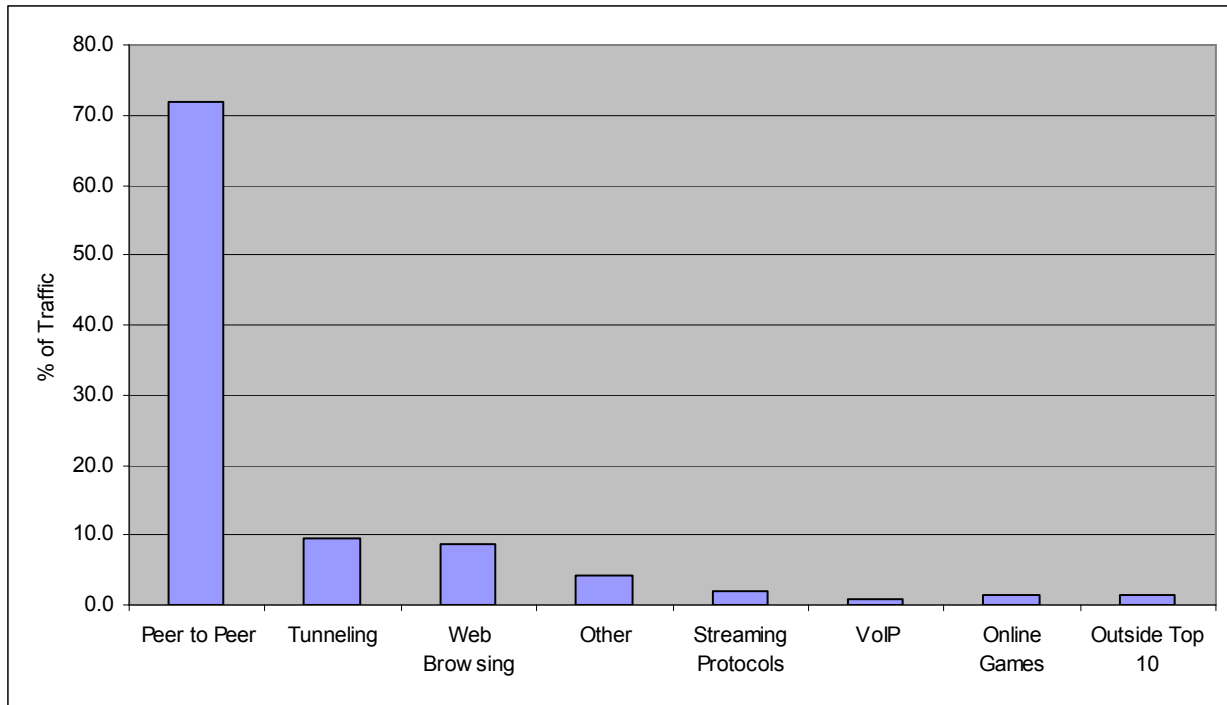
Figure 2: **Upstream Bandwidth by Protocol**

Downstream Traffic Trends

Like upstream, the primary use of downstream traffic is peer to peer. Peer to peer accounts for 35% of the network traffic. Web browsing (not streaming) is very close to peer to peer accounting for 31% of downstream use. Streaming protocols (you Tube, Flash, Joost etc.) are as expected the next largest category of traffic use at 17%. The separation of streaming protocols from standard web browsing is important. Often streaming protocols are delivered over HTTP and as a result are often inaccurately be categorized as "HTTP" by DPI platforms.
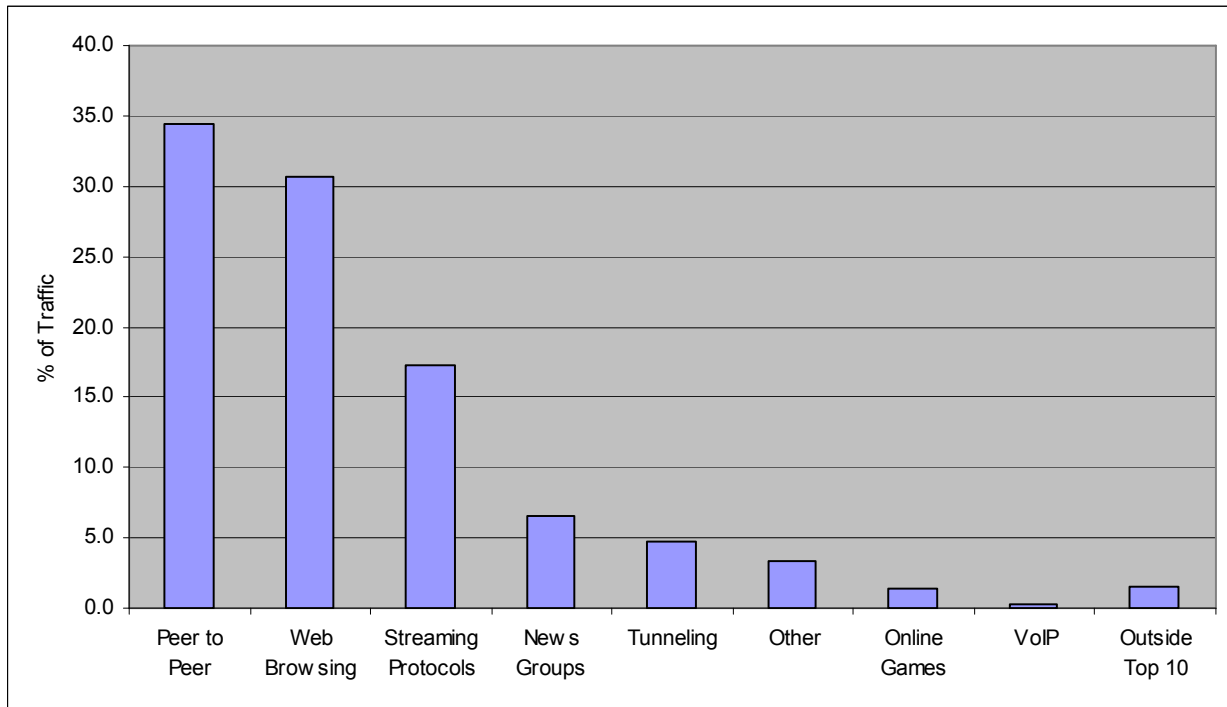
Figure 3: **Downstream Bandwidth by Protocol**

Summary

North America broadband usage remains dominated by Peer-To-Peer applications, particularly in the upstream where it exceeds 72% traffic. Traffic in the downstream is more balanced with Peer-To-Peer being followed closely by web browsing and video (streaming & playback) applications.