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Summary of views on Broadband Technology Capabilities Today and in the Future

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CableLabs® is a non-profit, research and development organization funded by the cable industry. We were founded under the 1984 National Cooperative Research and Production Act and are responsible for the development of many of the technologies adopted and deployed by the cable industry. Several of the key technologies developed by CableLabs include: cable modem (DOCSIS), voice over IP (PacketCable) and digital television (tru2way). Specifications for these technologies have become both national standards (through SCTE) and international standards (through ITU-T).

During the 1990s many cable operators invested in upgrading their cable networks to increase their bandwidth, reliability and to support two-way communications. CableLabs developed the original cable modem specifications (DOCSIS 1.0) in 1997. In the intervening period there have three subsequent revisions to the DOCSIS specifications, adding QoS, security, and increased bandwidth all backward compatible with the original 1.0 version. The current generation of specifications, DOCSIS 3.0, enables cable operators to offer up to 152 Mbps downstream and 108 Mbps upstream. However, this is just the starting point for DOCSIS 3.0, there is plenty of room to grow. For example, Virgin Media in the UK has just announced a 1.5 Gbps downstream 150 Mbps Upstream service using DOCSIS technology.

DOCSIS was originally designed to provide shared access for a large group of subscribers in a single service group. At the same time DOCSIS bandwidth has been increasing, cable operators have been investing not only in DOCSIS technology, but also reducing service group size through node splitting and replicating bandwidth. These investments, combined, have enabled cable operators to continue to offer increasing broadband capabilities.

When looking at expanding cable systems to provide broadband Internet access at the speeds identified in the National Broadband Plan (4Mbps DS/1Mbps US) it does not require that DOCSIS 3.0 technology be used (any of the DOCSIS versions can provide this level of service). However, it is necessary to consider what kinds of investments are required to offer this level of service. The kinds of investments required are also very dependent on the specific situation under consideration. For example,

- In all cases, an investment in cable modems per subscribers that do not currently have broadband Internet services
- New cable plant build is required if the service area is currently not served by cable
- Plant upgrades may be required if the cable plant currently is not two-way or doesn't provide sufficient bandwidth
- Headend equipement investments, e.g. CMTS (either new purchase, replacement, or upgrades) will be required depending on the level of service required and service group size
- Investment in the servers and routers required to provide the Internet access services (provisioning servers, TOD, DHCP, SNMP, DNS, email, web hosting, etc.)
- Transit circuits necessary to provide broadband provider middle mile transport

The cable industry continues to invest in broadband technology to meet customer demand and CableLabs continues to lead in the development of broadband technology for cable.