

# AMT HFC (Hybrid Fiber Coax) Services

## Upgrading System Bandwidth

Identifying the need to upgrade system bandwidth to 750MHz, 860 MHz, or 1Gig is the first step to upgrading the system.

The increasing demands of end-user customer data consumption drives the need to upgrade the plant to deliver higher speed and data throughput packages as well as deliver video OTT in different packaging than legacy video via coax.

Cable operators are evaluating alternatives to support the ever-growing demand for bandwidth or spectrum. With a flexible and scalable HFC architecture, finding the RF spectrum may be accomplished in many ways, including Bandwidth Reclamation and Increased Bandwidth Efficiencies, HFC Segmentation, Bandwidth Expansion, Node Splits and HFC Spectrum Overlay. None of these options need to be done system-wide; they may be targeted capacity upgrades implemented (for lower than average capital outlay) at the node locations that need the additional bandwidth.

Each of these areas can be reviewed independently depending upon the timeline and demands on the network. Ensuring that you have a partner that understands each of these areas is key when making the step to move forward for more bandwidth. AMT can help you do the Pros and Cons for your network upgrade and help you evaluate your cost and your project timeline and then supply competent resources to help you meet both goals.

### ■ Bandwidth Reclamation

- ✓ Migration to higher order modulation (Forward & Reverse)
- ✓ Partial Analog Reclamation
- ✓ Switched Digital Video (Multicast)
- ✓ All Digital (Full Analog Reclamation)
- ✓ Compression Technology Adoption (MPEG4)

### ■ Segmentation

Service Group Segmentation

- ✓ Nodes have often been combined at the Headend with a forward laser serving a group of nodes, therefore creating a "logical node".
- ✓ Service group segmentation reduces the number of nodes in a service group, and thus decreases the number of customers sharing bandwidth.

Node Segmentation or Logical Node Split

- ✓ Reduces the size of the serving area of the physical node by adding optical receivers and optical transmitters at the node and HE/Hub.
- ✓ Segmentation may add downstream or upstream capacity independently.
- ✓ Provides targeted capacity upgrades by reducing the physical service group size at the node level.

### ■ Bandwidth Expansion

- ✓ 750 MHz System
- ✓ 860 MHz System
- ✓ 1GHz System
- ✓ Mid-Split Architecture 5-86 Mhz

### ■ Node Splits

- ✓ Physically add nodes to separate/reduce the number of customers being served from a single physical node.
- ✓ Node splits are similar to service group and node segmentation in that fewer customers share the RF Spectrum, thus increasing overall bandwidth available for the customers.

### ■ Spectrum Overlay

Spectrum Overlay of the existing HFC Network:

- ✓ 1-3 GHz nodes, amplifiers and passives.
- ✓ Spectrum overlay Downstream 1250 – 1950 MHz (about 4Gbps of new bandwidth).
- ✓ Spectrum overlay Upstream 2250 – 2750 MHz (about 400Mbps of new bandwidth).



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