

Technical Capability Statement:

Hartington Telecommunications Co., Inc. (Hartelco) has been offering broadband services since 1995. Hartelco started off with Dial Up Internet Access in 1995, DSL Internet Access in 1999, Fiber to the node-Rural in 2006, Fiber to the home in the town of Hartington, NE in 2009, and 2013 Fiber to the home in the Rural areas of their Hartington ILEC exchange. Hartelco offers its customers voice, video and broadband internet services (Triple Play). Hartelco currently offers broadband services to approximately 901 subscribers. Hartelco currently has four (4) Central office equipment (COE) and Outside Plant (OSP) employees and Hartelco has three (3) computer technician. Hartelco has been Gig-Capable Certified with NTCA since June of 2017. Hartelco is currently offering 100/100 Mbps (see web page). Hartelco currently uses their own staff to operate and maintain their current FTTH system and will use their staff to operate and maintain the FTTH facilities deployed as part of the North Star Project.

Hartelco currently uses 10GE Active Ethernet (IEEE 802.3ae standard) and 1GE Active Ethernet (802.3ah standard) and NG-PON, using GPON (ITU G.984) and XGS-PON (ITU-T G.9807.1 standard) fiber-to-the-premises (FTTP) for their last-mile technology to supply services to their customers. As a single exchange ILEC, Hartelco has no middle-mile/backhaul network. Interconnections are handled separately for voice and data. For voice, Hartelco utilizes a Ribbon C15 Class 5 switch connected to the Public Switched Telephone Network (PSTN) via CenturyLink toll center in Norfolk, Nebraska using an Optical Network connection and with Inteliquent via redundant SIP trunks. For Broadband, Hartelco has two optical ethernet connections utilizing Open Shortest Path First (OSPF) and Border Gateway Protocol (BGP) to uplink to a Tier 2 broadband provider. The total capacity of these optical connections is 2.3 Gbps.

For the middle mile network, Hartelco utilizes the DZS NMS (DZS CONNECT-ACS-1K) to monitor individual customer usage and if peak usage frequently exceeds 75% on a 15-minute average, Hartelco will be capable of upgrading their last mile service to 10Gbps Active Ethernet should the customer choose to upgrade their service beyond 1Gbps.

For the middle mile network, Hartelco utilizes the DZS NMS (DZS CONNECT-ACS-1K) to monitor every optical ethernet link and if peak average utilization over a 5-minute average exceeds 75%, the system being proposed is capable of adding a second 10 Gbps of bandwidth via IEEE 802.1ax (formerly IEEE 802.3ad) Link Aggregation Control Protocol (LACP) to effectively double the bandwidth of that link.

For the internet uplink, Hartelco utilizes the OPTK NOC which monitors the broadband uplinks 24x7x365. Here again, if peak usage exceeds 75% peak average utilization over a 5-minute average, Hartelco has the capability to increase bandwidth on the existing optical uplinks from the current 2.3Gbps to 20Gbps. In addition, MRTG graphs will be

utilized to monitor internet access and middle mile usage. For voice services, Hartelco proposes to use the Ribbon Manager NMS system QoS Enhancement to monitor MOS and to use RTCP to allow monitoring of a specific call-in progress and to use the CenturyLink NOC which monitors voice trunks 24x7x365.