Requirements

Name	Quantity	Parameter requirements
Hughes HX Hub	1 used	**Outgoing channel:** 1) Standard: DVB-S2/ACM (adaptive coding modulation); 2) Frequency bands: C, extended C, X, Ku, extended Ku, Ka; 3) Modulation: QPSK, 8PSK, 16APSK; 4) Symbol rate: 1 to 45 Msps; 5) Coding method: LDPC with BCH outer code, 1/2, 3/5, 2/3, 3/4, 5/6, 8/9, 9/10; 6) Transmission bit rate: max. 121 Mbps. **Return channel:** 1) Standard: IPoS; 2) Modulation: 0QPSK; 3) Symbol rate: 256,512,1024,2048,4096,6144 ksps; 4) Coding: Turbo coding (1/2, 2/3, 4/5), LDPC coding rate (1/2, 2/3, 4/5, 9/10), channel coding adaptive; 5) Transmission bit rate: up to 9.83 Mbps; 6) TDMA spreading factors: x 1,2,4,8 (256 ksps), x 1,2,4 (512 ksps), x 1,2 (1024 ksps and 2048 ksps). **Expansion flexibility:** 1) 29 expansion slots for more devices; 2) basic configuration supports 18 TDMA channels; 3) basic configuration supports 3000 small stations; 4) supports multi-star and multi-retransmitter expansion. **Security:** 1) Integrated conditional access control (CAC); 2) DES encryption for outbound channels. Optional AES-256-bit encryption is available. **Network Management:** Hughes HX ExpertNMS **WX small station support:** a) HX50L, HX90, HX200, HX260, HX280; b) Mesh gateway support (MESH GATEWAY).

Hughes HX200/HX260	2 of used HX200 and 2 of used HX260	**Physical interfaces:** two 10/100 BaseT RJ-45 Ethernet ports (independent subnet); one serial port (RS-422 or RS-232) for antenna control; one BNC port for external 10MHz reference clock input. **WX parameters:** **frequency:** C, extended C, Ku and Ka bands supported; DVB-S2 ACM outbound channel; DVB-S2 adaptive coding and modulation, or DVB-S; **DVB-S2 ACM rate:** 1-45Msps (0.5Msps step); DVB-S2 ACM modulation: QPSK, 8PSK, 16APSK (adaptive modulation). **DVB-S2 ACM coding:** BCH with LDPC3/5,1/2,2/3,3/4,5/6,8/9,9/10 (adaptive coding); **FDMA/TDMA (IPoS) channel rate:** 256~6144Ksps (256Ksps~9.8Msps); FDMA/TDMA (IPoS) channel modulation. OQPSK; **FDMA/TDMA(IPoS) channel coding rate:** Turbo coding (1/2, 2/3, 4/5) and LDPC (1/2, 2/3, 4/5, 9/10), channel coding adaptive; BER (receive): 10-10 or lower; **BER (transmit):** 10-7 or lower; **interface with ODU:** industry standard BUC (L-band) or Hughes proprietary BUC. **Performance:** Packets per second: 5000; UDP data throughput: 45Mb/s; TCP data throughput: 15Mb/s; Multicast throughput: 60 Mb/s. **Operating temperature:** 0℃~50℃.