DAH

DOCSIS Access Hub

The DAH will extend your IP network over the existing coaxial cabling inside apartment buildings. It supports DOCSIS 2.0 and 3.0 cable modems and up to 200 subscribers. Typical applications are in FTTB/FTTC networks and at the hospitality market e.g. hotels. The DAH doesn't need any special equipment premises. It can be installed in street cabinets or basements. Its in-build amplifier and return diplexers make it easy to connect to the existing house network.

Taking "last mile" access in a new direction

The DAH offers an evolution path to All-IP for cable operators

- An interesting access network option for deep fibre / FTTLA investments
- Delivers reliable and low-cost high-speed broadband access to meet the consumer needs.
- Using the existing coax infrastructure offers faster deployment times, at lower capital expenditure.
- Helps with broadband access requirements in areas where fibre optic networks do not reach the customer premises.
- Future proof investments in Ethernet optical transmission

Meet the DAH (DOCSIS Access Hub) – a new innovative approach that provides a cost-efficient solution to bring high-speed broadband connections to customers by using existing coaxial cabling, and for under one-fifth of the price compared to FttH.

Evolution of services and bandwidth

The digital media environment has changed quickly. New interactive services drive the need for very high bandwidth and fibre-level network connections. At least 30 Mbps guaranteed downstream speeds are required to access popular video streaming services, and the lack of sufficient bandwidth is becoming a significant problem in many areas. Utilising new optical fibres would provide sufficient speeds, but bringing fibre connections to individual homes is far too expensive to be economically viable to operators. High costs of building FTTH networks create incentives to use and upgrade the existing networks.

Teleste's DAH gives operators a cost-effective choice to provide their customers for popular video streaming services, fast download rates and access to increasingly higher video definition formats. The DAH enables bringing fibre connections deeper into networks and utilizing the existing coaxial cabling for connecting the individual homes inside apartment buildings. This reduces the costs of building fibre level broadband connections to one fifth compared to using fibre all the way. With the DAH, operators can also guarantee that their customers can access to broadband speeds comparable to the FTTH style networks.

Possibilities of HFC architecture

Because all bandwidth within the HFC architecture is shared among connected customers, it is possible that poor network performance might affect an increasing amount of subscribers. In order to ensure the quality of service to all subscribers, operators need to continuously improve performance of the existing coaxial cabling. Some of the used techniques include node segmentation and deep fibre architectures.

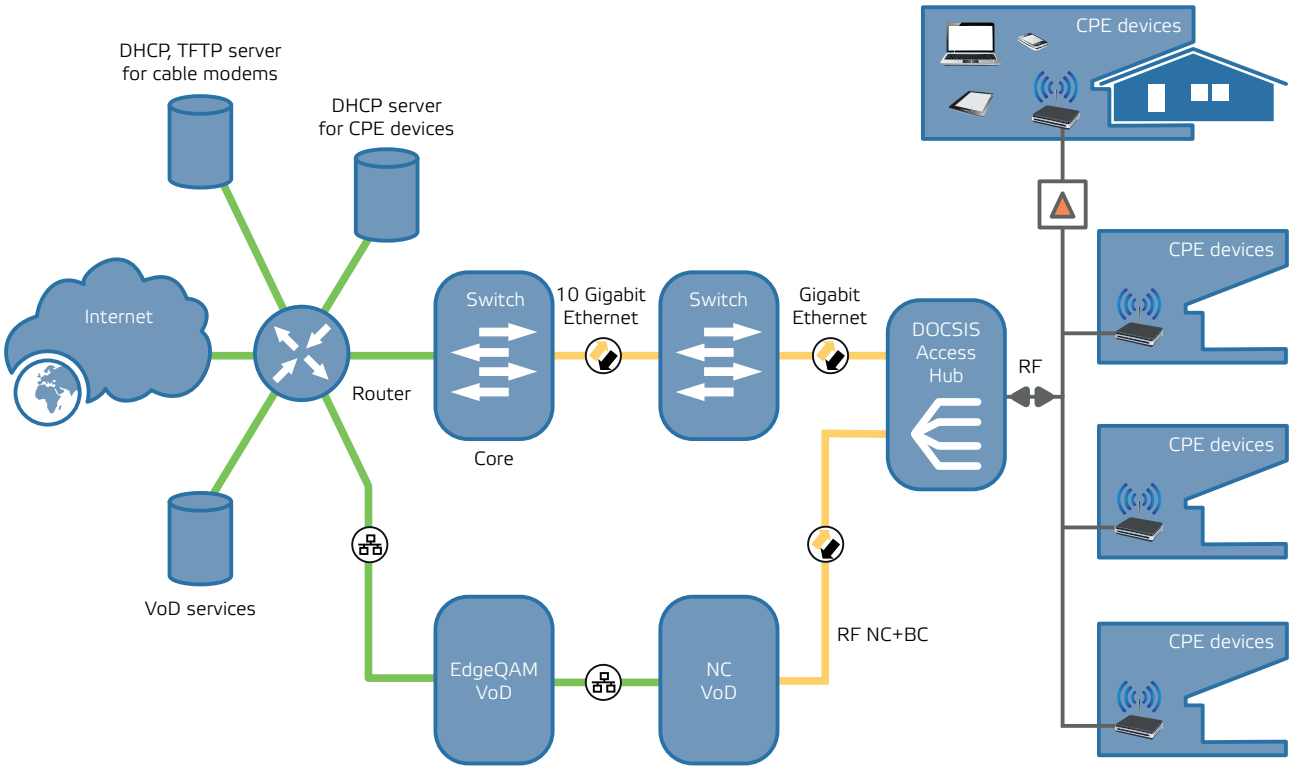
The DAH is based on DOCSIS technologies, but it does not rest on the traditional, centralised CMTS architecture. Designed for distributed network architecture, the DAH offers a cost-effective, agile way to upgrade network capacity for smaller network segments with up to 200 customer modems. The DAH can be placed either in street cabinets or inside apartment buildings, which enables bringing the CMTS functionality closer to the customers and makes it possible for cable service providers to maximize bandwidth allocations to cable modems while minimizing system noise in HFC network.

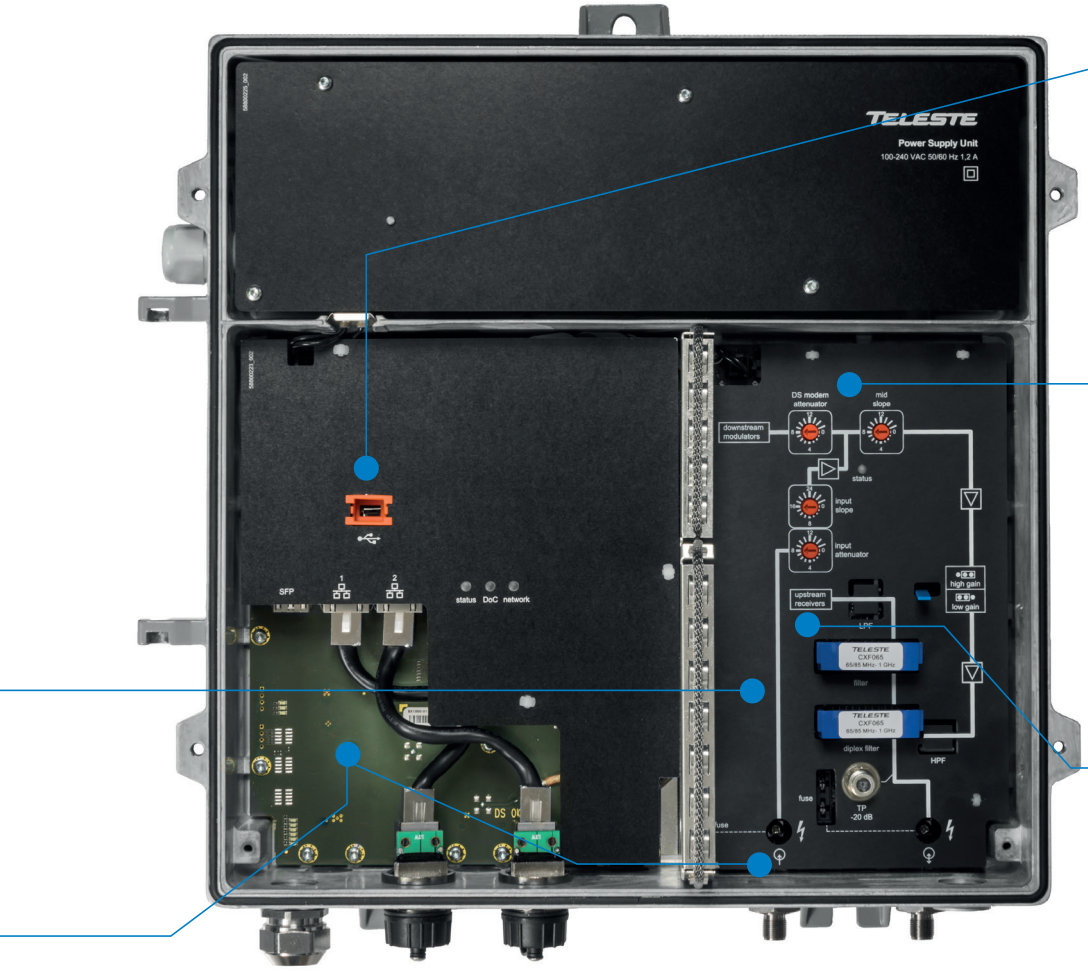
Integrated RF amplifier

- High gain / low gain selection
- Flat / sloped output selection
- Level adjustments with local switches and with software control

Interfaces

- Optical interface SFP slot
- Ethernet 2xGbE copper
- Coax PG11





CLI interface

- Telnet and SSH for remote configuration
- USB port for local configuration

Downstream

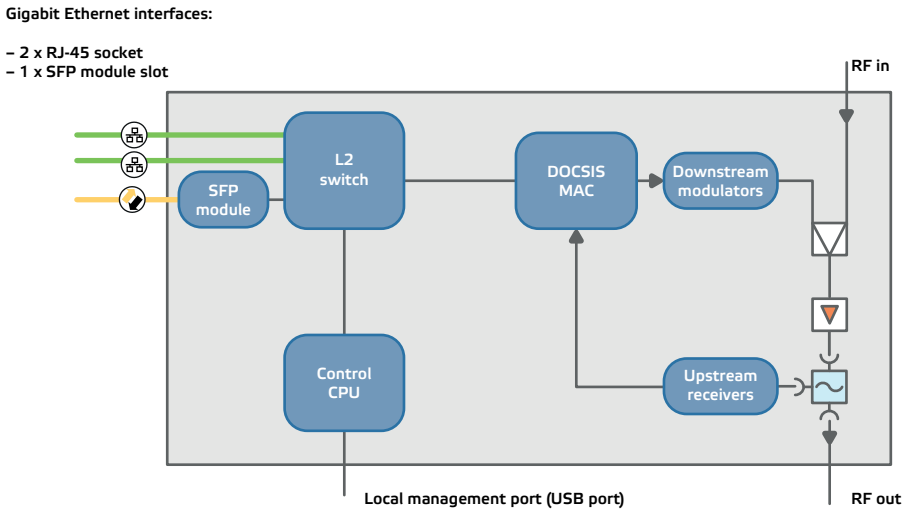
- 112...1002 MHz
- 16 bonded DS channels
- Up to 1024 QAM
- Up to 960 Mbps

Upstream

- 5...65 MHz
- 4 bonded US channels
- Up to 256 QAM
- Up to 160 Mbps

Features

- Mature standard, developed for access networks
- Wide availability of low-cost subscriber modems
- Works in existing two-way coax networks, up to 1 GHz downstream
- Enables a smooth evolution from central-office CMTS to distributed CMTS architecture
- Fits to FTTC/FTTB/FTTH roadmaps



Technical specifications

RF CHARACTERISTICS

Downstream signal path (RF into RF out)			
Frequency range	54 / 85...1006 MHz	Flatness	± 0.75 dB
Return loss	18 dB	Test point	-20 dB
Gain	42 dB	Noise figure	7 dB
Input attenuator control range	0…25 dB	CTB 42 channels	117.0 dBµV
Input slope control range	0…20 dB	CSO 42 channels	117.0 dBµV
Mid stage slope	0…15 dB	XMOD 42 channels	114.5 dBµV
Gain selection	42 / 34 dB	$U_{max\ (112\ QAM\ channels)}$	113.0 dBµV

RF modem downstream		**RF modem upstream**	
Number of channels	16	Number of channels	4
Output frequency	112…1002 MHz	Input frequency	5...42 / 65 MHz
Output level	95…113 dBµV per channel	Nominal input level	57…87 dBµV @ 5.12 Mbaud
Modulation	QAM64, QAM256, QAM1024	Type	ATDMA, SCDMA
Channel width	6 MHz / 8 MHz	Modulation	QPSK, QAM16, QAM64, QAM256
Flatness	±1.5 dB	Symbol rate	1.28, 2.56, 5.12 Mbaud / Channel
Equalized MER	43 dB	Channel width	1.6, 3.2, 6.4 MHz
Standard	Compatible with DOCSIS and euroDOCSIS 2.0 / 3.0 Cable Modems	Standard	Compatible with DOCSIS and euroDOCSIS 2.0 / 3.0 Cable Modems

GENERAL CHARACTERISTICS

Power consumption	60 W	Operating temperature	-10…+55 °C
Supply voltage	110…240 VAC	EMC compatibility	EN50083-2, EN61000-6-1, EN61000-6-3
Dimensions (h x w x d)	360 mm x 350 mm x 150 mm		
Weight	10 kg	ESD	4 kV
Class of enclosure	IP54	Surge	6 kV (EN 60728-3)

RF connection		**Local management interface (USB port)**	
Connector, RF in	PG11	Connector	USB 2.0
Connector, RF out	PG11		

Gigabit ethernet interfaces	
Number of ports	3
Connectors	2 x RJ-45 socket, 1 x SFP module slot
Standard	1000BASE-T, 1000BASE-X