

Network Overview

Broadband Internet and Cable TV access

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TelstraClear

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Overview

- Services
- Hybrid Fibre-Coax (HFC) Network Description
- High-Speed Data Platform Description
- Headend and Network Components



Hybrid Fibre-Coax (HFC) Network Services

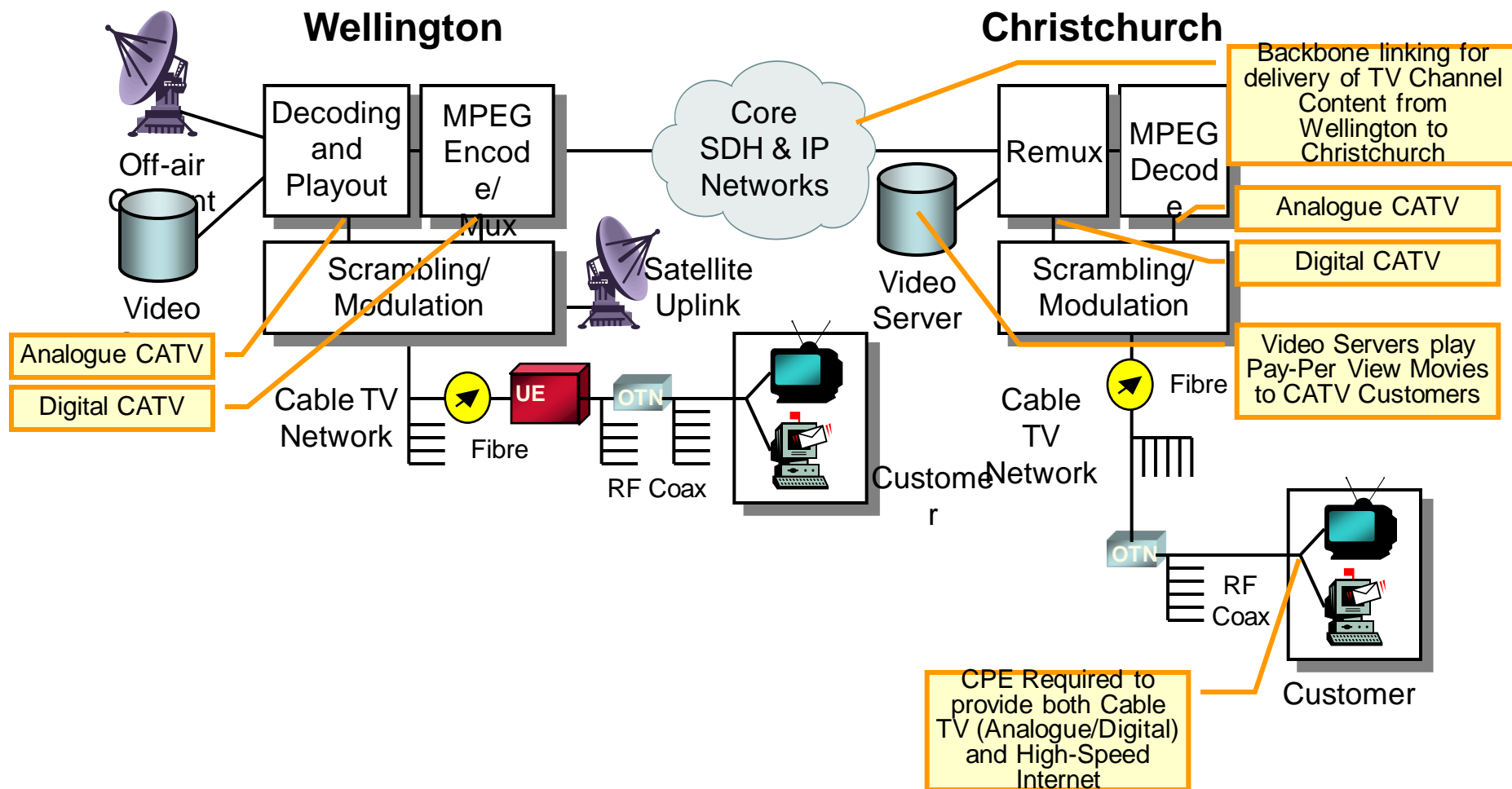
Services delivered via this network are:

- **Broadcast TV Services**
 - Digital and Analogue Cable TV Service Platforms
 - Pay-Per View Content Management and Scheduling
- **Broadband Internet Services**
 - On-net Cable Modem Internet Access
 - Digital Cable TV return path traffic is also delivered via a dedicated Cable Modem connection.

Cable Television (CATV) Network Description

- High-capacity access infrastructure delivered to customers in Wellington and Christchurch over Hybrid Fibre-Coaxial (HFC) Cable Network Technology
- Provides Analogue and Digital Cable Television (CATV) Services and High-Speed Internet via Cable Modem
- Pay-Per-View Services are maintained and managed on nCUBE Video Server Technology
 - TelstraClear customers via Saturn Cable TV – Analogue and Digital
 - Delivered to Sky TV customers via the Satellite Uplink Network

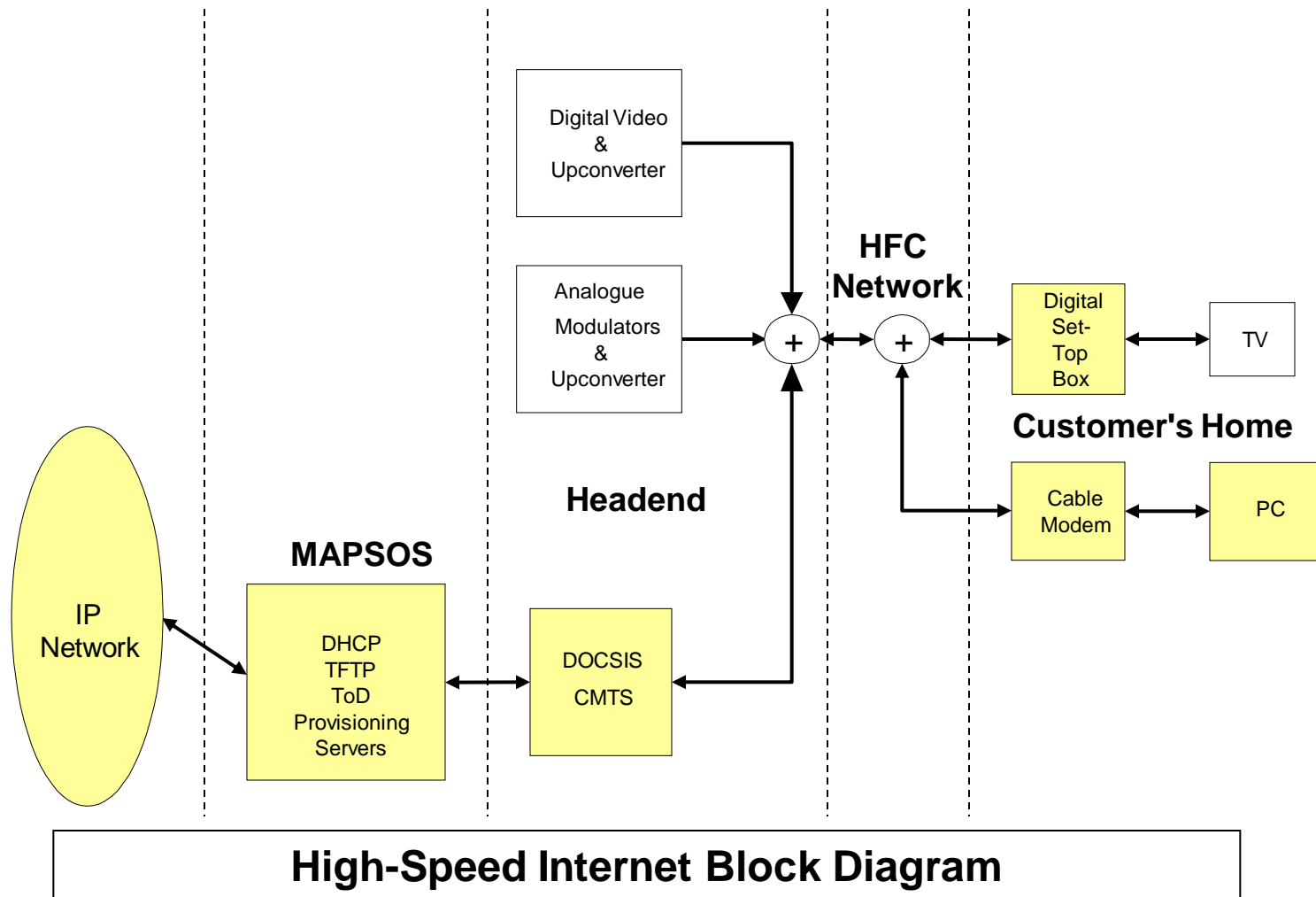
CATV System Overview



High-Speed Internet

- Delivered via HFC Cable Modem Technology –:
 - DOCSIS
 - Data Over Cable System Interface Spec
 - Mature, standardised and widely available resulting in low-cost CPE and Headend system equipment

High-Speed Cable Internet



The 'Headend'

- The Headend is the Cable TV system's 'brain'
 - The point of origination for television programming and data traffic delivered to and from cable modems
 - Each source requires special processing before it can become part of the combined broadband CATV signal
 - There are a variety of devices at the Headend to process, combine and manage these signals for cable transmission
- Separate Headends exist in Wellington and Christchurch
 - Kapiti is served via the Wellington Headend for all TV and High-Speed Internet services
 - Most TV Channels are transported in Digital (MPEG) format from Wellington to Christchurch - High-Speed Internet, Pay Per View and some local TV channels are added locally

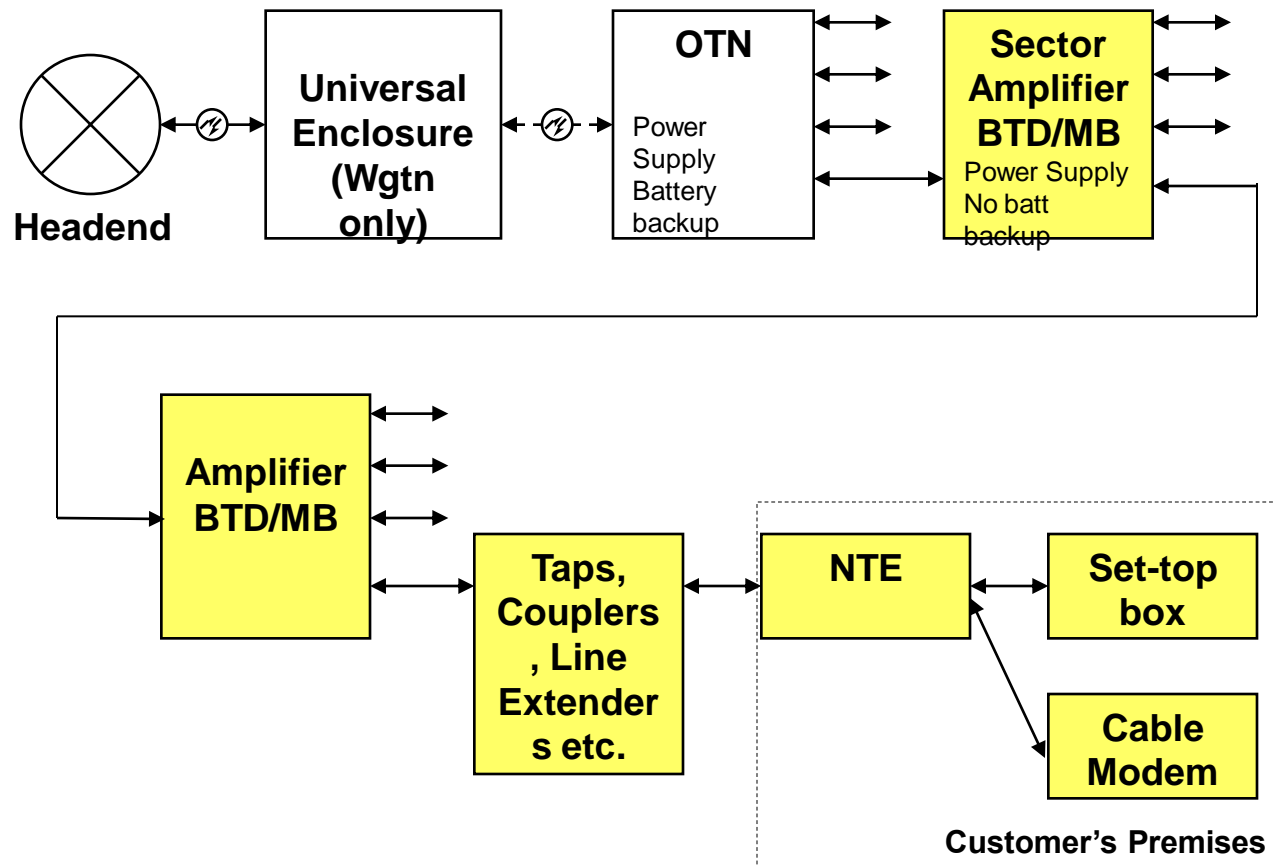
Signal Combining

- Performed at the Wellington and Christchurch Headends before delivery onto HFC networks
- Achieved through merging groups of individual services into a composite broadband RF signal for transmission.
 - High-Speed Internet
 - Digital TV
 - Analogue TV
- This signal is then converted into a light source and transmitted via a fibre optic cable to Optical Termination Nodes (OTN) in the HFC Networks

Hybrid Fibre Coax (HFC) Access Network

- HFC CATV network consists of a forward path of 77 to 750MHz and a Return path of 5 to 55MHz.
- Wellington Network started 1996, Christchurch started in 2000
- Downstream information is carried via forward path fibre and split passively to Optical Termination Nodes (OTN)

HFC Network Components



Return Path

- The Return Path comprises of an optical link between the OTN and the Headend.
 - In Wellington returns from each OTN are frequency stacked at each Universal Enclosure (UE) and sent back to the Headend to be demodulated and split back into individual Node paths
 - In Christchurch there is a dedicated upstream fibre from each OTN
- Used for Two-way communication
 - Data 'uploading' from High-Speed Internet Customers
 - Purchasing of Pay-per View Movies for Cable TV. Digital TV uses the Cable Modem Network for Movie Purchasing and downloading programme guide info