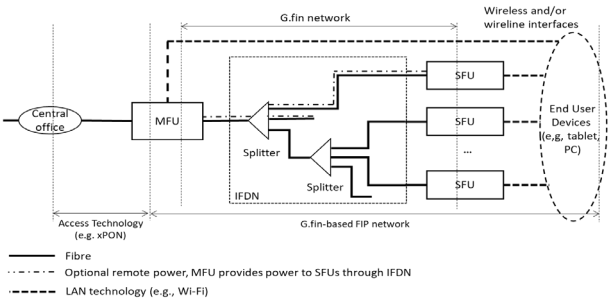
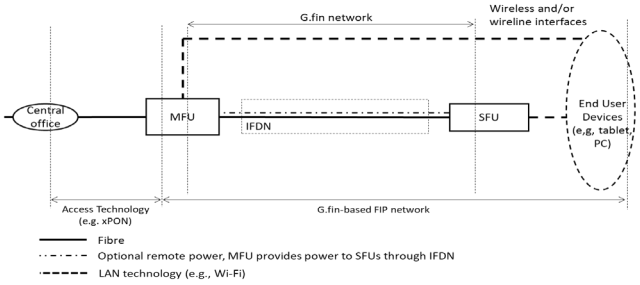
G.9940 In-premises fibre-based transceiver: Architecture

G.fin-based network topology

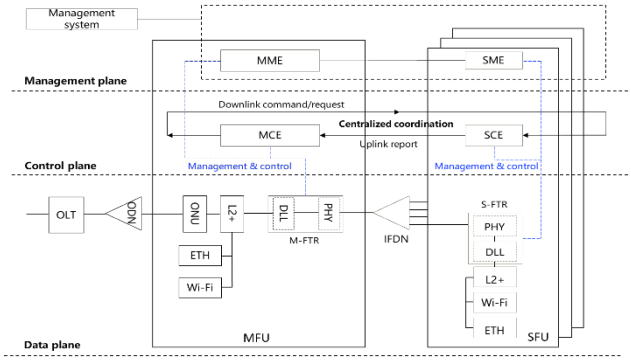
- ITU-T G.9940 specifies the system architecture and general requirements of high-speed fibre-based in-premises networking systems (G.fin)
- A system using G.fin includes a main FTTR fibre unit (MFU), an indoor P2MP fibre distribution network (IFDN), and sub FTTR fibre units (SFUs)
- A G.fin-based network can be used in a both home network or a small and & medium enterprise

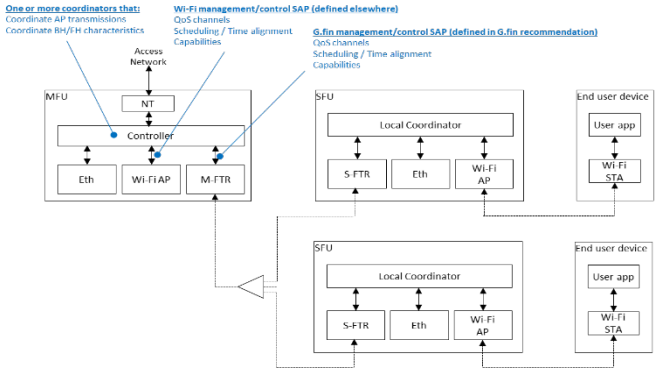


- IFDN may support remote powering of SFUs, simultaneously distributing optical signals and electrical power to SFU(s) using Optical and Electrical Hybrid Cables (OEHCs) and Optical and Electrical Hybrid Splitter (OEHSs).
- If only one SFU needs to be connected, the IFDN does not include any splitters, creating a direct link between the MFU and SFU.



G.fin system framework



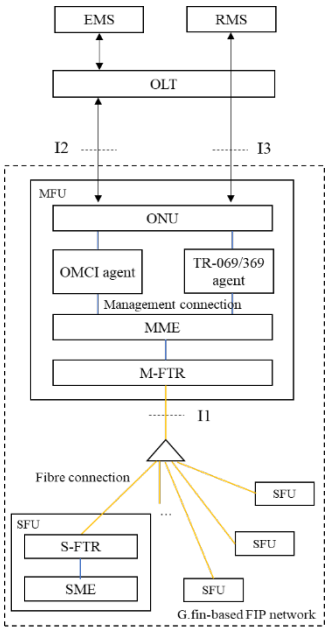


- The functional architecture of a G.fin network consists of a management plane, a control plane, and a data plane.
- The MFU conducts centralized management via the MFU Management Entity (MME) and control via the MFU Controller Entity (MCE) on the entire G.fin network.

Optical link type	Link budget	Splitting ratio	Wavelength set
			2.5/2.5 Gbit/s
Ra	0-18 dB (home)	1:8	Up: 1310±10nm Down: 1490±10nm
Rb	13-28 dB (SME)	1:32	Up: 1310±10 nm Down: 1490±10nm

- **Data plane**:
- The data plane provides connectivity for exchanging service data, management data, and control data
- G.fin defines a data exchange rate of Symmetric 2.5 Gbps
- The G.fin system defines Optical link types (Ra/Rb) adapted to home and SME scenarios

- **Control plane** (centralized coordination network architecture):
- A controller located in the MFU allows centralized status collection, and sending of centralized network control commands, through the latency-controlled fibre transmission channel provided by G.fin technology



- **Management plane:**
- A network based on G.fin may be in parallel managed using OMCI (e.g. G.988) or any IP-based protocol (e.g. TR-069/TR-369)
- Management functions includes system visualization, system configuration, collection of stem performance metrics, fault management, security management, etc.