Modern Network Architectures

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Economies of Scope and Sharing of Common Costs

Modern networks (efficient networks) are designed to make high use of shared assets between voice and data services

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Three Major Trends in Network Architecture

- Use of traffic concentration in the local network initially driven by voice
- That architecture proved suitable for data services, allowing sharing of physical & electronic assets between voice and data
- Followed by separate switching and data platforms in the core network being integrated

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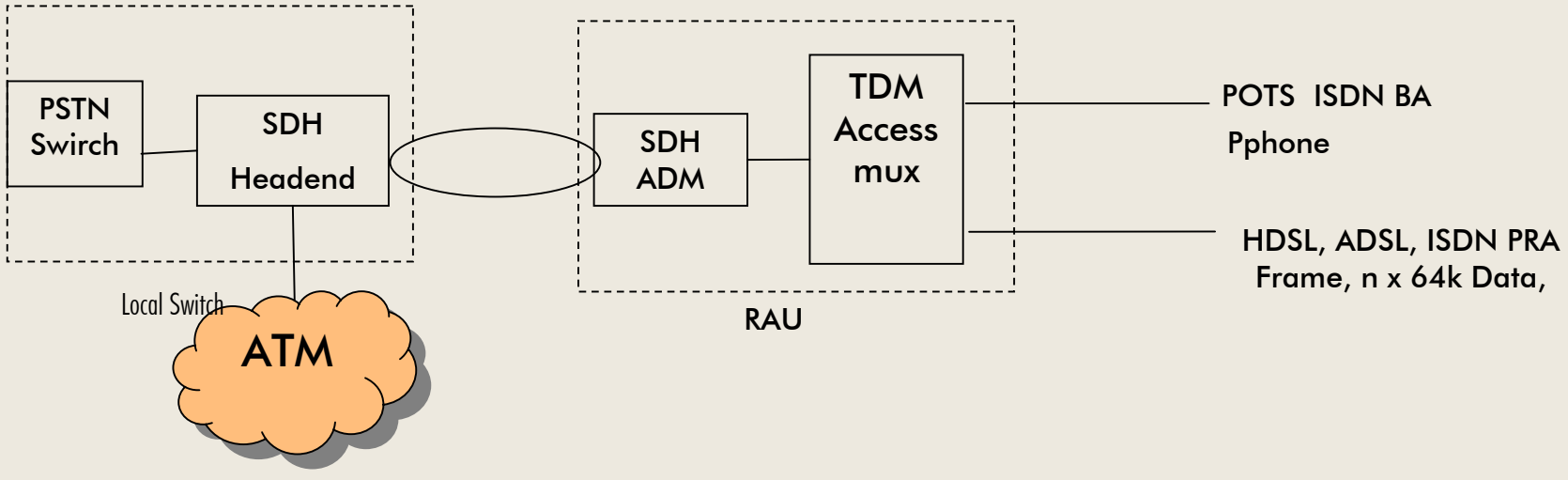
Typical End-to-End Network



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Trends in Access and Core Architectures

- Access architectures use copper from the Customer to the cabinet (RAU), then fibre to the Local Access Switch (LAS) which houses the SDH equipment
- ADSL (Internet and Private IP), HDSL (Frame Relay) IDSN (Data) and n x 64k (Data) share the same copper cable sheath and ductlines from CPE to RAU. Data Linecards and Voice Line cards share same RAU equipment
- The RAU linecards aggregate PSTN traffic onto 2Mbs E1 streams of an SDH or PDH transmission system on fibre.
- The Data Traffic packets are encapsulated into 2Mbs E1 streams by NEHC or IMA Cards in the RAU
- All 2Mbs streams share the same STM1 (155Mbs) SDH link back to the LAS

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TelstraClear's Sharing of Inter-Local Access Switch Transmission

- All LAS's trunks share the STM1 STM4 or STM16 bandwidth capacity with 2M PDL's or ATM streams
- LAS to Transit Network Switch site - the STM1 carries both Voice and Data
- Intercity SDH shares Voice and Data PDLs
- Intercity Fibre shares ATM and STM1s on STM4's or STM16's
- 28% of SDH Intercity traffic is data
- Approx 50% of Intra-city traffic is data

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TelstraClear Cabinet Deployment
Voice & Data Sharing

	DSC	1511AN	Litespan 1540	UMUX 1500
First Available	1992	1995	1999	2000
First Deployed by TCL	1992	1995	2001	2001
Deployed by	ex- TSL	ex-CCL	ex-CCL	ex-TSL
POTS/VAS – Voice	✓	✓	✓	✓
Basic Access ISDN – Data		✓	✓	Aug 02
E1, nx64 kbps – Data	✓	✓	✓	
Nortel P-phone – Voice		✓		✓
G.HDSL – Data			✓	✓
ADSL - Data G.SHDSL			✓	✓

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Sharing of TelstraClear RAU, LAS & Intercity Transmission

	PSTN Bandwidth Mbs	Data Bandwidth Mbs	% Data	CATV/Cable Modem	Share Copper sheath	Share Electronics	Share Fibre to LAS	Share Fibre Ducts and trench to LAS	Share Ducts and Trench to LAS	Share Inter switch & intercity fibre
Alcatel Stage 1	376	486	56%	N	Y	Y	Y	Y	Y	Y
Alcatel Stage 3	966	524	35%	N	Y	Y	Y	Y	Y	Y
Cableways	15	16	52%	N	Y	Y	Y	Y	Y	Y
DSC (WN)	2,036	3,054	60%	Y	N	N	N	Y	Y	Y
Nortel (CH)	3,621	5,432	60%	Y	N	N	N	Y	Y	Y
Nortel plus DSC (WN)	408	612	60%	Y	N	N	N	Y	Y	Y
Copper (WN)	1,038	1,557	60%	Y	N	N	N	Y	Y	Y

Note: Ave data capacity	512	kbs	
Ave CATV and Internet capacity	360	kbs	6 Mbs *32 channels for 500 homes

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