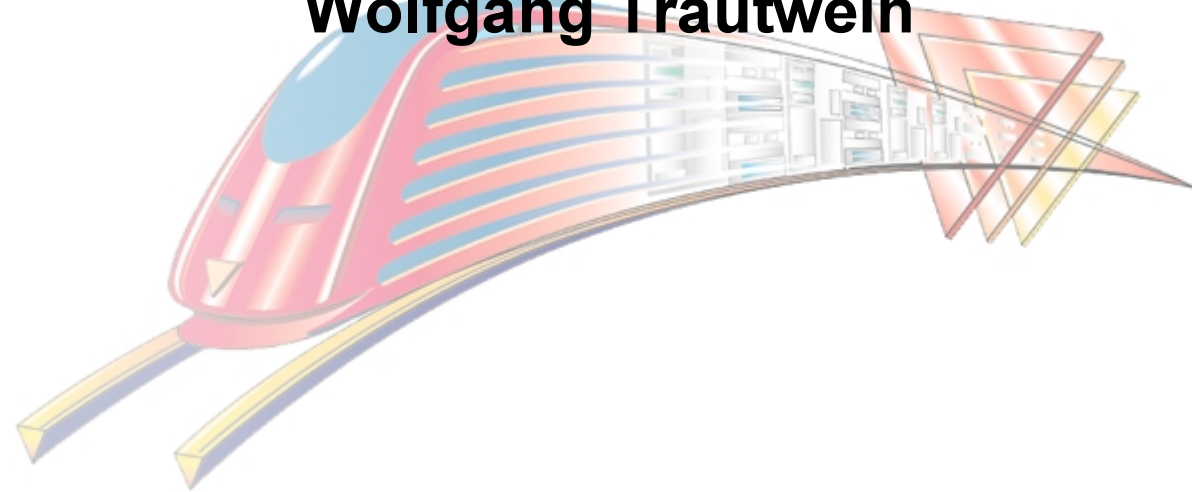


ADSL

Status and evolution

Wolfgang Trautwein



Drivers for '99 ADSL Market



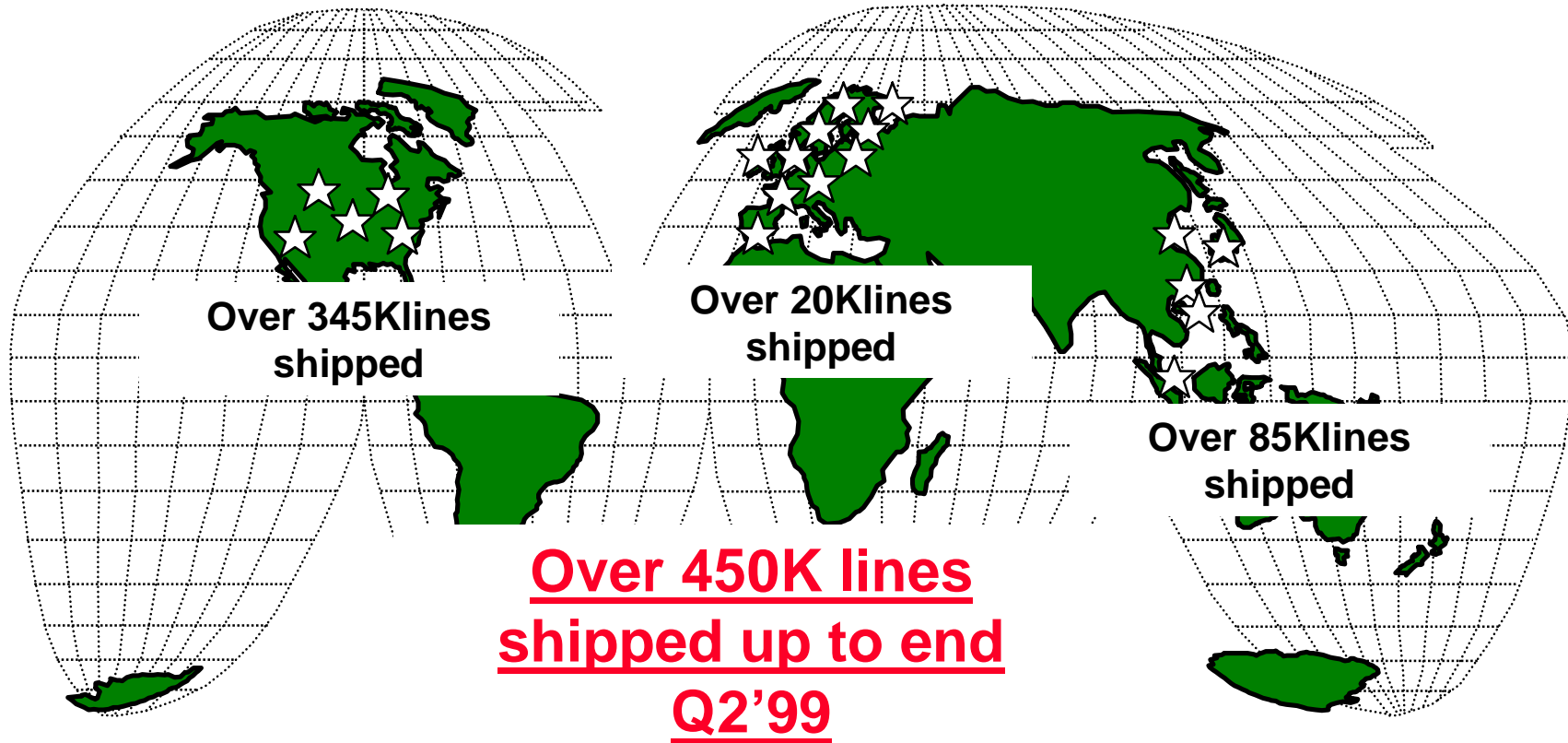
- ▼ ADSL is standardized by ANSI, ETSI and ITU
 - ▼ All standards DMT-based
 - ▼ Alcatel is reference for all interoperability testing
- ▼ Real interoperability is happening (mainly G.Lite)
- ▼ Costs have decreased by more than 80% since 1994
- ▼ Wholesale model stimulates market demand
- ▼ Wide range of CPE options are available

ADSL COMMERCIAL ROLL-OUT IS ONGOING

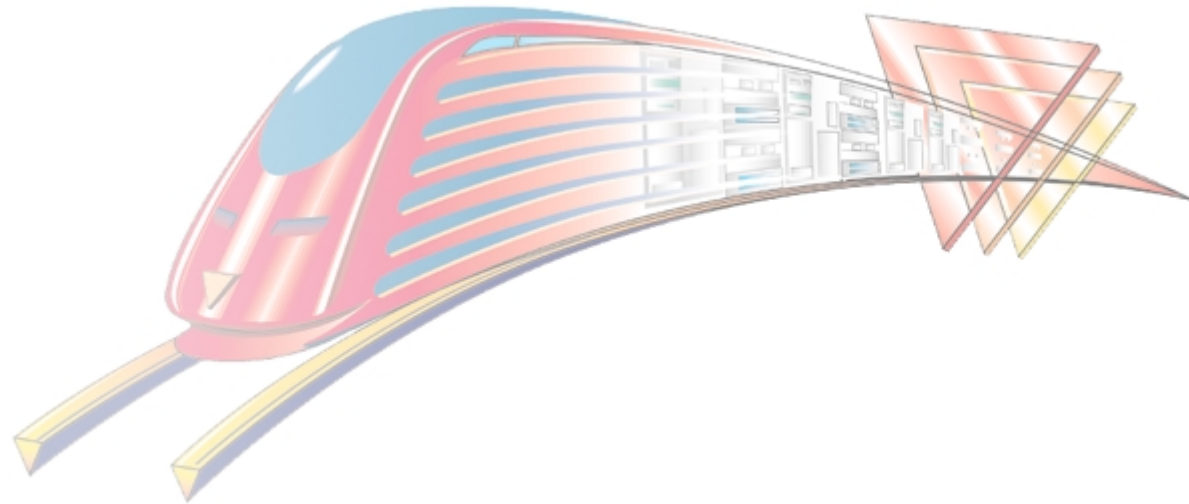
Alcatel's ADSL presence



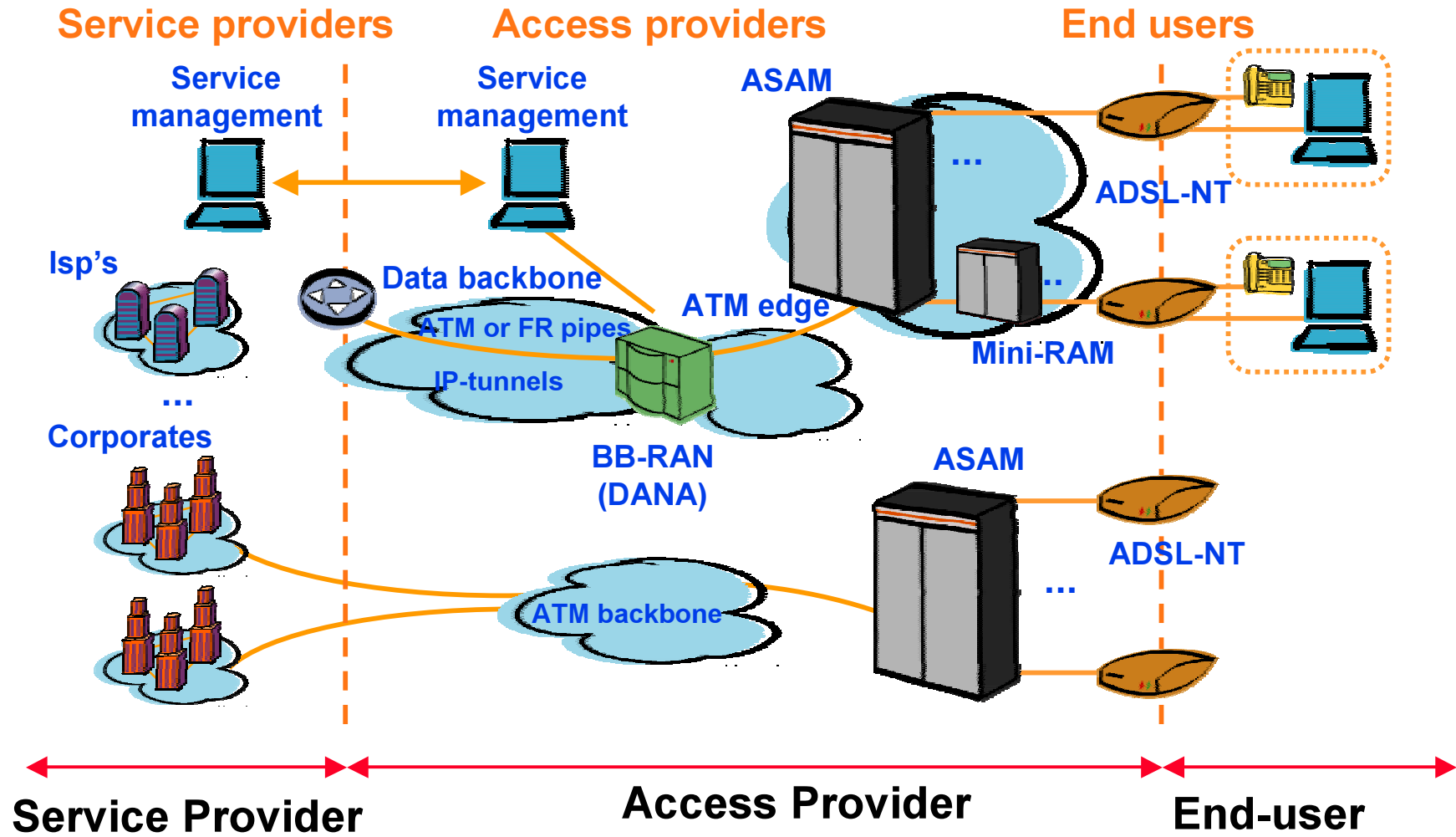
TODAY : Over 28 customers ~30 M Homes Passed



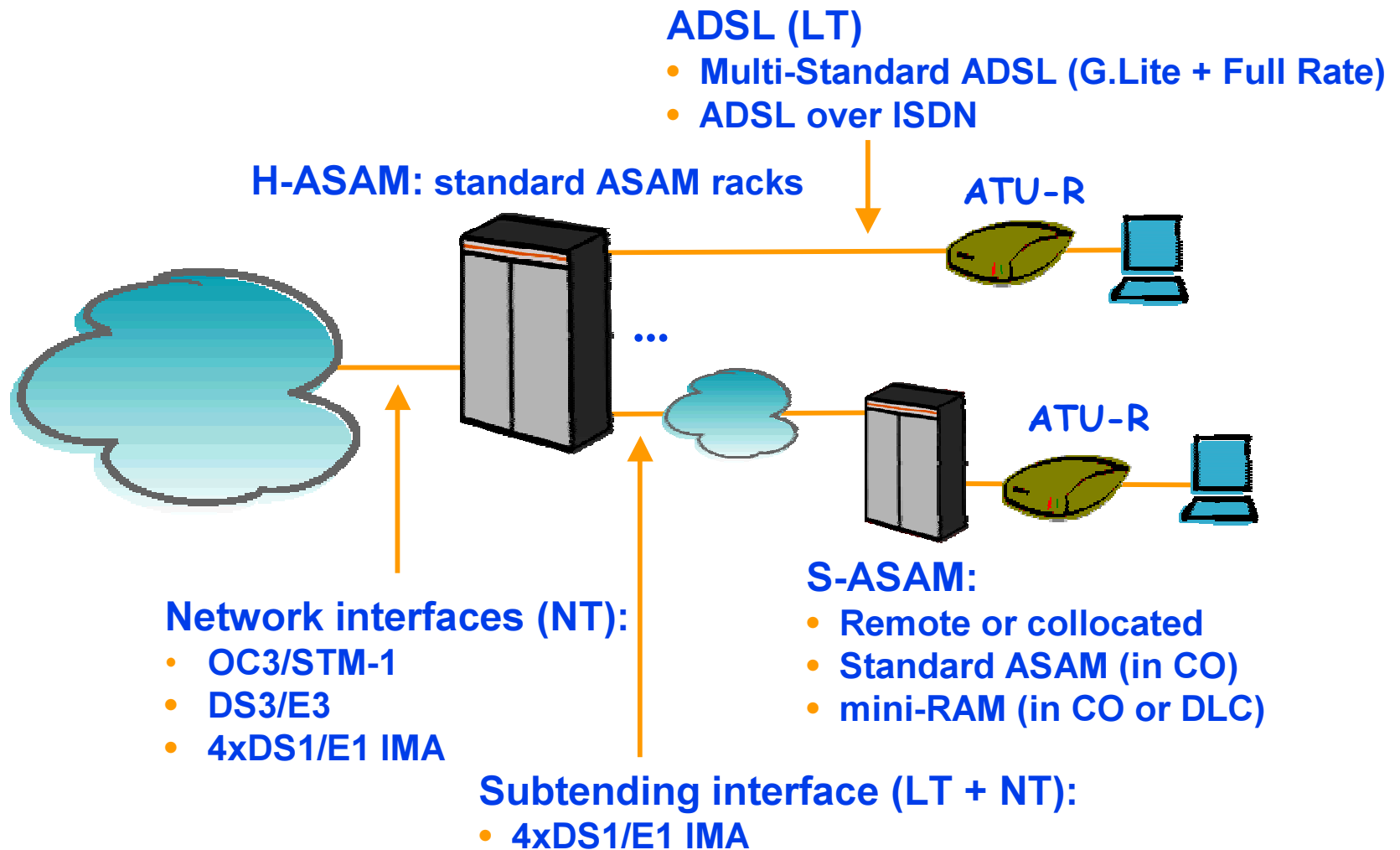
ADSL Access Network Architectures



End-to-end ADSL access



ASAM product overview



Alcatel 1000 ASAM

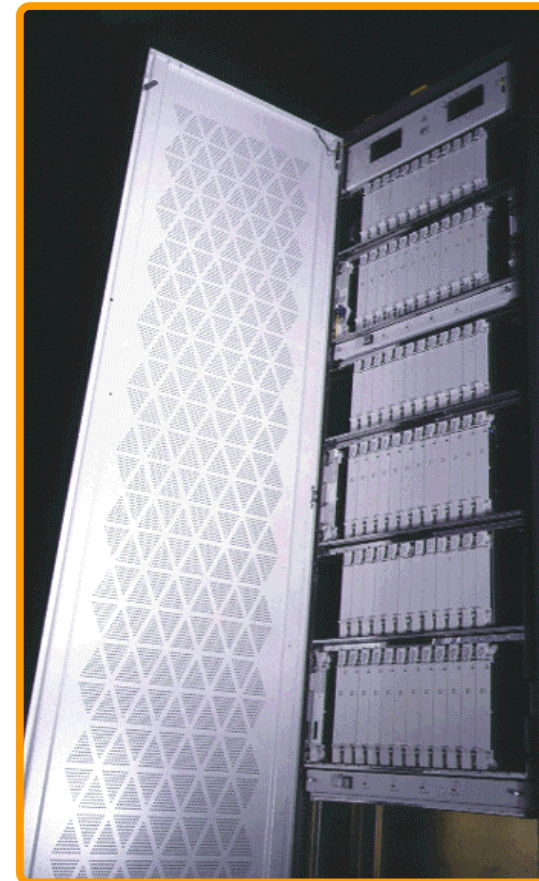


- ▼ **Open networking model**
 - ▼ **Connecting to any ATM network/switch**
 - ▼ **Connecting to any POTS network/switch through splitters**
 - ▼ **Connecting to Alcatel and third party CPE**
 - ▼ **Key for mass-volume market**
 - ▼ **Nr. 1 reference for interoperability testing**
- ▼ **High-runner in fast growing market**
 - ▼ **450.000 lines shipped to date**
 - ▼ **Market leader: 49% worldwide (mid 99)**

Highly modular and scalable DSLAM



- ▼ **ATM based subscriber access multiplexer**
- ▼ **Up to 2592 ADSL lines per DSLAM**
- ▼ **Two-layer multiplexing configurations**
- ▼ **Up to 16 PVC/SVC connections per line**
- ▼ **Multiple ATM-QoS classes supported**
- ▼ **Supports any AAL**



Modularity - scalability



▼ ETSI and NEBS equipment practice

▼ Standard density (now)

- ▼ 4 lines/board
- ▼ 48 lines/shelve
- ▼ 144-192 lines/rack
- ▼ 576 lines/DSLAM

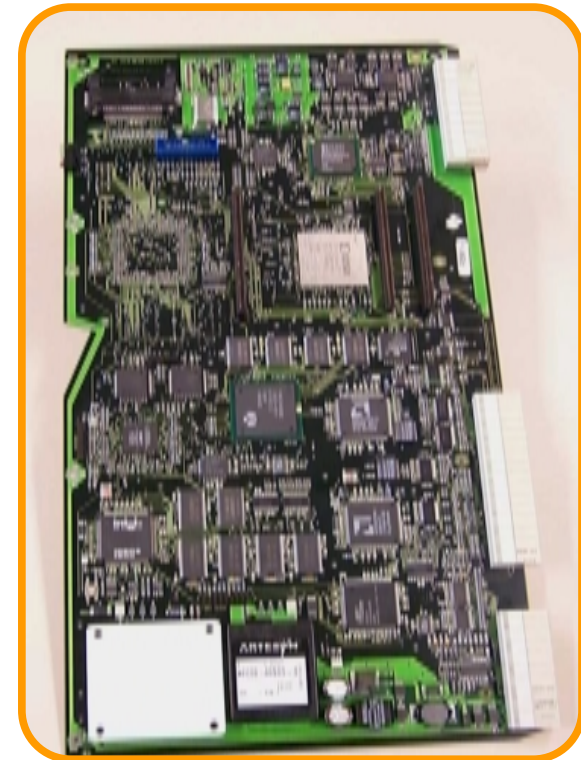
▼ High density (R4.0)

- ▼ 12 lines/board
- ▼ 192-216 lines/shelve
- ▼ 384-432 lines/rack
- ▼ 2304-2592 lines/DSLAM

ATM network interfaces (NT)



- ▼ **STM-1/OC-3c (155 Mbps)**
- ▼ **4xE1/4xDS-1 IMA (4x2 Mbps/4x1.5 Mbps)**
- ▼ **E3/DS-3 (34 Mbps/45 Mbps)**
- ▼ **SVC UNI3.1 signalling support**
- ▼ **Optional 1+1 NT redundancy**



Euro-ADSL



- ▼ **ADSL for ISDN lines**
- ▼ **Same fast-internet services available to POTS and ISDN subscribers**
- ▼ **Optimised to reduce crosstalk between POTS-ADSL and ISDN-ADSL**
- ▼ **Dedicated line termination boards and splitters**
 - ▼ **POTS-ADSL and ISDN-ADSL can be mixed in same ASAM**

Speed Touch Product Line



Residential leisure

Residential pro (>1 PC)
& Telecommuters

Small Businesses
& branch offices



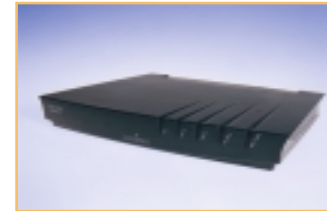
SPEED TOUCH
PC



Speed Touch USB



SPEED TOUCH
Home



SPEED TOUCH
Pro



SPEED TOUCH
Office

Speed Touch PC



▼ Specifications

▼ Features:

- ▼ 1/2 size internal ADSL modem
- ▼ Bridging, PPPoATM, and CIP support
- ▼ Windows 95/98/NT support
- ▼ Full Plug & Play installation
- ▼ G.lite

▼ Evolution:

- ▼ SVCs



Speed Touch USB



▼ Specifications

▼ Features:

- ▼ Bridging, PPPoATM, and CIP support
- ▼ Windows 98 compatible
- ▼ Full Plug & Play capability
- ▼ Single chip solution
- ▼ Powered directly by the PC
(No external Power supply required)
- ▼ New form factor

▼ Evolution:

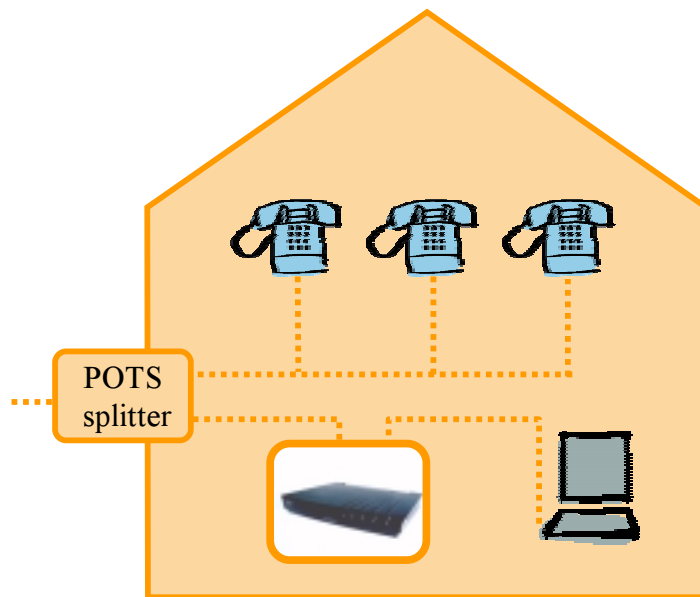
- ▼ G.Lite
- ▼ SVCs



Central Splitter vs. Splitterless

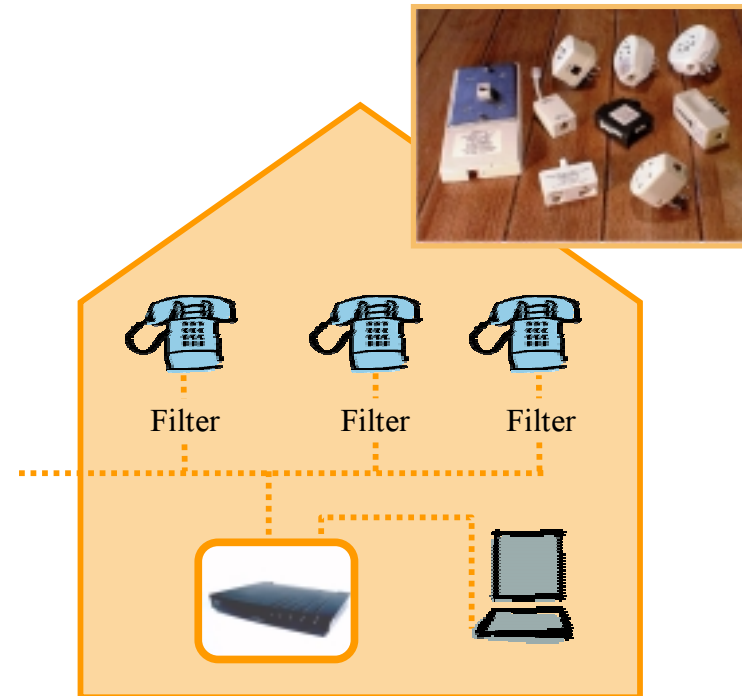


▼ With central POTS splitter



▼ Splitterless

- ▼ with distributed filters
- ▼ works w/ G.lite, full rate and multi-mode modems

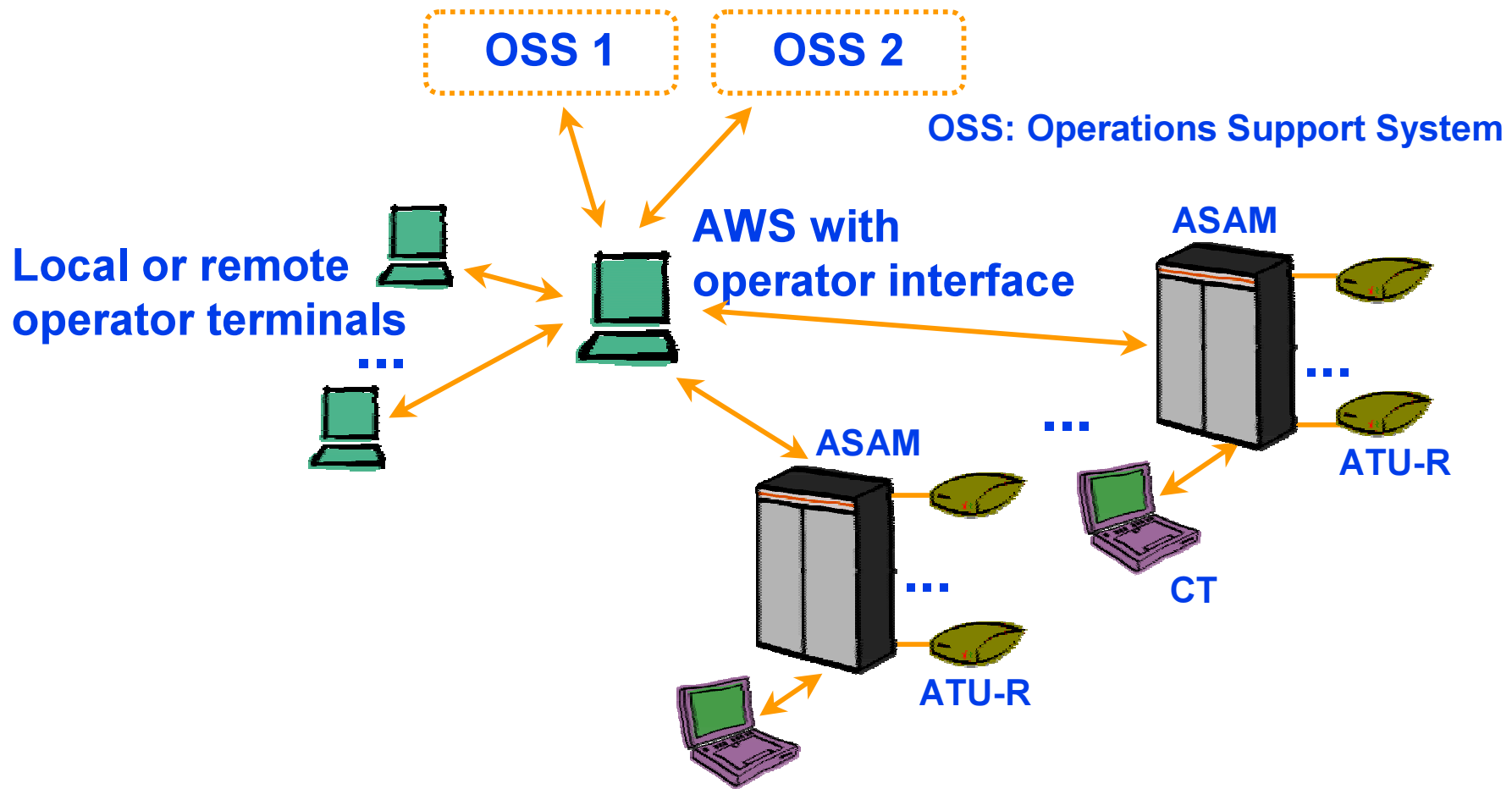


ADSL modem characteristics

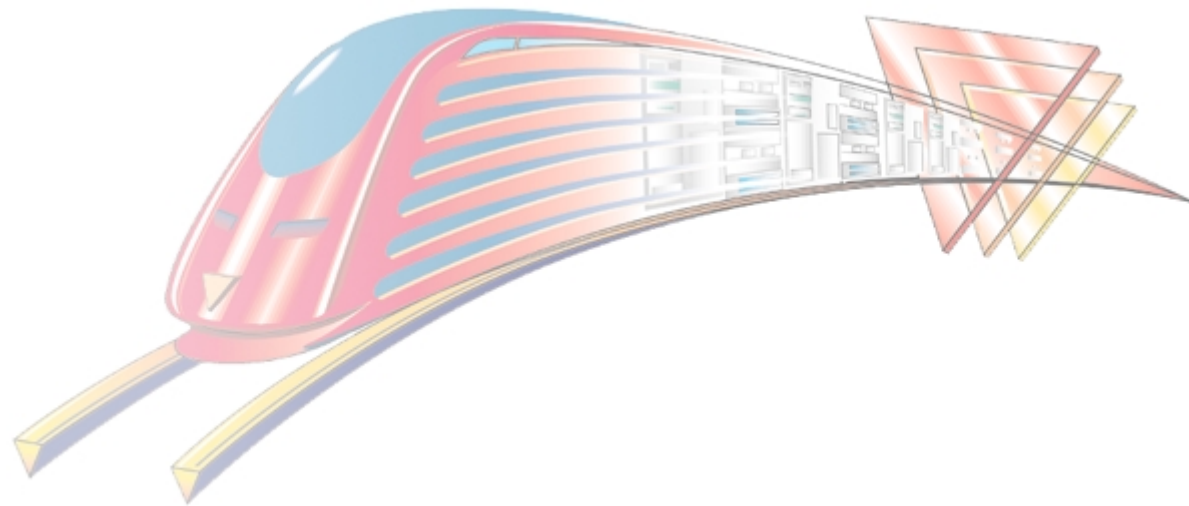


- ▼ **Multi-standard compliant**
 - ▼ Auto-detect multi-mode operation
 - ▼ Handshake protocol determines operating mode (G.hs)
 - ▼ Operating modes: ANSIT1.413i2 - G.Lite - G.dmt
- ▼ **Interoperable with any standard compliant ADSL modem**
 - ▼ Alcatel is the reference in ADSL interoperability testing
- ▼ **Best modem performance in the market**
 - ▼ 4th generation ADSL chipset
 - ▼ Optimised for maximum reach and minimum crosstalk
 - ▼ Minimum power consumption (2 Watt/line)

ADSL element management: AWS



HDSL-2 in ASAM

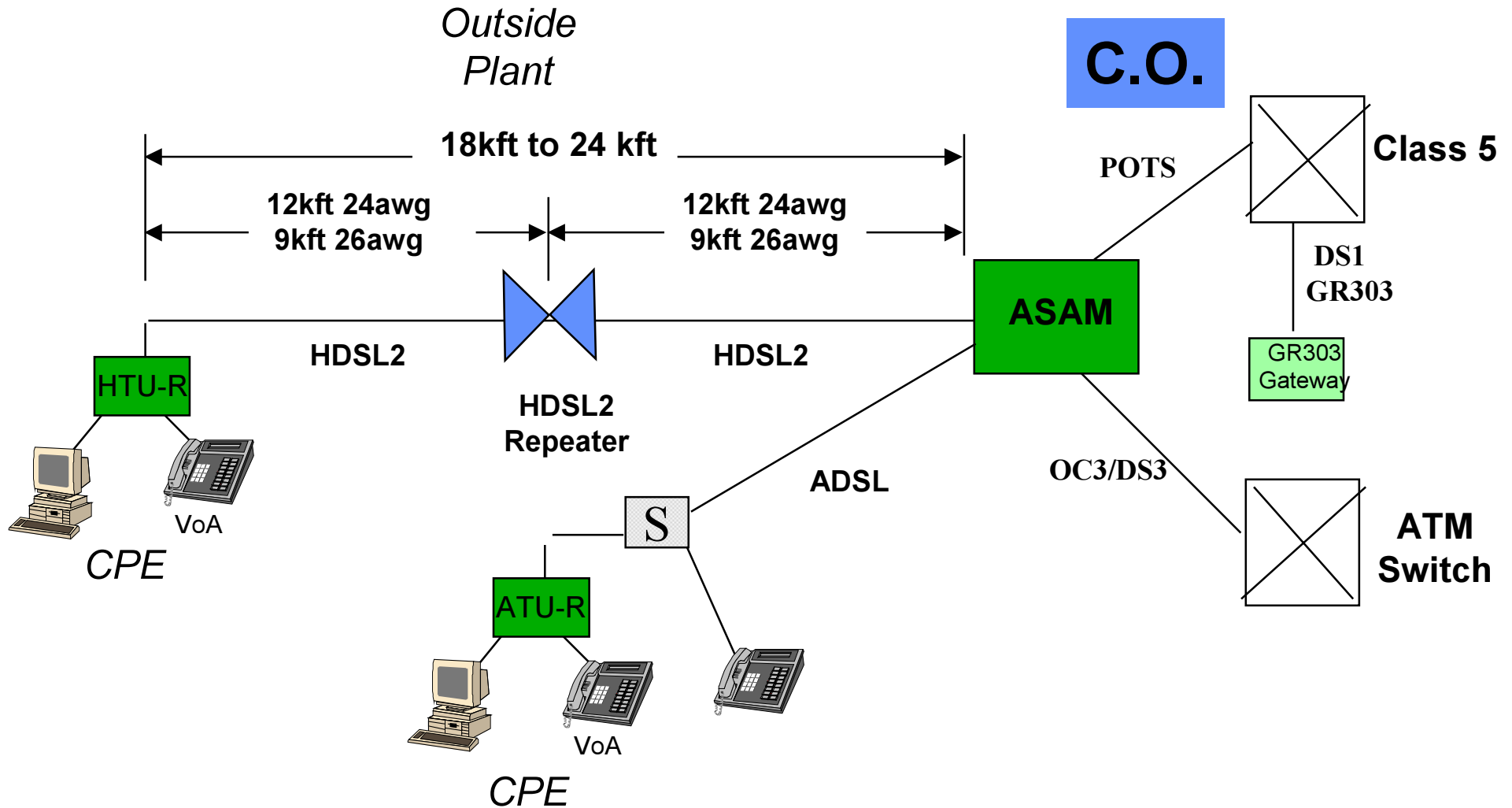


HDSL2 Integrated in ASAM

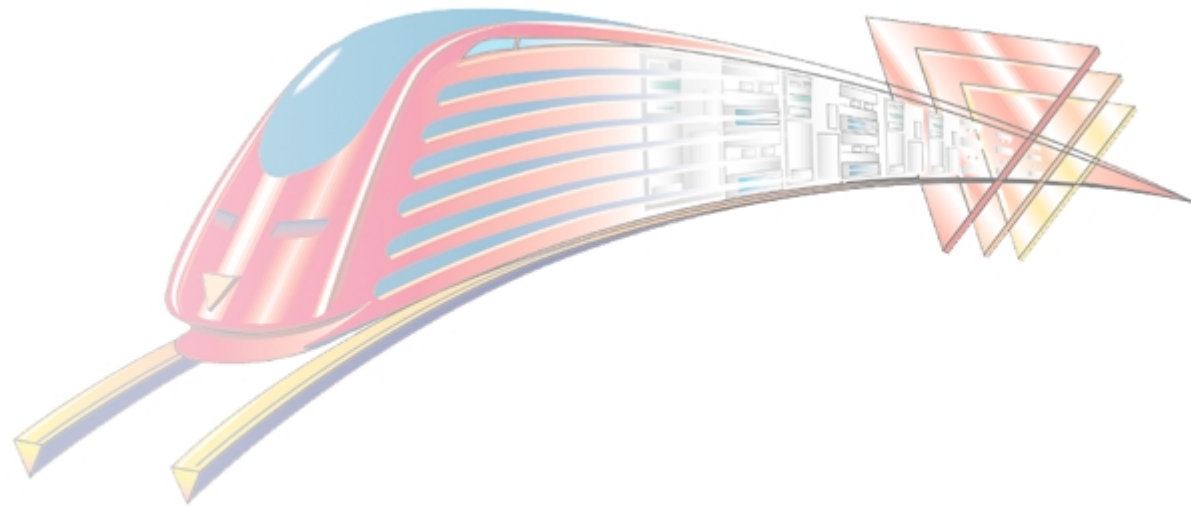


- ▼ **Single pair HDSL**
- ▼ **Adapted to small business users, with specific symmetrical traffic needs**
- ▼ **HDSL-2 standardization ongoing**
- ▼ **Smooth migration to higher bandwidth services**
- ▼ **Service profiles align well with current ADSL service profiles**
- ▼ **Same end-to-end network models as ADSL (ATM)**
- ▼ **Evolution to connect Integrated Access Devices**
- ▼ **First products available 3Q 2000**

HDSL2 Integrated in DSLAM



VoADSL in ASAM



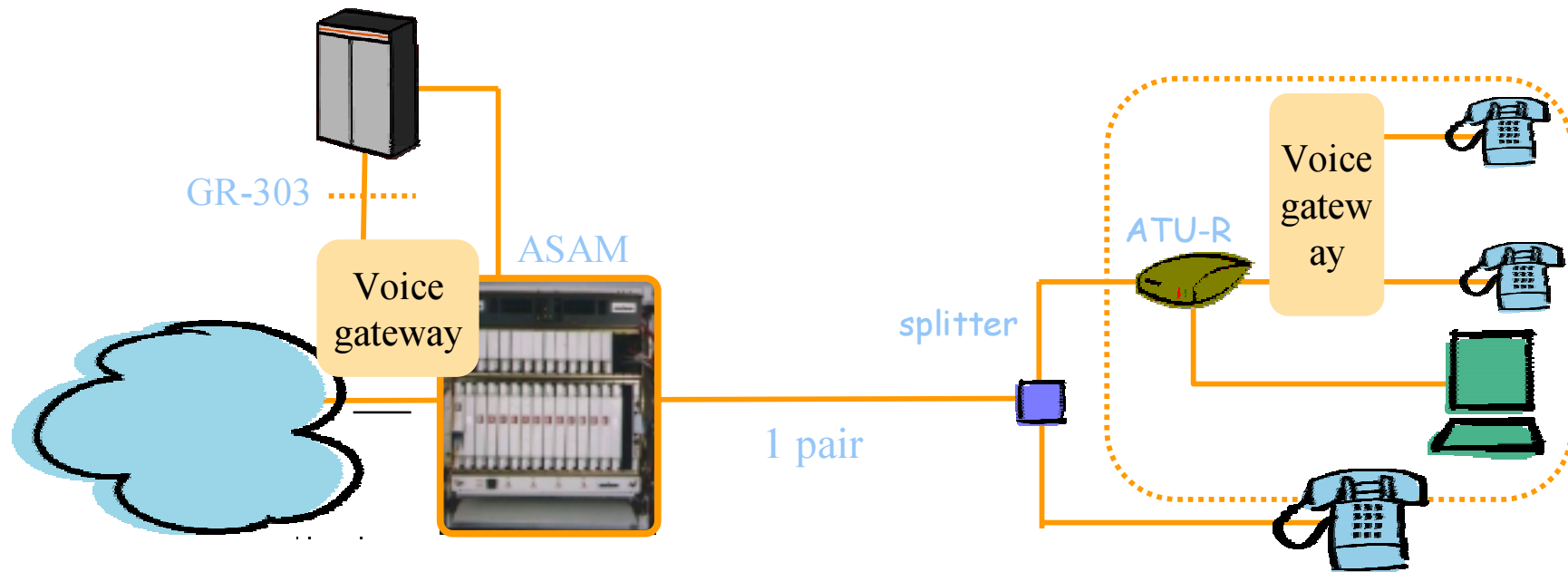
Voice on ADSL (1)



- ▼ Drivers
 - ▼ Reduce provisioning cost
 - ▼ Recuperate copper (related with copper unbundling)
 - ▼ Soft service provisioning
 - ▼ Voice and data service packages

- ▼ Primary customers
 - ▼ Small enterprises: e.g. 8 voice lines + 500 kbit/s data
 - ▼ High end residential (> 2 phone lines)

Voice on ADSL (2)



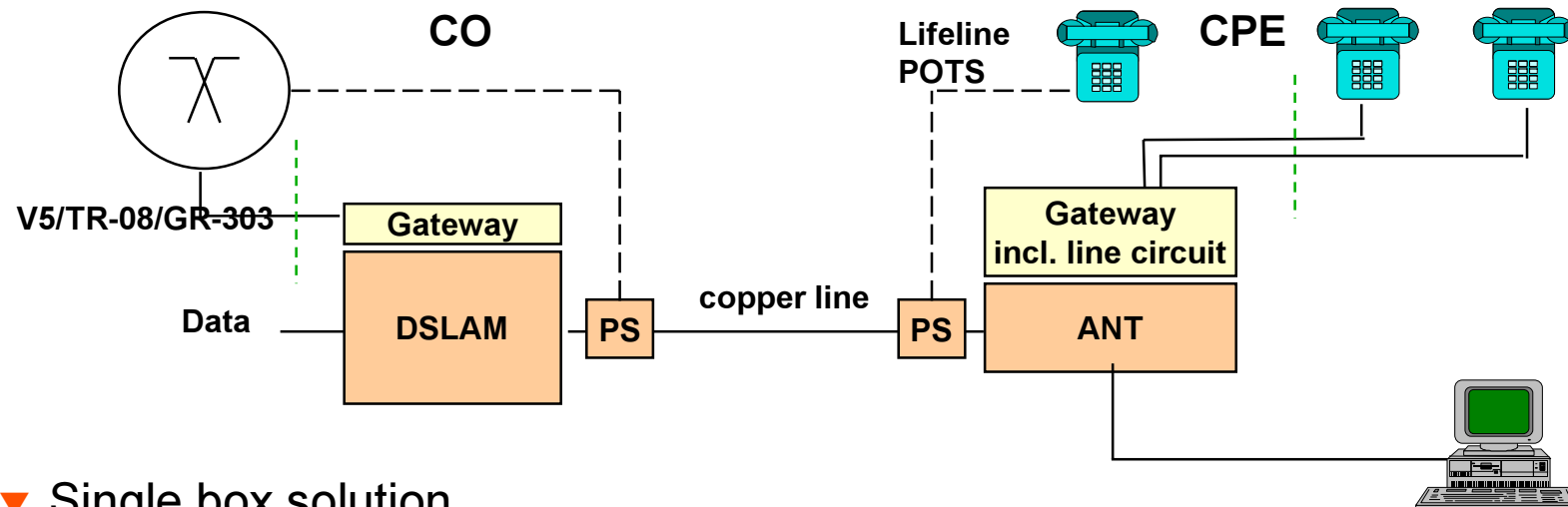
Product Portfolio



▼ Voice over ADSL

▼ 2 box solution

- ▼ Jetstream (demonstrated at Supercomm) / Coppercom gateways
- ▼ Speed Touch Home / Pro / Office



▼ Single box solution

- ▼ Speed Touch Home / Pro with multiple integrated voice ports (4-12)