

Transmission - XLR 4.6 Range Short-Haul Broadband Access Solutions

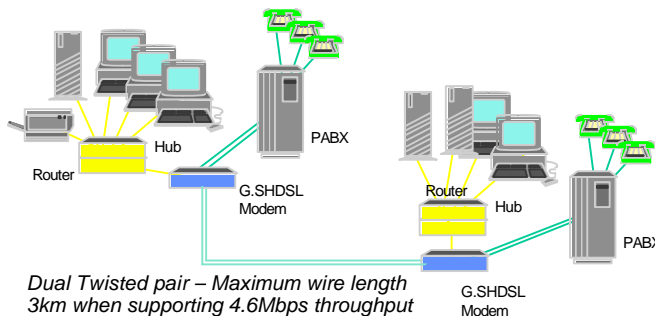
Delivering Communications Services over Copper Pairs

Case Communications range of XLR G.SHDSL modems cover **Voice & Data** as well as **Data-Only** applications, running over either one or two pairs of unconditioned copper wires. This Fact Sheet illustrates some typical applications of the different modems. Further technical details are available on separate Data Sheets covering the products.

Voice and Data Applications

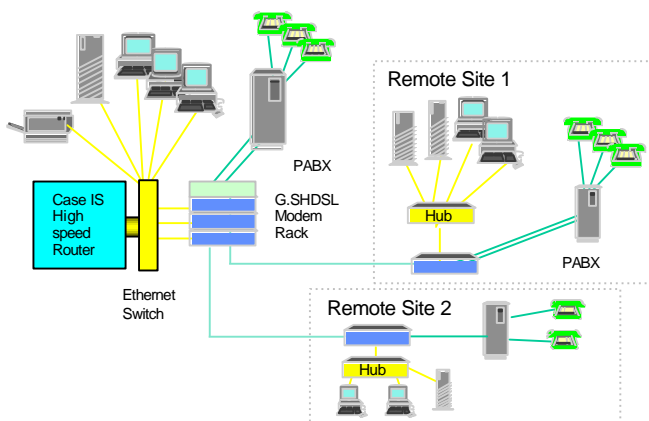
G.SHDSL provides an ideal opportunity to rationalise individual Voice and Data circuits to remote sites using twisted pair cables. In many situations the costs saving though retiring an existing E1 circuit will more than cover the cost of deploying G.SHDSL technology. While Voice and Data Integration has been around for many years, G.SHDSL offers the opportunity to significantly reduce costs through being able to transport a structured E1 circuit, plus a high speed data channel over a pair of unconditioned twisted pairs.

Application 1: Data and Voice over two Twisted Pairs



- Always-on, Aggregate Data rates of up to 4.6Mbps over two twisted pairs
- Opportunity to migrate data services from Narrowband to broadband with limited increase in network hardware costs
- Circuit Range depends on the parameters of the twisted pair cable – though typically maximum throughput is achievable up to 3km
- Re-use existing unconditioned twisted pair circuitry – no new circuit installation costs.
- Support Full E1 link between central and remote PABXs
- Support for fractional E1 PABX link – use more bandwidth for Data Application.
- Enable other bandwidth hungry applications

Application 2: CAMPUS Voice and Data Network using Internal Bridging and Transparent Voice



- Always-on, Aggregate Data rates of up to 4.6Mbps over two twisted pairs, or 2.3Mbps over single twisted pair.
- Ability to create a CAMPUS Voice Network Using E1 Transparent G.703 / 704.
- Ability to create a CAMPUS Data Network using Internal Bridges and Central Ethernet Switch. Case-IS Router allows whole Campus to share high speed connection to outside world.
- Use in situations where extended reach of up to 6km is required to deliver a nominal data rate (in the region of 2.048 Mbps)
- Support Full E1 link between central and remote PABXs
- All intelligence at Central Site – minimum configuration at remote sites.
- Opportunity to migrate data services from Narrowband to broadband with limited increase in network hardware costs

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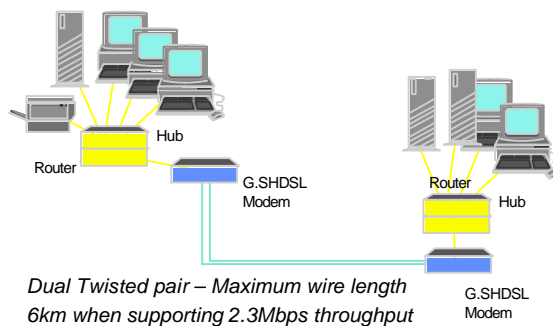
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Data Only Applications

Of course, not all situations require digital voice interfaces. Many G.SHDSL units will be deployed in locations where there is either no PABX, or where the provision of a PABX cannot be cost justified. In such situations, the bandwidth available through using G.SHDSL can be deployed to either a single device (such as a router or by using the XLR's Internal Bridge as shown in the diagrams below) – or it could be split between two such data devices. The exact split being dependent on the bandwidth requirements of each device.

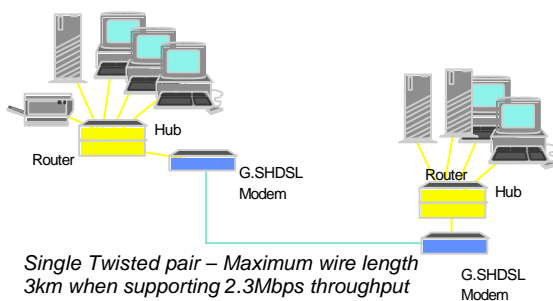
In many applications, a single pair will suffice, though the second pair can be used to extend the effective range of the modem pair.

Application 3: Data only over Dual Twisted pairs



- Aggregate Data rates of up to 4.6Mbps over two twisted pairs
Opportunity to migrate data services from Narrowband to broadband with limited increase in network hardware costs
- Range depends on the parameters of the twisted pair cable – though typically maximum throughput is achievable up to 3km
- Use in situations where extended reach of up to 6km is required to deliver a nominal data rate (in the region of 2.048 Mbps)
- Re-use existing unconditioned twisted pair circuitry.
- Support Full E1 link between central and remote PABXs
- Support for fractional E1 PABX link – use more bandwidth for your data application.

Application 4: Data only over a single Twisted pair



- Aggregate Data rates of up to 2.3Mbps over a single unconditioned Copper Pair
- Opportunity to migrate data services from Narrowband to broadband with limited increase in network hardware costs. (*Change the modems only!*)
- Use in applications where the circuit length is not an issue (3km or less) – *otherwise use 2-pair variant as above.*
- Re-use existing unconditioned twisted pair circuitry.
- High Speed Router to Router data or use internal Bridges to bring data back to Ethernet switch.

Approximate Data Rates and Ranges on a single pair.

PE 0.8mm (38nF/Km) up to 2Mbps for 6Km 256Kbps at 14Km
 PE 0.6mm (30nF/Km) up to 2Mbps for 5Km 200Kbps for 10Km
 PE 0.5mm (25nF/Km) up to 2Mbps for 4Km 300Kbps for 9Km
 PE 0.6mm (56nF/Km) up to 2Mbps for 3.2Km 300Kbps for 7Km
 PE 0.4mm (45nF/Km) up to 2Mbps for 2.2Km, 300Kbps 4.7Km
 PVC 0.4mm (120nF/Km) up to 2Mbps for 1.25Km, 300Kbps for 3Km
 PVC 0.32mm (120nF/Km) up to 2Mbps for 0.75Km, 300Kbps for 2Km

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