# 2400 ADSL / SHDSL SERIES

**> THE TELINDUS 2400 MULTI-PORT DSL ROUTER SERIES ENABLES ENTERPRISES AND SERVICE PROVIDERS TO DEPLOY BUSINESS SERVICES OVER ADSL AND SHDSL, WHILE MAINTAINING A MAXIMUM FLEXIBILITY FOR THE CONNECTION TO THE BACKBONE.**

The Telindus 2400 Series enables enterprises and service providers to deploy business services over ADSL and SHDSL, while maintaining a maximum flexibility for the connection to the backbone. Apart from a fixed 100Base-T backbone connection, the Telindus 2400 Series can accept various modular interfaces with support for PPP, Frame-Relay or ATM. These interfaces include:

- Multiple E1 (up to 8) with support for IMA (Inverse Multiplexing over ATM), multilink PPP or multilink Frame-Relay. The number of E1 lines and the encapsulation scheme effectively used can be selected by configuration (e.g. 4x E1 IMA)
- E3 with support for ATM
- STM1 with support for ATM
- 10/100Base-T Ethernet interface with built-in 4 port switch

Fully supported by the TDRE (Telindus Dynamic Routing Engine), the 2400 Operating System supports ATM switching, full IP-routing, bridging and VLAN switching. The ports of the unit can be split into multiple bridge groups, enabling direct mappings between DSL lines and VLANs. In addition is has an extended support for IP CoS (Class of Service) and it can handle multicast applications. Therefore, the Telindus 2400 Series can be used for supporting services like VoIP (Voice over IP) and digital video multicast.

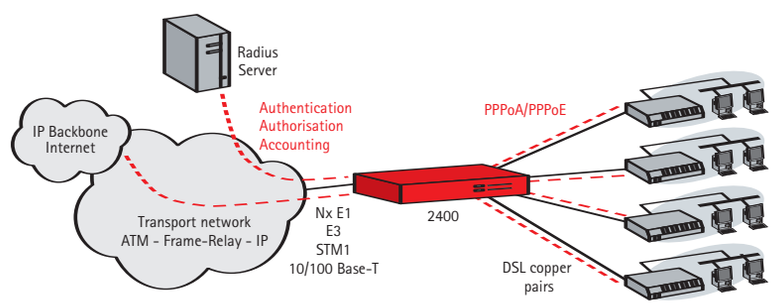
The integrated possibility to terminate PPPoA and PPPoE sessions, together with the built-in Radius client functionality allow for the Authentication, Authorisation, and Accounting (AAA) of end-users, without the need for installing a separate BRAS (Broadband Access Server) or router.

The unit comes with an advanced built-in management agent and is supported by the complete TMA management suite for local and remote control. The existing backbone infrastructure (IP, ATM or Frame-relay) can be used to transport all management information to a central location without the need for a separate overlay network.

## FEATURES & BENEFITS

- ADSL/SHDSL MULTI-PORT ROUTER FOR PROFESSIONAL BROADBAND SERVICES
- 1 UNIT HIGH HOUSING FOR COMPACT CENTRAL-OFFICE SOLUTION
- 8, 16 OR 24 ADSL OR SHDSL LINE PAIRS PER UNIT
- COMBINES ATM SWITCHING, IP ROUTING AND VLAN SWITCHING IN ONE DEVICE
- SUITABLE FOR FLEXIBLE CONNECTIVITY TO FRAME-RELAY, ATM AND BACKBONE NETWORKS
- FULL IP QOS SUPPORT
- MODULAR UP-LINK INTERFACE FOR MAXIMUM FLEXIBILITY FOR BACKBONE CONNECTIVITY

V INTEGRATED PPPOE/PPPOA TERMINATION



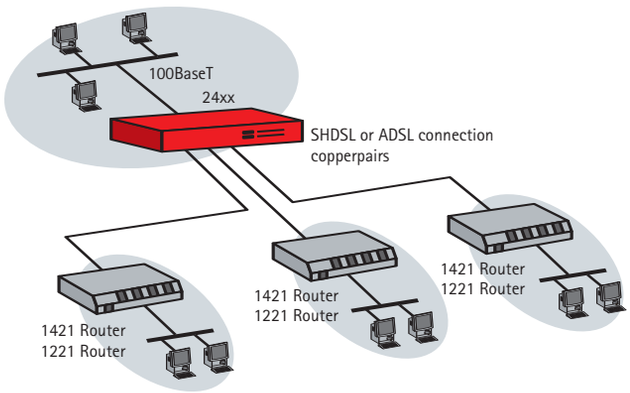
The Telindus 2400 access concentrator houses 8, 16 or 24 ADSL or SHDSL modems. Two SHDSL circuits can also be combined to increase the distance or speed towards the end-users.

The Telindus 2400 series comes in a very compact size (1 unit high) and can be used as desktop unit or can be rack-mounted through the optional rack-mount-kit. It fits in 30 cm deep ETSI racks with all connectors and indicators on the front. Combined with its low power consumption it is easily stackable.

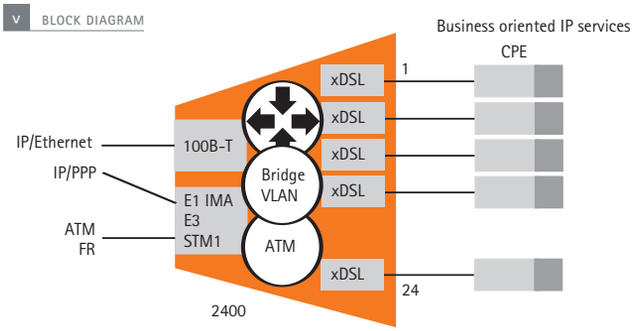
In case of IP routing, bridging or VLAN switching, several units can be cascaded via the fixed and modular Ethernet interfaces. On the last Telindus 2400 unit, the data is encapsulated for the WAN interface.

Typical applications include the rollout of business-oriented services over DSL as it is applicable in operator or campus network environments.

V CAMPUS NETWORK CONCENTRATION




V BLOCK DIAGRAM




## VERSIONS

| Version | # DSL ports | Options | Power supply |
|---|---|---|---|
| 2401 ADSL | 8 | Annex A / annex B, built-in splitter | -48VDC, AC |
| 2402 ADSL | 16 | Annex A / annex B | -48VDC |
| 2403 ADSL | 24 | Annex A / annex B | -48VDC |
| 2421 SHDSL | 8 | | -48VDC, AC |
| 2422 SHDSL | 16 | | -48VDC |
| 2423 SHDSL | 24 | | -48VDC |

## ADSL LINE INTERFACE

- Single-pair ADSL/ADSL2*/ADSL2+* line access
- Connector: 50 pin telco connector
- Coding: compliant to ANSI T1.413 issue 2, ITU-T G.992.1 (ADSL G.dmt), ITU-T G.992.2 (ADSL G.Lite), ETSI TS 101 388 v1.3.1, ITU-T G.992.3* (ADSL2 G.dmt) , ITU-T G.992.4* (ADSL2 G.Lite), ITU-T G.992.5* (ADSL2+ DMT)
- Support for ITU-T annex A (POTS) or Annex B (ISDN and POTS)
- Optional integrated POTS or ISDN splitters (on 2401 versions)
- Line speeds: Downstream: 32 kbps up to 26* Mbps
  Upstream: 32 kbps up to 1088* kbps
- Performance monitoring: compliant G.826 (errored seconds, severely errored seconds, unavailability seconds)

## SHDSL LINE INTERFACE

- Single or two-pair SHDSL line access (configurable)
- Coding: TC PAM, compliant to ITU-T G.991.2 (G.SHDSL) and ETSI TS 101524
- Connector: 50 pin telco connector
- Line speeds: Single-pair: N x 64 kbps (N = 3 ... 36)
  Two-pair: N x 128 kbps (N = 3 ... 36)
- Handshaking: compliant G.994.1 (automatic speed negotiation) or fixed speed
- Performance monitoring: compliant G.826 (errored seconds, severely errored seconds, unavailability seconds)

## FIXED ETHERNET UPLINK

- Compliant with IEEE 802.3 10Mbps HDX/FDX Ethernet
- Compliant with IEEE 802.3u 100Mbps HDX/FDX Ethernet
- 10/100Mbps auto-sense
- RJ45 Unshielded Twisted Pair (UTP)

## MODULAR UPLINK INTERFACE:

- Number: 1
- For use in combination with Telindus Interface Modules (TIMs)
  - Multiple E1 TIM
    Support for Frame-Relay & Multilink Frame-Relay (up to 8 ports)
    Support for PPP & Multilink PPP (up to 8 ports)
    Support for ATM IMA (up to 6 ports)
  - E3 TIMs
    Support for ATM
  - STM1 TIM
    Support for ATM
  - 4 port Ethernet TIM

## CONTROL INTERFACE

- Applicable standards: ITU-T V.24, V.28, EIA/TIA 574
- DCE signals: RXD, TXD, SGND
- Connector: female DB9

## STATION CLOCK INTERFACE

- G.703/G.704, 2048 kbps, RJ45 120 Ohm

## IP ROUTING

- Conform TDRE (Telindus Dynamic Routing Engine)
- Protocol on DSL lines: ATM
- Uplink Protocols: ATM, Ethernet, PPP, Frame-relay

## ROUTING AND BRIDGING PERFORMANCE

- Routing performance: 150.000 pps
- Bridging performance: 150.000 pps
- Supported number of Frame-Relay DLCIs: 200
- Supported number of ATM PVCs: 200
- Supported number of PPPoA terminations: 200
- Supported number of PPPoE terminations: 100
- Supported number of L2TP tunnels: 10
- Supported number of VLANs: 200
- Supported number of bridge-groups: 25

## FRONT PANEL INDICATIONS

- PWR: Power indication for each power inlet
- R: Reset condition
- LAN: Lan status
- CLK: Station clock status
- DCD: Data Carrier Detect for each DSL line

## CLOCKING

- Slave on STM1, E3, T3 or E1 uplink
- Station clock (G.703 clock input)
- Internal

## MAINTENANCE AND MANAGEMENT SUPPORT

- Conform TDRE (Telindus Dynamic Routing Engine)
- 2 alarm contact outputs (normally open and closed contacts)
- 7 alarm input contacts with common return (normally closed contacts)

## MEMORY

- 32 MByte DRAM
- 16 MByte Flash

## MECHANICAL DATA (H X W X D)

- 44 x 440 x 240 mm (desktop), Weight: 3.5 kg

## POWER REQUIREMENTS

- Single or dual powered
- DC: -36 up to -72V
- AC: 85 – 264V, 47 – 63 Hz
- Power consumption: 8P versions: 25 W
  16P versions: 35W
  24P versions: 45 W

* feature soon available

### SALES CODES STANDARD VERSIONS

- 182577 24 lines ADSL annex A, redundant 48VDC
- 182578 24 lines ADSL annex B, redundant 48VDC
- 183065 8 lines SHDSL, 48VDC and 230VAC
- 181307 24 lines SHDSL, redundant 48VDC
- 183021 Rack-mount kit

### SALES CODES: CABLES

- 182955 50pin telco – copper wires, 1 meter
- 182590 50 pin telco – copper wires, 3 meter
- 182956 50 pin telco – copper wires, 5 meter

- Other models and models with internal splitters are found in the sales code quick reference
- Sales codes for Telindus Interface Modules (TIMs) can be found in the modular interface section and the sales code quick reference