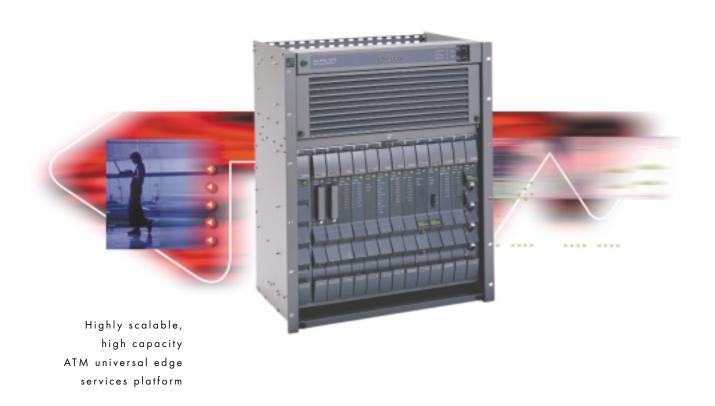# ALCATEL **7470**

The Alcatel 7470 Multiservice Platform, formerly the 36170 Multiservices Switch*, is an industry leading, highly scalable, high capacity ATM universal edge services platform. It interconnects and switches traffic between T1, E1, T3, E3, HSSI, OC-3, STM-1, OC-12, and STM-4 spans for numerous service offerings.

Universal services

As a service provider you will find that the 7470 Multiservice Platform is ideal for edge networks that support multiple services using permanent virtual circuits (PVCs), soft permanent virtual circuits (S-PVCs) and switched virtual circuits (SVCs).

Highly scalable,
high capacity
ATM universal edge
services platform

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These services include:
- ▼ cell relay
- ▼ frame relay
- ▼ circuit emulation
- ▼ voice services
- ▼ internetworking
- ▼ broadband supplementary services

The 7470 Multiservice Platform has the throughput and traffic management features required for large-scale service deployments based on a future-proof ATM infrastructure.

Modular architecture

The switch complex is a fully interconnected, non-blocking, output-buffered matrix. The flexible peripheral shelf configurations provide a wide range of high port densities including both high speed and low speed ATM.

The modular architecture of the 7470 platform allows you to expand from a cost-effective single shelf system to a large multishelf system on an as-needed basis. The 7470 is scalable to 12.8 Gb/s switch throughput.

The availability of the 7470 Multiservice Platform is guaranteed by many features, including redundancy of the switching fabric, power supplies, synchronization, control, the call processing complex and interfaces. The 7470 supports standard synchronization sources such as BITS, or G.703 2,048 kb/s synchronization interfaces, line time synchronization from all interface cards, as well as line trunking. All cards support hot insertion and removal.

Infrastructure

The 7470 supports point-to-point and point-to-multipoint connections for PVCs, S-PVCs and SVCs. S-PVCs are permanent connections that use signaling resources for routing and rerouting on failures. SVCs are established between end subscribers on an as-needed basis through signaling.

The switch supports a full spectrum of fault management features including connectivity verification, alarm surveillance, performance monitoring and test connections. Complete network performance monitoring and fault management are supported by the Alcatel 5620 Network Manager, formerly the 46020 Network Manager*.

QoS guarantees

The 7470's traffic management abilities guarantee that quality of service (QoS) objectives are achieved in complete fairness and isolation, while optimizing switch resources and performance.

Traffic management and congestion control

The 7470 switch provides state-of-the-art traffic management capabilities that allow service providers to optimize the use of bandwidth while maintaining QoS levels for connections. The 7470 is fully compliant with the ATM Forum Traffic Management Specification version 4.0 (TM4) suite of traffic management and congestion control features. These features provide excellent traffic performance, subscriber isolation and traffic shaping capability.

The 7470 has a per VC queuing/per VC accounting architecture supporting explicit rate (ER), available bit rate (ABR) and unspecified bit rate plus (UBR+) with minimum committed rate (MCR) guarantees. High levels of frame related traffic throughput is maintained by using intelligent frame discard congestion control mechanisms such as early packet discard (EPD) and partial packet discard (PPD).

The 7470 supports ingress and egress traffic shaping. ABR flow control is supported through ER, ABR and virtual source/virtual destination (VS/VD) functions which provide superior ABR performance. Large scale, manageable ATM networks are built using the Alcatel AdvantEDGE™ ABR tunneling and VP aggregation features.

Technical Summary

General

▼ Fully redundant, non-blocking ATM switch fabric with performance equivalent to a single stage, output buffered fabric (ideal)

▼ Permanent and switched virtual ATM connections

▼ Standards-compliant ATM layer processing

▼ Scalable statistical multiplexing for ABR/UBR traffic

▼ Unlimited VPI/VCI range at UNI, NNI

▼ Support of CLP bit handling (marking or transparent)

▼ ATM layer multipoint connections

▼ Spatial multicast

▼ ISL (inter-shelf link) attachment of peripheral shelves to switching shelf for multishelf configuration; peripheral shelves can be in the same central office as the switching shelf or extended to other central offices up to 15 km (9.3 mi.) away

▼ I.610 ATM layer OAM functions: continuity verification, alarm surveillance monitoring, continuity checking, performance monitoring

▼ Mean cell loss probability less than 10-10

Cell Relay

▼ UNI/NNI interfaces: octal T1/E1 ATM with inverse multiplexing option, triple T3/E3, STM-1 electrical; and the following optical interfaces: SR, IR, LR, XLR, for OC-3, OC-12, STM-1 and STM-4

▼ 1+1 automatic protection switching (APS) redundancy for all OC-3, STM-1, OC-12 and STM-4 interfaces

Frame Relay

▼ Interfaces: octal T1/E1 unchannelized, quad T1/E1 channelized, T3 channelized (n*DS0 capable, 1:N redundancy optional), T3/E3 unchannelized (1:N redundancy optional), HSSI

▼ All frame relay interfaces are configurable for UNI, NNI, PPP or transparent HDLC applications

▼ Frame relay/ATM Network Interworking (FRF.5) and Service Interworking (FRF.8)

▼ Four QoS levels for differentiated frame relay services

▼ Closed loop congestion control (VS/VD)

▼ Frame relay SVCs (FRF.4)

Circuit Emulation

▼ Circuit emulation interfaces: octal T1/E1 channelized/unchannelized, T3/E3 channelized (1:N redundancy optional) for private line applications, quad E3 channelized down to 64 kb/s with 1+1 protection

Voice

▼ Voice interfaces: quad T1/E1 Voiceband Services Card, providing compressed voice over rt-VBR ATM

▼ QSIG and N-ISDN signaling for PBX networking

▼ Reliable proxy signaling interface for PSTN services in conjunction with call server

IP

▼ IP over frame relay and PPP on T1/E1 and T3/E3 ports complete with network layer forwarding

▼ IP over ATM termination and forwarding

▼ IGMP channel selection capability for broadcast video and audio sources

▼ IP Services Card enhancements: 128 IP static routers, remote LAN segment, IP CoS, 1+1 redundancy

▼ Quad 10/100 Ethernet card: 802.1d transparent bridging with Spanning Tree protocol

xDSL

▼ 16-port multirate SDSL line card; rates from 208 kb/s to 2,320 kb/s

▼ Octal ADSL line card for full rate ADSL (per G.992.1) and G.Lite (per G.992.2)

Switching fabric

▼ 12.8 Gb/s

▼ Scalable, non-blocking, full redundancy

Switching Shelf

▼ Two per node for redundancy

▼ Fully software upgradable

Peripheral Shelves

▼ Up to 16 shelves per node

▼ 12 universal card slots per shelf

▼ Fully software upgradable due to Flash PROMs

▼ Peripheral Shelf-2: compact shelf with a wide variety of multiservice interfaces

Slots and Ports

▼ Up to 96 slots per node

▼ Up to 14 high speed slots per node

▼ Single, triple, quad and octal density interfaces

Synchronization Sources

▼ BITS 1.544 Mb/s or G.703 2.048 Mb/s external

▼ Line derived

▼ Internal (FreeRun)

PVCs

▼ 64,000 bidirectional per node

▼ Point-to-point and point-to-multipoint

▼ Unidirectional, bidirectional, symmetric and asymmetric

SVC Signaling

▼ ITU Q.2931, Q.2961

▼ ATM Forum UNI v.3.1, UNI v.4.0, PNNI v.1.0, B-ICI v.2.0

▼ IISP v.1.0 and AINI with enhancements to enable loop detection

▼ QSIG and N-ISDN signaling for PBX networking

▼ Reliable proxy signaling interface for PSTN services in conjunction with call server

SVC Routing

▼ ATM Forum PNNI v.1.0 dynamic routing

▼ Static routing (when IISP or AINI is employed)

S-PVCs

▼ Up to 64,000 bidirectional point-to-point connections per node

Traffic Management

▼ As per Bellcore GR-001110-CORE, GR-001248-CORE, TM4 and ITU I.371; VS/VD and full ABR as per TM4, including ER marking

▼ Eight QoS classes: CBR, rt-VBR1, rt-VBR2, nrt-VBR1, nrt-VBR2, nrt-VBR3, ABR and UBR

▼ Efficient support of real time traffic (CBR, rt-VBR)

▼ Statistical multiplexing of non-real time and real time traffic

▼ Ingress and egress traffic shaping

▼ Ability to combine ingress policing and shaping

SNMP Support

▼ MIB II as per RFC 1213

▼ Interface Table MIB as per RFC 1573

▼ SONET MIB as per RFC 1595

▼ DS3/E3 MIB as per RFC 1407

▼ ATM Interfaces MIB as per RFC 1695

▼ ILMI MIB as per ATM Forum UNI v.3.1

▼ Enterprise MIB for PVC statistics

▼ Frame relay services MIB

Node, Network and Service Management

▼ Local or remote management interface through SNMP or the 5620 Network Manager

▼ Centralized alarm management with audible and visual alarm notification

▼ Centralized software management administration

▼ Automatic discovery of equipment additions, deletions and changes

▼ Sophisticated link and path management

▼ Extensive performance data for SLAs and billing capabilities based on AMA (automatic message accounting) records

▼ Multiple graphical displays of performance data

▼ Open interfaces at the network and service levels for maximum business automation

▼ Customer assurance and self-provisioning support through the Alcatel 5730 VPN Service Manager, formerly the 930 VSM*

▼ Broadband access carrier class provisioning through the Alcatel 5740 Service Subscription Manager, formerly the 940 SSM*

Physical Description

Switching Shelf

▼ Height: 55 cm (21.75 in.)

▼ Width: 48 cm (19 in.)

▼ Depth: 30 cm (12 in.)

▼ 12 VU, 20 kg (44 lbs.)

Peripheral Shelf-2

▼ Height: 48 cm (19 in.)

▼ Width: 49 cm (19.25 in.)

▼ Depth: 30 cm (12 in.)

▼ 11 vertical units (VU) with fans and integrated alarm panel, 18 kg (40 lbs.)

Operating Environment

▼ 0° to 40° C (32° to 104° F)

▼ 5% to 95% relative humidity, noncondensing

▼ 60 m (197 ft.) below sea level to 1,800 m (5,905 ft.) above sea level

Product Safety

▼ EMC to FCC Part 15; Industry Canada CES-003; EN 55022; EN 50082-1

▼ Safety to CSA C22.2 No. 950; UL1950; EN 60950

▼ Environmental to GR-63-CORE (NEBS)

Network Attachment

▼ Network attachment to FCC Part 68, CTR 12, CTR 4; Industry Canada CS-03

Power

▼ Maximum 125 W per slot

▼ 48/60 V DC

▼ AC powering

Contact Alcatel for information on upcoming feature enhancements

* This product belonged to the Newbridge family. Newbridge was acquired by Alcatel in May 2000.

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