

# Alcatel 1000 S12

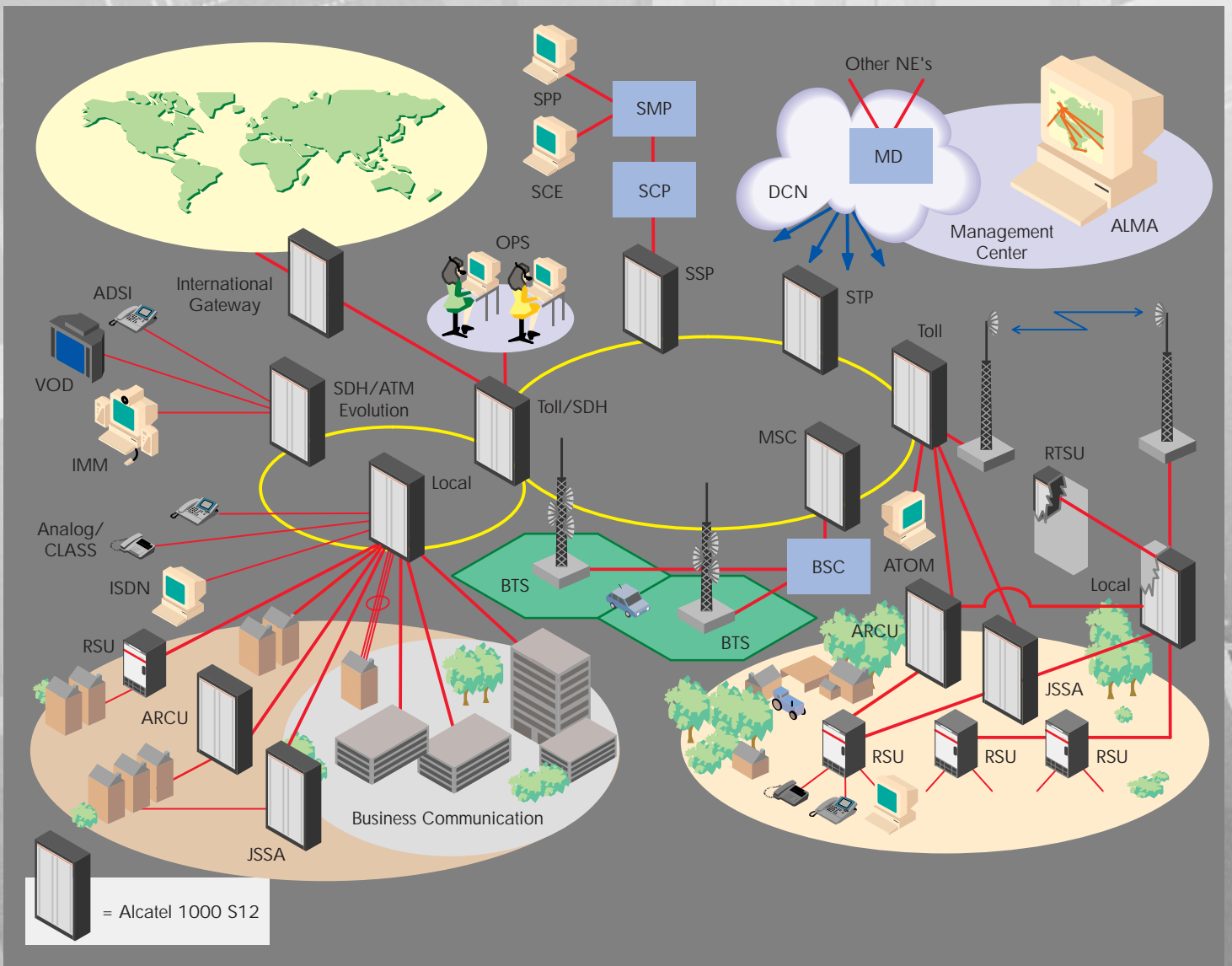
## A Multifunctional Platform



## Abbreviations

ACE	Auxiliary Control Element
ADSI	Advanced Display Services Interface
ALMA	Alcatel Management Application
AMPS	Advanced Mobile Phone System
ARCU	Large Capacity Remote Unit
ASM	Analog Subscriber Module
ATM	Asynchronous Transfer Mode
ATOM	Advanced Terminal for Operations and Maintenance
BSC	Base Station Controller
BTS	Base Transceiver Station
CCS	Common Channel Signalling
CDMA	Code-Division Multiple Access
CE	Control Element
CLASS	Custom Local Area Signalling Services
CTM	Clock and Tone Module
DCM	Digital Conference Module
DCN	Data Communication Network
DECT	Digital Enhanced Cordless Telecommunications
DIAM	Dynamic Integrated Announcement Module
DLM	Data Link Module
DSE	Digital Switching Element
DSN	Digital Switching Network
DTM	Digital Trunk Module
DTUB	Digital Trunk Unit Type B
ECM	Echo Canceller Module
EPM	Extended Peripheral Module
FMM	Finite Message Machine
GSM	Global System for Mobile Communication
HCCM	High performance Common Channel Module
IGE	International Gateway Exchange
IMM	Interactive Multimedia
IN	Intelligent Network
IPTM	Integrated Packet Trunk Module
IRIM	ISDN Remote Interface Module
ISDN	Integrated Services Digital Network
ISM	ISDN Subscriber Module
IT	Information Technology
JSSA	J-Rack family Small Stand Alone
LE	Local Exchange
MD	Mediation Device
MIM	Mobile Interworking Module
MSC	Mobile Switching Center
NE	Network Element
OAS	Operator Assisted Services
OIM	Operator Interface Module
OPS	Operator Position System
P&L	Peripheral & Load Module
RSU	Remote Subscriber Unit
RTSU	Remote Terminal Subscriber Unit
SCE	Service Creation Environment
SCM	Service Circuit Module
SCP	Service Control Point
SDH	Synchronous Digital Hierarchy
SMP	Service Management Point
SPP	Service Provisioning Point
SSP	Service Switching Point
STP	Signalling Transfer Point
TCE	Terminal Control Element
TTM	Trunk Test Module
TE	Toll Exchange
VOD	Virtual Private Network

# Alcatel 1000 S12 Total Network Offering





## A full range system

Some ten thousand Alcatel 1000 S12 exchanges are silently performing their switching tasks in the world-wide telephone network. Most of them are Local Exchanges (LE) connecting tens of millions of telephone subscribers to the network. Many of them are Toll Exchanges (TE) carrying long distance traffic. There are also a number of International Gateway Exchanges (IGE) ranging from a few thousand trunks to tens of thousands of trunks, literally switching the international telephone traffic of entire continents.

The Alcatel 1000 S12 Switching System acts as a Mobile Switching Centre (MSC) in GSM networks, as well as in AMPS and CDMA networks. Other Alcatel 1000 S12 exchanges specialise in providing Operator Assisted Services (OAS), others still function as Signalling Transfer Points (STP) in the Common Channel Signalling System (CCS#7). In the Intelligent Network (IN), the Alcatel 1000 S12 System acts as a Service Switching Point (SSP).

The Alcatel 1000 S12 Switching System is truly a field proven "Full Range" system. All these different functions are performed by individual systems derived from the same, unique, Alcatel 1000 S12 Switching Platform. All functional entities are based on the same appropriate hardware and software building blocks.





## From specialisation to multifunctionality

In many cases our Alcatel 1000 S12 Systems specialise in one of the above mentioned functions. But there is also quite a number of installations where several of those functions are embedded in one physical installation. In Nepal, for instance, an Alcatel 1000 S12 exchange switches local, tandem, national-toll and international-toll to traffic in a single combined exchange. Moreover, many toll exchanges combine International Telephone Traffic with Operator Assisted Services. STP or SSP functionality is normally not implemented as a stand alone exchange, but is normally combined with some other exchanges, performing normal switching functions.

The specialisation stems from the conventional administration's mode of operation and certainly makes a lot of sense. As an example, mass deployment of subscriber lines calls for specialised, optimised local exchanges. But in the currently developing economical climate of increased competitive pressure as well as competitive opportunity, there is a novel interest in deploying exchanges that combine several functions in one and the same physical entity.

The interest for real "Multifunctional Platforms" is inspired by economy of investment. This is an essential factor when a new operator aims to compete fast with an incumbent operator. Such competition will focus on many fronts simultaneously, but will be limited in size initially. Fast and multifaceted defence against challenging competitors, also calls for versatile, cheap and readily deployable tools.

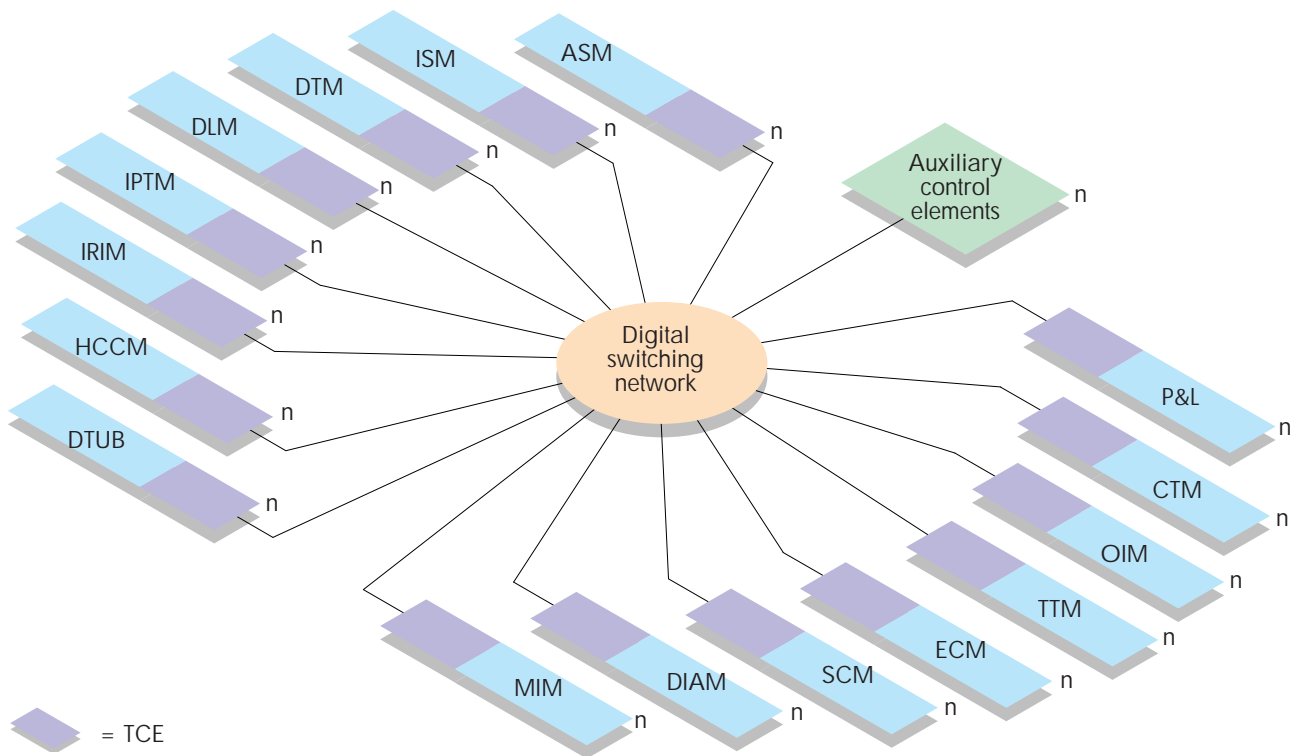
The Alcatel 1000 S12 Switching System is such a Multifunctional Platform which will help you compete in the new competitive environment. Indeed, there is no compelling reason why an Alcatel 1000 S12 exchange should be specialised in any way. Indeed, the systems architecture itself is the basic reason why the Alcatel 1000 S12 Switching System is particularly suited as a Multifunctional Platform



# Reviewing the Alcatel 1000 S12 architecture

The heart of the Alcatel 1000 S12 Switching System is the Digital Switching Network (DSN). The DSN is virtually non-blocking and self-routing. It interconnects a number of building blocks called modules. There are a limited number of building blocks each having a dedicated function. Some modules may even perform different functions, depending on the software that is loaded in the module. Each standard module can be added to the system in any quantity needed as dictated by the exchange size. For instance, eight Analogue Subscriber Modules (ASM), each serving 128 analogue lines will be needed to connect 1,024 lines.

Each module has its own micro-processor and semiconductor memory, forming the module's control electronics, called a Control Element (CE). CEs are either Terminal Control Elements (TCE) or Auxiliary Control Elements (ACE). TCEs serve a number of terminals, e.g. 128 analogue lines in an ASM. ACEs, on the other hand, only perform pure software functions and do not drive any terminal hardware such as lines or trunks.



*Alcatel 1000 S12 architecture*

The DSN is used for user channel switching (switched voice or data paths) and also for interprocessor communications in the form of datagrams. The DSN consists of a number of identical building blocks called the Digital Switching Elements (DSE). The actual number of equipped DSEs depends on the exchange size.

The Alcatel 1000 S12 software is also built up in a modular fashion. The basic software building blocks are called Finite Message Machines (FMM). Each FMM can receive and send a well-defined set of messages from and to other FMMs. An FMM can hence be seen as a black box where certain predefined actions are taken and from which resulting messages are sent, based on the sequence of received messages.

Each specific type of module has its own software, consisting of an identical copy of the basic software for that type of module and its private data set, relevant to the associated terminals. With its own private software loaded, each module minds its own business without bothering about the presence of any other module.

A specific implementation of an Alcatel 1000 S12 installation thus consists of a combination of any quantity of identical replica of members of the set of basic system hardware and software modules. Module types; TCEs, ACEs or FMMs, which are not needed for the functions to be provided by the particular installation are not equipped at all. Conversely, however, there is no limitation to the nature of the selected subsets. Any combination of modules can be realised, meaning that any combination of functions which belong to the basic function-set can be realised.

It is exactly this feature that makes the Alcatel 1000 S12 Switching System the ideal **Multifunctional Platform**.







## Second dimension switching and IT components: System openness



Via the Extended Peripheral Module (EPM), the Alcatel 1000 S12 Multifunctional Platform gets access to UNIX-based servers through the mediation of an Ethernet-LAN. Extensive use of UNIX-servers, will make that the Alcatel 1000 S12 Switching System becomes a truly "Open" System.

A stringent and secure communications protocol between the UNIX-servers and the core system, allows to dissociate the core real time call processing functions from the non real time or post processing functions. All non real time functions can now be developed in a real commercial IT-environment. This means that such software can be coded and tested anywhere, also by your own staff for instance.

But what is more, the timing of introduction of new non real time software can now be completely dissociated from the introduction of subsequent major core software releases. Basically, this boils down to the fact that new such functionality can be developed with a short time to market cycle or could possibly be purchased commercially off the shelf.

But also important real time functions, such as Intelligent Network functions, will be programmed within the new UNIX-server structure, when commercially and economically justified. This will allow us to easily integrate the IN-SCP functions within the same exchange, while still adhering to the IN-architecture, with all its advantages for rapidly deploying new diversifying features and functions within your network.



### Third dimension narrowband and broadband capability



As a third major dimension in the further evolution of the Alcatel 1000 S12 Multifunctional Platform, it will be possible to connect broadband links to any existing Alcatel 1000 S12 switching system. The interfaces will be integrated into the switch architecture without any impact on existing narrowband services. In this way, your Alcatel 1000 S12 machine will be able to serve as a platform for broadband services.

The interworking of narrowband and broadband services as an integrated functionality will make the Alcatel 1000 S12 switching system the most suitable system

for the networked multimedia environment, supporting all types of future applications. Alcatel Telecom has opted for an approach in three phases. Every phase will have to prove its performance and reliability under live traffic conditions.

In the first phase, the existing narrowband group switch will be replaced with a broadband switch, while at the same time Synchronous Digital Hierarchy (SDH) links will be directly terminated at this switch. In the second phase, it will be possible to also connect ATM links to the switch. And finally, the third step will bring full integration between narrowband and broadband with full interworking between narrowband and broadband services.

*Networked multimedia*





## Alcatel 1000 S12 ready for third millennium competition

Whether you are an incumbent or an alternative operator, your future profitability will depend on building a sustainable competitive advantage. To attain this objective, you will need innovative, differentiating characteristics. Naturally, you will need to minimise cost of network ownership, but in addition, you must “add value” by offering powerful new revenue-generating services and features.

Alcatel Telecom is fully committed to further enhancing the capabilities of its Alcatel 1000 S12 Switching System. By merging wire-line and cellular services on one switching platform and by further introducing external server functionality and truly futuristic broadband capabilities, the Alcatel 1000 S12 Multifunctional Platform is ready to serve you in your Third Millennium competitive activities.



## Currently available Alcatel 1000 S12 brochures and leaflets:

Title	Doc. no + edition
1. Alcatel 1000 S12 Evolution and Achievements Worldwide	3CL002870001TQZZA Ed.01
2. Alcatel 1000 S12 Digital Switching System	3CL002700001TQZZA Ed.01
3. Alcatel 1000 S12 Technical Description	3CL002700002TQZZA
4. Alcatel 1000 S12 Remote Subscriber Unit Don't let a lack of concentration spoil your efficiency	3CL002700004TQZZA Ed.02
5. Alcatel 1000 S12 Demonstrates Very High Load Handling Capability	
6. Alcatel 1000 S12 No.7 Signalling Subsystem	
7. Alcatel 1000 S12 Operator Position System	3CL002700005TQZZA Ed.02
8. Alcatel 1000 S12 ISDN, Targeting Your Customers' Service Needs	3CL002840002TQZZA Ed.01
9. Alcatel 1000 S12 Easy migration to Broadband	3CL003260002TQZZA Ed.01
10. Small Stand-Alone Exchange JSSA The flexible Solution for Rural and Suburban Networks	3CL002700007TQZZA Ed.01
11. Alcatel 1000 S12 International Gateway Exchanges	3CL003270002TQZZA Ed.01
12. Alcatel 1000 S12 Business Communication The Centrex Package	3CL003180001TQZZA Ed.01

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