

- *1+1 Automatic Protection Switching (APS).* All the Lucent multiservice switches utilize 1+1 APS for card, facility, and port protection on all of their optical line cards. These line cards range in speed from OC-3/STM-1 to OC-12/STM-4 on the CBX 500, OC-3/STM-1 to OC-48/STM-16 on the GX 550 and OC-3/STM-1 to OC-192/STM-64 on the MSC 25000. The Lucent APS implementation on the CBX 500, GX 550, and MSC 25000 switches provides manual or dynamic line switchover, revertive and non-revertive support, mixed-mode operation, signal degradation detection, intra-card APS, and inter-card APS. The integrated 80 Gbps SONET/SDH cross connect on the MSC 25000 enables it to provide 1:N Layer 2/Layer 3 line card processing protection, and standards-compliant 1+1 APS on all interfaces without stranding bandwidth.
- *Integrate Multiservice and Optical Networks.* Used to aggregate traffic from the multiservice network, the MSC 25000 sits at the edge of the optical transport network. With its full range of optical interfaces, high-speed trunking, DWDM support, and standards-based dynamic optical signaling, the MSC 25000 truly integrates the multiservice and optical networks—enabling new wavelength-based services.
- *Essential Performance Statistics.* The NavisCore™ and NavisXtend™ network and service management suite, which manages all Lucent multiservice switches, provides the industry-leading performance statistics service providers require to engineer the network for top performance.

3. Common Applications

Streamlining Intra-MSB Communications

Supporting intra-MSB soft handoffs and voice coder hunting requires point-to-point communications between each switching module (SM) in the Mobile Switching Center (MSB). This is implemented as a mesh network.

This full mesh of circuits poses the same scalability issues that any full mesh does. Namely, the number of connections grows exponentially¹ as new circuit packs are added to the MSB—consuming resources for network administration that could otherwise be used to support new services. Because a Lucent 5ESS™ switching module can contain up to 80 circuit packs, this can quickly become a serious management problem for service providers.

When a switching module contains 5 or more circuit packs, it is more cost-effective to route intra-MSB communications through a CBX 500, GX 550, or MSB 25000 switch. This replaces the full mesh with a much simpler communications infrastructure and preserves valuable switching module capacity for wireless services. (See Figure 1)

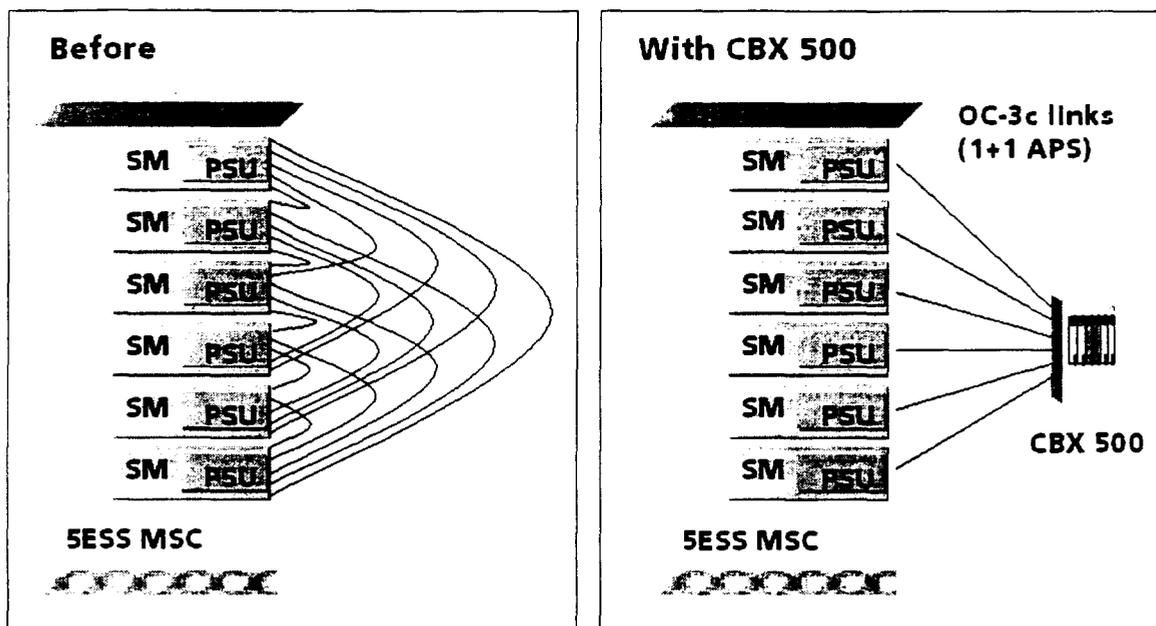


Figure 1—In the before shot, a full mesh of PVCs connects switching modules within a 5ESS MSC. Adding a CBX 500 allows service providers to replace this mesh with a series of 1+1 APS protected optical links. Using a CBX 500 to support intra-MSC communications creates a simpler, more efficient network infrastructure. (Larger networks that need more capacity may choose to use a GX 550 or MSC 25000 instead.)

Note: The actual formula calculating the number of connections required to maintain a full mesh of point-to-point link is $[n(n-1)/2]$.

Supporting CDMA Soft Handoffs

When a user places a call to a CDMA wireless network, multiple Mobile Switching Centers (MSCs) may receive that call's signal simultaneously. The MSC with the highest signal strength becomes the primary MSC for communications with the Public Switched Telephone Network (PSTN). As the user moves, that primary MSC's signal strength may decline while another MSC's signal increases. If the primary MSC's signal strength becomes too weak, the network may select an alternate MSC with a stronger signal to receive the call from the user. That MSC transmits the call to the MSC through a wired frame relay or ATM network over T1s. The initial MSC maintains the connection with the PSTN for the duration of the call. This process is known as a soft handoff, because the MSC receives the signal before the handoff takes place.

In CDMA networks that use Lucent 5ESS switches in the MSC—also known as the Mobile Telephone Switching Office (MTSO)—an ATM network is built to support soft handoffs between switches. Each 5ESS switch connects to multiple base stations. As a user moves from one base station to another, the 5ESS switch performs a soft handoff. If the user moves to a base station that is connected to a different switch, the transmission is sent between the two 5ESS switches using an ATM network.

Figures 2 through 5 depict how soft handoffs are accomplished in a CDMA network that uses Lucent 5ESS switches in conjunction with a multiservice network comprised of Lucent CBX 500 multiservice WAN switches².

Note: Higher capacity networks may use a GX 550 or MSC 25000 instead of a CBX 500.

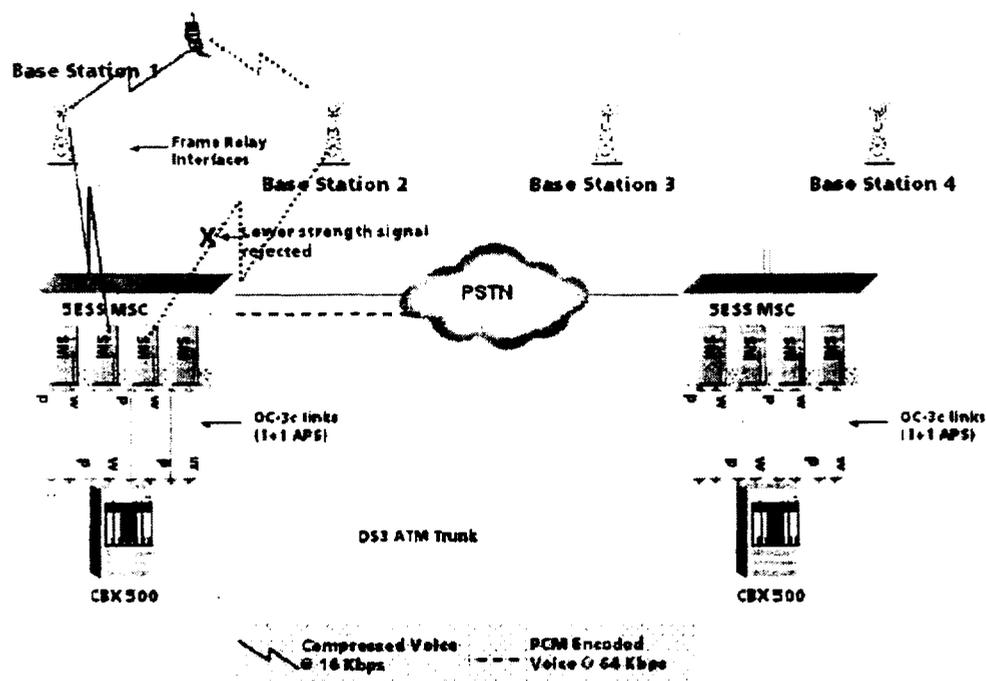


Figure 2—A cellular user is simultaneously communicating with Base Station 1 and Base Station 2. Base Station 1 has the strongest signal and is selected as the primary source. The voice source is compressed in the cellular phone and decompressed by the 5ESS switch before it is transmitted to the PSTN.

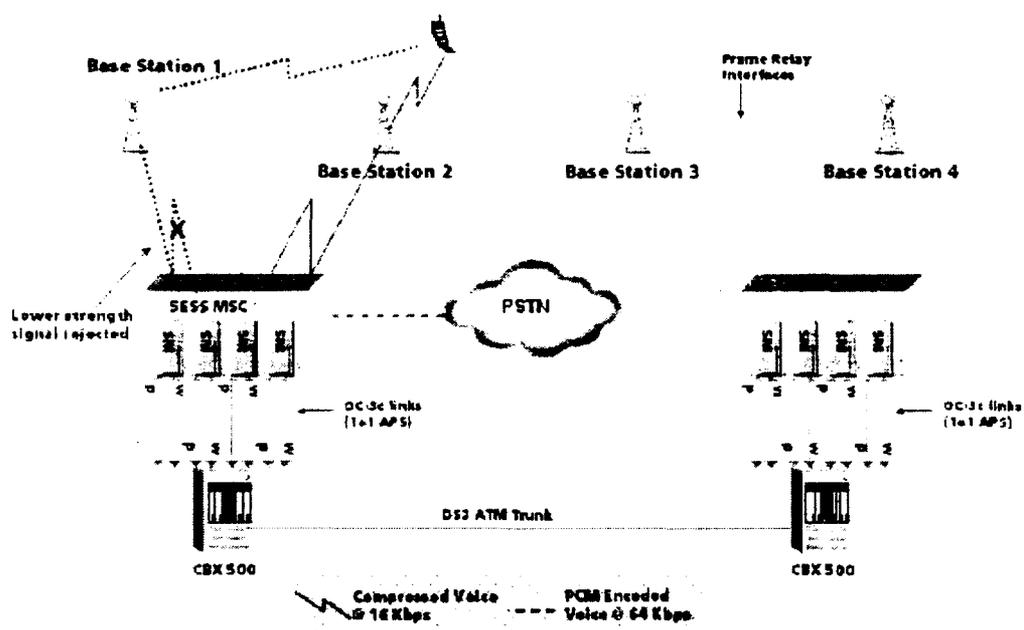


Figure 3—As the user moves, the signal strength increases on Base Station 2. When the signal is stronger on Base Station 2, it is selected as the primary source for interconnection with the PSTN.

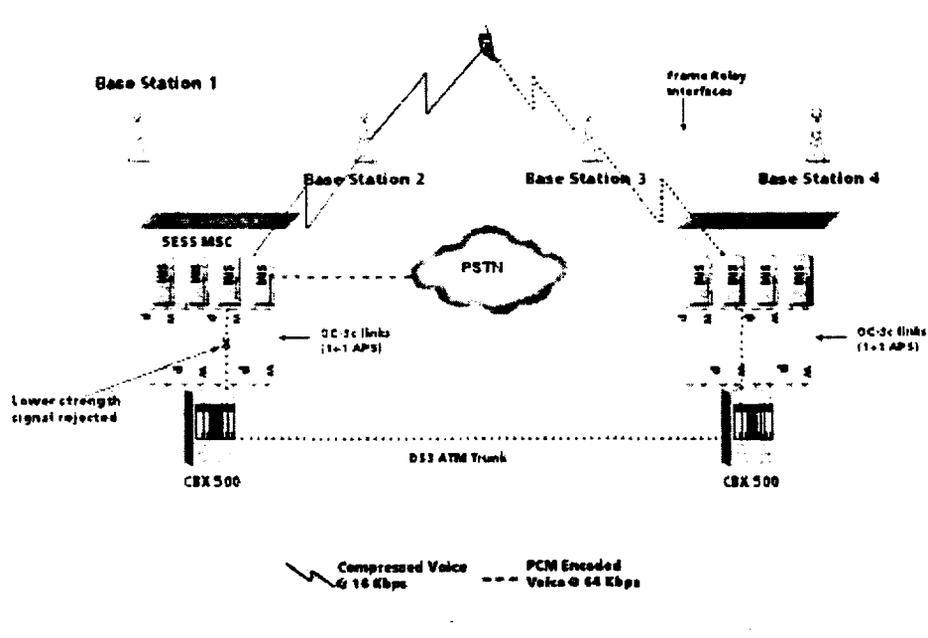


Figure 4—As the user moves further, the signal is picked up by Base Station 3 and dropped by Base Station 1. The compressed voice signal is sent across the CBX 500/GX 550/MSC 25000 multiservice network to the 5ESS switch that established the original connection. However, the signal strength is still stronger on Base Station 2, so it remains the primary base station.

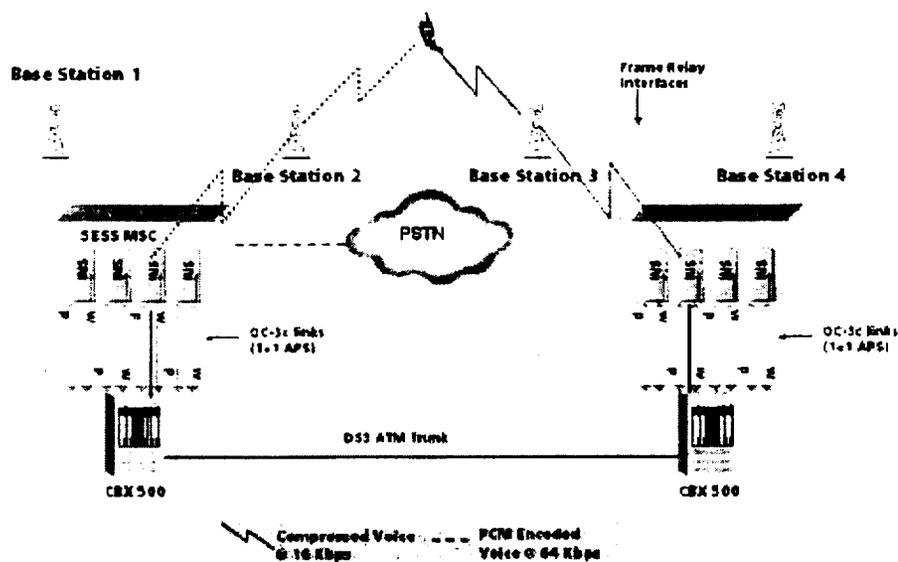


Figure 5—As the user moves closer to Base Station 3, the signal strength becomes stronger until it is selected as the primary base station. The call is transmitted across the CBX 500/GX 550/MSC 25000 multiservice network as compressed voice. It is decompressed at the original 5ESS switch and transmitted as a 64 Kbps pulse code modulation (PCM) voice transmission across the PSTN.

Providing Backhaul Aggregation

The same CBX 500 multiservice WAN switch deployed in the wireless network to streamline intra-MSC communications and support CDMA soft handoffs can also aggregate traffic for long-distance transport. Service Providers with multiple networks can converge them into a single backbone network, reducing costs and improving operational efficiencies.

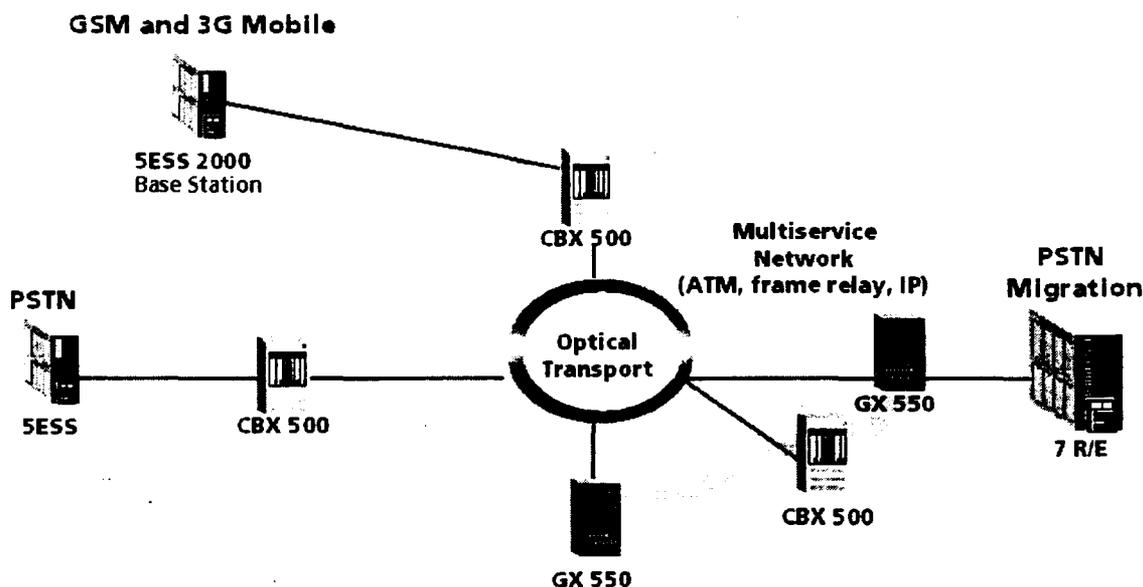


Figure 6—A single multiservice backbone infrastructure improves efficiencies.

Seamless Migration to IP MPLS

Lucent CBX 500 and GX 550 multiservice WAN switches already deployed in 2G CDMA networks can be redeployed to support the coming ATM-based Radio Access Network (RAN) in 2.5G wireless networks. 3G wireless networks build on this RAN, adding an all-IP core network to connect gateways, application servers, other providers, databases, and the Internet. Over time the CBX 500 and GX 550 switches used in the RAN can be redeployed as IP MPLS switches in the 3G all-IP core network. The MSC 25000 can also be used to support 2G and 3G wireless networks. This flexibility enables service providers to take advantage of the CBX 500, GX 550, and MSC 25000 multiservice capabilities, field-tested reliability, and operation infrastructure throughout their wireless networks. This in turn enables them to reduce operations costs by reducing the number of different kinds of equipment used in their networks and by reusing proven carrier-class equipment as the network evolves.

Supporting Voice-over-Packet, Internet Access, and mCommerce Services

Unparalleled Traffic Management Protects Voice and mCommerce Services

The CBX 500, GX 550, and MSC 25000 multiservice switches deliver proven end-to-end absolute QoS, traffic engineering, and control required to support delay-sensitive voice and mCommerce services in a mixed environment. These switches actively manage incoming traffic to ensure that low priority bandwidth demands such as emails, file transfers, and web browsing do not interfere with voice calls and mCommerce transactions—even during network congestion. (See Figure 7)

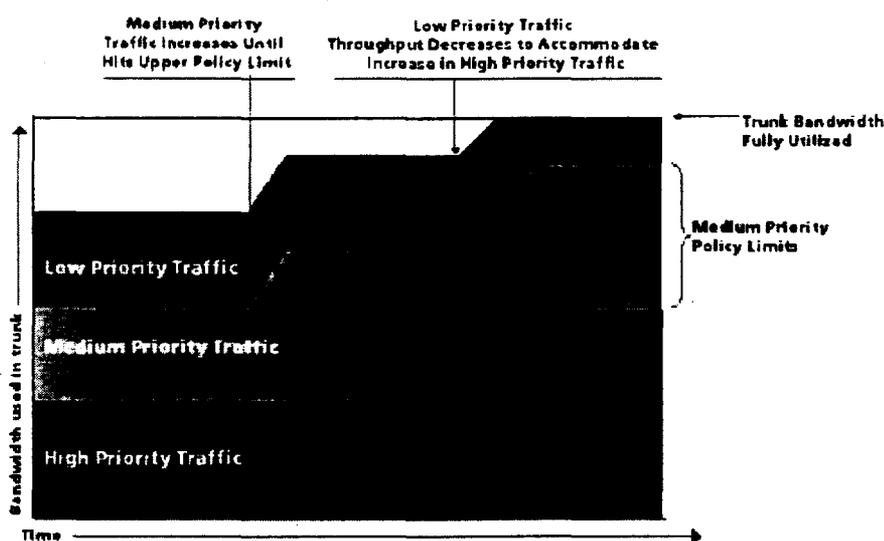


Figure 7—As traffic loads increase, the CBX 500, GX 550 or MSC 25000 switch automatically adjusts throughput to meet service requirements for each QoS class.

Figure 7 shows the result of inputting high, medium, and low priority ATM and native IP traffic into a CBX 500. In this experiment, the offered load on the medium priority traffic was increased until it reached the upper bounds of its governing traffic policy. In response, the CBX 500 decreased the throughput on the low priority traffic, while maintaining the throughput of the high priority voice and mCommerce traffic.

Then the traffic generator increased the offered load of high priority traffic. In response, the CBX 500 decreased the throughput of the medium and low priority traffic—keeping the utilization of the available bandwidth in the trunk at near 100%, while ensuring that all levels of traffic are fairly serviced³.

Note: Higher capacity networks may use a GX 550 or MSC 25000 instead of a CBX 500.

Transporting Standard Internet-Accessed Applications and Mobile Applications

As standards-compliant IP MPLS switches, the CBX 500 and GX 550 can also provide transport for standard Internet-accessed applications such as email, wireless photography, and web browsing. They can also support unique mobile applications, including point of sale and location specific information services.

Because IP MPLS does not rely on the inefficient overlay used in IP-over-ATM, it can simplify the network infrastructure and avoid the N^2 scaling problem.

Most importantly, the CBX 500 and GX 550 have the same field-proven switch hardware and control algorithms at their core that have made the switches the industry's equipment of choice for global multiservice networks. As a result, Lucent's CBX 500 and GX 550 truly provide an IP interface that utilizes the benefits of ATM (QoS and traffic engineering) and IP (services)⁴.

This enables service providers to explore new revenue generating opportunities without risking their lucrative voice services. At the same time, service providers can enter special potentially high margin service areas, such as remote control telemetry and Voice-over-Packet services.

Note: The CBX 500 and the GX 550 currently offer enhanced pre-standards-based MPLS, and will conform to standards-based MPLS, as the standards are defined. The MSC 25000 will also conform to standards-based MPLS.

4. Conclusion

Service providers can use the CBX 500, GX 550, and MSC 25000 to create a more reliable and robust network to support a wide variety of wireless services. In addition, service providers can use this same network as their Operations Administration Maintenance and Provisioning (OAM&P) backbone or to provide bandwidth on demand to non-wireless services during off peak wireless hours.

Perhaps the most compelling reason, however, to use the Lucent CBX 500, GX 550 and MSC 25000 multiservice switches at the heart of wireless networks is the fact that these switches position wireless service providers to migrate seamlessly to 3G.

As the recent bidding wars in Europe attest, wireless service providers are intent on migrating to 3G wireless to provide high bandwidth mobile data services. A smooth migration to 3G, however, requires first implementing a 2.5G wireless network. This step introduces, among other things, an ATM-based Radio Access Network (RAN). 3G wireless networks build on this RAN, adding an all-IP core network to connect gateways, application servers, other providers, databases, and the Internet. (See Figure 8)

A Generic 3G Wireless Network

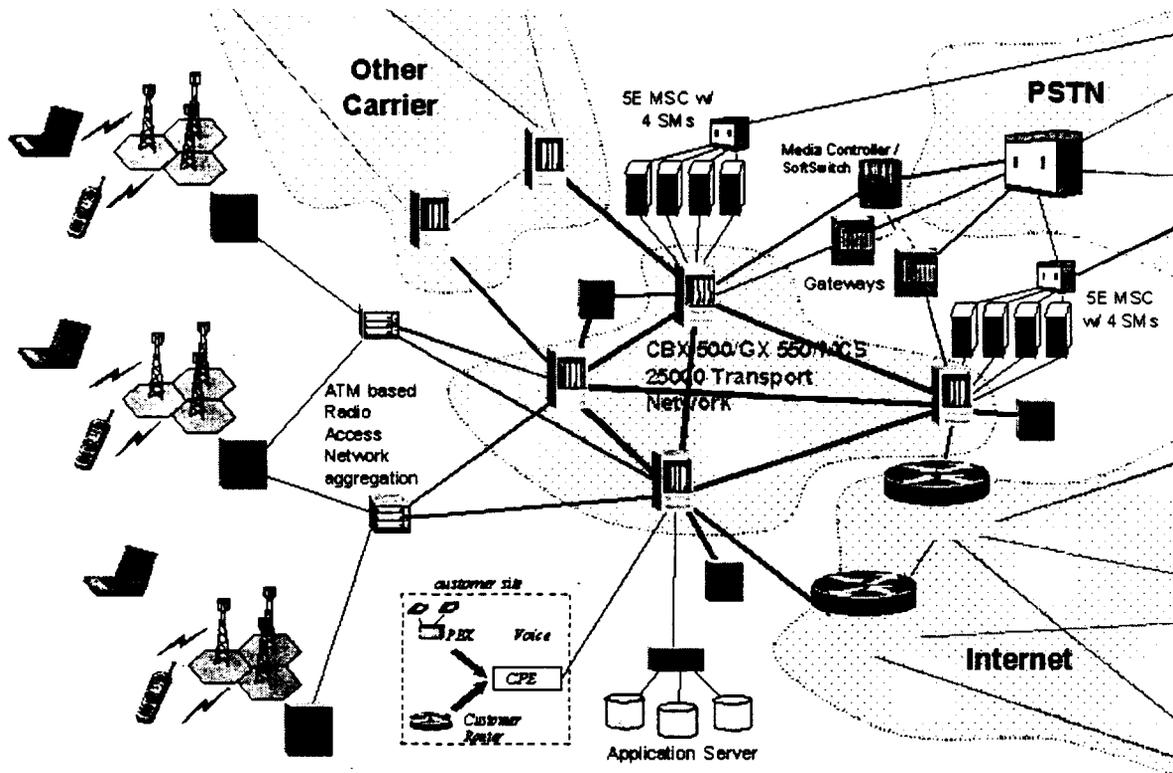


Figure 8—A generic 3G wireless network with the Lucent CBX 500, GX 550, and MSC 25000 multiservice switches.

Lucent multiservice switches are equipped with the reliability, availability, scalability, and QoS capabilities service providers require to build first the ATM-based RAN and the all-IP core networks involved in this migration.

Service providers who deploy the CBX 500, GX 550, and MSC 25000 in their wireless networks to profit from high-revenue voice, mCommerce, and mobile data services will be able to redeploy those same switches as they migrate from 2G to 2.5G and 3G wireless networks.

No other multiservice switch on the market today can match this long-term investment protection.

ATTACHMENTS

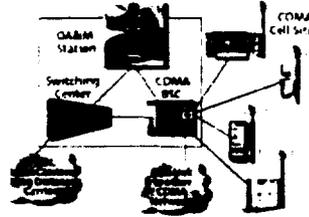
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CDMA Networks

Provides advanced wireless features that allow network operators to compete successfully anywhere in the world

Our CDMA solution offers a robust wireless portfolio that allows network operators to compete successfully with the most advanced technology available today while being prepared for the technology of tomorrow. Based on our DMS-MTX switching platform, the CDMA solution provides operators with a complete range of wireless options that expand subscriber services, optimize network performance, lower capital costs, and reduce the overall cost of ownership.



[View Network Diagram](#)

With CDMA technology powering your network, you can position yourself at the forefront of the next generation of communication technologies. CDMA will be the driving force behind true wireless Internet access and mobile technology solutions that will inspire a new era of high-speed, anytime-anywhere information access. Our CDMA solution will help you prepare your infrastructure to profit from the delivery of highly targeted and efficient solutions to your customers.

Feature

The Nortel Networks CDMA solution:

- Increases RF capacity through unique advanced power control algorithms that reduce interference from other handsets, as well as through a high power (12.5 Watt) forward link
- Minimizes dropped calls with high-speed soft handoff algorithms and our innovative 6-way intelligent soft handoff
- Reduces capital costs since our advanced handoff triggers eliminate the need for beacon cells
- Minimizes dropped calls and base station coverage overlap through Intersystem Soft Handoff
- Increases revenue potential from subscriber services portability allowing seamless roaming to other networks
- Allows for more subscribers and revenue due to higher system capacity
- Creates additional revenue opportunities through attractive digital services
- Provides near wireline voice quality
- Offers inherent call security through CDMA advanced coding techniques
- Prolongs battery life, thereby encouraging users to leave their phones on and accept more calls, which in turn increases air time usage operator revenue
- Lowers capital investment in excessive cell sites and associated acquisition cost through larger cell site radius

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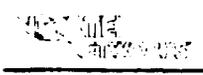
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CDMA Networks

CDMA Base Station Portfolio

Provides a complete selection of CDMA solutions to support markets ranging from extreme rural to dense urban areas

Our CDMA Base Station Portfolio connects the DMS-MTX or DMS-100 Wireless to cell sites to perform advanced CDMA mobility functions in a range of challenging environments. With features such as soft-handoff and advanced mobile power control, the Base Station Portfolio uses a unique packet-based architecture that provides an easy transition to high-speed, high-bandwidth ATM networks.

The CDMA Base Station Portfolio uses our unique, intelligent 6-way soft handoff technology to permit six simultaneous cells or sectors to be maintained within a mobile unit's active set of soft handoff candidate cells. Combined with our high-speed soft handoff methods, the Base Station Portfolio allows CDMA operators to significantly reduce the potential for dropped calls.

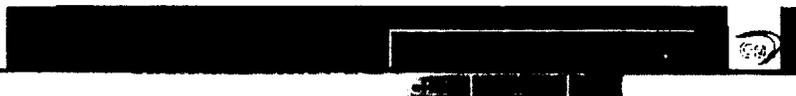
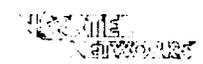
CDMA Base Station Portfolio

- **Base Station Controller** - Connects CDMA base stations to mobile switching centers to enable highly efficient backhauls in the network
- **Metro Cell** - Provides indoor and outdoor CDMA coverage for metropolitan applications at both 800 MHz and 1900 MHz
- **Metro Cell with CGS** - Provides expanded Metro Cell features in the same cabinet footprint
- **Minicell** - Offers a cost-effective solution for wireless coverage in special areas
- **Fiber Optic Microcell** - Provides cost-effective extension or reinforcement of coverage in challenging niche markets
- **Rural Cell** - Extends coverage to rural and remote areas
- **Repeaters** - Extend coverage to areas where additional capacity is not required

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CDMA Networks

CDMA Base Station Controller

Connects CDMA base stations to mobile switching centers to enable highly efficient backhuls in the network

Our CDMA Base Station Controller (BSC) is a packet-based device that connects CDMA base stations to mobile switching centers (MSC). With an ATM-based design and using Nortel Networks unique, intelligent six-way soft handoff algorithm, the BSC provides mobility functions such as soft hand-off between cells, power control of individual traffic channel links, and the selection of up to six available base stations for handoff during a call.

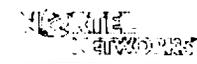
Supporting both 1900 MHz and 800 MHz cell sites and a wide variety of call traffic density applications, the BSC can provide 96 conversations on a single unchannelized T1 using 13 Kbps vocoders, and more than 130 conversations using 8 Kbps vocoders. The BSC is highly scaleable, able to support small networks of fewer than 50 cell sites or larger networks with up to 160 base stations. In addition, Dual BSC Capability allows two BSCs running off one common DMS-MTX switch to support up to 300 base stations.

Features and Benefits

- Superior technology - Using our unique, intelligent six-way soft handoff algorithm and an ATM-based design, the BSC provides greater RF path diversity and enables highly efficient backhuls in the network.
- Highly scaleable - The BSC can support and grow with your network, whether it is in initial build-out phase with quick anticipated growth or if added capacity will be required over an indefinite length of time. It supports networks with fewer than 50 cell sites or as many as 160 base stations, and can support up to 300 base stations when two BSCs are used with Dual BSC capability.
- Provides mobility functions - The BSC's technology allows for soft handoff between a selection of up to six available base stations, as well as power control of individual traffic channel links.

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CDMA Networks

CDMA Metro Cell

Provides indoor and outdoor CDMA coverage for metropolitan applications at both 800 MHz and 1900 MHz

Our CDMA Metro Cell is a high-capacity, multicarrier base station suited for metropolitan applications in mobile or fixed wireless environments. The Metro Cell provides 576 channel elements to handle urban calling needs while also having the flexibility and scalability for cost effective deployments in suburban applications.

Available in both indoor and outdoor versions, the Metro Cell is based on our technology that provides superior system performance, offers flexibility for use in numerous applications, and provides easy upgrade capability for added capacity. The Metro Cell consists of two main components: the Metro DE, an enclosure containing the digital electronics and all channel elements; and the Metro RE, an enclosure containing the radio equipment.

Features

The Metro Cell offers:

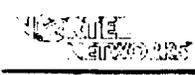
- Indoor or outdoor operation
- AC or DC operation
- Digital system support of up to four RF carriers from one platform
- 800 MHz and 1900 MHz capability
- Removable RF equipment with a digital interconnect link via optical fiber
- Design modularity for simple, cost-effective expansion
- Completely digital system from T1/E1 to Intermediate Frequency (IF) stage in FRM

Benefits

The Metro Cell provides:

- The highest capacity CDMA base station currently available
- The most compact footprint of any equivalent base station
- One base station for 800 and 1900 MHz applications
- Simple upgrades to add capacity
- A modular, flexible, and reliable design
- Easy access and maintenance

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CDMA Networks

CDMA Rural Cell

Extends coverage to rural and remote areas

The Nortel Networks CDMA Rural Cell, nicknamed the "Boomer Cell," was originally designed to provide 800 MHz wireless coverage in the extreme rural areas of the Australian outback. The Rural Cell generates a high RF power output to meet the long-range demands of remote areas.

In addition to using a high power amplifier for forward link capacity and a tower top LNA unit for improved sensitivity, the Rural Cell requires an antenna height of at least 200 feet, and generally needs a 300-foot antenna to cover range distances greater than 80km. Typically installed on a hill or other high terrain, the Rural Cell has demonstrated coverage of up to 240km over water and 130km over land.

Benefits

The Rural Cell offers:

- A complete compliment or replacement for AMPS coverage in the most extreme environments.
- Expandability and scalability to grow as your subscriber base grows.
- Common components with the existing Metro Cell product for easy sparing

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Public Carrier Networks

DMS-100 Wireless System

The DMS-100 Wireless system offers unprecedented wireline and wireless system integration, maximizing existing network assets, increasing operating efficiency, and opening the door to new revenue opportunities.



The DMS-100 Wireless System

The DMS-100 Wireless system offers the following business and market solutions:

- *Service providers can leverage existing switching platforms*
- *PCS spectrum owners can deploy their wireless systems cost effectively*
- *Cellular service providers can leverage system assets in new wireline opportunities*
- *Service providers can offer a full suite of wireline/wireless mobility and fixed access services from a single platform*
- *Service providers can lower operating costs by using system trunking and signaling resources more effectively*

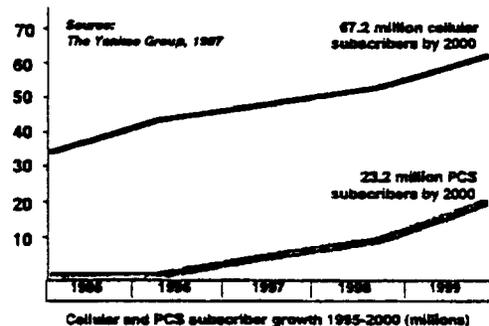
A cost-effective switching solution for opening new markets and expanding revenues in wireline and wireless services

The market for cellular services and personal communications services (PCS) is undergoing a rapid expansion. As more and more subscribers discover the convenience of these services, demand will continue to build. By the year 2000, the total number of cellular wireless subscribers in the US is expected to reach 67.2 million, with an additional 23.2 million PCS subscribers. Deregulation in the local telephone market is enabling new service providers to offer revenue-generating wireline services to business and residential markets by becoming competitive local exchange carriers (CLECs).

One Platform, Two Markets

The DMS-100 Wireless system from Nortel (Northern Telecom) allows service providers to capitalize on these exciting new opportunities for expanded revenues. It combines the capabilities of two of the industry's most reliable and robust wireline and wireless switches into a single system, providing a cost-effective and highly integrated service platform. A single DMS-100 Wireless system can provide a full suite of wireline, wireless mobility, and fixed access services.

The DMS-100 Wireless system is designed for maximum flexibility. It can help broaden service offerings and dramatically increase revenues. It allows service providers to expand their service areas, offering retail wireless services to their existing customer base and to potential new customers. The platform also enables service differentiation today with advanced service integration in voice mail and personal number services, and in the near future by providing wireless centrex, advanced residential services, and more.



The DMS-100 Wireless System

- *Leverages existing switching assets*

The DMS-100 Wireless system allows service providers to upgrade existing DMS-100 switches to provide a full suite of wireline and wireless mobility and fixed access services.

- *Provides service differentiation*

Service providers can offer integrated wireline/wireless services such as voice mail and simultaneous/sequential ringing, providing a major competitive differentiator and positioning the service provider as the innovation leader in the marketplace.

- *Provides new market opportunities*

The DMS-100 Wireless system increases revenue potential by allowing service providers to capitalize on the rapid growth in the wireless and CLEC markets.

- *Supports HLR/VLR capabilities*

Service providers can manage wireless customers' services and capabilities from the integrated DMS-100 Wireless Home Location Register (HLR)/Visitor Location Register (VLR) mobility databases.

- *Supports advanced wireline capabilities*

The DMS-100 Wireless system supports the full suite of wireline capabilities available today with the DMS-100 system, including Internet Access, National ISDN, Custom Local Area Signaling Service, Meridian Digital Centrex, Local Number Portability, Wideband Data Services, and more.

- *Supports advanced wireless capabilities*

The DMS-100 Wireless system provides wireless customers with the full suite of wireless features available today with the DMS-MTX system, Nortel's flagship wireless switching system. These features include Short Message Service and Message Waiting Indicator, Fixed Wireless Access, Group/Simultaneous Ringing, and many more.

- *Provides a flexible migration path to support multiple common air interfaces*

Initially, the DMS-100 Wireless system will support Code Division Multiple Access (CDMA) radio at the 1900 MHz and 800 MHz frequencies. Support of Advanced Mobile Phone Systems (AMPS) radio and Time Division Multiple Access (TDMA) radio is planned for future releases.

- *Reduces deployment costs*

The DMS-100 Wireless system's integrated platform allows common usage of existing SS7 facilities, network trunking, and OAM functionalities, allowing service providers to reduce the cost of providing wireline and wireless services.

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● *About This Document*

This document is an advance-planning tool for network operators, engineers, and marketers who need information about the DMS-100 Wireless system. It has been designed to complement—not replace—more detailed Nortel technical documents.

● *For More Information*

For more detailed information, contact your regional Nortel representative or call 1-800-4 NORTEL (1-800-466-7835) or 1-506-674-5470.

The address for our World Wide Web (Internet) home page is <http://www.nortel.com>

Retail and Wholesale Opportunities

The DMS-100 Wireless system also offers service providers great flexibility in how they deliver wireless services to potential subscribers in their service area. For example, they can offer retail wireless services directly to their own customers, or they can offer wholesale network services to another wireless service provider.

In addition, service providers can offer innovative service packages that mix and match retail and wholesale services.

Retail Opportunities

As a retailer, a local exchange carrier (LEC) PCS or cellular license holder may own all the components of the network: the radio, switching, and database subsystems. Such a network is completely self-sufficient and offers full, feature-rich PCS and cellular networking, along with integrated trunk interconnects to the LEC and interexchange carrier (IXC).

Alternatively, the service provider could partner with, or partition radio spectrum from, a company that owns PCS licenses to pursue the new wireless opportunities.

Either method allows the service provider to

- leverage a strong brand name
- extend their current service area
- maximize use of switching system assets
- minimize initial costs associated with a wireless system start-up

Wholesale Opportunities

The DMS-100 Wireless system opens the door to a variety of innovative relationships between service and network providers, helping them to realize the vision of ubiquitous, cost-effective PCS.

The flexibility of the DMS-100 Wireless system allows an owner to wholesale a customized network solution for PCS service entrants and cellular providers at varying levels, including:

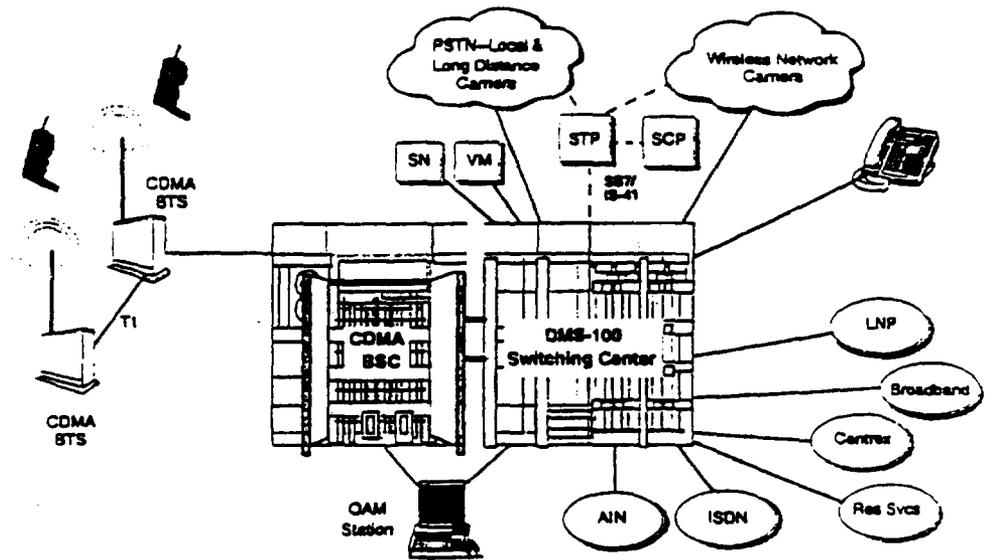
- Basic switching and end user services
- Mobility database support
- Intelligent networking platforms
- Back office support functions, such as billing, order entry, and maintenance

No matter what the opportunities in a service provider's market, the DMS-100 Wireless system offers the finest in flexibility and system integration available in the market today.

2

Services and Features

The DMS-100 Wireless system provides an extensive list of revenue-generating wireless and wireline services. It also allows service providers to maximize marketplace differentiation and revenue potential by offering subscribers the convenience of integrated services such as wireline/wireless voice mail and single number simultaneous/sequential ringing. Figure 2 shows some of the high-level services and features offered by the DMS-100 Wireless system.



Abbreviations: BSC, Base Station Controller; BTS, Base Transceiver Station; CDMA, Code Division Multiple Access; ISDN, Integrated Services Digital Network; LNP, Local Number Portability; OAM, Operations, Administration, and Maintenance; PSTN, Public Switched Telephone Network; SN, Service Node; SCP, Service Control Point; STP, Signaling Transfer Point; VM, Voice Mail

Figure 2. DMS-100 Wireless Services and Features

Wireline Services

Like the DMS-100 system, the DMS-100 Wireless system offers the following wireline services and more:

- ◆ National ISDN-2/3 BRI and PRI
- ◆ Custom Local Area Signaling Service
- ◆ Meridian Digital Centrex
- ◆ Local Number Portability
- ◆ Wideband Data Services
- ◆ Automatic Call Distribution
- ◆ Advanced Intelligent Networking Releases 0.1 and 0.2
- ◆ TR-303 Access Interface

For a more detailed list of wireline services, please refer to the *DMS-100 Feature Planning Guide* (50004.11).
Call
1-800-4 NORTEL
to order the latest issue.

1

Market Introduction

The wireless market has given the subscriber the ability to access telephony-based services from any location. The rapid expansion in this market illustrates the high value subscribers place on these services. As more and more subscribers discover the convenience of wireless services, demand will continue to grow. By the year 2000, the total number of cellular wireless users in the US is expected to reach 67.2 million, plus 23.2 million wireless personal communication services (PCS) users.

The DMS-100 Wireless system from Nortel (Northern Telecom) offers a cost-effective way to pursue these exciting opportunities for increased revenue. It integrates the industry's most reliable and robust wireline and wireless switching systems onto a single platform, making it possible to provide a full suite of wireline and wireless services—without adding significantly to existing infrastructure (Figure 1). And because the DMS-100 Wireless system builds on existing technology, there is no need for a large initial investment of capital or for extensive training.

The DMS-100 Wireless system enables the service provider to capitalize on the emerging wireless market by adding wireless capabilities to the existing network base.

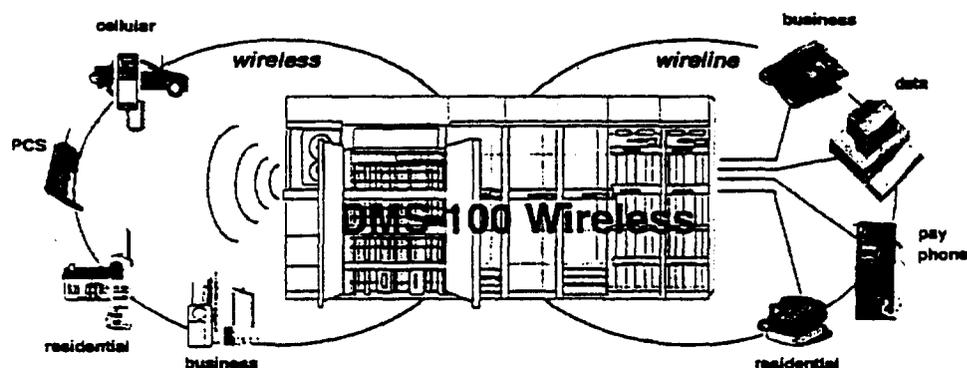


Figure 1. The DMS-100 Wireless System

New Markets and New Opportunities

The DMS-100 Wireless system offers a flexible and cost-effective way for the service provider to establish a single point of presence in both traditional wireline and new wireless and PCS markets. It enables incumbent local exchange carriers (ILECs), independent operating companies (IOCs), and competitive local exchange carriers (CLECs) to profitably add wireless capabilities to their existing equipment—thereby leveraging their installed asset and customer base, while enabling them to cost-effectively compete in both wireline and wireless markets.

As a new system, the DMS-100 Wireless solution allows the service provider to pursue new business opportunities by effectively using their switching system resources in a much larger telecommunications scope, to include business centrex, integrated services digital networks (ISDN), advanced intelligent networks (AIN), advanced residential services, full mobility PCS, and wireless local loop.

Wireless Services

The DMS-100 Wireless system allows service providers to offer their customers many exciting wireless mobility and fixed access features and services, including the following:

- ◆ Account Code Billing*
- ◆ Call Forwarding
- ◆ Call Transfer
- ◆ Call Waiting
- ◆ Calling Line ID Presentation
- ◆ Calling Line ID Restriction
- ◆ Credit Card Calling*
- ◆ Equal Access
- ◆ Hotline*
- ◆ Message Waiting Notification (audio and visual)*
- ◆ Personal Number Service (requires external IN platform)
- ◆ Real Time Billing*
- ◆ Remote Call Forward Activation and Deactivation
- ◆ Short Message Service*
- ◆ Three-Way Calling
- ◆ Voice Mail Callback (requires external IN platform)
- ◆ Wireless Circuit Switched Data and FAX (coming soon)

For a more detailed list of wireline services, please refer to the *DMS-MTX Feature Planning Guide* (66009.08/01-97).
Call
1-800-4 NORTEL
to order a copy.

Integrated Wireline/Wireless Services

- ◆ Single Voice Mail System*
- ◆ Group/Simultaneous and Sequential Ringing*
- ◆ Voice-Activated Dialing Shared Directories*, Wireless Circuit Switched Data, and FAX (coming soon)

Wireless System Features

In addition to the many revenue-generating subscriber services, the DMS-100 Wireless system uses the following *integrated* components to provide full mobility, extending subscriber access virtually anywhere the service provider allows.

- ◆ Advanced IS-41 Networking*
- ◆ Inter- and Intra-System Handoff*
- ◆ Integrated Home and Visitor Location Registers (HLR and VLR)*

**These features are described in greater detail in the following pages.*