

NN10270-100

Succession Multimedia Xchange

Succession MX Basics

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Succession MX basics

Introduction

The Succession MX Basics provides a high-level overview of the entire Succession Communication Server for Multimedia Xchange (MX) and the various network elements of which it is comprised. It provides the Overview, Upgrades, Fault, Configuration, Accounting, and Performance, Security and Administration (OUFCAPS) information for the overall Succession MX. The following list shows how the Succession MX Basics is organized:

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- Upgrades on page 51
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Overview

How this chapter is organized

The Overview chapter is organized as follows:

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Functional description

The Nortel Networks Succession Communication Server for Multimedia Xchange (MX) offers a wide range of next generation multimedia services in a variety of network configurations. The Succession MX provides a powerful platform for hosting a full set of SIP features, a diverse range of Internet Protocol (IP)-based clients, and gateway and media server components for Session Initiation Protocol (SIP) interoperability. It revolutionizes business communications. It customizes Vertical Applications. It provides ultimate reliability and scalability.

The Succession MX combines SIP multimedia client applications and services with scalable inter-working, trunking, and routing services. The Succession MX can integrate into customers' voice network, which can include a range of products. It can integrate into the customer's private branch exchange (PBX) environments, gracefully migrate them to IP and next generation SIP services. In addition, Succession MX can

be introduced into standalone IP environments, extending the newest SIP multimedia applications to users, including such services as Instant Messaging, Presence, Collaboration and Video Calling, enhancing the overall communication experience and taking users to the next level of application integration.

The Succession MX facilitates the shared benefits of providing a common service development and execution environment into a client services infrastructure. Such client services and programmability are seen as key components of evolving multimedia networks.

The Succession MX is positioned to

- bring multimedia services to subscribers over an IP network
- integrate IP network resources with real-time oriented conversation
- allow subscribers to converse over an IP network
- provide enhanced terminal devices and applications to enrich and simplify subscriber experiences
- provide a full range of services to meet all communication needs, such as call forwarding/redirect, forking/distribution, Call Processing Language (CPL) script execution, and basic presence monitoring and management services
- provide multi-protocol, multi-vendor IP network controller and centralized network routing
- provide number translation, number portability, and billing services with SIP

Succession Communication Server for MX opens a new realm of opportunities by unifying voice, video, and data over a single packet infrastructure.

Session Initiation Protocol

Session Initiation Protocol (SIP) is a service-enabling protocol defined by the Internet Engineering Task Force (IETF). SIP was proposed as a standard on February 2, 1999, and defined in RFC 2543 (see note for specific reference). SIP is a text-based protocol similar to the Hypertext Transfer Protocol (HTTP) that can initiate real-time, multimedia sessions, which seamlessly integrate voice, data, and video.

Note: (J. Rosenberg et al, SIP: Session Initiation Protocol, Internet Draft draft-ietf-sip-rfc2543-bis09.txt, IETF, Feb 27, 2002.)

This protocol's text-based architecture speeds access to new services with greater flexibility and more scalability than many alternative multimedia communication protocols in use today.

SIP enables simplified, interactive multimedia services and opens the way to expand service provider revenue streams with a new breed of differentiating services. With the emerging Session Initiation Protocol (SIP), a range of personalized, media-rich services can be delivered anytime, anywhere. These SIP-enabled services increase productivity, expand mobility, and enhance interactive communication.

IP communication

The Succession MX focuses on meeting the communications needs between subscribers on IP access client endpoints. Succession MX endpoints can communicate directly with each other or with endpoints that reside on other access networks with which the Succession MX interoperates.

Due to dynamic addressing schemes, such as Dynamic Host Configuration Protocol (DHCP), and the desire to avoid limiting a subscriber to a particular device, the Succession MX uses the IP "domain" concept to define networks of subscribers. A domain is an overlay in the IP network defining a subset of all subscribers that are generally served by a single system.

Examples of common domain servers currently in use include e-mail servers and Web servers. For real-time communication needs, the Succession MX maintains information related to the actual locations of subscribers in the network, and then proxies communication requests to those locations in order to reach the particular subscriber.

Once the signaling communication path is established, the endpoints can transmit desired data or media between them as indicated during the setup of the communication path.

In addition to providing Succession MX client devices and applications, and supporting network servers, the Succession MX also supports gateways to bridge the IP and existing time division multiplex (TDM) and public switched telephone network (PSTN) networks, thus enabling voice communication between IP endpoints and traditional TDM devices.

Succession MX network

Figure 1, "Succession MX network," shows the Succession MX network connectivity.

Figure 1 Succession MX network

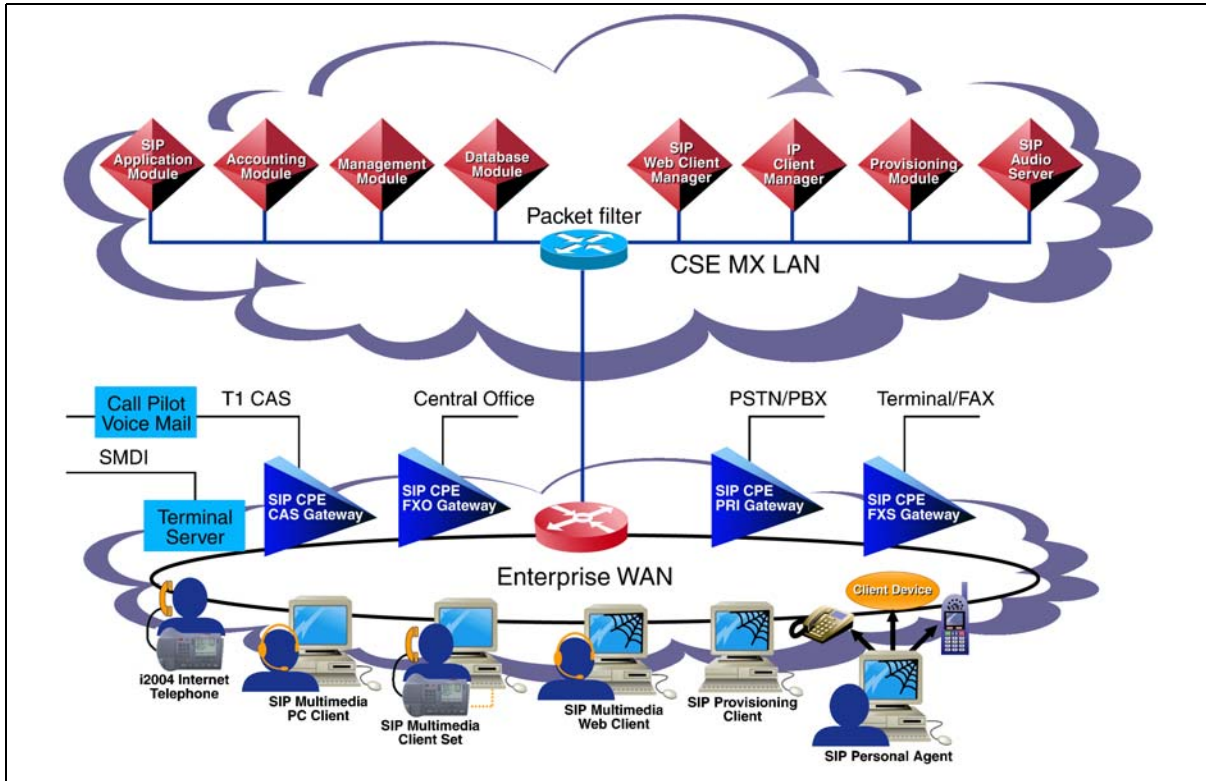
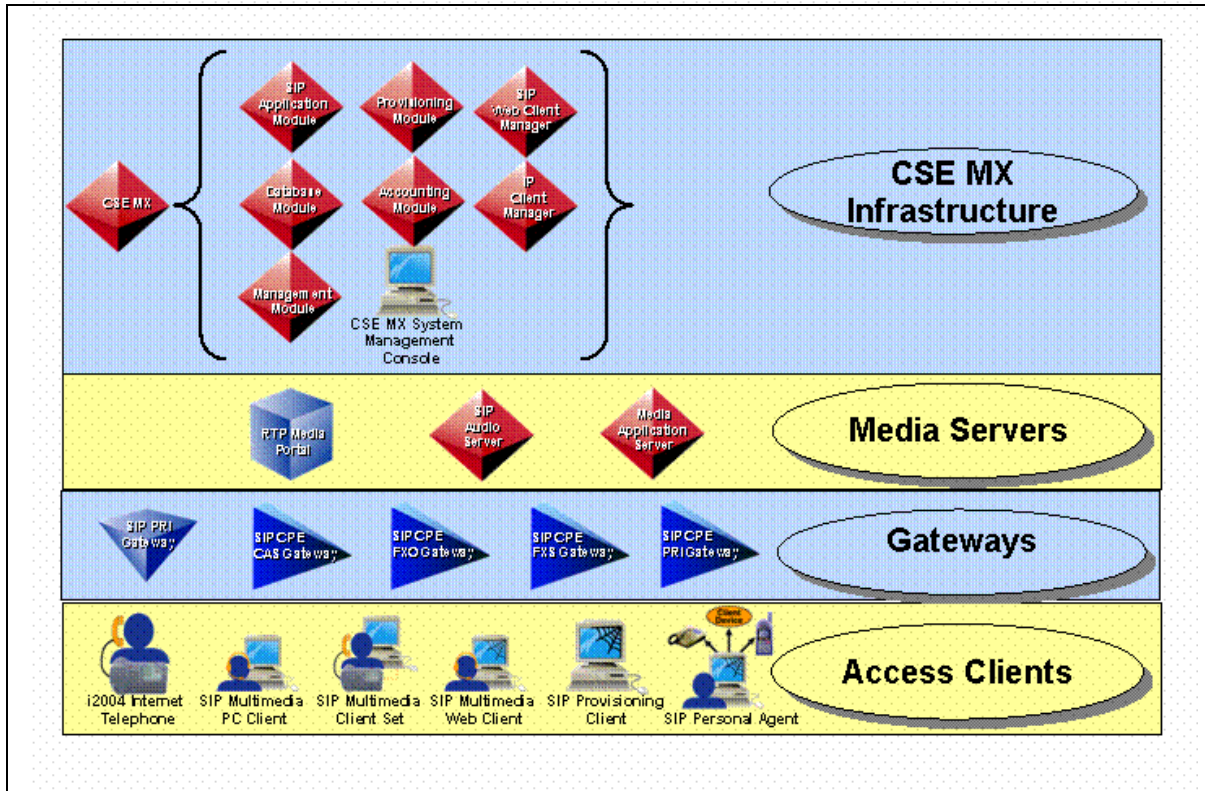


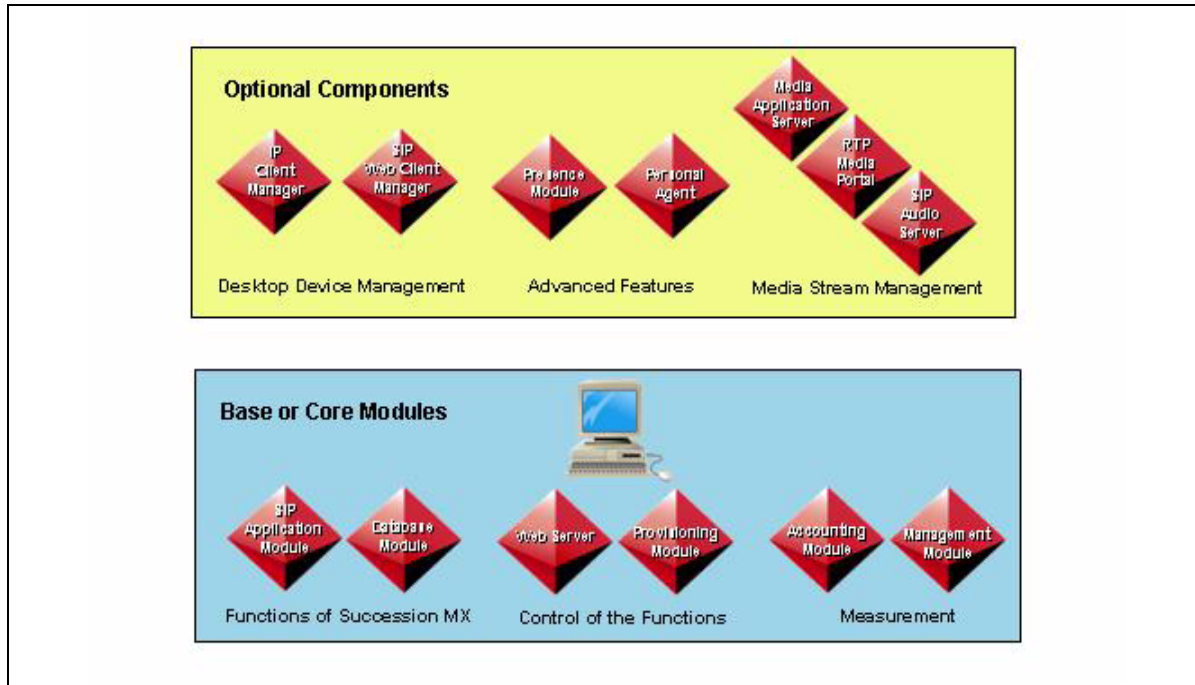
Figure 2, "Succession MX components," gives a high-level view of Succession MX network showing all required, optional, and third party components.

Figure 2 Succession MX components



Building blocks

Succession Communication Server for MX is a collection of building blocks that can be combined in different ways to create a variety of SIP-based IP network solutions. Figure 3, "Succession MX building blocks," shows the categories of SIP-enabled building blocks that comprise the overall portfolio offering. The components are categorized as base and optional components.

Figure 3 Succession MX building blocks

The following sections describe each of the categories of SIP-enabled network elements that comprise the Succession MX:

- Succession MX components
- Media servers
- Gateways
- Access clients

Succession MX components

Succession MX is a data network-oriented, IP-based Enterprise market voice communications solution developed to capture a majority of the emerging VoIP (Voice over Internet Protocol) market for converged voice and data networks. Succession MX includes several functional components, some of which are required and some of which are optional as shown in the following sections.

Required functional components

Table 1, “Succession MX functional components (required),” shows the required functional components that comprise Succession MX.

Table 1 Succession MX functional components (required) (Sheet 1 of 4)



Succession MX component	Description
	<p>The SIP Application Module is the service execution engine that provides the following software functionality:</p> <ul style="list-style-type: none"> • SIP Proxy Server • back-to-back user agent (BBUA) • SIP Registrar • CPL Interpreter • address resolution and routing capabilities <p>As an optional software feature of the SIP Application Module, the SIP Presence Module processes information for presence subscription and notification. For more information, refer to <i>Succession MX SIP Application Module Basics</i> and <i>Succession MX SIP Presence Basics</i>.</p>
	<p>The Management Module enables communication between the System Management Console, Database Module, and the various application servers. It provides the software functionality that</p> <ul style="list-style-type: none"> • manages the following functions for the Succession MX components, media server, and gateways: <ul style="list-style-type: none"> — faults — configuration — performance • collects operations, administration, and maintenance (OAM) information for display on the System Management Console <p>The System Management Console is the administrator’s interface to the Management Module. For more information on the Management Module, refer to <i>Succession MX Management Module Basics</i>. For information on the System Management Console, refer to <i>Succession MX System Management Console Basics</i>.</p>

Table 1 Succession MX functional components (required) (Sheet 2 of 4)



Succession MX component	Description
<p>Database Module</p> 	<p>The Database Module is an Oracle Replication Server that provides storage and retrieval for</p> <ul style="list-style-type: none"> • subscriber location information • registration status based on information received with SIP client registration • routing and translation entries • system configuration data <p>For more information on the Database Module, refer to <i>Succession MX Database Module Basics</i>.</p>
<p>Accounting Module</p> 	<p>The Accounting Module provides a mechanism for collecting, storing, formatting, and transmitting SIP accounting information for billing purposes.</p> <p>For more information on the Accounting Module, refer to <i>Succession MX Accounting Module Basics</i>.</p>

Table 1 Succession MX functional components (required) (Sheet 3 of 4)



Succession MX component	Description
<p>Provisioning Module</p> 	<p>The Provisioning Module provides the interface for the SIP Multimedia PC Client to securely access the network address book stored on the Database Module for performing the following tasks:</p> <ul style="list-style-type: none"> • service provider provisioning through the SIP Provisioning Client • customer domain provisioning through the SIP Provisioning Client • subscriber self provisioning through the SIP Personal Agent • setting up network services functions, such as the network address book <p>Within the Provisioning Module, a Sun ONE Web Server processes HTTP requests from the SIP Multimedia Web Client, Personal Agent, and Provisioning Client to support self provisioning and network-based services.</p> <p>For more information about the Provisioning Module, refer to the <i>Succession MX Provisioning Module Basics</i> and <i>SIP Provisioning Client User Guide</i>. For more information on provisioning tasks which will be processed by the Provisioning Module, see the following documents:</p> <ul style="list-style-type: none"> • <i>SIP Multimedia PC Client User Guide</i> • <i>SIP Multimedia Web Client User Guide</i> • <i>i2004 Internet Telephone User Guide</i>



Table 1 Succession MX functional components (required) (Sheet 4 of 4)

Succession MX component	Description
<p data-bbox="219 394 560 457">Succession MX System Management Console</p>  <p data-bbox="240 804 587 831">System Management Console</p>	<p data-bbox="646 394 1398 485">The Succession MX System Management Console has a graphical user interface (GUI). With this GUI you can</p> <ul data-bbox="646 506 1393 806" style="list-style-type: none"><li data-bbox="646 506 1284 569">• administer system, database, and service components<li data-bbox="646 583 1372 646">• configure Succession MX system sites, servers, service components, and services<li data-bbox="646 661 1393 724">• monitor the Succession MX system using alarms, logs, and performance measurements<li data-bbox="646 739 1372 806">• manage collection of operations, administration, accounting, and maintenance information <p data-bbox="646 821 1398 1010">The Succession MX System Management Console runs on a customer-provided personal computer (PC) and communicates with the Management Module. For more information about the Succession MX System Management Console, refer to the <i>Succession MX System Management Console Basics</i>.</p>

Optional functional components

Table 2, "Succession MX functional components (optional),"The optional shows the optional components that comprise the Succession MX.

Table 2 Succession MX functional components (optional)

Succession MX component	Description
 <p>IP Client Manager</p>	<p>The IP Client Manager manages i2004 Internet Telephones and provides them access to SIP services. Through the use of i2004 Internet Telephones, the IP Client Manager also provides access to the following features:</p> <ul style="list-style-type: none"> • instant messaging • 911 emergency notification • information delivery services • session-handling services • call management services <p>It performs the SIP- to-UNISTim conversion that enables the interworking of i2004s with the SIP Application Module. For more information on the IP Client Manager, refer to the <i>Succession MX IP Client Manager Basics</i> and <i>i2004 Internet Telephone User Guide</i>.</p>
 <p>SIP Web Client Manager</p>	<p>The SIP Web Client Manager manages SIP Multimedia Web Client and enables subscribers to access Succession MX SIP services from a browser.</p> <p>The SIP Web Client Manager also provides the SIP Multimedia Web Client feature set and enables the interworking of the SIP Multimedia Web Client and the SIP Application Module.</p> <p>The SIP Web Client Manager is deployed from the Succession MX System Management Console as part of the Web software bundle. For more information on the SIP Web Client Manager, refer to the <i>Succession MX SIP Web Client Manager Basics</i>.</p>

Media servers

Table 3, "Media servers (optional)," provides a high-level description of the Succession MX media servers.

Table 3 Media servers (optional) (Sheet 1 of 2)




Media server	Description
<p>SIP Audio Server</p> 	<p>The SIP Audio Server provides network-wide, ad hoc audio conferencing capabilities for Succession MX access clients. These capabilities include</p> <ul style="list-style-type: none"> • support for up to 32 port audio conferences • SIP BYE-ALSO/REFER messaging • independent Coder/Decoder (CODEC) negotiation for each conference call port • mid-session broadcast of SIP info signals to all conference parties (for example, a Web page URL) • hold/retrieve • round-robin resource allocation (for selecting media resources for conference calls) • long call service • call transfer • ability to chain conferences together • authentication of the SIP Application Module sending request <p>For more information on the SIP Audio Server, refer to the <i>Succession MX SIP Audio Server Basics</i>.</p>


Table 3 Media servers (optional) (Sheet 2 of 2)

Media server	Description
<p data-bbox="219 359 581 394">Media Application Server</p> 	<p data-bbox="646 359 1401 615">The Media Application Server is the IBM server for the Succession MX solution. It is a SIP-enabled platform, which supports the building of advanced, new, and innovative software-based media services. For this release, it supports the ad hoc conferencing for Succession MX. For more information on the Media Application Server, refer to the <i>Media Application Server Basics</i>.</p>
<p data-bbox="219 800 475 835">RTP Media Portal</p> 	<p data-bbox="646 800 1328 867">The RTP Media Portal is a network-distributed component that provides the following functions:</p> <ul data-bbox="646 884 1369 1234" style="list-style-type: none"> • performs media-stream network address translation and network address port translation (NAT/NAPT) • provides a media firewall • provides third-party media controls • enables the client firewall/NAPT traversal mechanism • provides anchor packet gateway, which provides the third-party media controls (anchor/pivot). <p data-bbox="646 1251 1401 1402">The RTP Media Portal handles media streams using the Real-time Transport Protocol (RTP) and Real-time Transport Control Protocol (RTCP). For more information on the RTP Media Portal, refer to the <i>Succession MX RTP Media Portal Basics</i>.</p>

Gateways

Table 4, "Succession MX PSTN gateway," includes a high-level description of the Succession MX PSTN gateway.

Table 4 Succession MX PSTN gateway

PSTN gateway	Description
<p>SIP PRI Gateway</p> 	<p>The SIP PRI Gateway converts packet-based voice streams to circuit-based voice streams to allow SIP endpoints the ability to connect to PSTN devices. Some of its functions include:</p> <ul style="list-style-type: none"> • PRI call handling • CODEC negotiation • call rejection on nodal authentication request • calling party name and number delivery to SIP • parameter mapping between SIP and PRI protocols <p>For more information on the SIP PRI Gateway, refer to the <i>Succession MX SIP PRI Gateway Basics</i>.</p>

Access clients

The Succession MX access clients include SIP user agents that provide subscribers access to the SIP network, administrator and subscriber provisioning interfaces, and an interface for administrative system management. User agents can be hardware components, such as an IP phone, software applications running on a Personal Computer (PC), or software applications executed from a Web browser.

Table 5, “Succession MX access clients (optional),” provides a high-level description of the SIP access clients.

Table 5 Succession MX access clients (optional) (Sheet 1 of 4)


Access client	Description
<p>SIP Multimedia PC Client</p>  <p>SIP Multimedia PC Client</p>	<p>The SIP Multimedia PC Client is a stand-alone SIP-enabled user agent installed on a Personal Computer (PC) that provides access to SIP features and services such as:</p> <ul style="list-style-type: none">• traditional telephone services• multimedia communications such as<ul style="list-style-type: none">— video calls— instant messaging— file sharing/file transferring— whiteboard session— Web page push <p>The SIP Multimedia PC Client accesses the SIP services network by way of the SIP Application Module.</p> <p>Succession MX also offers the Converged PC Client or Converged Desktop, which allows the customers to use their existing desktop telephone for voice calls and SIP Multimedia PC Client for multimedia communication.</p> <p>For more information on this multimedia client, see the <i>SIP Multimedia PC Client User Guide</i>. For more information on Converged PC Client or Converged Desktop, see the <i>Succession MX interworking</i> section in this chapter.</p>
<p>Note: Subscriber access to the SIP services network requires one of the following clients: the SIP Multimedia PC Client, i2004 Internet Telephone, the SIP Multimedia Web Client, or the SIP Multimedia Client Set.</p>	

Table 5 Succession MX access clients (optional) (Sheet 2 of 4)



Access client	Description
 <p>SIP Multimedia Client Set</p>	<p>When the SIP Multimedia PC Client is configured to control the i2004 Internet Telephone, the configuration is known as the SIP Multimedia Client Set. The i2004 Internet Telephone provides voice services, while the PC provides all other services. The SIP Multimedia PC Client Set provides access to SIP features and services such as:</p> <ul style="list-style-type: none"> • traditional telephone services • multimedia communications such as <ul style="list-style-type: none"> — video calls — instant messaging — file sharing/file transferring — whiteboard session — Web page push <p>For more information on the Multimedia Client Set, refer to the <i>SIP Multimedia PC Client User Guide</i> and <i>i2004 Internet Telephone User Guide</i>.</p>
 <p>i2004 Internet Telephone</p>	<p>The i2004 Internet Telephone is a Nortel Networks Succession MX hard client device that provides a traditional looking telephone set enhanced with multimedia features for accessing IP-based SIP services. Some of the i2004 Internet Telephone advanced features include:</p> <ul style="list-style-type: none"> • instant messaging • stock query • bulletins • Quality of Service (QoS) information <p>The IP-based i2004 Internet Telephone is managed by the IP Client Manager (IPCM). For more information on the i2004 Internet Telephone, see the <i>i2004 Internet Telephone User Guide</i>.</p>
<p>Note: Subscriber access to the SIP services network requires one of the following clients: the SIP Multimedia PC Client, i2004 Internet Telephone, the SIP Multimedia Web Client, or the SIP Multimedia Client Set.</p>	

Table 5 Succession MX access clients (optional) (Sheet 3 of 4)




Access client	Description
<p data-bbox="219 359 552 394">SIP Provisioning Client</p>  <p data-bbox="272 730 570 758">SIP Provisioning Client</p>	<p data-bbox="646 359 1377 426">The SIP Provisioning Client is a browser-based tool that allows service providers to provision:</p> <ul data-bbox="646 443 1117 758" style="list-style-type: none"> • administrators • domains • gateways • IP Client Managers • voice mail servers • service packages • telephony routing translations <p data-bbox="646 772 1398 930">The SIP Provisioning Client is accessed by administrators for communicating provisioning data to the Succession MX network. For more information on the SIP Provisioning Client, see the <i>SIP Provisioning Client User Guide</i>.</p>
<p data-bbox="219 963 1398 1058">Note: Subscriber access to the SIP services network requires one of the following clients: the SIP Multimedia PC Client, i2004 Internet Telephone, the SIP Multimedia Web Client, or the SIP Multimedia Client Set.</p>	

Table 5 Succession MX access clients (optional) (Sheet 4 of 4)

Access client	Description
<p>SIP Personal Agent</p>  <p>SIP Personal Agent</p>	<p>The SIP Personal Agent is a browser-based client that allows users to perform network-based management with their own Succession MX services and communication preferences. Features include:</p> <ul style="list-style-type: none"> • Preference Settings • Directory Management <ul style="list-style-type: none"> — manage key contact information • Call Management <ul style="list-style-type: none"> — define how incoming calls will be treated — “push” Web pages — block anonymous callers <p>For more information on the SIP Personal Agent, see the <i>SIP Personal Agent User Guide</i>.</p>
<p>SIP Multimedia Web Client</p>  <p>SIP Multimedia Web Client</p>	<p>The SIP Multimedia Web Client is a Web-based access client that provides various multimedia and telephony features such as</p> <ul style="list-style-type: none"> • picture caller ID • instant messaging • video calls/conferencing • personal network-based address book <p>The SIP Multimedia Web Client communicates with the SIP Web Client Manager using Web Client Session Control Protocol (WCSCP). The SIP Web Client Manager then communicates to the SIP Application Server using SIP.</p> <p>Because this multimedia client is browser-based, it is easy to add and deploy new services as they become available. When the SIP Web Client Manager is updated, subscribers automatically have access to any updated SIP Multimedia Web Client functionalities.</p> <p>For more information on the SIP Multimedia Web Client, see the <i>SIP Multimedia Web Client User Guide</i>.</p>
<p>Note: Subscriber access to the SIP services network requires one of the following clients: the SIP Multimedia PC Client, i2004 Internet Telephone, the SIP Multimedia Web Client, or the SIP Multimedia Client Set.</p>	

Succession MX interworking

This section provides information on the following topics:

- Interworking with Nortel Networks products
- Interworking with third-party products
- Converged Desktop

Interworking with Nortel Networks products

SIP allows interoperability with other Nortel Networks products. The Succession MX can interwork with the following Enterprise Business Networks (EBN) products:

- Meridian 1 family of PBX's
- Communication Server Enterprise 1000 (CSE 1000)
- BCM
- Meridian SL-100
- Communication Server Enterprise 2000 (CSE 2000)
- CallPilot

Interworking with third-party products

The Succession MX can also interwork with the following third-party products:

- T1/E1 SIP CPE PRI Gateway - Vega 100: provides an alternative to the Nortel Networks SIP PRI Gateway.
- T1/E1 SIP CPE CAS Gateway - Audiocodes Mediant 2000: interfaces for configurations that choose to deploy Call Pilot Unified Messaging system directly off the Succession MX.
- 4-port SIP CPE FXS Gateway - Mediatrix 1104: provides connection for analogue handsets and FAX machines into the Succession MX solution.
- 4-port SIP FXO Gateway - Mediatrix 1204: provides connection into the PSTN or Enterprise TDM network.
- SMDI Voice Mail - Succession MX provides interoperability with voice mail systems that support SMDI. (GR-283-CORE).
- SIP Voice Mail - Succession MX provides interoperability with voice mail systems that support SIP interworking.

Converged Desktop

The Converged Desktop for the Succession MX solution allows end users to use their PCs for the multimedia portion of their communication, while using their existing telephony system for voice. A

Converged Desktop consists of a Time Division Multiplex (TDM) telephone and a PC running the SIP Multimedia PC Client software. Some benefits of providing multimedia services using the converged service are:

- End users can keep using their existing telephone and its capabilities.
- There is no need to replace an existing telephony switch to add multimedia capabilities.

The Converged Desktop adds the following capabilities to the end user's telephony service:

- to redirect calls based on SIP Personal Agent screening rules
- to set up a call log of all incoming calls
- to set up the video calling line ID, that is, to receive a picture ID of the party on the other end of the call
- to set up automated enhanced routing and screening of incoming calls based on time of day or based on the calling party's identity (answer, redirect, answer, pass)
- to start collaborative applications such as shared whiteboard, file transfer, and clipboard transfer with the party on the other end of the call
- to provide web Co-browsing
- to send instant messages to the party on the other end of a call and to provide their Presence state indications

The existing switching system of the user connects to the Succession MX through a SIP-to-primary rate interface (PRI) gateway. For this release, the Converged Desktop services are supported over the following gateways:

- Vega 100, SIP to PRI (NI-1) gateway
- Vega 100, SIP to PRI (NI-1 / DMS 100 switch) gateway

Hardware

This section provides information on the following topics:

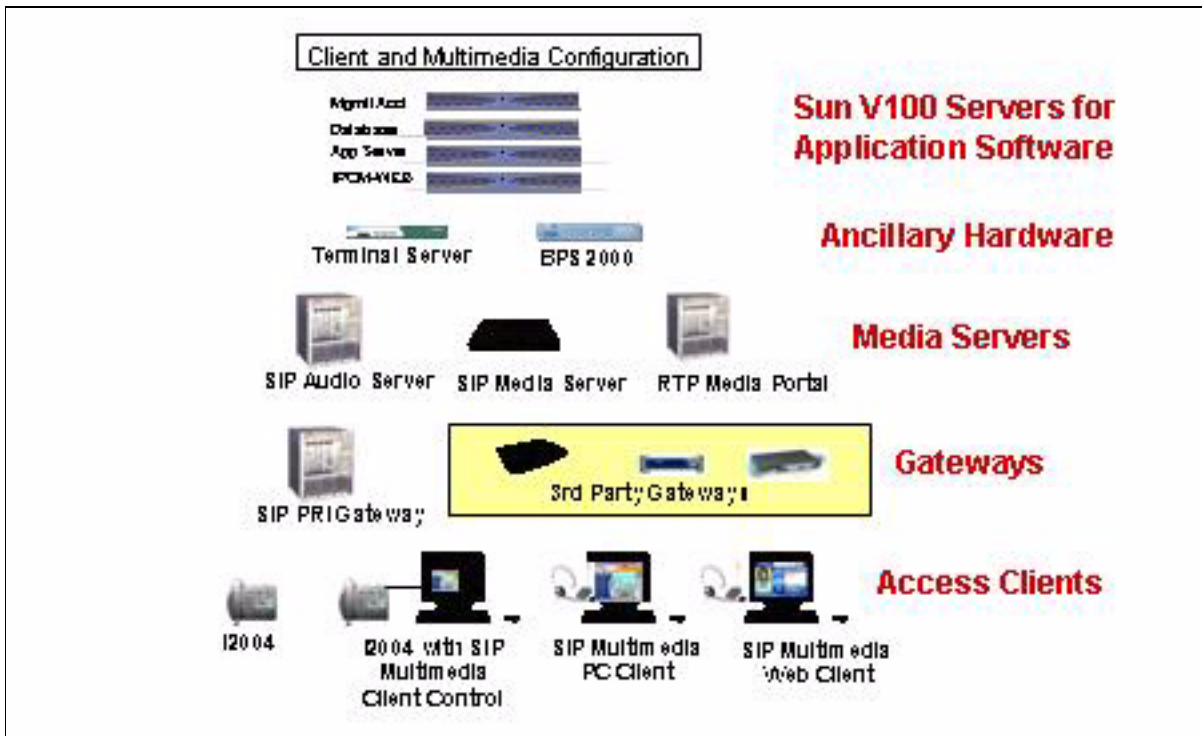
- Succession MX hardware platform
- Minimum baseline configuration

Succession MX hardware platform

The Succession MX Solution consists of Nortel Networks' software that resides on industry-standard hardware platforms in addition to a range

of third-party gateways (hardware) to connect to various resources in the network. Figure 4, "Succession MX hardware components," shows the hardware components of the Succession MX Solution.

Figure 4 Succession MX hardware components



The baseline hardware for the Succession MX Solution includes

- Sun Fire V 100 servers
- a 1U high rack-mount unit (a standard platform from Sun running the Solaris operating system).

Ancillary hardware for the Succession MX Solution includes

- a terminal server (iTouch unit) for remote access to the servers
- an L2 switch, such as a BPS 2000 switch or a BS460 switch

The Media Servers for the Succession MX Solution include

- Media Application Server based on an IBM server
- SIP Audio Server based on a SAM16 compact PCI chassis
- RTP Media Portal for unique, multi-domain application (if required)

Gateways for the Succession MX Solution include

- SIP PRI Gateway for PRI interface into the PSTN
- SIP CPE FXS Gateway/SIP FXO Gateway for analog connectivity
- SIP CPE PRI Gateway for PSTN and TDM PBX connectivity
- SIP CPE CAS Gateway for Call Pilot integration

Minimum baseline configuration

The baseline configuration for this release is four Sun Fire V 100 servers to support Application, Management/Accounting, Database, and Client Manager Modules. For redundancy and high reliability, an eight servers configuration of Sun Fire V100 servers is required. The Succession MX system can be further expanded up to 13 servers to meet the need for up to 6000 subscribers for higher reliability and expanded subscribers capacity.

The base software elements are on four servers in a simplex mode and eight physical servers in a duplex mode. Duplex mode includes four additional servers for redundancy with failover.

Software

Succession MX 1.1 can either be a Greenfield installation or an overlay. Refer to the following documents for detailed software information:

- For information on software installation, refer to *Succession MX Installation and Commissioning*.
- For information on software delivery and on software maintenance upgrades strategy, refer to the Upgrades chapter.

Software deployment on hardware components

Figure 5, “Software deployment,” shows the distribution of software on the various hardware components.

Figure 5 Software deployment

Hardware Software	Database Server	Management and Accounting Server	SIP Application Server	IP Client Manager Server	SIP Web Client Manager Server	IP Client Manager and SIP Web Client Manager Server
Database Module	X					
Management Module		X				
Accounting Module		X				
SIP Application Module			X			
Provisioning Module					X	X
SIP Provisioning Client					X	X
SIP Web Client Manager					X	X
IP Client Manager				X		X
SIP Personal Agent					Optional	Optional
SIP Multimedia Web Client					X	X

High reliability

The minimum network configuration for the Succession MX solution consists of four Sun Fire V 100 servers. One Server is for Management and Accounting Modules, one for the Database Module, one for IPCM and Web, and one for the Application Module. However, this minimum configuration does not offer redundancy. For redundancy and higher reliability, the customer requires an eight Sun Fire V 100 servers configuration. This section describes the Succession MX Solution strategy for hardware and software high reliability for the following components:

- Management and Accounting Modules
- SIP Application Module
- Database Module
- SIP PRI Gateway, SIP Audio Server, and RTP Media Portal

- Web Client Manager
- IP Client Manager

Management and Accounting Modules

The Management and Accounting Modules use 1+1 (active/standby) configuration for high reliability. The failover is a manual process. Failure is indicated by alarms.

SIP Application Module

The Application Module uses the N+M redundancy for fault tolerance. It supports automatic failover through the IP Takeover. This means that when one of the active SIP Application Modules fails, the passive Module takes over the IP address. The passive Module has now become active and assumes the responsibilities of the failed Module.

Database Module

The Database Module uses the database replication strategy for high reliability (that is, 1+1). The failover for this module is automatic. Failure is indicated by alarms on the Management Console.

SIP PRI Gateway, SIP Audio Server, and RTP Media Portal

The SIP PRI Gateway, SIP Audio Server, and RTP Media Portal are shared resources with redundancy provided through network engineering.

Web Client Manager

The Web Client Manager uses a load sharing strategy for high reliability. The Web Client Manager can be treated as a pooled resource by front ending it with a web switch.

IP Client Manager

The IP Client Manager uses 1+1 (active/standby) redundancy for high reliability. The failover for this manager is automatic. When an active IP Client Manager loses service, the standby server takes over to manage the i2004 Internet Telephone and subscribers and begins processing SIP and UNISim messages.

OAM&P strategy

With the exception of some database administration functions that are managed through the Oracle Enterprise Manager (OEM), all operation, administration, maintenance, and provisioning (OAM&P) functions are performed by the Management Module.

The Management Module provides the services that support communication between Succession MX components and the System

Management Console, which is the user interface to the Management Module. All management functions are performed through this user interface except for the database administration functions that are managed through the OEM. All provisioning functions are performed through the Provisioning Client except for the user provisioning functions that are managed through the OEM. OEM is launched from the Management Module, which is a shared resource.

In conjunction with the System Management Console, the Management Module provides the following functionality:

- system operations administration
- system software management
- system configuration
- system maintenance
- fault monitoring
- system performance monitoring
- Network Management System interfaces

Interfaces

This section provides information on the following topics:

- Signaling interfaces
- Network protocols
- User interfaces

Signaling interfaces

Multiple protocols can share access through a common NIC interface. Protocols must allocate different ports for sending and receiving signaling packets.

Network protocols

Table 6, “Network protocols,” shows the protocols that Succession MX uses to communicate with its components and network elements. Succession MX uses these network protocols to report logs and

alarms, to allow provisioning of services, and to communicate configuration data.

Table 6 Network protocols (Sheet 1 of 3)

Network protocol	Protocol function
Data Transfer Protocol	The data transfer protocol uses socket-based TCP/IP communication to transmit collected accounting information from the SIP Application Module to the Accounting Module and to provide acknowledgment of the information receipt from the Accounting Module to the SIP Application Module.
Hypertext Transfer Protocol/HTTP Secure (HTTP/HTTPS)	The Web-based access clients use HTTP/HTTPS to communicate with the Web server portion of the Provisioning Module to enable browser-based communication sessions. Information transmitted in these sessions includes service provider provisioning, customer domain provisioning, subscriber self provisioning, and user network-based service capabilities.
Media Gateway Control Protocol ⁺ (MGCP ⁺)	MGCP ⁺ is an augmented version of the MGCP protocol used for communication between the RTP Media Portal and the SIP Application Module for establishing and maintaining required media sessions.
Open management interface (OMI)	The Management Module uses OMI to communicate management and configuration data to each of the managed network elements. OMI uses Extensible Markup Language (XML) over Transmission Control Protocol (TCP).
Perfect Channel Protocol (PCP)	Each of the managed network elements uses PCP to report performance data, logs, and alarms to the Management Module for viewing on the System Management Console.
Primary rate interface (PRI)	The SIP PRI Gateway performs SIP-to-PRI and PRI-to-SIP protocol conversions to provide access to and from PSTN and PBX callers.
Real-time Transport Protocol/Real-time Transport Control Protocol (RTP/RTCP)	The RTP Media Portal is used to provide audio and video streaming capabilities for all SIP call sessions. RTCP is used to pass statistical data about SIP call session connections between endpoints.

Table 6 Network protocols (Sheet 2 of 3)

Network protocol	Protocol function
Web Client Session Control Protocol (WCSCP)	WCSCP uses socket messaging sent by way of a TCP connection to enable communication between the SIP Multimedia Web Client and the Web Client Manager for session control.
Session Initiation Protocol (SIP)	SIP is a service-enabling protocol used for real-time, multimedia sessions to integrate voice, data, and video. The SIP Application Module uses SIP to communicate with the SIP Audio Server, SIP PRI Gateway, Provisioning Module, SIP Web Client Manager, IP Client manager, SIP Multimedia PC Client, and SIP Multimedia Client Set.
Structured Query Language (SQL)	SQL is used over a Java database connectivity (JDBC) to communicate subscriber location information, routing and translation data, and system configuration data from the Database Module to the network elements.
Unified Network IP Stimulus (UNIStim) Protocol	UNIStim is a Nortel proprietary protocol used to provide communication from i2004 Internet Telephone devices to the IP Client Manager for SIP-based services. The IP Client Manager performs UNIStim-to-SIP and SIP-to-UNIStim protocol conversion, which enables i2004 Internet Telephones to access SIP services.
Simple Object Access Protocol (SOAP)	SOAP is an XML-based lightweight protocol for the exchange of information in a decentralized, distributed environment. It is used between the Provisioning Module and the SIP Multimedia PC Client (and the SIP Multimedia Client Set) to transfer address book information and service package information. It is also used by the Command Line Interface and third party provisioning applications to transfer provisioning data to the system.

Table 6 Network protocols (Sheet 3 of 3)

Network protocol	Protocol function
Open Provisioning Interface (OPI)	Based on the SOAP protocol message structure, encoding style and messaging rules, the OPI is a web service that exposes XML remote procedure calls, enabling the provisioning clients to access the provisioning data. HTTP/HTTPS functions as its transport protocol. The Command Line Interface (a command line provisioning client), third party applications and the PC Client that need to retrieve, modify, or store provisioning data use OPI. Additionally, OPI is used to integrate the provisioning server with non-Succession MX applications, such as customer's records management (CRM) systems.
File Transfer Protocol (FTP)	FTP is used for transferring data from the Management Module to a northbound management system for logs and operational measurements/performance measurements (OMs/PMs). FTP is also used for transferring accounting data from the Accounting Module to a Northbound management system.
Simple Network Management Protocol version 2C (SNMPv2C)	Network elements use SNMP v2C to transmit traps using the reliable fault management information base (MIB) to the northbound network management system.

Table 7, "Succession MX component protocol usage," shows which Succession MX components use which network protocols.

Table 7 Succession MX component protocol usage (Sheet 1 of 2)

Network protocol	Succession MX components using this protocol
Data transfer protocol	SIP Application Module and Accounting Module
HTTP/HTTPS	Provisioning Module, SIP Provisioning Client, Personal Agent, and SIP Multimedia Web client
MGCP ⁺	RTP Media Portal and SIP Application Module
OMI	Management Module, Accounting Module, Database Module, SIP Application Module, SIP Audio Sever, SIP PRI Gateway, IP Client Manager, RTP Media Portal, Provisioning Module, and SIP Web Client Manager

Table 7 Succession MX component protocol usage (Sheet 2 of 2)

Network protocol	Succession MX components using this protocol
PCP	Management Module, Accounting Module, Database Module, SIP application Module, SIP Audio Sever, SIP PRI Gateway, IP Client Manager, RTP Media Portal, Provisioning Module, and SIP Web Client Manager
PRI	SIP PRI Gateway
RTP	RTP Media Portal, i2004 Internet Telephone, SIP Multimedia PC Client, SIP Multimedia Client Set, SIP Audio Server, SIP PRI Gateway, SIP Multimedia Web Client, and CS 2000 interworking communication
WCSCP	SIP Multimedia Web Client and SIP Web Client Manager
SIP	SIP Application Module, SIP Audio Server, SIP PRI Gateway, Provisioning Module, SIP Web Client Manager, IP Client Manager, SIP Multimedia PC Client, and SIP Multimedia Client Set
SOAP	Provisioning Module, SIP Multimedia Client, and SIP Multimedia PC Client Set
SQL over JDBC	Database Module, Management Module, SIP Application Module, IP Client Manager, Provisioning Module, and SIP Web Client Manager
UNISim	IP Client Manager, i2004 Internet Telephone, and SIP Multimedia Client Set

User interfaces

Succession MX provides the user interfaces shown in Table 8, "Succession MX user interfaces," for deploying, configuring, managing, and monitoring network elements, and for performing provisioning tasks.

Table 8 Succession MX user interfaces

User Interface	Function
System Management Console	This is the primary Succession MX graphical user interface (GUI). Use it to deploy, configure, manage, and monitor Succession MX network elements.
Oracle Enterprise Manager (OEM)	Use this Oracle GUI to monitor replication and the nightly batch jobs that are run to back up the database. Launch the OEM from the Management Module. Note: Use the System Management Console to monitor database activity.
Command Line Interface (CLI)	Use this basic CLI to bulk provision subscribers and domains. This user interface is primarily used by service providers and domain administrators. Note: The Bulk Provisioning tool enables tasks, such as the query/import of data to/from flat files and to update/delete data based on flat file input. This interface will be changed in the future release. For more details on the interface, please contact the support group.
SIP Provisioning Client	Use this Web-based GUI to perform overall provisioning of the Succession MX. This user interface is used by service providers to provision administrators, domains, gateways, IP Client Managers, voice mail servers, and service packages.

Features and services

The Succession MX offers a wide variety of multimedia and telephony features and services to the subscriber. The availability of these features and services depends on the client devices deployed. The following sections list features and services associated with each client device.

SIP Personal Agent features and services

The SIP Personal Agent is a Web-based self-provisioning interface that enables subscribers to customize their SIP services. The features and services associated with the SIP Personal Agent are as follows:

- Web-based Administration and User Account Profile
- Subscriber-provisioned Call Screening and Routing (follow me, sequential ringing)
- Network-based Address Book
- Presence
 - User-initiated Presence functions include:
 - User can create a list of Buddies.
 - User can view, add to, and remove from the list of Buddies.

Note: From the SIP Personal Agent the user can add a name to the list of buddies only if the name already exists in the Address Book.

For information on using the SIP Personal Agent, refer to the *SIP Personal Agent User Guide*.

SIP Multimedia Web Client features and services

The SIP Multimedia Web Client provides subscribers with access to SIP services through a Web browser. The features and services associated with the SIP Multimedia Web Client are as follows:

- Real-time call screening (answer, pass, reject, transfer)
- Call waiting, call hold
- Information Delivery Services (calling name, number, subject, picture)
- Conference Calling (three-way client-based conferencing and server-based conferencing with many more ports)
- Web Push, Co-browsing
- Video Calls
- Instant messaging

- Easy access to voicemail
- Presence
 - User-initiated Presence functions include:
 - User can add to and remove from the list of Buddies.
 - User can change their Presence status.
 - User can view the status of Buddies.
 - Automatic Presence functions include automatic detection for “inactive” and “on the phone” status of the user.

Note: From the SIP Multimedia Web Client the user can add a name to the list of buddies only if the name already exists in the Address Book.

For information on using the SIP Multimedia Web Client, refer to the *SIP Multimedia Web Client User Guide*.

SIP Multimedia PC Client features and services

The SIP Multimedia PC Client is a downloadable software client that provides subscribers with access to SIP services. The features and services associated with the SIP Multimedia PC Client are as follows:

- Real time call screening (answer, redirect, decline, ignore)
- Call waiting, call hold
- Inbox and outbox
- Information Delivery Services (calling name, number, subject, picture)
- Conference Calling (three-way client-based conferencing and server-based conferencing with many more ports)
- Web Push, Co-browsing
- Video Calls
- Collaboration (Clipboard/White Board/file transfer)
- Click to Call using integration with Microsoft Outlook to initiate calls
- Easy access to voicemail
- Instant messaging

- Three-way calling
- Presence
 - User-initiated Presence functions include:
 - User can add to and remove from the list of Buddies.
 - User can change their Presence status.
 - User can view the status of Buddies.
 - Automatic Presence functions include automatic detection for “inactive” and “on the phone” status of the user.

Note: From the SIP Multimedia PC Client the user can add a name to the list of buddies only if the name already exists in the Address Book.

For information on using the SIP Multimedia PC Client, refer to the *SIP Multimedia PC Client User Guide*.

SIP Multimedia PC Client Set features and services

The SIP Multimedia PC Client Set is a downloadable software client that provides subscribers with access to SIP services. The features and services associated with the SIP Multimedia PC Client Set are as follows:

- Real time call screening (answer, redirect, decline, ignore, transfer)
- Call waiting, call hold
- Incoming and outgoing call log
- Information Delivery Services (calling name, number, subject, picture)
- Conference calling
- Web Push, Co-browsing
- Video calls
- Collaboration (Clipboard/White Board/file transfer)
- Click to Call using integration with MS outlook to initiate calls
- Easy access to voicemail
- Instant messaging
- Import contact information from Microsoft Outlook 2000

- Presence (user initiated and automatic presence)
 - User-initiated Presence functions include:
 - User can add to and remove from the list of Buddies.
 - User can change their Presence status.
 - User can view the status of Buddies.
 - Automatic Presence functions include automatic detection for “inactive” and “on the phone” status of the user.

Note: From the SIP Multimedia PC Client Set the user can add a name to the list of buddies only if the name already exists in the Address Book.

For information on using the SIP Multimedia PC Client, refer to the *SIP Multimedia PC Client User Guide*.

i2004 Internet Telephone features and services

The i2004 Internet Telephone is a hard client that provides subscribers with access to SIP services. The features and services associated with the i2004 Internet Telephone are as follows:

- Real-time call screening (answer, redirect, reject, pass)
- Call waiting, call hold, call forward, call transfer
- Information Delivery Services (calling name, number, subject)
- Conferencing calling
- Automatic registration on activation of the device
- Multiple Users Logon
- Handset, handsfree, headset support
- Inbox and outbox
- Address book
- Presence
 - User-initiated Presence functions include:
 - User can change their Presence status.
 - User can view their Presence status.
 - User can view the Presence status of Buddies (by scrolling horizontally in the list).
 - Automatic Presence functions include automatic detection for “inactive” and “on the phone” status of the user.
- Instant messaging

- Stock query (obtain stock quotes directly on the i2004 Internet Telephone display)
- Bulletins (receive messages from your service provider, such as news of an upcoming system upgrade, directly on the display screen of your i2004 Internet Telephone)
- QoS (view RTCP information for the media stream of the call on your i2004 Internet Telephone. Your service provider can use this information to analyze network performance.)

For information on using the i2004 Internet Telephone, refer to the *i2004 Internet Telephone User Guide*.

Basic call flows

The following sections provide an explanation of SIP signaling as well as sample diagrams and descriptions of some basic Succession MX call flows. These flows outline the general flow for basic messaging scenarios and may omit some details in order to emphasize the overall concepts involved in call processing. The following sections describe the flows for the following types of calls:

- SIP-to-SIP call
- SIP-to-PSTN call
- PSTN-to-SIP call

For more information, refer to the messaging information in *Succession MX SIP Application Module Basics*, which includes information on database lookup, registration, authentication, and persistent acknowledge messages (PRACK).

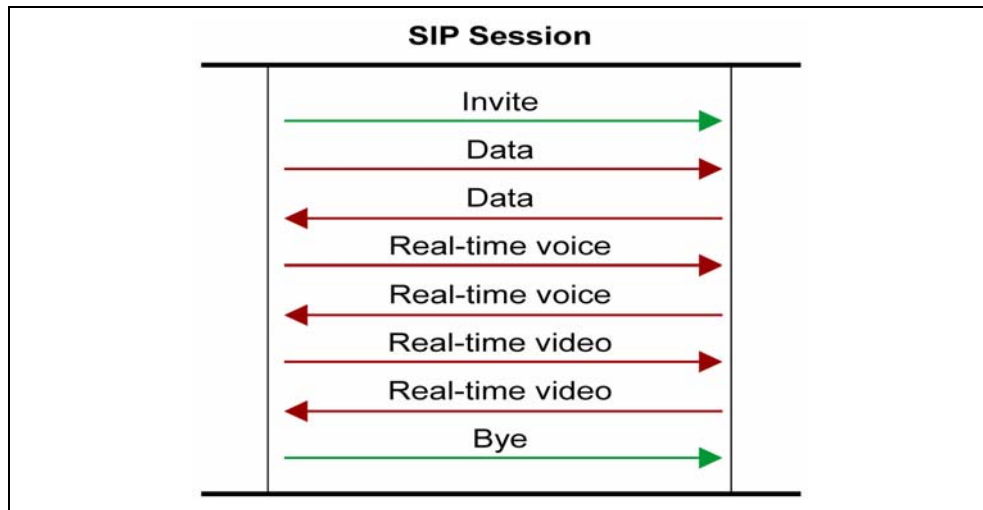
SIP signaling

To facilitate Voice over IP (VoIP) and integrate multimedia services, the Succession MX uses SIP as the signaling protocol to establish a communication path between endpoints. Since SIP uses a simple text-based command structure with HTTP syntax and URL addressing, it is well equipped to work with both Internet and Web-based applications.

The focus of SIP transaction signaling is to open a dialog between endpoints agreed to by the initiator and by the receiver. Once SIP establishes a signaling path, any form of dialog can occur between the participants. For example, the dialog can be used to transfer data such as files or whiteboarding, or to communicate in real-time audio as in the case of conference calls.

With SIP, it is possible to set up media simultaneously between the participants during the session. Refer to Figure 6, “Basic SIP session.”

Figure 6 Basic SIP session



SIP signaling is transaction-based. An Invite transaction opens the session and a Bye transaction closes the session. The Succession MX uses the abbreviated form of headers in its SIP messages. The key to the abbreviated SIP message headers used in the Succession MX is shown in Table 9, “SIP message header abbreviations.”

Table 9 SIP message header abbreviations

Abbreviation	Meaning
t:	To:
f:	From:
i:	Call-ID
k:	Supported:
m:	Contact:
c:	Content-Type:
l:	Content-Length:
v:	Via:

The following example shows a sample SIP message that is an Invite message for a call from user 353 on an i2004 Internet Telephone to user 14 on another i2004 Internet Telephone. It is the Invite message forwarded on behalf of user 353 from the SIP Application Server to the IP Client Manager hosting the i2004 Internet Telephone for user 14.

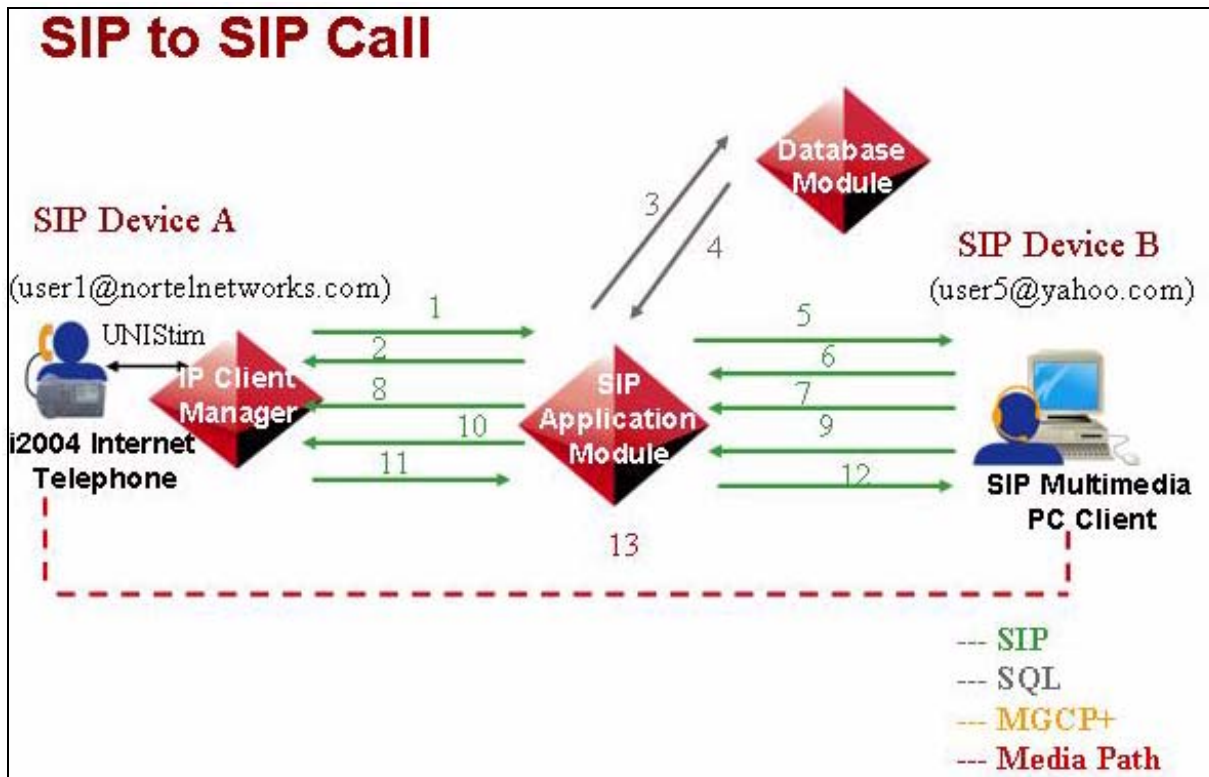
Example
Sample SIP message header

```
INVITE sip:14@lab3.org:5070;action=proxy;maddr=47.104.12.140 SIP/2.0
t: 14 <sip:14@lab3.org>
f: 353 <sip:353@lab3.org>;tag=1947342603
i: 3eee9628_ee3e2052d9@test3_app
Allow: REFER,ACK,BYE,CANCEL,INVITE,OPTIONS,INFO,MESSAGE
Max-Forwards: 19
k: com.nortelnetworks.superclient,com.nortelnetworks.firewall,100rel
m:
<sip:353@47.104.12.140:5060;nt_end_point=ZaBCAIBBFLFCFEFCCBFFF
GEPFAFBFFEPFAFDEPFAFFFBFLFEFBFGFB>
c: application/sdp
l: 313
v: SIP/2.0/UDP
47.104.12.140:5060;branch=bba919f84defc995e821d1f7453668e4.1
CSeq: 49826 INVITE
```

SIP-to-SIP call

Figure 7, "SIP-to-SIP call," shows a basic call flow for a SIP-to-SIP call. A detailed, step-by-step description follows the illustration.

Figure 7 SIP-to-SIP call



Steps for SIP-to-SIP call:

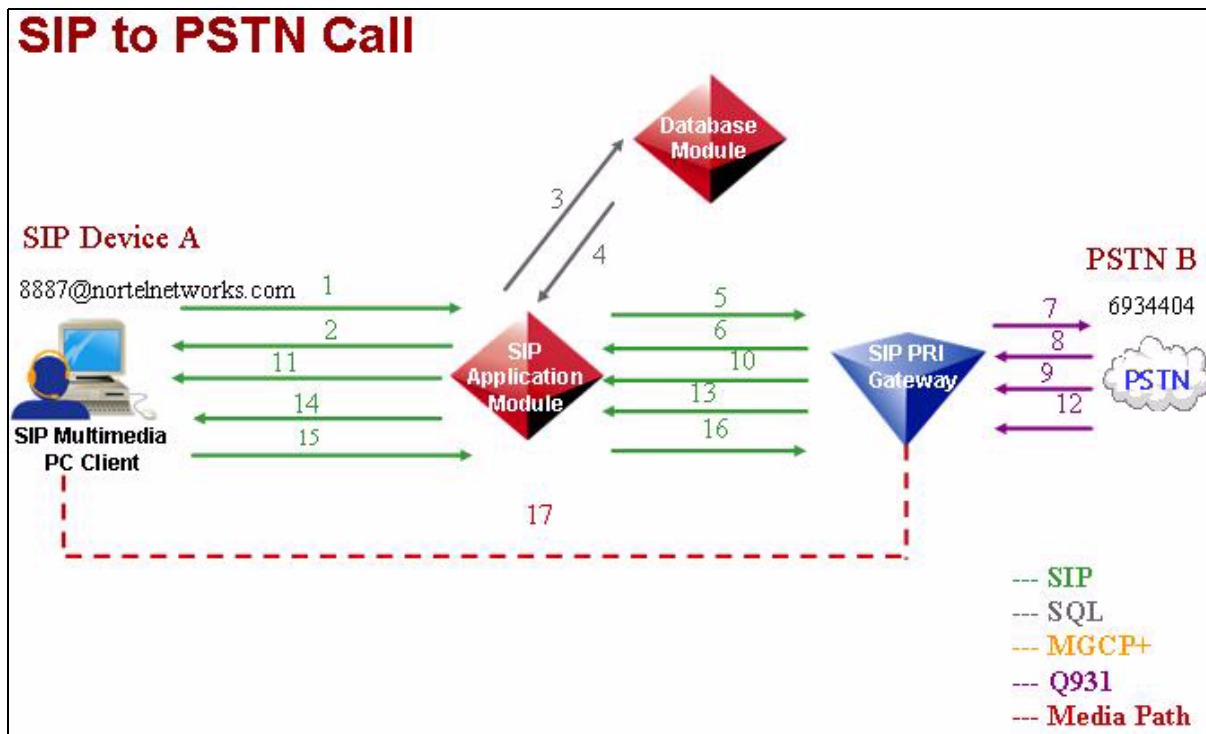
1. Invite (SIP) — INVITE sip:user5@yahoo.com SIP/2.0
m: <sip:user1@47.102.128.241:5070>(SDP: A)
2. Trying (SIP) — SIP/2.0 100 Trying
3. Database Lookup (SQL) — send user5@yahoo.com
(See “Database Lookup 1.”)
4. New URL (SQL) — return sip:user5@yahoo.com:5060;
maddr=216.115.104.112
5. Invite (SIP) — INVITE sip:user5@yahoo.com:5060;
maddr=216.115.104.112 SIP/2.0
m: <sip:user1@47.104.12.150:5060>(SDP: A')
6. Trying (SIP) — SIP/2.0 100 Trying
7. Ringing (SIP) — SIP/2.0 180 Ringing
8. Ringing (SIP) — SIP/2.0 180 Ringing
9. OK (SIP) — SIP/2.0 200 OK
m: <sip:user5@216.115.104.112:5060> (SDP: B)

10. OK (SIP) — SIP/2.0 200 OK
m: <sip:user5@47.104.12.150:5060> (SDP: B')
11. ACK (SIP) — ACK sip:user5@yahoo.com SIP/2.0
(Note: Originating client will start sending packets.)
12. ACK(SIP)—ACKsip:user5@yahoo.com:5060SIP/2.0
(Note: Terminating client will start sending packets.)
13. Media Path Established.

SIP-to-PSTN call

Figure 8, "SIP-to-PSTN call," shows a basic call flow for a SIP-to-PSTN call. A detailed, step-by-step description follows the illustration.

Figure 8 SIP-to-PSTN call



Steps for SIP-to-PSTN call:

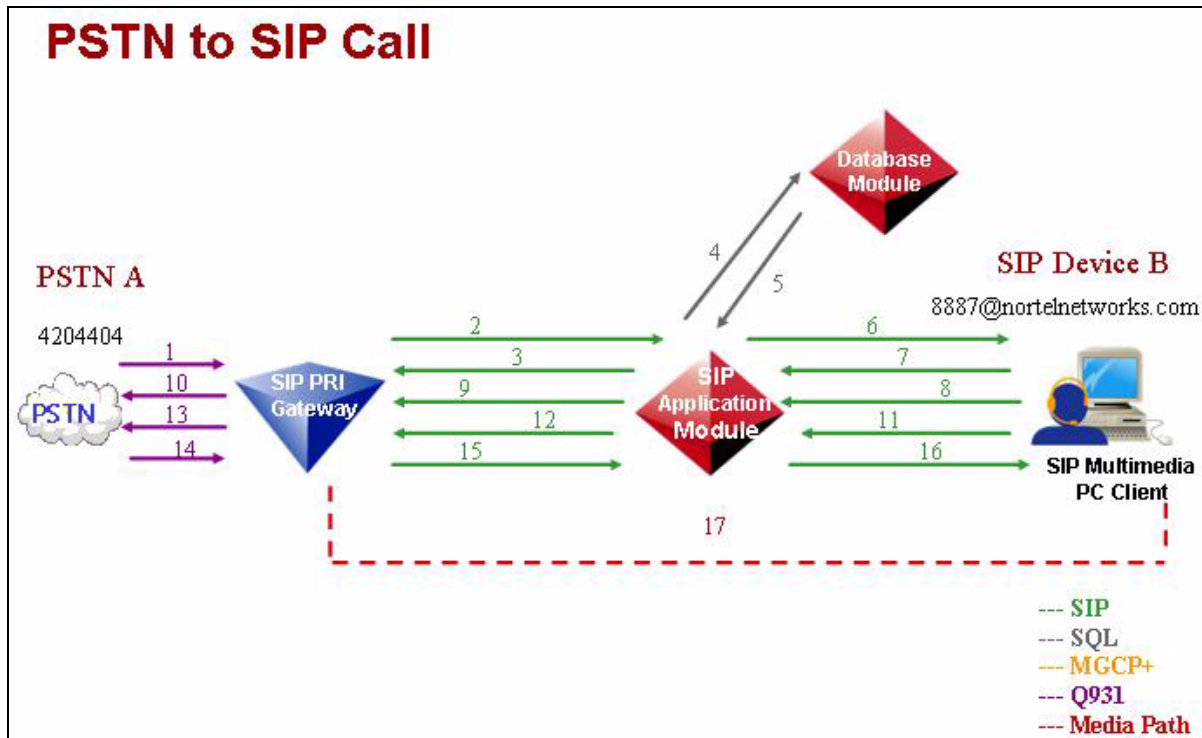
1. Invite(SIP)—>INVITEsip:66934404@nortelnetworks.comSIP/2.0
m: <sip:8887@47.100.234.159:5060> (SDP: A)
2. Trying (SIP) — SIP/2.0 100 Trying
3. Database Lookup (SQL) — send 66934404@nortelnetworks.com
(See "Database Lookup 2.")

4. New URL (SQL) — return sip:4404@nortelnetworks.com, maddr=47.100.234.140, user=phone, norteldevice=pri, norteltrkgrp=pria_t1_8000
5. Invite (SIP) — INVITE
sip:4404@private.nortelnetworks.com:5060;
maddr=47.100.234.140; user=phone
norteltrkgrp=pria_t1_8000 SIP/2.0
m: <sip: 8887@47.104.12.150:5060>(SDP: A')
6. Trying (SIP) — SIP/2.0 100 Trying
7. SetUp (Q931)
8. Call Proceeding (Q931) — equates to the SIP Trying
9. Alerting or Progress (Q931) — depends on NT or TE mode
10. 183 Ringing (SIP) — SIP/2.0 183 Session Description(SDP: B)
(Note: The Terminating Gateway will start sending ringing tones.)
11. 183 Ringing (SIP) — SIP/2.0 183 Session Description(SDP:B')
(Note: The originating client will start sending packets when it receives the 183 with SDP information.)
12. Connect (Q931)
13. OK (SIP) — SIP/2.0 200 OK
m: <sip: 66934404@47.100.234.140:5060> (SDP: B)
14. OK (SIP) — SIP/2.0 200 OK
m: <sip: 66934404@47.100.234.140:5060> (SDP: B)
15. ACK (SIP) — ACK sip:66934404@47.104.12.150:5060 SIP/2.0
16. ACK (SIP) — ACK sip:4404@private.nortelnetworks.com:5060;
maddr=47.100.234.140; user=phone; norteltrkgrp=pria_t1_8000
SIP/2.0
17. Media Path Established

PSTN-to-SIP call

Figure 9, “PSTN-to-SIP call,” shows a basic call flow for a PSTN-to-SIP call. A detailed, step-by-step description follows the illustration.

Figure 9 PSTN-to-SIP call



Steps for PSTN-to-SIP call:

1. SetUp (Q931).
2. Invite (SIP) — INVITE sip:8887@private.nortelnetworks.com; maddr=47.104.12.150; transport=udp; user=phone; nortelTrkGrp=pri_t1_8000 SIP/2.0 m: <sip: 4404@47.100.234.140:5060> (SDP: A)
3. Trying (SIP) — SIP/2.0 100 Trying
4. Database Lookup (SQL) — send 8887@nortelnetworks.com
5. New URL (SQL) — return sip:8887@nortelnetworks.com:5060; maddr=47.100.234.159
6. Invite (SIP) — INVITE sip:8887@nortelnetworks.com:5060; maddr=47.100.234.159; ttl=1; transport=udp SIP/2.0 m: <sip: 4404@47.104.12.150:5060> (SDP: A')
7. Trying (SIP) — SIP/2.0 100 Trying
8. Ringing (SIP) — SIP/2.0 180 Ringing (SIP clients do not send SDP in the 180)
9. Ringing (SIP) — SIP/2.0 180 Ringing

10. Alerting (Q931)
11. OK (SIP) — SIP/2.0 200 OK
m: sip: 8887@47.100.234.159:5060 (SDP: B)
12. OK (SIP) — SIP/2.0 200 OK
m: <sip: 8887@47.104.12.150:5060>(SDP: B')
(Note: Originating Gateway will start sending packets.)
13. Connect (Q931)
14. Connect ACK (Q931)
15. ACK (SIP) — ACK sip:8887@private.nortelnetworks.com;
maddr=47.104.12.150; transport=udp; user=phone;
nortelTrkGrp=pria_t1_8000 SIP/2.0
16. ACK (SIP) — ACK sip:8887@nortelnetworks.com:5060;
transport=udp SIP/2.0
(Note: Terminating client will start sending packets.)
17. Media Path Established

Customer information

This section describes the way in which Nortel Networks provides customers with the following types of information:

- Web site information
- Training and documentation
- Legal notices

Web site information

Nortel Networks Web site, www.nortelnetworks.com, is a valuable site for customer information, support, and services. From this site, you can get information on customer service, training and documentation, professional services, and other areas of business.

Training and documentation

How to contact Nortel Networks for help on customer information

Contact your Nortel Networks account prime for help on customer information.

Where to get customer documentation

Documentation for the Communication Server for Enterprise Multimedia Xchange is delivered on the customer CD.

Where to get training information

All course descriptions, prerequisites, schedules and locations can be viewed at www.nortelnetworks.com.

Note: For the most recent curriculum information, please contact your Nortel Networks Training and Documentation representative. For enrollment assistance, please contact Training registration at 1-800-4-NORTEL (1-800-466-7835), express routing code #280.

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Upgrades

How this chapter is organized

The Upgrades chapter is organized as follows:

- Strategy on page 51
- Tools and utilities on page 52
- Task flows and sequencing on page 52

Strategy

Maintenance releases are supported for all Nortel Networks components of the Communication Server for Succession Multimedia Xchange (MX) network. A maintenance release allows the current active software to be incremented in order to address emergency or general maintenance requirements. The update mechanism for the Succession MX 1.1 maintenance releases

- supports migration of configuration data from one version to the next
- provides software rollback capability for use in the event of software or deployment failure
- bundles the maintenance release software into an updated package to decrease the time required to identify the differences between releases and reduce the time required for the overall update process

Software update delivery methods

Nortel Networks can deliver Succession MX maintenance release software update packages on a compact disc (CD).

Once Succession MX maintenance release software update bundles are delivered, they are loaded onto the SIP Management Server where property definitions are unbundled to drive the System Management Console. Once this is accomplished, the software packages are deployed to the appropriate Succession MX components.

For instructions on updating component software, refer to the *Succession MX System Management Console Basics*.

Update contents

Each Succession MX 1.1 update package contains the following items:

- the compatible System Management Console to be transferred to the System Management Console PC
- a copy of the Installation Methods of Procedure (MOPs)
- a copy of the Release Notes for the maintenance release, which outline the contents of the maintenance release

Tools and utilities

All software maintenance release updates are implemented from the Management Module by way of the System Management Console. That is, the maintenance software update bundles are loaded onto the Management Module and are then deployed by way of the System Management Console. Rollbacks also are accomplished from the System Management Console.

For information on the Management Module, the System Management Console, and instructions for performing component software updates (and rollbacks), refer to the *Succession MX Management Module Basics* and *Succession MX System Management Console Basics*.

Task flows and sequencing

This section provides information on the following topics:

- High-level maintenance update tasks
- Deployment order

High-level update tasks

Once the maintenance release software update has been received, perform the following tasks before the software update bundles can be deployed:

- Extract the update software to the Succession MX Management Server.
- Install the upgraded System Management Console software on the PC being used as the administrator's workstation.

For information on installing the upgraded System Management Console, refer to the *Succession MX System Management Console Basics*.

Deployment order

The order in which the maintenance release software updates to Succession MX are deployed is extremely important. Failure to perform updates in the specified order will result in loss of service.

Updates to Succession MX software components must be performed in the following order:

- Third-party maintenance releases
- Database Module
- Management Module
- System Management Console PC
- Provisioning Module
- Accounting Module
- SIP Application Module
- RTP Media Portal
- IP Client Manager
- SIP Web Client Manager
- SIP PRI Gateway
- SIP Audio Server

Please note that the Database Module is the first Succession MX component to be updated. Thus, the Database Module is updated using the existing, old version of the Management Module and the System Management Console. Once the Database Module is updated, then the Management Module is updated (from the command line) using the `mgmtdeploy.pl` script, and the new version of the System Management Console is installed onto the user's PC. With the Database Module, Management Module, and System Management Console PC updated, all other Succession MX components are updated from the System Management Console.

Fault management

How this chapter is organized

The Fault management chapter is organized as follows:

- Strategy on page 55
- Tools and utilities on page 56
- Task flows on page 58
- Disaster Recovery on page 59

Strategy

The Management Module provides fault management for all Succession MX system components. Fault data is collected from each Succession MX core element and then sent to the Management Server. Software and application alarms are transmitted using the XML and consolidated at the Management Server. Database Module, Provisioning Module, RTP Media Portal, SIP Audio Server, and SIP PRI Gateway send SNMP traps to the Management Server. The fault data is formatted into Nortel STD logs as well as populated into the Nortel Networks' Reliable fault management information base (MIB). The formatted data may be sent to the Management Console and the Network Management System. A secure Open Management Interface (OMI) over Secure Socket Layer (SSL) interface is used by the Succession MX management console to receive these alarms. For additional information on the Management Module, refer to the *Succession MX Management Module Basics*.

The System Management Console, which is the interface to the Management Module, is used to view faults and manage the health of the Succession MX system and its components. For detailed instructions on using the System Management Console, refer to the *Succession MX System Management Console Basics*.

In addition to being monitored from the System Management Console, faults also can be pulled directly from the Management Module through the use of an SNMP stream or FTP session as follows:

- SNMPv2c feed for alarms only
- TCP/IP stream for all logs

For a comprehensive list of all Succession MX system alarms, refer to the *Succession MX System Management Console Basics*.

For information about a specific component's faults, refer to the specific component document.

Tools and utilities

The System Management Console monitors all system-level and server-level Succession MX alarms and logs. You can access the Alarm and Log browsers from the Tools menu on the System Management Console menu bar or by right-clicking on the specific component for which you want to view alarm or log information.

The rest of this section provides general information on alarms and logs. For more information on alarms and logs and for information on using the System Management Console to monitor alarms and logs, see *Succession MX System Management Console Basics*.

Alarms

During operation, services may detect faults that represent malfunctioning under certain conditions. As these faults occur, alarms are raised by the corresponding services in order to alert the user that a problem exists.

When an alarm is raised, it is added to a list of currently active alarms. The alarm remains on the active list until it is resolved. Once the problem is resolved, the alarm is cleared and removed from the list of active alarms. Until an alarm is cleared, it remains on the active list.

Note: The process of clearing alarms is automatic; you cannot clear alarms manually.

The information displayed in the alarm browser depends on the node selected in the System Management Console hierarchy tree. For example, if a server is selected, the alarm browser will show the alarms for all the components hosted on the server; if a component is selected only the alarms generated by its hosted services are displayed. Administrators can launch more than one browser, allowing them to view alarms for specific nodes separately.

Table 10, “Alarm attribute,” shows all alarm fields viewed in the alarm browser with their descriptions.

Table 10 Alarm attribute

Alarm attribute	Description
Timestamp	The time when the alarm was raised.
Severity	The severity assigned to the alarm (see Table 11).
Originator	The service originating the alarm.
Alarm Name	The name of the alarm.
Probable Cause	The general problem causing the alarm.
Family Name	Managed object family originating the alarm.

There is a severity level associated with each alarm that indicates how serious the problem is. The severity levels that can be assigned to alarms are listed in Table 11, “Alarm severity levels.”

Table 11 Alarm severity levels

Severity level (and #)	Meaning
Critical (5)	The application is malfunctioning and is incapable of continuing to provide the desired functionality. The application may not recover until the problems have been resolved.
Major (4)	The application is experiencing difficulties in providing the desired level of services and soon may not be able to provide the services any longer.
Minor (3)	The application has detected a problem that is not presently affecting services. Services provided by the application could be affected if the problem persists.
Warning (6)	A problem may have occurred. It is not affecting service or the service can recover by itself.

Alarm log format

You also can view alarms through the Log Browser on the Succession MX System Management Console.

SNMP alarm reporting

Alarm events are provided through an SNMP management information base (MIB), which includes a local copy of an active alarms table for resynchronization.

For more information on alarms, refer to the *Succession MX System Management Console Basics*.

Logs

Logs capture and record information about events that occur during service component operation so that events can be analyzed at a later time.

Every log event is captured and archived in Standard (STD) format to disk on the Management Server.

For more information on logs, refer to the *Succession MX System Management Console Basics*.

Task flows

Perform all fault management tasks from the System Management Console. The following procedures outline high-level task flows, but do not include all possible tasks.

For more information and detailed procedures, refer to the overview information of each individual Succession MX component.

Procedure 1 Alarm analysis***At the System Management Console***

- 1 View alarms.
- 2 Analyze alarms.
- 3 View alarm history.
- 4 Respond to system faults that caused the alarms.
- 5 View logs.
- 6 Analyze logs.
- 7 View log history.
- 8 Respond to system faults and conditions captured in the logs.
- 9 Reload device.
- 10 Return device to service.

Disaster Recovery

This section gives an overview of what may be done in the event of hardware or software failure.

Hardware failure

The general rule for replacing any hardware is to follow the documentation that comes with the unit. The following hardware can be replaced:

- hard disk drive
- CPU and memory
- CD-ROM drive
- BPS2000
 - 10/100 MDA, Gigabit MDA and Cascade Module
- Terminal Server

Software recovery

The software recovery process provides recovery of all operating system, application configuration and program store in the event of a catastrophic server failure. The backup process generates a snapshot of the software suite on a server that allows that server to be recreated after failure.

Server backup should be performed after every configuration change or software update.

Backup and restore procedures should be done in the following order:

- Backup SIP Management/Accounting/Database Server
- Restore SIP Management/Accounting/Database Server
- Backup IP Client Manager/SIP Web Client Manager
- Restore IP Client Manager/SIP Web Client Manager
- Backup RTP Media Portal
- Restore RTP Media Portal
- Backup SIP PRI Gateway
- Restore SIP PRI Gateway

Configuration management

How this chapter is organized

The Configuration management chapter is organized as follows:

- Strategy on page 61
- Tool and utilities on page 62
- Task flows on page 62

Strategy

Nortel Networks delivers Communication Server for Enterprise Multimedia Xchange SIP-based IP network solutions on a pre-configured basis. All components within these pre-defined configurations can be ordered separately. Process and tool development is geared to this strategy. As a result, custom engineering is only offered at an additional cost through Nortel Networks Services.

Nortel Networks performs standard installation and base commissioning for the customer. After the base commissioning is done by Nortel Networks, the customer takes over. Nortel Networks and the customer assume different responsibilities to make the network fully operational.

After installation and base commissioning is done by Nortel Networks, the customer can use the following checklist to verify completion:

- All appropriate hardware equipment and software loads have been installed and loaded as follows:
 - The network is cabled/connected.
 - All cards are installed.
 - Grounding is implemented for safety.
- All network topology (physical characteristics) is implemented as planned.
- Installation validation procedures are complete and components are found to be operational. (For example, when you install and load

software and turn pieces of equipment on, then the equipment is commissioned.)

- The sequence of translations, internal customer testing, and additional services, applications, and features have been planned.

Tool and utilities

The configuration of a Succession MX SIP-based IP network has three phases—deploying and configuring the Succession MX components and network elements and provisioning the Succession MX.

The tool for deploying and configuring all Succession MX components and network elements is the System Management Console.

The tool for provisioning the Succession MX is the SIP Provisioning Client, which is a Web-based GUI. A command line interface (CLI) tool also is provided to enable bulk provisioning. The Bulk Provisioning Tool provides a command set for bulk provisioning tasks, such as the query/import of data to/from flat files and to update/delete data based on flat file input. This interface will change in the future release. For more details on the interface, please contact the support group.

Task flows

The configuration management and provisioning tasks to be performed can vary from one Succession MX deployment to another. However, most of these high-level tasks for configuring Succession MX components and network elements and for provisioning Succession MX domains are identified in the following sections:

- System Management Console configuration tasks
- SIP Provisioning Client provisioning tasks

When configuring a new Succession MX system at deployment, you should configure the managed objects on the different nodes and bring everything online before beginning provisioning tasks.

System Management Console configuration tasks

Table 12, “System Management Console configuration tasks sequence,” shows the sequence of the Succession MX component and

network element configuration tasks that a user must follow from the System Management Console.

Table 12 System Management Console configuration tasks sequence

Step	Description	Tasks
1.	Configure Succession MX system level elements (add/remove sites, servers, and Succession MX service components)	Add/remove sites, servers, and Succession MX service components Note: Before you can delete a server, you must delete all the service components for that server. Similarly, before you can delete a site, you must delete all the servers from that site.
2.	Configure the Accounting Server	Add component
		Select from the load list
		Configure Accounting Manager Service Component Name
		Configure the properties within the Central Accounting Manager tab
3.	Configure the SIP Application Server	Add component
		Select from the load list
		Configure SIP Application Server Service Component Name
		Configure the properties within all tabs of the SIP Application Server
4.	Configure the IP Client Manager	Add component
		Select from the load list
		Configure IP Client Manager Service Component Name
		Configure the properties within all tabs of the IP Client Manager

Table 12 System Management Console configuration tasks sequence

Step	Description	Tasks
		<p>Configure the Web bundle (SIP Provisioning Client, SIP Provisioning Server, SIP Multimedia Web Client, SIP Multimedia Web Server, SIP Personal Agent)</p> <ul style="list-style-type: none"> • add component • select from the load list • configure IPCM service component Name • configure SIP Provisioning Client, SIP Provisioning Server, SIP Multimedia Web Client, SIP Multimedia Web Server, and SIP Personal Agent
		<p>deploy the UFTP bundle (required for i2004 Internet Telephone firmware downloads) by selecting</p> <ul style="list-style-type: none"> • Components->Add->BaseSoftware (for the server to deploy the bundle to) • UFTP bundle from load list and then selecting the Apply button
5.	Configure RTP Media Portal	Add component
		Select from the load list
		Configure RTP Media Portal Service Component Name
		Configure the properties within all tabs of the RTP Media Portal
6.	Configure SIP PRI Gateway	Add component
		Select from the load list
		Configure SIP PRI Gateway Service Component Name
		Configure the properties within all tabs of the SIP PRI Gateway
	<p>Note: Third-party gateways are configured from their own console. Third-party configuration is not part of Nortel Networks standard configuration procedures.</p>	

Table 12 System Management Console configuration tasks sequence

Step	Description	Tasks
7.	Configure SIP Audio Server	Add component
		Select from the load list
		Configure SIP Audio Server Service Component Name
		Configure the properties within all tabs of the SIP Audio Server

For more information about configuration management and for instructions for performing configuration tasks, refer to the *Succession MX System Management Console Basics*.

SIP Provisioning Client provisioning tasks

Table 13, "SIP Provisioning Client provisioning tasks sequence," shows the sequence of the provisioning tasks that a user must follow from the SIP Provisioning Client.

Table 13 SIP Provisioning Client provisioning tasks sequence

Step	Description	Task(s)
1.	Define roles and rights and use to create a new Administrator	Add role and assign rights
		Add Admin
2.	Define new domain(s)	Add domain(s)
		Add sub-domain(s) if required
3.	Define service parameters and assign to domain(s)	Define service parameters
		Assign services to domain
4.	Define domain service package	Create service package
		Assign service package(s) to domain(s) and sub-domain(s)
		Assign services to sub-domain(s)
5.	Define voice mail servers and assign to domain(s)	Add voice mail serve (SIP/Trunk/Line) and assign to domain(s)

Table 13 SIP Provisioning Client provisioning tasks sequence

Step	Description	Task(s)
6	If not deployed through the System Management Console, add IPCM and assign to domain	Add IPCM
		Assign IPCM to domain
7	Add domain status reason(s)	Add reason
8	Add users to domain(s)	Add user(s)
		Add user(s) to sub-domains
		Add i2004 device properties
9	If not autoprovisioning, assign devices to domain(s)	Add device
		Assign users to a device
10	Define gateway, gateway routes, and trunk groups	Add gateway
		Add gateway route
		Add trunkgroup
11	Define domain telephony routes and parameters	Add routing Class of Service (COS)
		Add telephony routes: Private, SIP, or Gateway
		Change routing parameters
		Add route list
12	Define banned users for a domain	Ban users

For more information on SIP Provisioning Client provisioning tasks and instructions for using the SIP Provisioning Client to perform these tasks, refer to the *SIP Provisioning Client User Guide*.

Accounting management

How this chapter is organized

The Accounting management chapter is organized as follows:

- Strategy on page 67
- Tools and utilities on page 68
- Task flows on page 68

Strategy

The accounting management system for the Succession MX provides the framework for collecting, formatting, and transmitting accounting data from the Succession Communication Server for Multimedia Xchange (MX) System to the service provider's back-end billing system. It is comprised of two logically separate entities:

- the Local Accounting Manager (LAM), which resides on the SIP Application Module
- Central Accounting Manager (CAM), which resides on the Accounting Module

The primary function of the LAM is to collect raw accounting data from active sessions on the SIP Application Module and transport it to the CAM.

The functions of the CAM include:

- formatting the raw accounting data received from the LAM into IPDR/XML records
- store IPDR/XML records on disk until manually removed
- depending on configuration, transmit IPDR/XML records to pre-configured destinations via TCP/IP or FTP Push or Pull

To ensure high availability of the accounting management system, the minimum Succession MX network configuration consists of four Sun Fire V 100 servers. One Server is for Management and Accounting Modules, one for the Database Module, one for IPCM and Web Client,

and one for the Application Server. However, this minimum configuration does not offer redundancy. For redundancy, the customer requires eight Sun Fire V 100 servers configuration. The LAM only runs in the SIP Application Module. Since many SIP Application Modules can run in a site, there can be many LAMs connecting to the CAM.

For additional information on the Succession MX Accounting Module, refer to the *Succession MX Accounting Module Basics*.

Tools and utilities

The Succession MX accounting management system is configured, monitored, and maintained through the System Management Console. For more information on the Succession MX accounting management system, refer to the *Succession MX Accounting Module Basics*. For information on using the System Management Console to configure, monitor, and maintain the accounting management system, refer to the *Succession MX System Management Console Basics*.

Task flows

This section identifies the high-level Succession MX accounting management tasks. The specific tasks you need to perform for your accounting management system will vary depending on the level of support purchased for your Succession MX.

Accounting management tasks

Configure the following accounting management system properties:

- Central Accounting Manager (CAM) communications channel
- Local Accounting Manager (LAM) communications channel
- Operations support system (OSS) communication channel (TCP/IP and FTP-push)
- Manual Failover and Switchback of Accounting Manager if applicable

For details on all the task flows for Succession MX accounting management, detailed procedures for performing these tasks, and details on the Accounting Records produced, refer to the *Succession MX Accounting Module Basics*.

Performance management

How this chapter is organized

The Performance management chapter is organized as follows:

- Strategy on page 69
- Tools and utilities on page 70
- Task flows on page 70

Strategy

Performance measurements (PMs) are statistics collected about the system. Performance is measured by the use of operational measurements (OMs).

Operational measurements (OMs) provide statistical information on the server operations and performances. OMs are usually represented in terms of groups, which contain registers (counters and gauges) that provide performance related data. For example, call processing can provide an OM group related to call control and an OM group related to call progress. One group provides data such as number of successful calls, number of calls rejected, unauthorized attempts, while the other group provides data such as average call holding time, duration of a call, and so on.

There are two types of OMs: active and holding. Active OMs are displayed as they are reported by the server to the management server/management console. Holding OMs have already been archived to files on the Management Server.

As the OM group registers are updated, they are collected into an OM report. A snapshot of this report can be viewed through the OM Browser located on the System Management Console.

Succession MX OM data belongs to one of the following categories:

- Platform-related OMs—Platform-related OMs are obtained from the SNMP agent(s) at the Succession MX components and System

Manager Node. The OMs are then channeled through the Succession MX management framework.

Note: This method applies only to Database Module and Provisioning Module, not to the entire system.

- Succession MX applications-related OMs—Application-related OMs are obtained through the Succession MX management framework.

Service provider can access OMs through FTP or view OMs using the OM Browser on the System Management Console. Succession MX OMs are collected and archived at the Management Module in a comma separated value (CSV) file format. These files then can be accessed through FTP by a performance management (PM) System.

For more information on OMs and a comprehensive list of all Succession MX OMs, refer to the *Succession MX System Management Console Basics*.

Tools and utilities

The Management Module provides the performance management framework for all Succession MX components. The user can configure performance data collection and reporting from the Management Console by selecting the "OAM Configuration" menu item. The OAM Configuration menu option is available when the user has selected a deployed application or the "System" node in the System tree and then right clicks (which displays the popup menu). In addition, the user can monitor performance data from the OM browser on the System Management console. For information on using the System Management Console to perform performance management tasks, refer to the *Succession MX System Management Console Basics*.

Task flows

Performance tasks for the various Succession MX components are documented in detail in the performance information provided for each individual Succession MX component. The following list of performance management tasks may not apply to every component. In addition, the order in which these tasks must be performed may vary from component to component. However, typical Succession MX performance management tasks include the following activities.

Procedure 2 Performing Succession MX Performance

Maintenance Tasks

At the System Management Console

- 1 Retrieve/view current performance data
- 2 Retrieve/view archived performance data
- 3 Configure performance data collection
- 4 Configure performance data reporting



Security and Administration

How this chapter is organized

The Security and Administration chapter is organized as follows:

- Security on page 73
- Administration on page 74

Security

Security Strategy

For the Succession MX solution, Nortel Networks has incorporated security mechanisms within the SIP protocol for registration and *invite* messages. Customer must implement authentication using Digest. Digest scheme is based on a challenge-response approach. Digest scheme makes a challenge using a nonce value. Valid response includes a *checksum* (MD5 by default - IETF 1321) of the username, password, given nonce value, the method, and the requested address/URI. This ensures that the password is not sent in clear. Additionally, an optional header allows the server to specify the algorithm used to create the *checksum* or Digest. As mentioned, MD5 algorithm is used by default. Also, user is authenticated with a username and password. Endpoints are identified by unique URLs. For more information on the Succession MX security strategy, refer to the *Succession MX Network Engineering Guide*.

Administration

Tools and utilities

The tools for performing Succession MX administration functions are as follows:

- System Manager Console—Depending on the level of administration access and security privileges, use this GUI to
 - add sites and servers
 - to deploy and configure Succession MX components
 - perform maintenance functions, such as login/logout,
 - display system topology in a directory tree
 - use maintenance commands
 - edit properties
 - browse alarms, logs and performance metrics
 - monitor admin and operational states
- SIP Provisioning Client Module—Provisioning administrators use this tool to manage subscribers at the provider and Enterprise domain level.
- SIP Personal Agent—This web-based GUI is used by the system administrator. It is also used by the subscriber, for example, to register and fill in person details according to the limits defined by the Domain Administrator/Administrator. It allows the user to
 - enroll for services
 - register their PC with the proxy server to answer and place SIP calls
 - view logs of missed calls
 - keep a personal phone directory
 - maintain routing information

Task flows

Use the administration tools to perform the following tasks. The tasks and the order in which they must be performed may vary from component to component. For detailed information on task flows, refer to the overview information of the individual Succession MX components or to the manufacturer's documentation that comes with the product, for example, the Sun Microsystems's documentation on Sun Fire V 100 servers.

Administration tasks for the System Management Console

An administrator who manages subscriber information may perform the following types of tasks:

- adding a user
- deleting a user
- editing user information
- reviewing audit trail
- changing passwords
- setting privileges
- modifying a user
- listing a user

Additionally, an administrator may perform the following tasks:

- accessing/starting an element
- configuration tasks, such as
 - deploying, monitoring, modifying, and restarting the element manager
 - changing system behavior
- performance monitoring tasks, such as
 - monitoring disk space usage
 - checking operational measurements
 - setting thresholds
 - checking alarms
- provisioning tasks, such as
 - Gateway routing changes
 - domain/subscribers information
 - device information
 - voice mail information
 - service packages
 - IP Client Manager
 - administrators

- Managing access control (user IDs and passwords)
 - Note:** Only users configured as “system administrators” are allowed to add/delete/modify user information. This capability can be further extended to domain information administration.
- Backing up and restoring system and database includes
 - manually backing up and restoring the operating system, database, and Succession MX software
 - saving data to a remote external device using shell scripting. (This method is used because the Vega 100 platform does not contain SCSI or DAT drive.)

Administration tasks for the SIP Provisioning Client

Administrators can create, or define, all the necessary provisioning roles to support their system. They can allow or restrict provisioning roles to carry out specific actions. Table 14, “Examples of roles and rights of administrators,” provides examples of several administrator provisioning roles and the “rights based” restrictions associated with various provisioning tasks.

Table 14 Examples of roles and rights of administrators

Provisioning role example	Rights given	Allowed tasks
User administrator	<ul style="list-style-type: none"> • User management with read, write, and delete access • Domain management with read access only 	Can view domain details, and add, delete, or modify users. Does not have access to other parts of the system, for example voicemail, service packages, and so forth.
Device administrator	<ul style="list-style-type: none"> • Domain management with read access • Device management with read, write, and delete access 	Cannot add or modify users. Allowed to add, modify or delete devices.
System administrator	Full domain access	Can see all domains, regardless of who created the domain, or the list of domains provisioned against the administrator.

Diagnostic tools

Use the following diagnostic tools to debug system problems:

- Unix commands such as “netstat -r,” “ping,” and traceroute
- Monitoring logs, alarms, operational measurements, and syslog
- Audits such as the Long Call Duration
- Loopback IP address testing on all physical ports provided by Sun Microsystems
- snoop (sniffer) or port mirroring on Ethernet switch, with sniffer connected to mirrored port, for monitoring messages
- Sun IP Multipathing for signals to switch physical interfaces upon detection of loss of the link



Appendix A List of acronyms

AC	alternating current
ACD	automatic call distribution
ADSL	asynchronous digital subscriber line
BBUA	back-to-back user agent
CAM	central accounting manager
CAS	channel-associated signaling
CD	compact disc
CGI	common gateway interface
CLI	command line interface
CODEC	coder/decoder
CoS	class of service
CPE	customer premise equipment

CPL	call processing language
CRM	customer's records management
CS 2000	Communication Server 2000
CSE 1000	Communication Server Enterprise 1000
CSV	comma separated value
DC	direct current
DHCP	dynamic host configuration protocol
DIGMAN	digit manipulation
DLCMI	data link control management interface
DLL	dynamic link library
DMS-100	Digital Multiplex System-100
DNS	domain name server
DSL	digital subscriber line
DSM	distributed software manager
DTMF	dual tone multi frequency
EBIP	enhanced breaker interface panel

EBN	Enterprise Business Networks
ERC	express routing code
FTP	file transfer protocol
GUI	graphical user interface
HDLC	high-level data link control
HSC	hot swap controller
HTTP	Hyper-text Transfer Protocol
HTTPS	Hyper-text Transfer Protocol Secure
IETF	Internet Engineering Task Force
IM	instant messaging
IMS	Interactive Multimedia Server
I/O	input/output
IP	Internet Protocol
IPCM	Internet Protocol Client Manager
IPDR	Internet Protocol Data Records
IPMP	Internet Protocol Multi-pathing

ISDN	Integrated Services Digital Network
JDBC	Java database connectivity
JPEG	joint photographic experts groupPNG (portable network graphic)
LAM	Local Accounting Manager
LAN	local area network
LCD	liquid crystal display
LI	Legal Intercept (also Lawful Intercept)
MAC	media access control
MAddr	media access control address
MCP	Multimedia Communications Portfolio
ME	managed element
MGCP	Media Gateway Control Protocol
MGCP+	Media Gateway Control Protocol with Extensions
MIB	management information base
MOP	methods of procedure
Meridian SL-100	Meridian SuperNode Logic-100

MS	Microsoft
MWI	message waiting indication
MX	Multimedia Xchange
NAT	network address translator
NAPT	network address port translation
NIC	network interface controller
OAM	operations, administration, and maintenance
OAM&P	operations, administration, maintenance, and provisioning
OCM	originating call model
OEM	Oracle Enterprise Manager
OM	operational measurement
OMI	open management interface
OPI	Open Provisioning Interface
OSS	operations support system
PBX	private branch exchange
PC	personal computer

PCP	Perfect Channel Protocol
PM	performance measurement
PRACK	persistent acknowledge messages
PRI	primary rate interface
PSTN	public switched telephone network
QFE	quad fast ethernet
QoS	quality of service
RMAN	Recovery Manager
RTCP	Real-time Transport Control Protocol
RTP	Real-time Transport Protocol
RU	recording units
SA	system administrator
SAM16	Service Application Module-16
SC	service consumer
SCTP	Signaling transport control point
SDP	Session Description Protocol

SE	service element
SIP	Session Initiation Protocol
SIP-T	Session Initiation Protocol - Telephony
SMDI	simple message desk interface
SNMP	Simple Network Management Protocol
SOAP	Simple Object Access Protocol
SQL	structured query language
SS	service session
SSL	Secure Socket Layer
STD format	standard format
TCM	terminating call model
TDM	Time Division Multiplexer
TCP	Transmission Control Protocol
UAS	Universal Audio Server
UDP	Universal Datagram Protocol
UE	usage entry

UFTP	UNIStim File Transfer Protocol
UM	unified messaging
UNIStim	Unified Network Internet Protocol Stimulus Protocol
URI	uniform resource identifier
URL	uniform resource locator
USB	universal serial bus
VMS	voice mail server
VoIP	Voice over Internet Protocol
WAN	wide area network
WCSCP	Web Client Session Control Protocol
XML	EXtensible Markup Language

Succession Multimedia Xchange

Succession MX Basics

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