

Meridian 1 System Software Feature Summary Through X11 Release 25.30

Release 25 Summary of Features

Capacity Expansion

Call Processor PII – Increases the Option 81C busy hour call completion (BHCC) capacity significantly beyond target competition and supports up to 1,200 complex Symposium Call Center Server (SCCS) agents (20+ skill sets). It allows for future Meridian* and/or intensive Symposium* product enhancements that can utilize the inherent higher capacity potential of CP PII. This additional real-time support also allows for considerable port expansion. It adopts an industry standard embedded compute platform (Compact Peripheral Component Interconnect (cPCI) and Intel PII processor).

Benefits: Employing off-the-shelf components provides a migration path to an open data model. Large installed base customers can now continue with one platform as they experience growth both from a port capacity perspective as well as additional applications.

Fiber Network Fabric (FNF) – Provides increased network capacity with the addition of three network groups for a total of eight. Now the Option 81 and Option 81C can experience growth to 16,000 ports. A 60% expansion. There is also a 60% increase in trunk capacity. The fiber rings that carry the traffic for all eight network groups are redundant. Each ring addresses all eight network groups.

Benefits: The additional capacity can now address larger Call Centers and tandem switches. It also eliminates contention for inter-network junctors while at the same time providing an additional level of reliability. Large installed base customers can now continue with one platform as they experience growth both from a port capacity perspective as well as additional applications because it is fully compatible with current network, CPU and applications equipment as well as existing inter-group architecture.

D-Channel Expansion – The D-Channel Expansion feature provides increased network capacity and increased digital trunking capabilities. It increases the total number of logical D-Channel (DCH) applications in the system from 64 to 255 for Options 51C – 81C and increases the number of physical I/O addresses allowable for D-Channel only applications to 16 per network group. The feature allows more physical I/O addresses to be used for other I/O devices e.g. QPC841, since the DDCH and MSDL (with DCH applications only) can share the same addresses as long as they reside in separate network groups.

Benefits: Allow the customer to expand their network and increase the capacity of PRI trunks into the call center.

DeskTop: M3900 Series Meridian Digital Telephones Enhancements

Flash Download – Enable a software firmware upgrade without replacing the sets in the field.

Benefits: Easier administration and less costly upgrades

Context Sensitive Soft Keys – Provides quick access to features and services when you need them. It supports 15 soft keys common Call Processing features.

Benefit: Improves desktop productivity

Display Based Expansion Module – This module expands the number of line and feature available using self-labeling soft keys. It has 8 soft labeled keys for DN's of features. The DBA's page key allows for 3 pages of 8 features to be programmed for a total of 24 keys.

Benefits: Reduces desktop geography when there is a need for additional features and/or line appearances

Personal Call Directory and Call Log for M3905 – Supports a personal directory with dial-by-name and ability to log incoming and outgoing calls via the Redial list.

Benefit: Saves the call center agent's time and improves productivity.

Set-to-Set Messaging – Allows users to create a message that will be displayed on the incoming caller's M3903 or M3904 display. It provides a way for the user to specify a Set-to-Set Message for callers to the telephone. The user turns the feature ON/OFF and edits the Set-to-Set Message via the "Applications" key.

Benefit: Improves person-to-person communications.

Corporate Directory – It provides users with a look-up and dial-by-name capability interfacing to an LDAP compatible directory.

Benefit: Increases productivity by helping users to find names and numbers quickly with dial-by-name simplicity. Also increases customer satisfaction by finding people for callers in a more expeditious manner.

Virtual Office – Provides the capability for the user to login to a designated set and be provided with their own profile.

Benefits: Maximizes the use of office space and desktop equipment for hotelling or hot desk applications.

IP Telephony

Meridian Internet Telephony Gateway (ITG) Line 2.0 provides an integrated solution for high-quality voice transmission over an IP network. Meridian ITG Line 2.0 is used in concert with the i2004 Internet Telephone. By providing IP network access system management is simplified and support costs are reduced through the potential use of a unified wiring scheme that allows for easier moves, adds and changes. Meridian ITG Line 2.0 enables communications between a circuit switched traditional telephony network and IP clients while complying with standard codecs (G.711, G.729A and G.729AB). Desktop operation is transparent to the end user who also will experience the robust feature complement of the Meridian 1 along with the ultimate in telecommunications reliability that Meridian 1 customers are accustomed to.

The Meridian ITG Line 2.0 consumes two card slots. It has a capacity of 24 ports and can support 96 i2004 Internet Telephones. Any packetized to TDM communications will consume one of the 24 ports. Any i2004 to i2004 call does not consume a port meaning that an IP to IP call is essentially non-blocking.

Benefits: Allows the end-user to invest in true IP Telephony at their own pace with the advantage of a reliable platform with a robust feature content

i2004 Internet Telephone continues Nortel Networks leadership in desktop solutions by providing the industry leading IP desktop terminal that works in conjunction with the Meridian ITG Line 2.0.

Benefits: Provides a true IP terminal that is truly full featured as it essentially mirrors the feature content of the M2616D. In addition the i2004 will allow Meridian 1 customers to take advantage of the benefits of IP telephony including a common cabling scheme, easier maintenance and administration and the cost benefits of the converged network.

ISDN ITG 2.0 Trunk – Extends ISDN functionality such as Calling Line ID and Name Display to customers. ISDN ITG 2.0 Trunk adds ISDN functionality to the Voice Over IP (VoIP) portfolio for both large and small systems and provides a 24-port card configuration that allows 24 simultaneous calls. Selectable standard voice compression rates are G.711, G.729B, G.729AB and G.723.1. Enables the use of MCDN networking features over IP for both large and small systems and initially Q.Sig networking features over IP for large systems.

Benefits: Maximizes network facilities by routing voice and fax traffic over Customer internal data network (intranet) to reduce separate Voice Circuits.

IP Expansion – Unique at this time to the Option 11C and Option 11C Mini, IP Expansion provides for the ability to extend an Expansion Cabinet over a QoS network via IP connectivity. Additionally as an option the remote cabinets can be survivable allowing for full stand-alone PBX functionality if the link to the Main Cabinet fails or the Main Cabinet experiences an outage. DRI/PRI expansion is also available with the ability to provide as many as nine (9) DTI/PRIs in the Option 11C Expansion Cabinets and Main Cabinet for a system total of 45 DTI/PRIs and as many as three (3) DTI/PRIs in the Option 11C Mini Expansion Cabinets and Mini Main Cabinet for a system total of 15 DTI/PRIs

Networking

- **Private to Public CLID Conversion** – It allows the correct CLID information to be displayed at the terminating set should the call leave the Private Network due to network congestion. This applies to ESN networks and is applicable to such interfaces as DMS100, DMS250, #4, #5 ESS, S100 and NI-2 TR-1268 interfaces.

Benefit: Leverages competitiveness compared to other vendor's offering correct CLID information to the destination during hop off scenarios.

System Administration

Inventory Reporting Phase II – It provides for additional cards for the inventory report listing that was not included in Phase I. It may be invoked by Overlay 117 or by MAT 6.6.

Benefits: It saves system administration time and improves inventory reporting accuracy.

Meridian Administration Tools (MAT) 6.6 – MAT has been updated to support all of the features and enhancements available in Release 25

FCC Compliance

10/20 digit ANI on 911 Calls – Handles any number of valid Numbering Plan Areas within a single Public Safety Answering Point (PSAP) through the 10 digit ANI. 10/20 Digit ANI on 911 calls accurately identifies the physical location of a wireless caller dialing 9-1-1 by using the 20 digit ANI (10 digits for ANI Calling Number Station number and 10 digits for wireless caller's location). The feature accepts 10 digit Automatic Number Identification (ANI) for wireline 9-1-1 calls and 20 digit ANI for wireless calls.

Release 24 Summary of Features

Hardware Support

Option 11C Line Size Expansion – Increases the Option 11C line capacity from the current 3 cabinets to a maximum of 5 cabinets with fiber links between cabinets – long (3 km) and short (10 m) fiber. Option 11C will be able to support an additional 20 IPE cards through 2 additional fiber expansion cabinets.

Benefit: Provides cost effective expansions for existing Option 11C customers. Increases addressable market for new Option 11C systems.

Meridian M3900 Series Digital Telephones – Introduces 5 new terminals for Meridian 1 Options 11C-81C.

Benefit: Increased user productivity through simplified user interface and simplified directory entry. Increased set personalization and end user empowerment.

Option 11C T1 Multipurpose Digital Interface – Introduces a new 1.5 Mb DTI/PRI card for Option 11C and introduces keycodes to implement functionality.

Benefit: Increases Digital trunking flexibility and provides simple cost effective upgrade from DTI to PRI (SW only change) Mobility

Meridian Companion Enhanced Capacity – Allows users to configure twice the number of users, base stations, and cells for Meridian Companion systems.

Benefit: Saves money by minimizing the number of card slots and receivers required for Meridian Companion systems.

Desktop

Automatic Hold – Allows users with multiple DNs to toggle between users without putting individual callers on hold before switching.

Benefit: Improves customer satisfaction by eliminating accidentally lost callers

Call Redirection by Day – Enhances Release 22 Call Redirection By Time Of Day feature by allowing call redirections to be configured by both time of day and day of week.

Benefit: Saves callers time by being routed immediately to most appropriate location.

Calling Party Privacy Override – Allows users to selectively unblock outgoing caller ID on a per call basis by using a flexible feature code.

Benefit: Combines system security/privacy with user flexibility

Make Set Busy Improvement – Allows the secretary phone, in a boss/secretary configuration, to toggle the status of the boss' phone between ringing and non-ringing.

Benefit: Improves productivity and increases flexibility in manager/secretary environments.

Distinctive Ringing by DN – Provides a different ringing cadence for each DN appearance on a Meridian 1 Digital Telephone.

Benefit: Saves time and improves personal productivity at the desktop

Message Waiting Indicator by DN – Provides a separate message waiting indication for each DN on a set with a voice mailbox.

Benefit: Increases productivity at the desktop, especially useful for administrators and telecommuters.

Flexible DID – Allows hotels to dynamically allocate DID lines to rooms so that external callers can be connected directly to rooms without going through an operator.

Benefit: Saves time, reduces costs, and improves service for hotel Environments

Call Center

Activity Codes for Not Ready – Allows call center agents to enter an activity code to track non-call/post call activities.

Benefit: Improves call center forecasting and staffing by tracking noncall Activities

MQA Enhanced Login – Returns a logged-out MQA set to its original queue rather than a default queue.

Benefit: Saves time in call center environments and simplifies MQA login process.

N Digit DNIS – Expands DNIS capability up to 31 digits

Benefit: Eliminates confusion in call center environments by ensuring each dialed number is uniquely identifiable.

System Administration

Instant Incremental Software Management (ISM) – Allows Meridian 1 users equipped with an IODU/C to update the system ISM limits, via a keycode, without requiring a SYSLOAD.

Benefit: Saves installation time and money because feature additions/ISM changes can be made during the day without taking users out of service.

Bearer Capability in CDR – Stores the type of ISDN call being made in the system's CDR records.

Benefit: Increases revenue by allowing the operator to apply different rates to calls according to the type of ISDN call being made.

MAT Data Buffering and Access – Allows a Meridian 1 System to store data output and allow those files to be accessed by the MAT PC

Benefit: Saves costs by eliminating the need for buffer boxes to capture Meridian 1 output

Call Capacity Report Enhancement – Improves calculation algorithms and extends the time period used for traffic reporting.

Benefit: Improves the accuracy of traffic reports and simplifies reporting

Meridian 1 Inventory Reporting – Introduces an automated tool for customers and support personnel to produce an inventory report listing cards and sets installed on the Meridian 1.

Benefit: Saves system administration time and improves inventory reporting accuracy.

OHAS Half Disconnect Enhancement – Notifies a security/emergency location when telephones enter “half disconnect” status (when the far end disconnects but near end is still off-hook).

Benefit: Improves safety for customers in nursing home environments

End to End Signaling Digits – Provides a customer based toggle to set if the entire End to End Signaling (EES) digit stream is shown when dialed by the user or if no EES digits are displayed.

Benefit: Introduces flexibility to turn off the display of EES digits where security/passwords are an issue.

Networking

1.5/ 2.0 MB Gateway – Provides connectivity between T1 and E1 networks. Introduces 2.0 MB PRI connections into North America.

Benefit: Integrates international networks more seamlessly, provides additional bandwidth for private network users.

510 Trunk Route Member Expansion – Expands the number of ISDN B-Channels that can be associated with a single D-Channel. Previously, 1D-Channel could support 254 B-Channel members, now, 1 D-Channel can support 510 B-Channels.

Benefit: Saves costs by maximizing D-Channel capabilities

MSDL/DDP: Port Overload Counter – Provides an overload counter capability on a port-by-port basis. Once the overload threshold is met, only one port is disabled, not the entire MSDL card.

Benefit: Isolates potential MSDL downtime issues to a single port

MSDL/DDP: Status Enquiry Message Throttle – Provides a mechanism to throttle or eliminate MSDL messages in high traffic situations such as when a D-Channel restart happens between Meridian 1's using Network ACD applications.

Benefit: Ensures maximum system performance during high traffic periods

QSIG Alternate Routing – Allows the QSIG network to re-route calls on alternate routes if the call cannot be connected over primary routes due to network congestion, temporary failure, etc.

Benefit: Allows maximization of network traffic routes by providing support for overflow situations

QSIG Compliance Update – Updates existing Q.SIG features to latest specifications

Benefit: Lower networking costs due to support for international standards

MCDN Alternate Routing – Allows the MCDN network to re-route calls on alternate routes if the call cannot be connected over primary routes due to network congestion, temporary failure, etc.

Benefit: Allows maximization of network traffic routes by providing support for overflow situations

MCDN End to End Transparency – Provides Nortel MCDN (Meridian Customer Defined Network) signaling services (NAS, NACD, NMS) over standardized ISDN Qsig Network interfaces.

Benefit: Leverages existing investment in MCDN services Release 23 Summary of Features

68060 Call Processor on Options 51C-81C – 1.5X improvement in real time call processing over the 68040 processor.

Benefit: 33% real time improvement provides more horsepower for application intensive environments.

IODU/C – Provides new method for software delivery via generic CD-ROM and customized keycodes to activate software feature packages and TN levels. New IODU/C card required.

Benefit: Simplified software update and delivery process.

RAN Broadcast – Allows up to 48 callers within a Meridian 1 system to simultaneously listen to a single RAN broadcast source. New queuing mechanism allows announcements to be staggered based on either elapsed time or number of calls queued.

Benefit: Improved system peripheral capacity and reliability.

Music Broadcast – Allows core software to broadcast music to up to 64 callers from music trunk ports without using conference hardware connections. Will deliver up to 10,000 music connections per system.

Benefit: Simplified installation & maintenance as well as increased music reliability and network slot savings.

NI1-BRI Compliance Enhancements – Increased support for NI1-BRI standards for connectivity to third party BRI terminal adapters, multiplexors, routers, bridges, etc.

Benefit: Allows remote (work-at-home) connectivity to data network through Meridian 1.

NI2-Call by Call Service Selection – Allows incoming ISDN channels to be assigned a trunk type on a per call basis rather than being dedicated. Similar to Meridian 1 call-by-call service selection but has increased traffic measurements such as incoming and outgoing trunk usage, number of trunks working, overflow, all trunks busy, incoming & outgoing ISA peg count.

Benefit: Saves money by optimizing trunk usage

QSIG Supplementary Service Path Replacement – Allows an active call connection through a QSIG private network to be replaced by a new connection after a call modification, like call forwarding, in order to obtain a more efficient connection. Similar to Meridian 1 Trunk Anti-Tromboning but this feature specifically supports the QSIG standard.

Benefit: Reduces costs and increases network efficiency by eliminating unnecessary connections when connecting to 3rd party switches.

QSIG SS – Call Diversion Notification – Provides display notification to the originating and diverted-to parties when a call is a Call Forward All Calls, Call Forward Busy, or Call Forward No Answer. Supports the Q.Sig standard for interworking between third party PBXs.

Benefit: Improves personal productivity in multi-vendor environments.

System Speed Call: Pretranslation Enhancement – Provides the user with an option to allow or deny pretranslation from occurring on a System Speed Call list entry when dial accessed. Places restriction on certain sets allowing them to only place calls through speed call lists while allowing all other sets to maintain current access levels.

Benefit: Provides increased control for system administrators

Seven Digit DNIS for MAX – Increases maximum allowable DNIS digits sent from Meridian 1 to Meridian Max. Previously, only the first four or last 4 DNIS digits were sent, now up to 7 DNIS digits can be sent to Meridian Max.

Benefit: Increased call processing capabilities and reduced time to service in call center environments.

B-Channel Overload Control – Regulates incoming ISDN B-Channel rate during periods of highly bursty traffic.

Benefit: Maintains consistent call processing during peak traffic periods.

CDR on Busy Tone – Provides a CDR record for incoming calls that encounter a busy tone and, therefore; abandon the call.

Benefit: Allows system administrators to help define required staffing and equipment resources.

Selectable Conferee Display/Disconnect – Allows users to selectively drop any party that has been added to a conference call. Alternate display options provide additional information including; number of internal conferees, number of external conferees, total number of conferees, and names of the conferees.

Benefit: Increased desktop control for conference calls

Flexible Trunk-to-Trunk Connections – Allows or denies the Transfer/Conference of two outgoing trunk calls on a per station basis (based on class of service), per trunk basis, or a combination of the two.

Benefit: Prevents potential toll abuse while allowing applications such as predictive dialing

Individual Hold Enhancement – When one member of a Multiple Appearance DN (MADN) puts a call on hold, the Individual Hold Lamp Option provides a “winking” lamp at the on-hold station and a steady “lit” lamp at all other stations.

Benefit: Accurate call treatment for MADN users

CLASS Services – Provides Calling Name, Number, Date, and Time to CLASS (Custom Local Area Signaling Service) compatible analog telephone sets. Requires a minimum of 1 Extended CLASS Modem Card (XCMC) per system.

Benefit: Brings display features to analog sets.

Emergency Services Access (ESA) – In accordance with FCC regulations, Emergency Services Access allows any Meridian 1 telephone dialing 9-1-1 to notify both public and on-site emergency personnel, provide the location of the caller (whether DID or non-DID), and allow the Public Services Answering Point (PSAP) to call back in the event that the caller disconnects.

Benefit: Standardizes emergency dialing, improves emergency response time, and provides an integrated software solution.

Attendant Console Enhancements – Addition of an “autoline” key to store pre-programmed emergency numbers (similar to autodial, but cannot be accidentally erased). Secondly, provides an audible and visual notification to multiple attendant consoles on the same key when a specific emergency number is dialed. Finally, allows any internal or external caller to directly dial a specific attendant without being queued.

Benefit: Improves responsiveness to emergency situations

X11 Release 22 (10/96)

Platform Evolution

68040 Call Processor on Option 51C/61C – 1.5X improvement in real time call processing over 68030 Processor.

Ships with 48Mb Memory. Card Upgrade from 68030 Processor

Benefit: 50% real time improvement

Option 11C – 7X improvement real time call processing over proprietary Processor. Uses PCMCIA card and keycodes for S/W delivery. Expands conference capability to 64 ports on a three cabinet system. There is now an optional glass fiber connection that allows an expansion cabinet to be located up to 1Km away.

Benefit: Supports advanced application with 7X real time improvement, easy software changes.

System Management – Platform design to support applications such as call accounting, alarm management, maintenance windows, and overlay enhancer.

Benefit: Supports advanced tools for simplified system management.

Maintenance Windows – Uses Windows '95 and an Ethernet connection to find out information about certain cards in the Meridian 1, and it allows the status of those cards to be changed.

Benefit: Simplified system management.

Overlay Enhancer – When using the overlays for system management, the enhancer will provide information about each prompt and what the response choices are. When additional information is required, the pull down help menu will provide a detailed description of the area of the system that is currently being programmed.

Benefit: Efficient programming, less references to paper documentation and provides immediate help.

SNMP Alarm Agent – Provides Meridian 1 alarm output capability to applications like Spectrum and HP Openview using the SNMP protocol.

Benefit: Single point alarm management for an entire Meridian 1 network.

Meridian 1 Mobility Server – Microcellular Option – Allows the use of standard digital cellular telephones for in building wireless applications. For handsets that support IS-54B; IS-136; and IS-94 standards. Provides automatic switch-over to the in-building service for cost effective wireless communication.

Benefit: Single handset for in-building microcell and public macrocell systems. No air time when in building

Meridian 1 Mobility Server Multisite Networking – Allows a cellular handset user to register at multiple locations so that they can use their handset at any location within a private ISDN network. The system will find the user if registered at any location and deliver calls.

Benefit: System can easily locate any cellular user that is at a site in the network.

Meridian Link Release 5 – Adds the following functionalities to Meridian Link: Enhanced Reporting of Call Release (provides information as to why a call is disconnected), Hold/Unhold (allows Meridian Link to put call on hold and retrieve a call on hold), and ISDN Progress Messages for Outbound Calls (adds additional ISDN network messages to Meridian Link for outbound calls)

Benefits: More accurate accounting of call records, and more efficient use of predictive dialing equipment

System Access Enhancements – Introduces additional security measures to increase OA&M security and to protect against toll fraud. Measures include: Limited number of attempts to enter PWD2, changes in default class-of-service, changes in default TGARs and TARGs, changes in default call forwarding, and the introduction of a security banner.

Benefit: Reduces toll fraud abuse

Improved Station Control

Call Redirection by Time of Day – A station can be assigned to one of four customer defined schedules. Calls will be directed to their normal Busy redirect or Forward no answer redirect numbers during the normal work schedule and can be automatically directed to different numbers during alternate hours.

Benefit: Helps to prevent lost calls by directing to appropriate alternate numbers.

Call Forward Deactivation – is a way to cancel forwarding of another telephone to your telephone. To cancel the forwarding, simply dial the Deactivation Flexible feature code and the number of the station that is forwarded to you.

Benefit: More control of your station, avoids forgotten forwarding.

Called Party Control – enhances Malicious Call Trace by maintaining a call connection until the station that has “control” hangs up, providing an opportunity to trace the call even if the caller has hung up.

Benefit: Better opportunity to successfully trace a malicious call.

M2216ACD Set Voice Parameters – allows the system administrator to increase the maximum volume level on ACD telephones without impacting the other telephones on the system.

Benefit: Improved sound quality for noisy environments.

Meridian Mail Password Suppression – Blocks display of the Meridian Mail password when entering on a telephone. Requires Meridian Mail Release 11 Software.

Benefit: Improved security.

Expanded Networking Capabilities

E.164/ESN Numbering Plan Expansion – increases the maximum number digits allowed in the international numbering plan from 12 to 15. Though the Meridian 1 can currently support dialing the increased number of digits, this feature will expand the call screening capability and many number storage areas in the system where more than 15 digits are required like maximum autodial digits and call forward digits.

Benefit: Supports expansion of new services in an increasingly globalized telecommunications network.

Trunk-to-Trunk Connection – allows the connection of two outgoing external calls without staying on the call. Supports telemarketing and predictive dialing applications where an outgoing external call needs to be transferred to a second external number for processing. Configured on a customer basis.

Benefit: More efficient telemarketing and predictive dialing.

Call Park & Page, Network Wide – Extends Call Park and Call Page capabilities across a network. Calls can be parked onto a telephone or System Park DN at a remote Meridian 1 location; allows a party outside of the Meridian 1 system where call is parked to retrieve a parked call by dialing the System Park DN through a DID or ESN dialing. Allows access to paging facilities at remote locations.

Benefit: Improved reachability and more fully featured network attendant services.

Virtual Network Services (VNS) Expansion – allows up to 4000 non-consecutive virtual DNs to be configured for additional connections between Meridian 1 systems.

Benefit: More connections between system when using VNS.

ISDN Q.Sig Compatibility – Introduces to North America an ISDN Primary Rate Interface standard for connecting multiple vendors' PBX systems. Introductory features include Basic Call Services, Calling Line Identification presentation and restriction and Name Display Services.

Benefit: Increased functionality in a multi-vendor environment.

ISDN CLID Enhancements – Expands ISDN Calling Line Identification (CLID) ability to support multiple area codes (NPAs), central office codes (NXXs), Home Location Codes (HLOCs) and Local Steering Codes (LSCs). Allows virtually any number to be programmed against any DN key; allows any Listed Directory Number (LDN)/Departmental LDN to be used on a per DN key per set basis; and supports the flexibility of using 2-3 or 5-7 digit DNs.

Benefit: More flexibility in configuring ISDN applications.

ACD Queue Call Restore – Rebuilds an ACD queue after a system initialization. Saves a section of non-volatile memory to store the information. Rebuilds queue as new calls if INIT occurs.

Benefit: Saves calls. Keeps customers in queue happy.

Call Forward/Breaking/Hunt Internal & External Network Wide – Preserves the original status of a call as internal or external even if transferred throughout a network of systems. Ensures that the correct treatment is given to the call when presented to the final destination (e.g., internal or external ringing, forwarding, voice mail greeting).

Benefit: Ensures appropriate ringing/forwarding/greeting is provided to the caller.

Meridian Mail Trunk Access Restrictions – Prevents an external call from being conferenced or transferred into the Meridian Mail system. For systems that have been programmed to prevent external access to the Meridian Mail system, this feature will take this precaution a step further and prevent transfers into the system. The attendant still has the authority to transfer authorized calls into the Meridian Mail system.

Benefit: Improves system protection. Helps to deter toll abuse.

CDR 100 Hour Call – keeps an accurate CDR record for calls that exceed 100 hours. Some data calls exceed 100 hours and the expansion will track these calls. This feature will add a field to the Global CDR record (when CDR NEW is selected in the system data block)

Benefit: Improves system protection. Provides more accurate billing information.

X11 Release 21 (3/96)

Improved System Performance

68040 Call Processor – 50% increase in real time call processing. Supports increased memory capacity with either 64MB or 96MB.

Benefit: 50% real time improvement

Option 81C – Combination of Core and Network modules into Core/Net module.

Benefit: Smoother upgrade from Option 61C and reduced footprint in the switch room.

Flexible Remote Capabilities

Carrier Remote IPE – Allows placement of remote IPE shelves up to 70 miles away using T1 facilities.

Benefits: Centralized OA&M, single database, and feature transparency.

Supervised Analog Lines – Allows equipment that requires supervision to be connected to the line side of the Meridian 1. This feature provides two types of supervision; battery reversal and hook flash disconnect supervision.

Benefit: Provides accurate tracking of analog calls.

Advanced Station and Attendant Features

Call Waiting Redirection – Allows unanswered calls presented to the call waiting key/feature to be redirected to the designated Call Forward No Answer (CFNA) number for that station.

Benefit: Eliminates interruptions and/or unattended calls.

Busy Number Redial – Allows analog telephone users to redial a number that was previously busy every time they go off-hook until the number is reached. Using a Flexible Feature Code activates this feature.

Benefit: Simplifies redialing for analog users.

Customer Call Forward – Allows analog telephone users to forward calls to a central answering service via a Flexible Feature Code eliminating the need to enter a DN.

Benefit: Simplifies call forwarding for analog users.

Directory Number Delayed Ringing – Provides three opportunities to answer incoming calls to a manager; first by the manager, second by the secretary, third by voicemail. Incoming calls simultaneously ring on a manager's phone while a flashing lamp is provided on a secretary's phone. If, after a specified amount of time, the call is unanswered by the manager, the secretary's phone will begin to ring as well.

Benefit: Increased call flexibility for managers.

Series Call – Allows an external caller to place a single call to the attendant who can then transfer the caller to the first of several desired parties. After the first internal party hangs up, the call is automatically routed back to the attendant who can then transfer the caller to the second desired party and so on.

Benefit: Saves the caller time and money by eliminating the need to place separate calls to multiple persons at the same location.

Semi-Automatic Camp-on – If an attendant has camped-on a call to a busy station, and that station then becomes free, rather than the call being automatically routed to the station, it will route back to the attendant who can then provide a personal greeting before connecting the call.

Benefit: Provides personal treatment to the caller and eliminates the need for attendants to place the call on hold and monitor its status.

Attendant Blocking of DN – Allows the attendant to make a user's station appear busy to incoming callers while they place an external (usually long-distance) call for the user. This ensures that the user's DN is available when the external call has been connected.

Benefit: Eliminated wasted call setups by the attendant.

Conference Warning Tone (Opt 11E) – Allows a caller to distinguish between conference warning tone and an intrusion tone.

Benefit: Added security for conference calls.

Superior Call Center Performance

500/2500 Disconnect for Outgoing Calls – Provides a signal to predictive dialing equipment when the far end disconnects so that the predictive dialing equipment can disconnect and proceed to the next call immediately.

Benefit: Allows more predictive dialer calls per hour.

Predictive Dialing Fast Transfer Support – Transfers predictive dial calls to an ACD agent in a single step which is at least twice as fast as the previous process.

Benefit: Increased effectiveness of predictive dial calls.

Multiple Queue Assignment – Allows agents to specify which queues to serve (up to five), what priority level to set for each queue, and which supervisor they will report to. Additionally, their individual DN calls will be forwarded to them no matter which set they are logged in to.

Benefit: Enhances skills based routing portfolio by providing additional flexibility and productivity for call centers.

Virtual Network Services – Provides private ISDN networking features without requiring a dedicated private network.

Benefit: Reduced cost of dedicated lines.

Enhanced Networking Capabilities

Call-Pickup Network Wide – In buildings with multiple Meridian 1 systems, call pick-up can be used even if the two phones are connected with different systems.

Benefit: More efficient call handling for large installations using multiple M1s

NI-2 TR1268 PRI Basic Call – Provides standard PRI connection format between PBX and Central Office switch.

Benefit: Provides standardized connectivity to multivendor Central Office Switches.

Calling Party Privacy – Allows Meridian 1 users to block the display of their calling party name and number on outgoing public or private network calls.

Benefit: Increased user privacy.

Network Hotline – Provides a dedicated line between 2 users across a network.

Benefit: Increases network productivity.

Direct Private Network Access – Allows the Meridian 1 to be used as a front-end concentrator for long distance service to international customers.

Benefit: Provides cost-effective international calling when away from the office.

Increased System Protection

Outgoing Call Barring – Allows the user to select one of three pre-defined levels of call barring/blocking for their telephone set.

Benefit: Flexible user-defined security.

Electronic Lock Network Wide/Electronic Lock on Private Lines – Allows users to restrict their telephone's class of service from remote network locations.

Benefit: Consistent feature functionality across the network.

Authorization Code Security – If an invalid authorization code is entered, an alarm is generated to alert the system administrator.

Benefit: Helps to identify toll abuse.

Simplified System Management

Meridian 1 Initialization Prevention/Recovery – Tracks specific hardware components and if faulty hardware is found, the faulty component is disabled rather than automatically causing a system initialization.

Benefit: Intelligent fault detection and reduced system initializations.

Traffic Period Option – Reports trunk traffic at each interval rather than only reporting traffic when a call is disconnected.

Benefit: More accurate traffic reports.

Trunk Seizure Option – Aligns M1 traffic reports with central office switch by starting accumulation of traffic statistics upon trunk seizure rather than when the call is established.

Benefit: More accurate traffic reports.

CDR On Redirected Incoming Calls – Allows the CDR Record to identify either the answering party or the party that last redirected a call in a redirection chain.

Benefit: More accurate call tracking and billing.

Overlay 15 Restructuring – Restructures the 250 prompts into 24 “gateway” prompts to provide more direct access for system changes and printing.

Benefit: Reduces system administration time and effort.

Set Based Administration – Offers three access levels to change certain system data like: Calling Party Name Display, system time and date, toll restrictions, and TN/DN correspondence. Additional changes can be made to option 11E including: changing Route Access Codes, trunk installation and removal, and auto-set installation via model sets.

Benefit: Simplifies system administration.

X11 Release 20 (12/94)

X11 Release 20, introduced in the first quarter of 1995, combines what was two separate streams of software, the North American and International streams, to provide additional features and functionality into the North American market.

General Business Features

Call Forward & Busy Status provides a secretary with the status of monitored sets (Busy and/or Forwarded). The feature key can also be used to forward or dial a monitored set.

Call Forward / Hunt Override via FFC, when used before dialing a number, will override Call Forward All Calls, Call Forward No Answer and Hunting.

Dial Access to Group Call allows a person to access the Group Call feature from any phone by dialing a flexible feature code.

Multi-Party Operations has several sub-features. Call Join allows two independent calls that are active on one telephone to be joined into a conference. Three Party Service allows the user of an analog telephone to toggle between two separate parties before conferencing them together. Recovery of mis-operation of Call Transfer will prevent callers from being disconnected if a transfer attempt is made to a vacant number or to a busy station.

Make Set Busy/Voice Call Override can be used to place a call to a telephone that has the Make Set Busy feature activated.

Priority Override allows someone to break into a busy call of a station that has a lower priority.

Restricted Call Transfer denies any attempt to transfer a call. This differs from Transfer Denied class of service, which will present a call to the attendant if a transfer is attempted.

Ring Again on No Answer allows the Ring Again feature to be activated against a station that does not answer (as opposed to only a busy station). When the called party next uses their telephone and disconnects, a notification will be provided to the original calling party allowing one button redial to the desired station.

Station Camp-on provides the capability to transfer an external call to a busy station where it will be “camped on”. The busy station will receive a camp on tone and will be presented with the call when they hang up.

Speed Call on Private Lines extends the speed call capability to calls made on a private line.

Attendant Features

Attendant Break-in simplifies the process of delivering an emergency call to a busy station.

Enhanced Night Service offers alternate night service options for weekend and holiday schedules.

Recall To Same Attendant simply delivers a recall (i.e., a call that has returned to an attendant because of no answer) to the attendant that last extended the call. If busy, the call can overflow to another attendant or queue to the last attendant.

Recovery of Misoperation of the Attendant Console prevents the attendant from dropping a call by transferring to a vacant number, busy station, or a number without enough digits.

Trunk Hook Flash Enhancement allows the attendant console to be configured with Trunk Hook Flash capabilities used to access CENTREX features.

Networking Features

Network Attendant Service provides the ability to have attendants distributed throughout a network sharing the workload. Calls can be re-routed to an alternate attendant (at a remote location) based on a variety of reasons (e.g., Overflow, Time of Day, Night Service, etc.)

Attendant and Network Wide Remote Call Forward extends the capability to remotely forward a telephone over the network and provides the attendant the ability to verify forwarding status and to change the forwarding of a telephone.

Network Wide Listed Directory Numbers (LDN) Provides two additional LDN keys to be programmed on a console. When used with Network Attendant Service, it will allow LDN keys to be configured for the LDN of a remote location.

System Features

Autodial Tandem Transfer permits the autodial feature to be used in conjunction with Trunk Hook Flash when accessing CENTREX features.

Call Forward Save on Dump/Sysload saves the Call Forward status of telephones after a Sysload (e.g., when upgrading software). The system restores the Forward to the status as of the Data Dump (or data save).

Dialed Number Identification Services (DNIS) Length Flexibility allows the DNIS number to be flexible from 1 to 7 digits instead of 3 or 4 digits.

Malicious Call Trace DN/TN Print provides more information about a Malicious Call (i.e., whether the call was internal or external and the CLID if offered).

Enhanced Malicious Call Trace allows a recording device to be conferenced with a Malicious Call. Also provides the ability to configure a maintenance terminal to output only Malicious Call Trace information (i.e., for a security office).

Flexible Feature Code Enhancements provides access to Autodial, Call Waiting, Make Set Busy, and Multiple Automatic Wake Up using Flexible Feature Codes.

Flexible Numbering Plan supports a network with Directory Numbers and Location Codes of varying lengths. Also supports Vacant Number Routing.

Global Call Detail Recording (CDR) Record provides the option of providing a new formatted CDR output, information on time to answer, information on abandoned calls, and a new record type “D” for station monitoring.

Phantom TN Operation provides the ability to configure a TN with no associated hardware. A useful application is “Virtual Office” or “Hoteling” office space if employees spend most of the time out of the office.

Recall After Parking allows calls to either recall to the station that parked the call or to the attendant.

Scheduled Access Restrictions allows calling restrictions to be placed on stations within a group based on time of day and days of week.

Station Activity Record provides a way to monitor internal and external activity on a single telephone without turning on CDR records for the whole system.

Trunk Barring restricts certain defined trunk-to-trunk connections for the purposes of conferencing or transferring.

New System Hardware Support

Multi Disc Unit (Hard Drive) for Option 21E

Option 11E

XOPS Off Premise Line Card

Option 51C

X11 Release 19 (12/93)

Summary

New business features in X11 Release 19 offer a collection of station activated call handling capabilities that provide the user with more flexibility while insuring system security is maintained. Call center enhancements enable the Meridian 1 system to provide more information to agents and supervisors improving call management and efficiency. Improvements in the Operations, Administration & Maintenance area support faster system installations, fewer service calls, and better customer responsiveness. ISDN Basic Rate Interface and Networking opens the door to more standardization and increases system capabilities.

Business Features

User Selectable Call Redirection – Select and change call redirection DN from the user set. Select number of rings before the call is redirected from user set or administration terminal

Call Forward Reminder Tone – A distinctive dial tone alerts analog set users that the phone is forwarded

Internal Call Forward – Allows internal calls to be forwarded while external calls ring through

Station Specific Authorization Codes – Defines authorization code access for each station

Handsfree Voice Call – Optionally allow either handsfree answerback or manual answerback for Voice Call and Intercom (with Voice Option) features

Call Center Enhancements

ACD Display Queue Enhancement – Shows call center queue status on the agent set

- Number of calls waiting in queue
- Number of agents staffed in the Queue
- Longest wait time of a call in queue
- Number of virtual calls overflowed from other queues

ACD Display – Displays new screens “Logged Out” and “Not Ready” when appropriate

DNIS Enhancement – Redisplays DNIS information on a terminating set after call modification over auxiliary processors and/or remote switches

Operations, Administration & Maintenance

Single Terminal Access – Provides convenient, centralized access for the administration of Meridian 1 and application processors, such as Meridian Mail, Meridian Max, CCR, and Meridian Link from a single terminal

Multi-User Login – Allows up to three users to log-in to the Meridian 1 for administration purposes

Overlay Restructuring – Enables direct access to gateway prompts for more efficient changes to the configuration record and lets the administrator enter commands in one overlay to be executed in another

Fault Management – Provides Alarm Filtering, Formatted Output and, for Option 81, System Message Lookup Utility

OA&M Feature Improvements

- System Security
- System Installation
- System Maintenance
- Print Enhancements

Networking Features

B8ZS on DTI – Allows Digital Trunk Interface loops to be configured for Bipolar with 8 Zero (B8ZS)/Extended Superframe (ESF) line encoding

Transparent Data Networking – Allows data calls to tandem through multiple Meridian 1 systems before terminating onto the public network. SDI on MSDL – Supports SDI applications on the Multi-purpose Serial Data Link (MSDL)

ISDN Basic Rate Interface

Meridian 1 Packet Handler – Provides an integrated solution for packet data transmission. Allows users to take advantage of ISDN BRI packet data applications cost effectively

Basic Rate Signaling Concentrator – Supports up to 100% ISDN BRI lines

National ISDN Support – Supports basic calling services and supplementary features, including Conference

M5209 ISDN BRI Telephone – New addition to the ISDN BRI terminals portfolio

X11 Release 18 (1/93)

- **ISDN BRI** – Standard interface for connecting data terminals and telephones to the Meridian 1. Developed based on the CCITT and ANSI standards to allow terminal portability, uniform feature activation, and simplified application development for third-party developers.
- **Remote Virtual Queuing (RVQ)** – ISDN feature that uses ISDN PRI or ISDN Signaling Link to allow queuing for network calls when trunking facilities are blocked or busy.
- **Off-Hook Alarm Security (OHAS)** – Telephones with this class of service are intercepted when the dial tone/interdigit timer expires or a digital set is forced out of service when the line cord is cut or damaged.

Benefit: Helps customers recognize potential emergency situations in correctional and hospitality settings.

- **Call Detail Recording (CDR) Answer Supervision on Ground Start Trunks** – Generates accurate CDR records for ground-start trunks. CDR records start recording when the receiving party answers the call rather than when the trunk is seized
Benefit: Enables customers to control costs
- **Overlay Cache Memory** – Stores up to 32 system overlays in cache memory, a protective memory, allowing customers to quickly access frequently used overlays.
- **Multiple Appearance DN Redirection Prime (MARP)** – Ensures the consistent activation of call redirection parameters such as Hunt, Call Forward All Calls, Call Forward Busy, and Call Forward No Answer.
- **Hold in Queue for Interactive Voice Response (IVR)** – Allows callers waiting to be answered in an ACD Queue to be connected to the voice processing services of IVR equipment of Meridian Mail Voice Menus. Caller receives IVR treatment while they retain their place in the ACD queue.
- **Alternate Call Answer** – Lets agents place Individual Directory Number (IDN) calls on hold to take a higher priority ACD call. Also allows ACD agents to place IDN calls on hold and not receive ACD calls.
- **Dialed Number Identification Service (DNIS) Name Display Enhancements** – Retains DNIS name and number during call modifications such as conference, transfer, and no-hold conference when the call reverts to a two-party call.
- **Meridian Communications Adapter (MCA)** – Asynchronous/synchronous data card that fits into Meridian Digital Telephones to permit simultaneous voice and data transmission up to 64 Kbps.
- **Data Port Hunting** – Allows up to 255 data ports to be configured as trunks in data port trunk routes when using the Data Access Card. The route can be programmed to step to another data port route if all route members are busy.
- **Modular Telephone Relocation** – Automates the Automatic Set Relocation (ASR) feature by reducing the number of manual steps needed to relocate a set.

X11 Release 17 (1/92)

Release 17 was introduced in January 1992. It included a PBX enhancement to meet new FCC regulations, Equal Access compliance, and introduced new business and hospitality features/enhancements to satisfy customer requirements.

Business Features

- **500/2500 Line Disconnect** – provides disconnect supervision to 500/2500 line ports that are connected to outboard processors such as an automated attendant or Voice Response Unit.
- **Name Display for DNIS** – Enables a name to be associated with a DNIS number. It displays the product line, company name, department, and other information associated with the incoming call to help ACD agents personalize and customize call answering.
- **Faster I/O** – Introduces a TTY “Host Mode” which ensures that output of the data associated with a TTY user type will be directed to a single TTY with an optimum baud rate.

Hospitality Features

- **Maid ID** – Allows a maid to enter a one- to four-digit identification number that is then sent to the Property Management System.

Benefit: Helps management track maid whereabouts, performance, and room status such as occupancy, cleaning status, and the readiness of hotel rooms thus providing an increased level of customer service.

- **VIP Auto Wake-up** – Routes Automatic wake-up calls for designated guests to an attendant who can provide personalized wake-up service.
- **Hospitality Screen Enhancements (Special Applications Display)** – Supports screen capabilities for Meridian Modular Telephones to guide users through Automatic Wake Up sequences, Maid ID, Message Registration, and Room Status Operations.

Regulatory Compliance

- **FCC Compliance** – With Release 17, Northern Telecom complies with the new FCC Part 68.314 to return answer supervision signals to the Public Switched Network on Direct Inward Dial (DID) calls.

Call Center Enhancements

- **ACD Report Control** – Allows customers to select specific ACD DN's to include in ACD-C1, ACD-D, ACD-MAX, and Meridian MAX reports. ACD Report Control is configurable on a per queue basis, allowing Call Center managers to focus on critical report information.
- **Call Detail Recording Enhancements (CDRE)** – Enables Meridian systems with Feature Group D to capture Feature Group D ANI in Normal and Start Records for incoming Feature Group D calls.

Networking Enhancements

- **Feature Group D (Inbound to Meridian 1)** – Allows the Meridian 1 to receive Multi-Frequency (MF) Signaling from Equal Access End Offices and perform the same functions as an Inter-Exchange Carrier Switch, providing corporate networks with high-quality long distance services such as using the private corporate network as the long distance carrier, routing to any long distance carrier of choice, receiving ANI information where ISDN PRI has not been implemented, and requiring mandatory user authorization codes.
- **NARS/BARS Enhancement** – Local Termination – Enhances Network Alternate Route Selection (NARS) and Basic Alternate Route Selection (BARS) capabilities. Local termination allows separate 911 emergency services for campus-like network environments.
- **ISA/Call by Call Service Selection Enhancements** – Dynamically allocates calls by call and service type. ISA enhancements support InWATS calls to all station types, including ACD DN's, support private trunk types for DMS-100 systems, and support Service Identification and Incoming Digit Conversion for all trunk types (Tie, COT, DID, WATS).
- **Network Name Display** – Displays caller and called party names in ISDN networks between Meridian 1s and Meridian Digital Centrex.
- **T309 Timer** – Operates in conjunction with T309 timers on DMS-100/250 and AT&T 5ESS Central Offices and Inter-Exchange Carrier switches to maintain active network calls if a D channel interruption is less than 90 seconds. After 90 seconds the T309 timer expires, releasing active calls.
- **D-Channel Error Reporting and Monitoring** – Provides diagnostic messages whenever the D channel is established or released.
- **Network Call Trace and Call Diagnostic** – Transports vital network call information from each tandem node back to the originating node, providing network administrators with information for testing and maintaining network setup and function integrity.
- **Backup D-Channel to DMS-100/250 and AT&T 4ESS** – Provides redundancy for the D Channel Handler Interface, switching to a second ISDN Primary Rate Interface span if the primary link fails.

Meridian Link Enhancements

Meridian Link Release 2 supports the following features in the LAPB Pass Through mode. (Release 3 will support the features in X.25 environments.) These capabilities are included in existing Meridian Link software and require the appropriate Software Utility Packages on the Meridian Link Module.

- **Feature Invocation Messages** – Allows the agent to activate frequently used ACD set features. The host application can activate and deactivate Make Set Busy/Make Set in Service, Ready/Not Ready, and Log-in/Log-out. Associated Sets can also access Call Forward and Message Waiting features.
- **Feature Notification Message** – Notifies the host whenever an agent activates the Make Set Busy/In Service Feature.

X11 Release 16 (6/90)

Business Features

- **Flexible ESN “0” Routing** – Allows customers to send route dialed 0, 00, or 011 calls over different routes.
Benefit: Customers can route local 0 calls differently from international 0 calls.
- **Attendance End-To-End Signaling** – Enables a console attendant to send Dual Tone Multi-frequency (DTMF) code through an established outgoing connection.
Benefit: Allows the attendant to access digital paging systems, digital dictation devices, and Meridian Mail.

Hospitality Features

- **Guest Entry of Auto Wake-Up** – Allows hotel guests to program wake-up requests directly from their hotel telephones. In a business setting, employees can program a reminder call from their set, and the system will call the user at the designated time with a reminder call.
- **Multi-Language Wake-Up** – Permits a hotel to provide wake-up calls in a guest’s preferred language. Up to six customer-definable languages can be configured on a per room basis.
- **Meridian Hospitality Voice Services** – Provides voice mail services to hotel guests by linking, Meridian Mail, the Property management System, and the Meridian 1.
Benefit: Allows guests to handle their own calls and thereby minimizing staff requirements.

ACD Enhancements

- **Supervisor Control of Queue Size** – Configures ACD DN’s so that when a queue meets or exceeds its overflow threshold, calls can be selected to receive a busy tone or to be routed into the queue.
Benefit: Saves operation costs for 800 service by reducing the number of calls waiting in queue.
- **500/2500 Single Line ACD Set** – Allows 500 or 2500 type telephone sets to be used as ACD Agent sets.
Benefit: Facilitates support of off-premise and part-time agents and saves money by reducing hardware costs.

Networking Enhancements

- **Trunk Optimization (Before Answer)** – Allows the Meridian 1 to automatically reconfigure trunk routes before answer for redirected calls (Call Forward All Calls/Call Forward No Answer, Call Forward Busy, Call Forward Hunt). For example, if a call is placed from location A to location B, then redirected before answer to location C, this enhancement drops the A to B and B to C connections, reestablishing a direct connection between A and C.

Benefit: Saves money by avoiding unnecessary use of ISDDN PRI or ISL channels/trunks.

- **Network Call Redirection** – Extends Hunt and Busy capabilities network wide, using a Meridian 1 network connected via either ISDN Primary Rate Interface or ISDN Signaling Link Private Networks. The originally dialed number, the connected number, and the reason for redirection (busy or hunt) are displayed.
- **AT&T Connectivity** – Supports Meridian 1 Integrated Service Access (ISA) call-by-call service when the Meridian is connected to an AT&T 5ESS central office switch via ISDN PRI. This feature allows the Meridian 1 to exchange information with the network on a call -by-call basis about services required for each incoming call.
- **In-Band Automatic Number Identification** – Allows a carrier such as MCI or Sprint to send the Meridian 1 the calling party's 10 digit telephone number via standard digital trunks (T-1).

Benefit: This feature allows customers to receive ANI digits without having the Inter-Exchange carriers' ISDN facilities in place.

- **Public Switched Data Service (PSDS)** – Also known as switched digital service, allows Meridian 1 users to transmit and receive 56 Kbps data over T-1 circuits or at 64 Kbps over an ISDN PRI channel. PSDS is offered by local phone companies and long distance carriers and allows the Meridian 1 to interwork with other PBXs data units supporting the PSDS feature. Meridian 1 customers can use this feature for build data transfer, video conference, group IV facsimile, and access to their high-performance applications.

- **Meridian Link**

X11 Release 15 (1/90)

- **Busy Lamp Field Enhancement** – Displays, in addition to the busy/idle status of system users, the reason for user absence and an alternate extension number to utilize.
- **Coordinated Dialing Plan Routing Enhancement** – Provides more flexibility to network dialing plans and alternate routing by allowing incoming DID calls to be routed over CO, WATS, and Tie trunks when a distant steering code is used.
- **Flexible Feature Codes** – Provides customers the ability to define their own access codes for system features.
- **Remote Call Forward** – Allows all incoming calls to a station to be automatically forwarded to a preselected number that may be remotely defined.
- **Time Forced Disconnect** – Permits a customer to specify the maximum duration of a call permitted on a trunk route basis.
- **Call Forward No Answer Second Level for Message Waiting** – Allows an SFA class of service to be defined on telephones with a Message Waiting Allowed (MWA) class of service. A message waiting indication can be activated at the originally dialed DN for Second Level CFNA calls terminating at a message center.
- **Recorded Announcement Enhancements** – Provide compatibility with associated RAN equipment that permit message lengths of 512 seconds.
- **Console Presentation Group** – Provide greater flexibility to the Multi-Tenant feature by allowing attendant consoles to be defined at the tenant level rather than the customer level.

- **Attendant Alternative Answering** – Allows any call presented to a console loop key to be forwarded to a customer-defined directory number when the attendant is not available to answer.

Hotel Feature Enhancements

Enhanced CCOS – Adds additional levels of restrictions.

Automatic Wake-up – Extends the number of automatic wake-up calls from 100 to 500 in a five minute period.

Telemarketing Enhancements

Network ACD (NACD) – Uses ISDN PRI or ISL hardware to quickly and efficiently route calls to available agents within a network of SL-1 systems.

Enhanced Overflow – Allows customers to optimize resources and service level by adding more flexibility in defining call overflow patterns within the system.

ACD Screen Enhancements – Provide new display messages on associated M2216 digital telephones that give agents and supervisors clear and simple instructions for feature activation.

- Network ACD Remote Targets
- Network Message Center
- International PRA
- Extended P. E. (Superloop)
- Enhanced Conference, TDS, & MFS
- Superloop Administration

X11 Release 14 (12/89)

- **Software Capacity Expansion** – extended the upper-limit parameters on the following features:
 - Private Line Routes
 - Dial Intercom Groups
 - Trunk Routes
 - Customer Groups
 - Network Authorization Codes
 - Pretranslation Groups
- **Centrex Switchhook Flash** – Facilitates the emulation of the SL-1 as a key system behind a Centrex switching office to permit call transfer
- **No Hold Conference** – Allows a station user to set up a conference call without losing voice contact with the original party such as in an emergency call.

- **Audible Reminder of Held Calls** – Extends to proprietary telephone, the Permanent Hold capability on 500/2500 telephones of alerting users periodically of the held call situation.
- **Night Key for DID Digit Manipulation** – Permits different call treatments to be implemented either after hours or during specific times during normal business hours.

ISDN Enhancements

Network Call Redirection

Network Ring Again for 500/2500 Sets

ISDN Signaling Link Enhancements

- **Audible Tone for ACD Observe**
- **Data Agent Log-In**
- **Flexible Incoming Tones**

X11 Release 13 (3/89)

The availability of X11 Release 13 in March 1989 added numerous additional business features and system enhancements. The existing four-digit numbering scheme was expanded to accommodate up to a seven-digit dialing plan to alleviate potential conflicts with directory number assignments. The expanded numbering plan also met the needs of large single system applications that may otherwise exhaust their numbering capacity.

Expanded software parameters addressed the requirements for additional networking routing capabilities with the BARS, NARS, Autovon, and Coordinated Plan features. Other feature parameters expanded included additional Call Pickup Groups, Speed Call lists, Group Call Members, and Multiple Appearance Directory Numbers. In addition, other enhancements to existing features included Distinctive Ringing for Dial Intercom, Speed Call/Auto Dial with Authorization Code using one keystroke, and an enhancement to the Call Party Name Display.

- **Network Call Party Name Display (NCPND)** – provides network wide visual display of name and number over PRA facilities.
- **Display of Non-PRA Calls** – Uses the trunk route access code and member number instead of CLID on the terminating telephone set display when network calls are routed over non-ISDN facilities.
- **Call Redirection/Call Forward All Calls Enhancements** – Provide information updates for both the calling and called telephones display for CLID and NCPND under those calling conditions.
- **Back-up D Channel** – Provides redundancy for the D-Channel Handler Interface (DCHI) circuit card with automatic switchover, if necessary, to the backup unit in the event of failure.
- **ISDN Application Protocol** – Provides interworking to facilitate message exchange between Meridian SL-1 and the DEC computer to support applications such as telemarketing, message desk, and support center operations.
- **Call-By-Call Service**
- **Calling Line Identification in CDR**
- **ISDN Signaling**
- **ISDN Primary Rate Access**
- **ISDN Signaling Link**

- Advance ISDN Features
- Inter-Exchange Carrier
- Software Capacity Expansion
- Directory Numbering Plan
- Call Pick Up Group
- Speed Call Lists
- Group Call Members
- Trunk Route Members
- Trunk Group Access Restrictions
- Multiple Appearance DNs
- NARS/BARS NCOS Groups
- NARS/BARS Route List Entries
- CDP Route List Index
- CDP Route List Entries
- CDP NCOS Groups
- CDP Steering Codes

X11 Release 12 (12/88)

Generic X11 Release 12 was introduced in November 1988 to offer another subset of powerful features to Meridian SL-1. ISDN Primary Rate Interface (PRI) capability was made available as well as console and ACD enhancements, further data networking flexibility, specific features for Health Care and Hotel markets, additional business feature offerings and memory expansion for the Meridian SL-1 ST all combined to bring new services. The following features were provided with this release:

- Incoming DID Digit Conversion
- ACD-D Auxiliary Security
- Directed Call Pick Up
- ACD Priority Agent
- Enhanced Music
- Meridian SL-1ST Memory Expansion
- Overlay 10/11 Enhancements
- Multiple Background Overlay Programs
- Night Service Time of Day

- **Attendant CPND Enhancement**
- **Call Number Information Message**
- **M2317 Enhancement – English/French**
- **CDR Enhancement**
- **ADM Trunk Hunting – Enhancement**
- **ACD Enhancement**

X11 Release 10 (1/88)

This software release introduced new business opportunities in key vertical markets such as lodging, health care, telemarketing, and the federal government. In addition, Generic X11 Release 10 culminated the development program, embarked on in 1984, to recombine the Hotel/Motel Generic (X37) into a single stream business offering. Thus users in the lodging environment utilized features formerly only available to the business segment, and vice versa. Generic X11 Release 10 introduced a total of 18 new feature options, partitioned typically for vertical markets, but additionally available to all users of this software base.

Hospitality/Healthcare

- **Automatic Wake Up**
- **Room Status**
- **Message Registration**
- **Property Management System Interface**
- **Background Terminal**

Federal Systems Telemarketing

- **Station Loop Pre-emption – ACD Enhancements**
- **Line Load Control**
- **Dialed Number Identification Service**

General Business

- **Call Party Name Display**
- **CFNA/Hunt by Call Type**
- **Call Forward No Answer 2nd Level**
- **500/2500 Conference Enhancement**
- **Do Not Disturb Enhancement**
- **Malicious Call Trace**

- **Internal CDR**
- **Auxiliary Processor Link**
- **ACD Timed Overflow**
- **Enhanced Hotline**

X11 Release 9 (6/87)

- **Trunk Verification from Stations** – Provides the capability for a classmarked 2500 set to seize a particular trunk within a trunk group, receive dial tone, and outpulse digits to complete a call to a remote maintenance site. This feature is used as part of a PPC-based Network Management system to allow physical testing of each trunk in a network.
- **New Distinctive Ringing** – Offers the ability for stations to have a distinctive ring to distinguish various call types. The distinctive ringing is enabled for specific trunk groups.
- **Meridian M2317 Digital Display Telephone**
- **ESN Access to ADM/MDM Trunks**
- **16 Port 500/2500 Line Card**
- **Print Routing – Enhancement**

X11 Release 8 (6/86)

- **Last Number Redial (LNR)** – Allows users to simple redial the last number dialed without having to key in the digits again.
- **Pretranslation** – Provides a means of utilizing Speed Call lists to implement a flexible dialing plan.
- **Supervisory Console** – Allows one attendant in each customer group to function in a supervisory capacity when the associated console is placed in a position-busy mode.
- **63 Attendant Consoles** – Allows 63 attendant consoles for each customer group compared to the previous fifteen.
- **BARS/NARS Enhancement** – Extends the previous three- or four-digit translation mechanism to eliminate potential routing conflicts when utilizing the BARS/NARS feature.
- **Station to Station Call Waiting** – Allows internal calls to enter the call waiting state via a new station class of service.
- **Digital Trunk Interface (DTI)** – Extends DTI functionality to additional Meridian systems including MS, NT, and XT.
- **Command and Status Link**
- **Command and Status Link Alpha**
- **Fast Tone & Digit Switch**

X11 Release 7 (12/85)

- **Station Category Indication (SCI)** – Allows the attendant to selectively answer internal calls in accordance with a predetermined priority status.
- **Controlled Class of Service (CCOS)** – Formally introduced for the Hotel/Motel industry, was applied to the business environment to allow a station's level of access to the external network to be changed to a predetermined system level using a controlling SL-1 telephone.
- **Automatic Trunk Maintenance** – Provides a means of periodically testing network resources by measuring facility loss and noise parameters to prevent under-utilization due to poor performance of service outage. Associated hardware to provide tone detection capabilities was also introduced.
- **Multi-Tenant Service** – Allows each of the 32 customer groups within the Meridian SL-1 to be partitioned into 512 tenants to facilitate resale of services.
- **Meridian Digital Telephones**
- **Meridian M3000 Touchphone**
- **Flexible Line Lockout**
- **CDR Enhancements**
- **DISA Enhancements**

X11 Release 5(1/85)

- **PBX Interface (DTI/CPI)** – Provides a 24-multiplexed digital connection for voice and/or data from a Meridian 1 to a digital DS-1 facility.
- **Departmental LDN** – Allows up to four different departments to be identified by their own specific listed directory number
- **Data Port Hunting** – Allows up to 128 data access modules to be assigned in a trunk group
- **Call Register Enhancement** – Allows a separate logical memory page to be assigned to both call registers and trunk timing blocks, thereby increasing the number of call registers from 1200 to approximately 1500.
- **Meridian SL-1XN Memory Expansion** – Increases the amount of memory available on the SL-1XN in the areas of Program Store and Protected Data Store.
- **Enhanced End to End Signaling (EES)** – Allows a telephone to send and receive DTMF codes, thereby extending the EES capability to internal PBX calls and incoming trunk calls.
- **Incoming Trunk Group Exclusion** – Associated with the BARS/NARS feature, provides the capability to deny the routing of incoming trunk calls to specific prefix codes.
- **Multiple DID Office Code Screening for NARS** – Supports on-net to off-net conversion for sites that have varying numbering schemes.
- **Offnet Number Recognition for BARS/NARS** – Removes the need to use two additional CO trunks to terminate a call at a company-owned location.
- **Privacy Override** – Allows multiple-appearance, single-call-arrangement directory numbers assigned to SL-1 telephones to have class-of-service control of privacy.

- **ESN AT&T/EPSCS Interface**
- **Optional Outpulsing Delay**
- **ACD Log-Out Enhancement**
- **ACD Reports Enhancement**
- **Message Waiting Lamp Testing**
- **ADM Trunk Hunting Enhancement**
- **ROM Enhancement**

X11 Release 4 (1/84)

- **Flexible Hotline** – Provides the capability to assign any single predetermined destination to be automatically rung from an associated 500/2500 telephone when the latte goes off-hook.
- **Deluxe Hold** – Adds two capabilities for calls placed on hold in multiple-appearance (single-call arrangement directory number environments:

Individual Hold – indicates only those calls placed on hold on SL-1 telephones in a multiple-appearance single call arrangement. When a user puts a call on hold, normal hold (winking) is indicated at that telephone only. A slow flicker is shown at all other telephones with the multiple appearance.

Exclusive Hold – allows users with multiple-appearance DN's to place calls on hold under the control only of their particular telephone. All other appearances of the DN do not indicate the held call and are excluded from entering it.

- **Automatic Line Selection** – Allows the SL-1 telephone to automatically select a line in a prioritized order when the handset is lifted.
- **500 Set Features** – Provides rotary dial access to the Speed Call, Call Forward, and Permanent Hold features.
- **Distinctive Ringing** – Allows calls over specified trunk routes to distinctively ring stations as opposed to the standard audible signaling arrangement.
- **Integrated Voice Messaging System (IVMS)** – Expanded previous SL-1 capabilities to include voice store and forward (VSF) messaging.

- **Autovon Interface**
- **Autovon CDR**
- **Flexible Line Lockout**
- **BARS/NARS 1 + Dialing**
- **Variable Trunk Seizure**
- **CDR C charge**
- **Double Density Line & Trunk Cards**
- **Line Preference Enhancement**
- **Network Enhancement**

X11 Release 3 (10/83)

- **Stored Number Redial** – Allows telephones and attendant consoles to store one previously dialed number of 4 to 31 digits in length for automatic redialing.
- **Outgoing Trunk Hunting** – The outgoing trunk hunting feature allows the choice of linear hunting, the last available trunk on a trunk route, round-robin hunting, where the system distributes outgoing trunk calls among the members of a route.
- **Network Call Transfer** – Minimizes the use of access Tie lines in the connection between Meridian 1 switches when calls are transferred and provides improved transmission performance because of the reduced number of access Tie lines involved in a transferred call on the SL-1 network.
- **Called Party Disconnect Control** – Allows the Meridian 1 to be the controlling party for disconnect of incoming calls on CO, FX, CCSA, DID, Tie, WATS, Mode, and CAMA trunks.
- **Secretarial Filtering** – Allows a set to have calls forwarded to a second set and the second set can, if necessary, transfer calls back to the first set even if it remains in the call forward mode.
- **SL-1 Tone Detector**
- **ACD/CDR Q Record**
- **Log-in/Log-out SL-1 Sets**
- **Management Reports**
- **15 Minute Reporting Option**
- **DID/TIE/CCSA Route Reporting**
- **Quiet Agent Observe**
- **Restricted Agent DN**
- **BARS NCOS – Enhancement**
- **TGAR/TARG Capability for ESN**
- **Satellite Link Control**
- **ACD-D Internal Route Change**
- **End of File Mark Enhancement**
- **Password Enhancement**
- **Enhanced 911 Interface**

X11 Release 2 (6/83)

- **ACD Package D** – Provides comprehensive administration capability that includes status displays, reports, and load management functions.
- **Call Park** – Provides the capability for attendant or station user to place a call in a held state (park) where it can be retrieved by dial access from any console or telephone set in the system.

- **Recorded Overflow Announcement** – Allows incoming calls that are delayed in answering by the attendant to be routed to a recorded message notifying the caller accordingly.
- **Flexible Code Restriction** – Allows the customer to specify whether stations with toll-denied class of service will be allowed or denied access to outgoing trunk routes based on specific number patterns and/or the number of digits dialed.
- **Speed Call** – Enhancement – Allows the creation of a System Speed Call list (or lists) fro access by any assigned station set irrespective of any class-of-service restrictions.
- **System Speed Call**
- **IMS Software**
- **Network Traffic Measurement**
- **Network Control / Signaling**
- **Network Queuing**
- **Network Speed Call**
- **New Flexible Code Restriction**
- **ACD-D Auxiliary Processor Link**
- **Trunk Group Busy Enhancement**
- **Flexible Call Forward – No Answer**
- **Conference Control**
- **Bulk Data Load**
- **Agent Log-in/Log-out/Walk-away**
- **RAN Improvements**
- **Extended Agent Observe**
- **Reporting Enhancements**
- **Audible Message Waiting**
- **ESN Enhancements**
- **ETN Switch Compatibility**
- **Traveling Class of Service**
- **Manual Trunk Maintenance**
- **100 Test Line Termination**
- **Loop Around Termination**
- **Routing Control**
- **CDR Enhancement**

X11 Release 1 (11/82)

- Mini CDR
- Network Class of Service
- Automatic Set Relocation
- Attendant Administration
- History File
- Attendant Overflow Position
- Attendant Overflow Position Busy
- Basic Alternate Route Selection (BARS)
- BARS Traffic Measurement
- Network Alternate Route Selection (NARS)
- Coordinated Dialing Plan
- Priority Queuing
- Flexible Call Back Queuing
- Off-Hook Queuing
- Network Authorization Codes
- Conditional Data Dump
- Expanded Trunk Groups
- Multiple Loop Directory Numbers

X09 (1980)

Software Generic X09 was introduced in 1980 to support the SL-1XL and additionally provide enhancements to the ACD feature by adding load management and administration and report capabilities

- ACD Package B
- ACD Package C
- Music Package
- CDR Forced Charge Account

X07 (1979)

In 1979, due to varying demand for software features, a split occurred in the Software Generic to address specific market segments. Business Generic X04 formed the foundation for the separate generic streams to evolve. Generic X07 was aimed specifically at the Hotel/Model communications management market and included the following features:

Room Number Correlation

Single Digit Access to Special Services

Message Waiting

Vacant Room Restriction

Supervisory Attendant Console

Toll Terminal Access

Music-On-Hold

System Call Park

Room Status

Controlled Class-of-Service

Recorded Overflow Announcement

X05 (1979)

In 1979, due to varying demand for software features, a split occurred in the Software Generic to address specific market segments. Business Generic X04 formed the foundation for the separate generic streams to evolve. X05 was introduced at this time as the premium Business Generic adding the following capabilities:

2500 Set Features – Provides a subset of features, formerly available only to SL-1 telephones, to be utilized on 2500-type single line sets. By dialing an octothorpe key (#) and a single digit access code, 2500-type telephones can access the features listed below:

Call Forward all calls

Speed Call (User and/or Controller)

Permanent Hold

Digit Display Sets – Provides for the display of information relative to normal call processing and feature activation on any SL-1 telephone equipped with a digit display.

Dial Intercom – Allows stations to be accessed by abbreviated dialing and arranged into separate intercom groups within the SL-1 system.

Direct Inward System Access (DISA) – Allows selected users to access the SL-1 from the external public network by dialing a special directory number from any Digitone-type telephone.

CDR Charge Account Code – Allows a charge account code to be entered before dialing or during an established call to allow billing of calls to other than station directory numbers.

Authorization Code – Allows selected users to temporarily override the access restriction assigned to any station or trunk by entering an authorization code.

Centralized Attendant Service – Allows customers with multiple locations to centralize their attendant services at a single facility.

ARS Priority Queuing – Provides an improvement to the ARS feature by introducing a flexible class-of-service assignment of the one of four priority levels or the access of least-cost routes by each user.

- **Basic ACD** – Provides a means of sharing service among a group of answering positions such that calls are served in the order of their arrival. A number of administration capabilities are available for effective agent/supervisor communication. The flexibility of providing stand-alone ACD, combined PABX service, or a split among the two can be configured utilizing a single system.
- **Message Center** – Allows an incoming call to be automatically routed to a message center if not answered at the original destination. A message waiting indication alerts the station user, who can then access the center for message retrieval.
- **Automatic Handsfree Answerback**
- **Group Call**

X04 (1978)

- **Automatic Number Identification (ANI)** – Provides the facility to automatically identify a station originating an outgoing toll call and to send this information by Multi-Frequency (MF) signaling to a central office toll-ticketing system.
- **Route Selection for ANI** – Works in conjunction with the ANI feature to route toll calls automatically over predetermined trunks.
- **Automatic Rout Selection (ARS)** – Provides automatic selection of least expensive and efficient trunk routes under software control from outgoing calls.
- **Remote Peripheral Equipment (RPE)** – Increases the range of the multiplex loop between the CE and PE by using T-1-type carrier facilities.
- **Do Not Disturb Group** – Allows the attendant to place a group of directory numbers into a Do-Not-Disturb mode so that they appear busy to all incoming calls, but free to originate calls.
- **Make Set Busy** – Allows an SL-1 telephone user to busy out the set for incoming calls to all DN appearances but free to originate calls.
- **Office Data Administration System**

X03 (1977)

Call Detail Recording – Allows the recording, on a per call basis, of details related to incoming and outgoing calls such as the calling and called parties, time, and duration. Downstream processing of the collected data permits usage reports to be generated.

Recorded Announcement (RAN) – Provides an interface to a Recorded Announcement machine and the capability of flexibly defining the intercept treatment for various call situations.

Time and Date – Provides the capability of displaying and modifying the system time and date from the attendant console.

Do-Not-Disturb – Provides the capability for the attendant to make any individual directory number appear busy to incoming calls while maintaining it free for originating calls.

End-to-End Signaling – Allows use of the SL-1 electronic telephone on an established outgoing connection to utilize the pushbutton dial pad to effect Digitone end-to-end signaling.

X02 (1976)

Generic 202 was introduced in 1976 to form the base for the SL-1 VL system. The software added a number of feature enhancements over the initial system capability and was adapted to the SL-1L as Generic 102.

Software Generic 101 (1975)

From a software point of view, Generic 101 was introduced to support the SL-1L system. In addition to many standard features and services inherent in the system, optional software packages provided multi-customer and advanced SL-1 set features. Multi-customer was unique in that it allows a single SL-1 system to serve up to 32 different customers, each with independent feature complements, numbering plans, and peripheral equipment. The advanced feature package provided Auto Dial, Call Forward, Override, Ring Again, Speed Call, and Voice Call /capability to the SL-1 telephone user. The typical application of the SL-1L system was in the 100 to 1000 line range.



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