

MX250

Enterprise Media Exchange

Overview

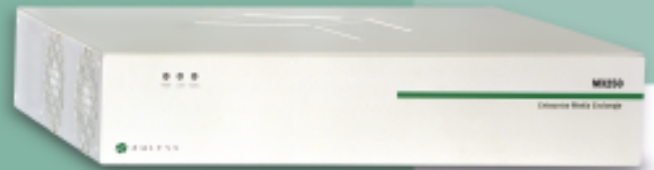
The MX250 is a media exchange that integrates multimedia communications for the enterprise into a compact system that has standard interfaces for all connections. The MX250 integrates the functions of many devices previously available only in several disparate boxes. By integrating these functions into a single unit, Zultys provides a solution for your company's communication needs that is cost effective and easily expanded.

The MX250 combines the functions of an Internet gateway (switch and router) with a PBX (line interface, analog circuits, auto attendant, voice mail, and ACD), and adds support for video calls. The system uses SIP to communicate with IP devices on the LAN or WAN. This standard protocol allows you to use the phone built into Windows Messenger or desktop phones from many manufacturers.

Administrators use a single GUI on a PC to configure and monitor every aspect of the system. Initial deployment of the system is simple and straightforward. A list of users can be imported and phones can be automatically provisioned.

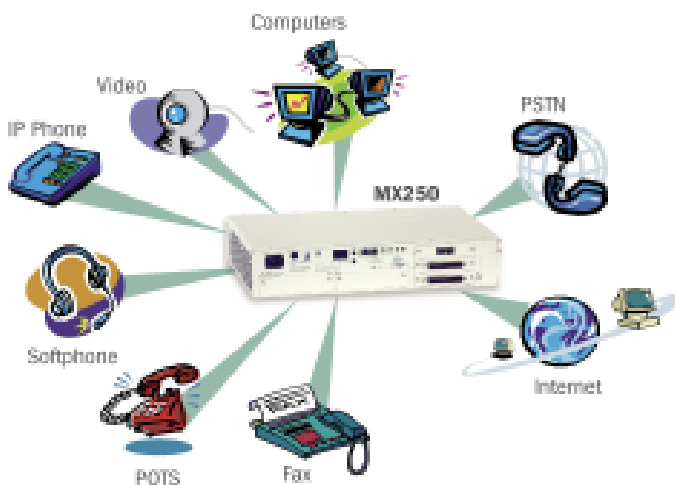
The MX250 connects to a standard Ethernet switch and to that switch you connect computers and phones. The connection to the LAN is made with one or two 100Base-T circuits, thereby providing redundancy. Additional redundancy is available with dual hard discs in a RAID 1 configuration, and ac and dc power inputs. Servicability is simplified with a removable fan tray and clock battery.

The MX250 has three slots that accommodate interfaces for connection to the CO and ISP. Voice is supported on an analog module. Voice and data are supported on BRA, T1, and E1 modules.



Key Features

- Supports 5 to 250 users
- Expandable in capacity and function without purchasing additional hardware
- Switches and routes voice, data, fax, and video
- Connects to CO and ISP with up to four T1 or E1 circuits, 24 analog circuits, 12 BRA circuits, or a combination
- 64 automated attendants with 24 simultaneous accesses
- 400 hours of voice mail with 24 simultaneous accesses
- 64 operator groups and 64 ACD or hunt groups
- Automated configuration of phones
- 50 VPN sessions directly support users over the Internet
- Internal fax termination and origination
- Standards based QoS support
- Moves, adds, and changes can be done in minutes
- SIP based – allows use of standard phones or soft phones
- Interoperates with any standards based network infrastructure
- Based on highly stable embedded Linux operating system





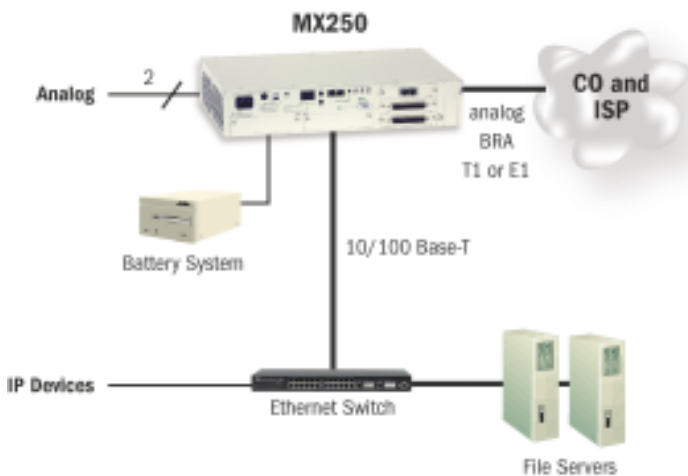
PBX and Telephony

The MX250 comes standard with two analog FXS circuits and has three slots to accommodate telephony interfaces. You can use modules to connect to analog (FXS and FXO), ISDN BRA (S/T), T1, and E1. You can configure the digital interfaces to carry voice or data traffic, or mixed voice and data.

Regardless whether you receive voice service from a telephony interface or over the WAN, the MX250 provides full PBX functionality. You obtain these features whether you use a soft phone, an IP phone, or an analog telephone. The MX250 supports all of the 25 recognized standard PBX functions.

The MX250 supports T1 and E1 ISDN PRA and T1 CAS. The CAS protocols are loop start and ground start with caller ID, and E&M wink with DID. The ISDN protocols are Lucent custom, Nortel custom, US National, and ETSI with subaddressing. The BRA protocol is ETSI with or without SPIDs.

The first two analog FXO circuits connect directly to the FXS circuits in the event of complete power failure to provide lifeline support.



The MX250 includes fax termination on any telephony interface. Incoming faxes can be answered by the MX250 and converted to a graphical file which can then be sent by email to a user or retrieved using MXIE.

The MX250 provides music on hold through an external connection, from the Internet, or from its internal hard disc. It supports overhead paging using an FXS circuit or a 3½ mm audio output. The system also supports paging through the phones which can be separated into multiple zones.

You can deploy the MX250 as an independent system, with the MX250 as a peripheral to an existing PBX, or with a PBX as a peripheral to the MX250. The MX250 can connect to other MX250s or other standard SIP equipment, either over LAN or WAN. G.729 compression is supported to reduce bandwidth requirements over a WAN.

Encryption

The MX250 supports 128-bit AES encryption. This allows you to fully encrypt conversations within the enterprise. In addition, you can secure traffic over the PSTN or WAN that may leave the enterprise.

MXIE – The Tool for User Productivity

MXIE is a PC application that interfaces with the MX250.

This software can be used by all people in the enterprise whether the person is logged in as an individual, an operator, or a member of an ACD group. Users can configure their presence and view the presence of others, send instant messages, set call handling rules, access voice mail and fax mail, make and terminate calls, and bind the application to a phone.

You can use the mouse to perform most functions. For example, you can transfer a call to another user by dragging and dropping the call indication onto the user's name.

Presence is an indication of the current state of a user, such as available or busy. Other people in the enterprise may see that presence and be able to take action based upon it. For example, an operator might route a call to an assistant if a person is busy in a meeting.

Instant messaging allows users to communicate using text messages in real time. The administrator can control whether or not messages exit the enterprise. Users can also initiate chat sessions and chat conferences.

The **call handling rules** editor allows users to configure actions to be taken by the MX250 on incoming calls. The rules can be very flexible and based upon presence, date and time, or calling party number. The MX250 can be configured to transfer calls to a number outside the enterprise, for example a mobile phone.

Users can access **voice mail** either from their phone or MXIE. With MXIE, a voice mail message can be played on the PC, saved to a folder, attached to an email, or forwarded to another user. Users can access **fax mail** on their PC, print, copy, and forward to other users.

By **binding** MXIE to a phone, the user can initiate calls from the PC while using the phone to communicate. Users can log in at any PC to MXIE, bind the application to a phone, and then receive calls at that location.

Data Networking

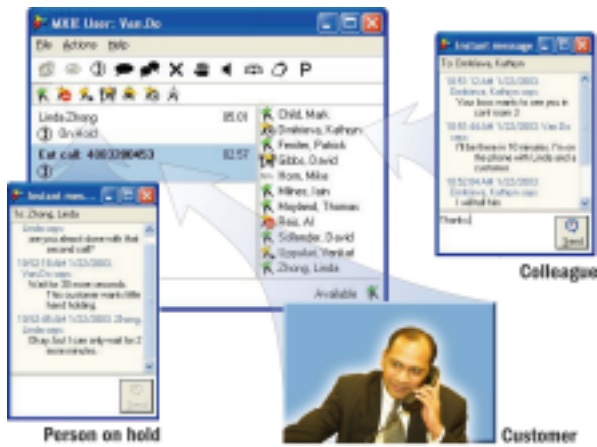
There are two 10/100Base-T circuits. You connect at least one of these to an external switch to provide connectivity to devices such as PCs and phones. You can connect both circuits to switches for redundancy and use the spanning tree protocol on the MX250 to handle fail over.

The MX250 functions as an edge router and supports RIP (version 1 and version 2) and OSPF version 2. The MX250 also allows for the provisioning of default routes (used in many cases where the MX250 provides IP WAN access over PPP or Frame Relay).

The system incorporates a firewall with NAT, for connection to the Internet. Also DHCP, TFTP, and NTP servers provide services within the enterprise. You can optionally disable any of these functions if you provide them external to the MX250.

The MX250 can provide SIP application layer gateway (ALG) function when the internal NAT and firewall functions are used. This allows you to make SIP calls outside of the private address space used within the enterprise.

The MX250 provides VPN functionality for 50 users. This allows remote users to securely access all functions of the MX250 and the corporate network.



Connection Options

To supply phone service to a user, you have multiple choices. Using a standard IP phone with a built in switch, you need only run a single Ethernet circuit to the desk. The PC is connected to the other side of the phone. If you already have two Ethernet circuits to the desk, you can connect one to the phone and the other to the PC.



You can use the multimedia capabilities of the PC by connecting a headset to it. You need only run a soft phone application on the PC, such as Windows Messenger. Such an application can allow you to easily make or receive voice and video calls at minimal cost.

CDR – Call Detail Recording

The MX250 records call data to provide comprehensive reports about users and traffic. Using these reports, you can reconcile your phone company's bill. You can generate predefined reports using the reporting tools included with the MX250. The system integrates Crystal Reports allowing you to create custom reports.

First Name	Last Name	Extension	DIR	User Name	Priority	Title	ID
Patricia	Adair	4127	338-9623	patricia.adair	Engineering	Senior Software Engineer	patricia.adair
Julie	Blumberg	4821	338-9623	jblumberg	Sales	Executive	jblumberg
Michael	Chou	4125	338-9982	michael.chou	Operations	Manufacturing Supervisor	michael.chou
Joe	Davis	4667	338-4754	joedavis	Marketing	Marketing Associate	joedavis
Chen	Guoh	8888	338-8738	chen.guoh	Marketing	Marketing/Marketing Specialist	chen.guoh
Jerry	Hall	764	338-7648	jerry.hall	Finance	CEO	jerry.hall
Steve	Hanson	4005	338-3468	stevhanson	Finance	Controller	stevhanson
Ray	Harrison	4821	338-7888	ray.harrison	Engineering	VP of Operations	ray.harrison
Bill	LeCompte	4001	338-7888	bill.compte	Admin	Director/Secretary	bill.compte
John	Nguyen	125	338-4728	john.nguyen	Admin	VP of Engineering	john.nguyen
John	Nguyen	4130	338-9623	john.nguyen2	Operations	Executive	john.nguyen2
Ha	Pham	4950	338-9623	ha.pham	Operations	Logistics Specialist	ha.pham
Andrew	Sims	122	338-9643	andrew.sims	Admin	President	andrew.sims
Ray	Smith	8788	338-9428	ray.smith	Sales	Regional Sales Manager	ray.smith
Thomas	Thomas	4001	338-9623	thomas.thomas	Engineering	Senior Test Engineer	thomas.thomas
Neil	Watts	4014	338-9623	neil.watts	Engineering	Hardware Engineer	neil.watts
Jim	White	8788	338-9623	jim.white	Personnel	Manager	jim.white

ACD – Automatic Call Distribution

An ACD routes calls to a group of agents based on flexible distribution rules. You can have up to 64 ACD or hunt groups, each with up to 64 agents. Routing to a specific ACD group can be either based on the called party number, or through an automated attendant or operator.

Skill based routing is achieved by assigning different priority levels to agents. Users can be members of multiple ACD groups simultaneously and if desired, can also log into the system as an individual. This allows them to make and receive personal calls.

Productivity is enhanced using the presence and instant messaging capabilities in MXIE. As an agent answers a call, MXIE automatically changes the presence, and includes a wrap up state at the end of the call. Each agent can view the presence of other agents in a group, allowing for supervisor monitoring.

If agents are using a popular CRM package that has a TAPI interface, the caller's information can be displayed with a screen pop. Agents can transfer calls by dragging the session within MXIE to another agent.

Auto Attendant & Voice Mail

You can have up to 64 auto attendants to service different applications or languages. You can configure schedules for each auto attendant to provide different behavior at different times of the day and on different days of the week. If you do not schedule any attendant to be active, the MX250 routes calls to an operator.

The voice mail has capacity to store 400 hours of speech. You can select how this is divided among the users.

The MX250 supports a total of 24 simultaneous voice streams to the auto attendant and voice mail. This means that incoming calls can be answered or routed to voice mail even under high loads. Further, all incoming calls can be recorded – ideal for call center applications.

Operators

You can define 64 groups of operators. Within each group you can have 64 operators and can assign them priorities. Therefore, calls are routed to some operators only when the primary receptionists are busy or not available. Operators use MXIE and do not need any special equipment. This allows you to locate operators anywhere, even at a different site.



Quality of Service

At Layer 2, the MX250 implements QoS based upon IEEE 802.1P. You can define up to 8 priority levels or classes of service. Based upon these levels, traffic can be marked and placed into different queues. Delay sensitive traffic such as voice and video are placed into priority queues, whereas data traffic is placed into lower priority queues. Queue servicing is optimized so that no particular queue is starved and throughput is maximized.

At Layer 3, QoS based upon Differentiated Services (RFC 2474 and 2475) is implemented. The MX250 is capable of marking the differentiated services codepoints (DSCPs) based upon the type of traffic received. In this way, the MX250 can enforce a QoS policy set up by the Administrator for traffic entering the enterprise's domain.

MX250 Enterprise Media Exchange



System Capacities

When you purchase the MX250, it is equipped with all the hardware necessary to support 250 users. A minimal system supports 5 users. You subsequently expand the functionality and capacity by purchasing software licenses for the system. You add these licenses without having to power down the system and do not need to return the system for any hardware upgrades.

The system does not keep track of devices such as PCs and the MX250 does not impose a limit to the number you can have on your network.

The MX250 allows each user to have eight contacts where he or she can be reached. Any analog phone or SIP device can be a contact. When a user is called, the MX250 can attempt to reach the user at any or all of these contacts, following rules defined by the user.

The MX250 can accommodate 1000 concurrent SIP registrations. A SIP registration is the action of an IP device indicating to the MX250 where it can be reached.

Power

The MX250 derives its power from ac, -48 Vdc, or both. The ac input operates from 90 Vac to 240 Vac, 47 Hz to 60 Hz. The maximum power drawn is 100 W.

You can connect a -48 V battery that must supply 100 W. Zultys supplies a battery system that provides about six hours of backup power in the event of an ac failure. You can concatenate these supplies to provide longer backup.

Physical and Environmental

Operating temperature: 10°C to 40°C (50°F to 104°F)

Storage temperature: 0°C to 50°C (32°F to 122°F)

Weight: 8.2 kg (18 lb). Shipping weight 10.5 kg (23 lb)

Size: 430 mm (W) x 269 mm (D) x 85 mm (H) (17" x 10½" x 3½")

Mount: Standard 19" rack from front, mid, or rear; 2 RU (89 mm)

Safety: UL 60950, CSA-C22.2, EN 60950:2001

EMI: FCC Part 15, ICES-003 Class A, CISPR 22, AS/NZS 3548 Class A

EMC: CISPR 24 (EN55024:1998), EN61000-4

Warranty: one year

System Administration

The system administration software gives you complete control over the system from a single integrated interface. The software runs under Windows and the PC can be located anywhere in your network.



You can have multiple administrators and can assign different privileges to each. The dial plan is intuitive and allows flexibility to have extension numbers of different lengths, internal and external emergency numbers, and call blocking. You assign the extension to the user, not to a physical phone.

You add the data about users manually or import the data from a file, an Outlook list, an LDAP server, or an Exchange server.

You can define the devices that you are using and assign them to users. As users move locations you do not need to make any changes to the configuration on the MX250. Users retain their extensions regardless where they plug their phone in your enterprise.

You select the auto attendant and voice mail scripts and the schedule for these scripts to operate. You can modify or create scripts through the GUI.

All of the configuration, the voice mail, and CDR can be periodically backed up. The software allows you to monitor the status of any user or device on the system, and also to monitor SIP, CAS, and ISDN protocols. The MX250 can send events to a Syslog server.

Technology

The MX250 was designed and built from its inception to be a media exchange. Most similar products were originally designed with IP in their core and then telephony was added on top, or they are traditional PBXs designed with telephony at their core and then IP was added on top. Those systems use proprietary phones and have closed architectures. Conversely, the architecture of the MX250 has been optimized to combine voice and data technologies while using standard interfaces and phones.

Internally, there are two computers running real-time Linux. Together, they perform 1400 MIPS. The Linux operating system yields a product that has very high reliability and allows easy introduction of new services and features. The MX250 has one or two SCSI hard discs. The two discs operate in a RAID 1 configuration. The discs store the voice mail, application code, data bases, and call detail records.

The MX250 uses the SIP protocol which is now widely recognized as the standard for IP telephony. The MX250 includes a SIP registrar, user agent client, user agent server, and presence server. You can use any standard SIP phone or SIP soft phone with the MX250 making it the second IP communications system that is truly open.

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