

ERICSSON COMMUNICATION SYSTEMS IP TELEPHONY



Ericsson Communication Systems IP telephony solutions are based on a plug-in board that makes Voice-over-IP (VoIP) an affordable, integrated and—above all—useful tool for small to medium sized enterprises. It enables existing Ericsson Communication Systems BusinessPhone and MD Evolution to offer IP-based, as well as traditional telephony.

Overview

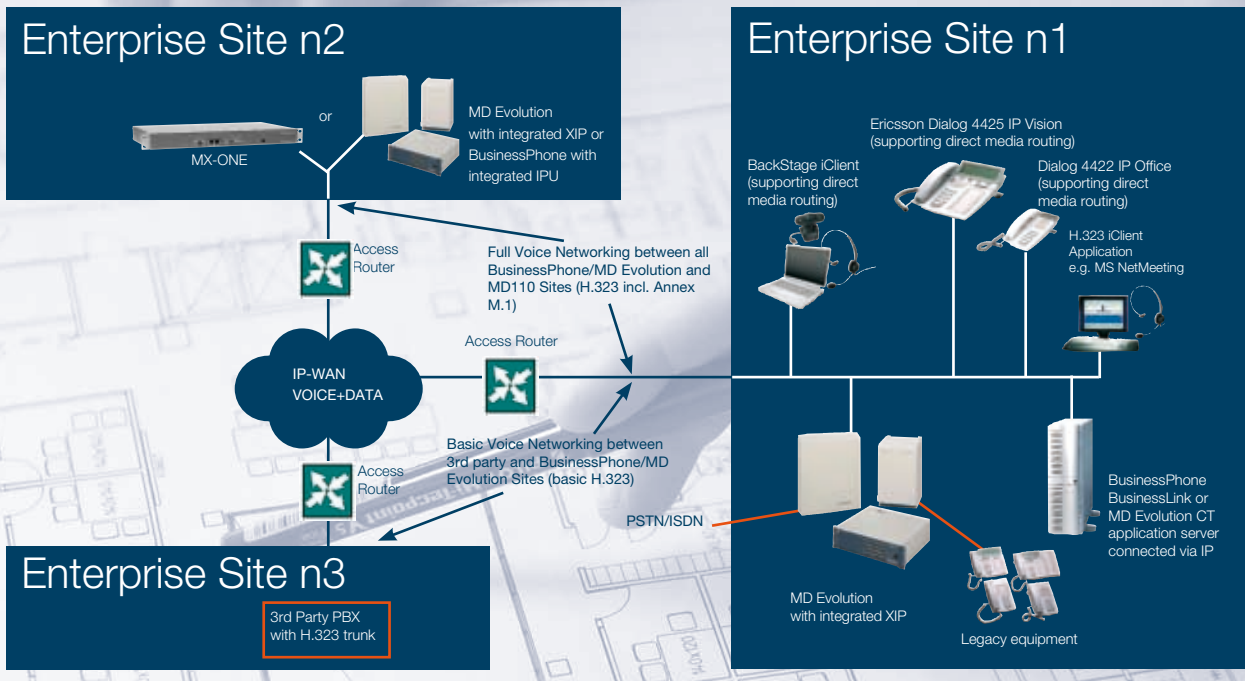
IP telephony is an integral part of the system. The immediate benefits are cost-effective connectivity and truly integrated computer-telephony applications over your corporate network.

The IP networking solution allows two or more (max. 1500 sites) systems to be networked seamlessly together, or with other PBXs, including the Ericsson MX-ONE Telephony Switch and MX-ONE Telephony Server. Additionally the Ericsson Communication Systems offers advanced IP telephony with the Ericsson IP clients, Dialog 5000 IP Premium, Dialog 4422, Dialog 4425, BackStage iClient and Dialog 4420 for MD Evolution

With IP telephony, installed BusinessPhone or MD Evolution infrastructure components can be reused, such as cabling, telephones—including analog, digital and DECT cordless models—as well as Computer Telephony (CT) applications.

Added Functionality

With IP telephony solutions, all the functionality of the system is maintained, and enhanced. Fully integrated voice and data communications mean new application capabilities that can enhance operational efficiency and improve customer service. For example, networked over a wide-area IP network, and connected to a CT application server, your staff can share applications as if they were working on their own office



network, regardless of location.

The integration of an H.323 Gatekeeper into the BusinessPhone or MD Evolution Communication System allows home and remote workers to be integrated into the organization's workflow. For example, with the BackStage iClient installed on any modern PC, employees can have full access to the system functionality while connected via a remote access service to the organization's computer network. They can access their work files, e-mail and voice mail, take part in conference calls and utilize other telephony functions.

Making IP connectivity an integral part of the system also opens some interesting new alternatives in system management. With Management over IP as standard, the BusinessPhone or MD Evolution system can be configured, administered and maintained from any location over an IP connection. The integrated Unified Messaging function is an attractive alternative, with standard integration and no extra hardware costs.

Efficiency with Quality

IP telephony has major operational advantages. By using a unified network for voice and data, you only have one set of cables to consider. And when it comes to adding, moving and removing users, it's just a question of plugging in and unplugging equipment—configuration is simple. This efficiency is not gained at the expense of quality. In the event of a failure in the IP network, or if call quality is insufficient, ongoing Voice-over-IP calls are handed over to an alternative non-IP route. The IPU also supports the Type of Service (ToS) field DiffServ field in the IP header to help maintain high quality of service.

IP Telephony

To integrate IP extensions, MD Evolution and BusinessPhone, use a Gatekeeper running in Linux. The implementation is based on the H.323 standard with an additional proprietary enhancement to support the Ericsson IP clients, Dialog 4422, Dialog 4425, and Dialog 4420 for MD Evolution, which are full-feature IP telephones, and the BackStage iClient. Functions supported by the IP telephones include Message Waiting Indication and Supervision of any other extension.

The IP telephones work the same as normal digital

extensions. By routing phone calls between IP extensions directly on a corporate IP network, no switching recourses from BusinessPhone or MD Evolution are used. Furthermore, speech quality is increased through this direct media routing function by eliminating coding delays.

Application scenarios for use of IP extensions and clients are manifold, but primary deployment is for home or remote workers, as well as in scenarios where support for "free-seated" employees is required. The nature of IP extensions and IP clients dictates that they must be registered on the system in order to operate appropriately. This is the registration procedure used in free-seating scenarios, where employees can log on to their personal voice and data accounts from any desk.

Employees can easily access the company computer network from home or remote locations via secure servers and routers. By logging onto the network's "voice server"—MD Evolution or BusinessPhone—they benefit from the same telephony functionality as if they were connected locally. Telephony supports diversion, call-back and even conference calls.

IP Networking

One of the key benefits of IP networking is reduced call costs. Internal voice calls can be carried over your private local or wide-area IP network (LAN or WAN). National and international call charges can be reduced dramatically using compression technology, which, compared to traditional voice calls, allows a greater number of VoIP calls to be carried over the same facilities.

By installing an appropriate IP voice channel license on the MD Evolution XIP board or BusinessPhone IP board in addition to the traditional voice networking license, voice networking over IP can be operated in the same way as via legacy leased or switched lines. Instead of multiple tie-lines per node or hop-by-hop routing, the IP connectivity is represented as one route in the system. The routing is performed in the corporate IP network, resulting in point-to-multi-point connectivity. The networking routes can consequently be dimensioned very efficiently. Only the traffic that is generated and terminated in their nodes needs to be considered in the system's traffic load calculation because there is no longer any need for transit traffic.

Ericsson Communication Systems IP networking is based on the standardized Voice-over-IP (VoIP) protocol H.323. Due to the implementation of Annex M.1 as part of

H.323, the protocol mechanisms allow tunneling of QSIG messages within H.323 call signaling channels. In this way, all networking features are supported via IP in the same way as via legacy network connections; even centralized operator functions are supported.

By adding a proprietary mechanism for tunneling Ericsson's networking functions, Networking over IP between Ericsson's MD110, MXONE and MD Evolution systems is easy. Full-feature transparency is provided between all networked sites, independent of whether MD110, MXONE, BusinessPhone or MD Evolution systems are installed.

In addition, this solution can be used to transparently couple MD Evolution or BusinessPhone and third-party PBXs (or Ericsson MD110) through Annex M.1-aware VoIP Gateway equipment over IP backbones. Using H.323 as the IP Networking protocol enables integration of small branch offices including local break-out capabilities. This means that a H.323 (version 2.0 or higher) trunk gateway can be connected in a branch office via the corporate IP network, and can be used for local trunk break-out.

IP Gateway

The IP gateway solution has the potential to satisfy a multitude of enterprise needs due to its wide range of features and the capability to easily customize the system. This packaged solution comes with a standard BusinessPhone or MD Evolution system, tailored to focus on the specific Voice-over-IP Gateway function. It enables a customer to implement a common infrastructure in a converged network for both voice and data applications without substantial investments.

The MD Evolution IP gateway is designed for standard



cabinets or the 19-inch system. The BusinessPhone IP Gateway is based on a standard BusinessPhone 128i system. This allows businesses to expand their voice networks with the addition of PBX functionality in a cost-effective manner simply by upgrading the IP gateway with the required license and adding minor hardware and software components, such as for voice-mail, while retaining the rest of the system.

Companies using a standard BusinessPhone or MD Evolution as a branch node communication system do not need a separate VoIP trunk gateway to connect the branch node to the PBX at the main site; the system supports an integrated trunk gateway. Full-feature transparency between the main site and branch offices is easily achieved via the corporate computer network. This is done by adding an IP gateway at the main site's PBX and on the IP network, and on the other side, by upgrading the systems in the branch offices with an integrated IP gateway.

QSIG networking features are supported via IP in the same manner as via legacy network connections; even centralized operator functions are supported.

Technical Data

	BusinessPhone	MD Evolution
IPU/XIP	IPU	XIP
• plug-in board with own	48 MHz processor	400 MHz network processor
• removable compact flash disk containing software and firmware	X	X
• Ethernet 10/100 BaseT	X	X
Protocols		
• IPv4	X	X
• vendor-specific OAM protocols	X	X
• BOOTP	X	X
• coding of speech packets according to RTP	X	X
• DHCP	X	X
• TCP, UDP	X	X
• FTP (File Transfer Protocol)	X	X
• H.323 v4 incl. Annex M.1	X	X
• H.225, H.245	X	X
• IP GateWay	BusinessPhone proprietary IP gateway (BPIP GW)	MD Evolution proprietary IP gateway
• Gatekeeper – Gatekeeper signaling with Location Request procedure	X	X
Voice Support		
• parallel calls	up to 16 parallel calls per IPU	up to 16/ 32 parallel calls per xIP
• voice coder	X	X
– G.711	X	X
– G.723.1	X	X
– G.729ab	X	X
• silence suppression with comfort noise insertion	X	X
• up to 64ms G.168 echo cancellation	X	X
• support of end-to-end DTMF	X	X

	BusinessPhone	MD Evolution
Quality of Service		
• queuing prioritization, support for Type of Service (ToS)	X	X
• DiffServ, Differentiated Services according to RFC2474	X	X
IP Extensions		
• support of up to 128 IP extensions per IPU via an integrated H.323 Gatekeeper	X	X
– Ericsson IP phone, Dialog 4422 and Dialog 4425	X	also Dialog 4420
– BackStage iClient	X	X
– any IP or PC phone conforming to H.323 standard	X	X
• direct media routing: end-to-end IP between IP extensions	X	X
IP Networking		
• standard-based signaling protocol	X	X
– H.323 including Annex M.1 supporting tunneling of QSIG (including proprietary add-ons)	between BusinessPhone systems over IP	between MD Evolution systems over IP
– H.323 including proprietary add-on supporting tunneling of QSIG (including proprietary add-ons)	between BusinessPhone systems and Ericsson's MD110 systems over IP	between MD Evolution systems and Ericsson's MD110 systems over IP
• vendor-specific call signaling protocol supporting full voice networking functionality including QSIG between two or more systems over IP	BusinessPhone systems	MD Evolution systems
• Least Cost Routing and Expensive Route Warning	X	X
• route support	full support as for any other BusinessPhone route	full support as for any other MD Evolution route
Network Redundancy		
• alternative route selection in the event of LAN access failure or IP congestion during call setup	X	X
• hand-over to circuit-switched network in the event of LAN access failure or IP congestion during conversation	X	X
CT and Maintenance Link		
• connection of CT Server to the system via IP	BusinessLink Server	CTI-Link Server
• connection via IP	of the BusinessPhone System Management Suite to the BusinessPhone system	of the MD Evolution Management Suite to the MD Evolution system
• connection of any traditional application, e.g., Call Center Supervisor, Call Accounting applications for the system utilizing Vcom or a software-based Com driver running on Windows 98SE, ME, XP, 2000 and Server 2003	X	X
• connection of the Unified Messaging Interface to the system via IP	X	X
Configuration Options		
• flexible utilization of voice channels; voice channels can be used for: – IP extensions – IP trunks to a central gatekeeper (operator) conforming to H.323 standard – IP trunks for networking	X	X
• software and firmware are fully upgradeable from remote locations	X	X
• remote configuration and maintenance	X	X

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