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WHITE PAPER

Enterprise communications trends, needs and opportunities

Delivering business advantage through multi-dimensional convergence

Preface

This white paper is intended for enterprises, operators, telecom journalists and analysts. It offers Ericsson's perspectives on enterprise communications needs, issues, trends and solutions at a high level. The paper does not go into any technical detail.

If you have further questions regarding the content of the paper, please contact your local Ericsson office.

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1 Introduction

While voice telephony remains the predominant form of communications for business users – particularly outside the office – fundamental shifts are under way in enterprise communications needs and expectations. Data communications are increasingly important for business users on the move, and advances in packet data technology mean the long-promised convergence of voice, data and video communications is starting to become reality. Communications convergence is also occurring in two other dimensions: between fixed and mobile and between public and private.

Operators are renewing their focus on enterprises as growth in consumer markets, especially in developed countries, slows down. At the same time, enterprises are looking to communications to provide them with new competitive advantages – for example, by making business-critical applications available everywhere – and to drive down cost of operations.

There are several other important trends occurring in the enterprise environment beyond communications: the moves to IT outsourcing, grid computing and storage area computing, to name a few.

This paper focuses on what is perhaps the most fundamental aspect of doing business: personal communications. It sets out the major trends, requirements and opportunities in enterprise communications over the coming years. It outlines some of the advanced communications solutions becoming available to enterprises of all sizes to make their businesses more flexible, more responsive and more profitable. And it highlights how enterprises, vendors and network operators can work together to implement value-adding, business-class communications solutions.

2 Enterprise communications trends

There are some fundamental changes taking place in the way enterprise communication solutions are delivered, implemented and used. The days of office telephony, office email, mobile computing and mobile telephony existing in splendid isolation are numbered. Enterprises need and expect their various communications systems to be able to interoperate to support their businesses better – wherever employees happen to be working. The focus is increasingly on adding business value by building business and relationship skills, forming new partnerships and alliances, and developing new business models.

On the supply side, deregulation, open standards and layered architecture are leading to globalization and enabling new entrants to compete. At the same time, value is shifting away from things like hardware, bandwidth and middleware towards applications and services. Some operators are therefore keen to become more complete communications service providers, and not just ‘bit-pipe’ providers. They see an opportunity to move up the value chain and offer more value-added services – especially to smaller enterprises that do not have the in-house resources to take advantage of new technologies and solutions themselves.

The general shift to mobile working also implies a need for greater interaction between public and private networks, for example in areas such as location-based services, roaming, single sign-on, device management and billing.

New service provider players from the IT and consulting worlds are entering the market to deliver both data and voice solutions to medium-sized and large enterprises. Office application providers are also expanding their software offerings to provide PBX-like functionality.

Ericsson has identified four major market trends in enterprise communications: the move to IP-PBXs, growing enterprise mobility, mobile applications integration and the rise of outsourcing and hosting (outlined in the following sections). Ericsson sees very close interdependence between these four trends, and they are the fundamental drivers of enterprise communications requirements and our development efforts for both the enterprise and operator communities.

2.1 PBX world goes IP

Following a slower start than many predicted, IP-based enterprise telephony is gaining ground fast. Significant inroads have already been made and dramatic growth is expected over the next few years. Enterprises are demanding IP

telephony based on its perceived cost savings and future-proof architecture, coupled with the fact that new multimedia services and applications are easier to implement and manage in a converged infrastructure.

Today, pure-play IP-PBXs account for less than five per cent of customer premises equipment (CPE) shipments. However, the deployment of IP lines is expected to grow by more than 50 per cent annually over the coming years as hybrid, IP-enabled PBXs dominate the market. Businesses value these hybrid solutions because they enable them to take advantage of the cost savings generated by using their IP infrastructure for voice traffic where it makes sense (for intra-site traffic or branch office integration, for example), while still protecting their investments in existing business-class communications systems.

In parallel to the growing popularity of IP-based CPE, the increased availability of broadband connections is enabling the deployment of Voice-over-IP (VoIP) services such as IP-Centrex. According to market analysts Probe Group, by the end of 2008, nearly 27 per cent of the global fixed line market will be using voice over packet technology.

2.2 Increasing role of mobility

As markets and businesses become more global, and the popularity of flexible working grows, there is a clear trend for enterprise workforces to become more mobile.

In Western Europe and the USA, there are now 180 million mobile workers, and at least 86 per cent of enterprises have personnel that spend at least one day per week outside the office, but not at home, according to industry analysts IDC. IDC has also found that more than half of all enterprises have a defined mobile strategy, and nearly all enterprises pay for some of their employees' mobile phone subscriptions, with the average company covering the mobile phone costs of 27 per cent of its workforce.

Mobility within the office is also key as accessibility and responsiveness become ever more important in productivity and customer service.

Management, field sales forces, field technicians and consultants are all early adopters of wide-area mobile enterprise solutions. However, fewer than one in ten mobile workers have a mobile enterprise solution today (that is, more than simple mobile phone subscriptions).

2.3 Mobile applications integration

There is a strong trend among enterprises to mobilize existing investments in office applications. Mobile enterprise applications will initially be

communications-centric, paving the way for more process-centric applications that involve more complex integration with business processes. All of these will be enhanced with integrated voice capabilities. Gartner predicts that every enterprise with over 500 employees will have deployed a mobile enterprise application by 2005. Ultimately, Ericsson expects that most, if not all, applications owned by the typical enterprise will benefit from some degree of mobility.

When it comes to mobilizing enterprise applications, it makes sense to start with the applications that are most beneficial – and simplest – to adapt to the mobile world.

While enterprises adopt mobilizing solutions at different rates, and in a variety of ways, there are three major phases of evolution taking place in the market today.

The first phase involves adding mobility to 'horizontal' enterprise applications like corporate telephony, voicemail, automated attendant, e-mail, messaging and intranet access. Mobilizing such applications enhances personal control over time, and supports enterprise communication and collaboration generally. For example, it makes personnel more accessible and frees up time that can be spent focusing on customers instead, while helping personnel become more efficient and motivated.

The second phase involves mobilizing more complex business processes, where the value of mobility, and immediacy, may be more pronounced and contributes to a reduction in process delays. Such processes include Field Force Automation (FFA), Sales Force Automation (SFA), Customer Relationship Management (CRM), Supply Chain Management (SCM) and Enterprise Resource Planning (ERP). Mobilizing these applications may modify working practices, but does not change business processes in any profound way.

In the third phase, mobility will enable the creation and transformation of business models. For example, new ways of delivering products or services will be created through machine-to-machine (M2M) mobility and the deployment of wireless sensors/transmitters in all kinds of products and equipment.

2.4 Outsourcing and hosting become viable

Outsourcing and hosting of a variety of business functions and services, including communications, are now a viable option, especially for small and medium-sized enterprises.

According to research from industry analysts IDC, there is no let-up in the outsourcing trend, with contracts getting larger and longer during the course of

2003. The total value of the top 100 European outsourcing deals in 2003 grew by 74 per cent to US\$44 billion, IDC studies show. The top 100 deals were dominated by the government sector.

Probe Group has found that enterprises' reluctance to outsource is continuing to fall as broadband and e-commerce drive the market for hosting services. The key criteria for choosing a hosting provider are price, customer service, carrier neutrality, stability and service level agreements (SLAs).

Managed communications services are an increasingly important aspect of this outsourcing trend, as the power, complexity and interdependence of communications increases. Larger enterprises especially are interested in combined IT and communications outsourcing to a single end-to-end supplier, as infrastructure, applications and devices increasingly handle both voice and data – and fixed and mobile – communications.

3 The big issues

Adoption of and investment in any new solution are motivated by business needs: to rationalize or enhance current processes to improve business performance. At the highest level, all enterprises want to reduce total cost of ownership, implement mobile ways of working, improve productivity, enhance customer satisfaction and ensure security.

Communications solutions have an important role to play in helping enterprises achieve these goals.

3.1 Cost

There are potentially substantial cost savings to be derived by enterprises from mobile-enabled converged communications. The most obvious is **converged communications architecture**, which reduces both capital and operational costs. There are also significant savings from **bringing the mobile phone into the corporate domain** – there are fewer wasted calls, mobile call costs are more transparent, and there is the potential to make special deals with network operators. Furthermore, costs become more predictable for the enterprise.

Integrating mobile devices into the corporate environment can reduce IT management costs, cut mobile phone costs and improve efficiency.

For the mobile operator, there are big potential revenues to be earned by helping the enterprise go mobile – after all, enterprise users tend to spend around four times more on their mobile services than consumers do. Operators benefit too from having **enterprise-wide agreements** with centralized account handling, service management and billing – meaning their revenue streams become more predictable.

With the opportunity to implement ‘**one number, one phone**’ capabilities, enterprises can reduce the amount of equipment and the number of subscriptions required. Costs are reduced through savings in office space and phones, and further cost savings can be made by **centralizing common support functions** (such as attendants), and through **automated functions** that reduce the need for support staff. Management of telephony services is also improved.

Recent analysis by Ericsson of its own ‘OnePhone’ implementation – where all employees have either a mobile or fixed extension as their communications device – has revealed cost savings of around 30 per cent in telephony costs

per user, when all factors were taken into account – including device and network rationalization, common support and the mobile tariff deals agreed with operators. Other companies that have implemented Ericsson's solution have quoted overall cost reductions of 38 per cent.

The deployment of **IP telephony**, particularly in branch offices, provides cost savings through convergence and lower transmission costs. In addition to cost savings, IP-based branch office solutions can provide local survivability, automatic recovery and PSTN access with direct media routing.

In-building coverage solutions are now available that combine multiple operator networks and WiFi into a single antenna system. This provides better coverage at a lower cost for the enterprise or facility owner.

In highly distributed organizations, the cost of supporting even basic functions like moves, adds and changes has a significant impact on IT budgets. Enterprises are therefore looking for ways to **manage costs and usage** themselves, for example by taking care of service activation and deactivation.

Another way cost of ownership can be reduced is through expert consulting services to **optimize corporate communications**. Enterprises can make further cost savings and service level improvements through outsourcing the management of the communications network to a specialist managed service provider.

Smaller enterprises can save the often significant capital costs of purchasing and upgrading converged communications solutions by **outsourcing communications** to an operator altogether. Mobile and IP Centrex services give small enterprises access to the latest mobile enterprise capabilities, together with the ability to manage the services themselves.

With technology developing at ever faster rates, a **defined upgrade path** is an important buying factor for enterprises. Most enterprises are not interested in the enabling technology itself, as long as it meets expectations for quality of service, performance and functionality. Migration to IP must therefore demonstrate real value in terms of reduced Total Cost of Ownership (TCO).

3.2 Mobility

To compete successfully in today's business environment, enterprises need to be able to operate seamlessly, wherever their employees happen to be. Mobile workers need access to a variety of applications, whether on the road, working from home or working at another company's premises.

Converged communications solutions offer several ways for mobile users to remain a full part of the corporate network in the wide area. For example, there are **Mobile Extension** facilities that provide user-friendly, graphical user interface-based access to hundreds of business-class features of the office

PBX from a mobile phone. **IP extensions** enable users to access PBX features from any IP network. While **fixed remote extensions** enables home-workers or remote call center agents to access PBX features as if they were in the office. In addition, there are now facilities for providing **seamless, secure and high-speed access to office voice-mail, e-mail and calendar facilities from a mobile phone**.

Mobility on site can be provided in several ways. In combination with **in-building coverage** solutions (if required), Mobile Extension opens up the opportunity to create true '**one number, one phone**' capabilities, with the mobile phone meeting all communications needs for users on the move.

Free-seating (hot-desking) capabilities enable users to log on and make and receive calls on their usual number at any physical extension on the network. The same capability is available through IP phones and IP softphone-enabled PCs connected to the corporate network. **DECT digital cordless** solutions are particularly suitable for a number of vertical market applications including hospitals, retail, manufacturing and warehouses.

Wireless LAN (WLAN) solutions are also valuable for delivering wireless data connectivity for laptop computers, personal digital assistants (PDAs) and data-capable mobile phones. **Voice-over-WLAN (VoWLAN)** solutions are available, and the financial case for deploying them can be very strong. However, there is still some issues to be resolved for VoWLAN solutions in areas such as standardization, quality, reliability, capacity and hand-over before they can be considered as a direct replacement for DECT solutions.

3.3 Productivity

Mobility-enabled converged communications solutions help enterprises boost productivity by enabling employees to **make better use of their time**. Through seamless and secure mobile access to corporate voice and data applications, employees are more available to callers, and so spend less time returning missed calls. They have faster access to information and colleagues wherever they are. In addition, mobile enterprise solutions enable flexible working, so that employees can work effectively at times and places that suit them. Business processes are not interrupted by the unavailability of people or information.

Converged communications solutions enable **multi-party interaction and collaboration** by using network technologies to facilitate communications across the enterprise. With tools that make them more available and responsive, individuals contribute to a more agile organization.

Many enterprises are seeking to improve productivity and business performance by **focusing on core activities**. Handing over responsibility for communications to a managed service provider not only helps reduce costs by

optimizing corporate communications, it also enables the active development of corporate communications to support the business.

Productivity is enhanced by making corporate communications services **easy to implement and use**. One way of doing this is to make the user interface to sometimes complex corporate communications functions simple and intuitive. For example, Sony Ericsson smartphones now include corporate functionality that provides users with an **easy-to-use, icon-based interface** to a variety of corporate communications applications, including mobile extension, directory and messaging services. The user is able to click-to-dial colleagues and perform other PBX tasks from smartphone screen without having to remember complex DTMF codes. The complex public–private number handling is also invisible to the user.

Enterprises – especially smaller ones – want solutions that **minimize integration effort**: as close to ‘plug and play’ as possible. One way this can be achieved is through pre-integrated standard solutions delivered as a service, and charged on a fixed-fee basis.

3.4 Customer satisfaction

Enhanced mobility and communications convergence can have a positive impact on customers’ perceived quality of communications and general satisfaction in a number of ways. One key area is improved **availability and responsiveness** of employees. Tasks get handled quicker and customers are dealt with more efficiently, even if the primary contact person is busy or unavailable.

Availability while working around the enterprise premises is improved through the use of in-building coverage solutions for wireless access to the corporate network – whether using WiFi or mobile network technology. In this way, corporate policies for maintaining professional customer communications are supported.

Corporate image can be maintained, for example, by having a **single contact number** – such as a local wireline number – that callers use to contact an employee, wherever they happen to be working.

The closer **integration of Customer Relationship Management (CRM)** with mobility solutions also enables real-time remote handling of ordering and payment.

3.5 Security

As enterprises begin to implement IP-based telephony systems and services in their networks, what were once isolated circuit-switched networks are

becoming part of the global IP infrastructure. That makes them just as open to abuse and attack as any other IP-based solution, especially as voice becomes more integrated with data-oriented applications. With mobility-enabled converged solutions, security becomes an even more important issue – it is no longer possible simply to build a secure ‘shell’ around the enterprise network in the form of a firewall. More sophisticated and flexible protection is needed.

Security is as important off-site as it is on-site. For mobile enterprise communications, this means having **secure remote access** both to and from mobile phones, remote PCs and laptop computers.

For smaller enterprises particularly, investing in **outsourced services** for security, back-up and disaster recovery not only ensures that corporate data is secure, it also provides access to carrier-class infrastructure and storage capabilities.

Enterprises also need to have **device security** policies in place for laptops, PDAs and mobile phones. There should be a balance between maximum security and ease of use. However, it’s wise to have all devices username- and password-protected, together with virus protection and data encryption. As with all security issues, user awareness and training are key to maintaining maximum protection.

For smartphone users, **secure access** can be provided in three main ways. At the most basic level, Microsoft Internet Information Server (IIS) web server security can be used. A higher level of security is provide by securing the connection with Transport Layer Security (TSL), which supports Secure Sockets Layer (SSL). A third level of security can be provided using IPSec, with a Symbian client, to secure a tunnel to the server.

4 Future enterprise communications solutions

Ericsson has identified the enterprise segment as a key growth area – one with significant opportunities. The company is increasing its focus on meeting business customer needs through the development of end-to-end solutions for small, medium-sized and large enterprises, both from within Ericsson and in partnership with other vendors and operators.

Ericsson has brought together product and solution expertise to address enterprise communications needs for enterprises themselves, for operators and for mobile multimedia solutions.

4.1 Enterprise-based solutions

Many enterprises today are looking to migrate their current circuit-switched telephony based systems smoothly to IP-enabled, hybrid PBX solutions – and ultimately all-IP based systems – to meet their communications needs into the future. Ericsson's initial focus for the mobile enterprise is voice and this means providing feature-rich enterprise telephony together with supporting functionality such as directories, user profile management, voice dialing and text-to-speech conversion of email.

Ericsson's business communications systems – the MD110 Convergence Communication System for medium-sized to large enterprises, and the BusinessPhone system for small to medium-sized enterprises – are both now IP-enabled systems that enable user mobility and reduce costs in a number of ways. For example, as well as supporting Mobile Extension capabilities, they also enable full communication convergence, with fully integrated IP networking, high-quality IP terminals and IP softphone capabilities. Customers can make the move to IP wherever they wish, at a time that suits their business.

4.1.1 Customization and optimization are key

While the basic requirements for mobility and IP convergence are fairly uniform for most enterprises, certain industry sectors have particular needs that will require a high degree of customization.

Ericsson has identified a number of industry sectors where the requirement for mobile communications solutions is most pressing – and where the most significant cost and productivity benefits will arise – and will address these with specially tailored mobile content management and mobile CRM (mCRM)

solutions, based on existing expertise and solutions. These include government (especially healthcare and public safety), manufacturing, travel and transport and utilities.

Through its Global Services organization, Ericsson has developed a suite of services designed to help enterprises focus on their core business and, if needed, hand over responsibility for all or part of their communications operations. These services include solutions for managed service provision, systems integration and technical advice. Ericsson also offers solutions for indoor coverage and specific optimization services. The benefits for enterprises are improved efficiency and reduced costs, with solutions that support specific business needs and achieve customer satisfaction.

4.2 Operator-based solutions

In addition to supporting small enterprises with advanced customer premises based business communications solutions, Ericsson is increasing its support to operators to enable them to successfully address market for hosted communications services for enterprises.

Ericsson has an extensive portfolio of products and services for mobile and fixed operators to deliver these services. Network solutions for Virtual Private Network (VPN), IP Centrex, as well as hosted PBX and VoIP services are backed by a range of professional services for access-independent service layer architecture. Ericsson's Global Services organization offers a range of advice, integration and management services to help operators optimize their operations.

To be successful, these solutions require partnerships to encourage the development of new applications based on industry standards, like Parlay and IMS. They also require enhanced functionality in device management and business support systems to make it easier for operators to handle the operational challenges of targeting a mass market of small enterprises.

New technologies and standards, including IMS, are now available to enable operators to offer single-source provision of well-integrated fixed and mobile services. There are also fixed cellular access solutions that enable mobile operators to serve the fixed communications needs of SOHO user and small enterprises cost-effectively in areas such as rural locations or business parks. Enterprises with PBXs can use fixed cellular access as a least cost routing option, for example.

4.3 Mobile multimedia solutions

While Ericsson sees business-class mobile telephony as the obvious starting point for mobilizing the enterprise, mobile access to more data-oriented

applications is becoming increasingly important. The aim is to make corporate access to data applications in the wide area as seamless and simple as possible for the user, to maximize cost, productivity and customer service benefits.

Continuing its 'always best connected' approach to mobile connectivity, Ericsson offers enterprises a range of options for mobile data access that incorporate applications developed through its Mobility World third-party application development program, its close relationship with Sony Ericsson and in partnership with third-party players.

Ericsson's IP Multimedia System (IPMM) has been specifically developed to offer fixed and mobile operators a smooth, service-driven way to migrate to all-IP operations. It enables users to communicate in a variety of modes – including voice, text, pictures and video, or any combination of these.

Stepwise to all-IP

Ericsson's strategy is to offer operators a stepwise approach to moving telephony traffic to the packet switched domain and Session Initiation Protocol (SIP)/IP logic. It enables operators to begin rolling out IP Multimedia Subsystem (IMS)-standard services today that generate revenue largely from existing investments.

The first of these is Ericsson Instant Talk, a Push-to-talk over Cellular (PoC) standard solution that offers feature-rich services for group communications, chat rooms, personal alerts and presence management. Ericsson Instant Talk operates entirely in the packet-switched domain – the first solution of its kind to do so – and is based on IPMM common service enablers for group, list and presence management, and multi-party conferencing.

5 Conclusion

Enterprises need to be more responsive, more available, more flexible and more efficient than ever before. Communications – especially converged communications – have a fundamental role to play in helping enterprises meet these challenges effectively.

In response to these business challenges, mobile working is increasingly the norm, and enterprises are employing IP-based infrastructure and outsourcing a growing range of IT and other operations to managed service providers.

Future communications solutions, therefore, need to be able to meet a wide range of enterprise and operator needs by enabling multi-dimensional convergence and interworking across the voice–data, fixed–mobile and public–private divides.

Ericsson's strategy is to meet this requirement by drawing from its unparalleled experience and expertise in delivering enterprise communications products, services and solutions to the enterprise and operator communities.

6 Glossary

| | |
|-------|--|
| 3GPP | Third Generation Partnership Project |
| CPE | Customer Premises Equipment |
| CRM | Customer Relationship Management |
| DECT | Digital Enhanced Cordless Telecommunications |
| DTMF | Dual-Tone Multi-Frequency |
| ERP | Enterprise Resource Planning |
| FFA | Field Force Automation |
| IIS | Internet Information Server |
| IMS | IP Multimedia Subsystem (3GPP standard) |
| IPMM | IP Multimedia System (Ericsson solution) |
| IPSec | Internet Security |
| LAN | Local Area Network |
| M2M | Machine-to-Machine |
| mCRM | Mobile CRM |
| PBX | Private Branch eXchange |
| PoC | Push-to-talk over Cellular |
| PSTN | Public Switched Telephone Network |
| SCM | Supply Chain Management |
| SFA | Sales Force Automation |
| SIP | Session Initiation Protocol |
| SOHO | Small Office/Home Office |
| SSL | Secure Sockets Layer |

| | |
|--------|------------------------------------|
| TCO | Total Cost of Ownership |
| TLS | Transport Layer Security |
| VoIP | Voice-over-IP |
| VoWLAN | Voice-over-WLAN |
| VPN | Virtual Private Network |
| WiFi | 'Wireless Fidelity' (wireless LAN) |
| WLAN | Wireless LAN |