

## **Efficient evolution to all-IP**

**The competitive landscape for operators and service providers is constantly changing. New technologies and network capabilities enable new players to enter the telecom market and challenge today's well known business models. Operators need to stay competitive and offer traditional services in a more cost efficient way. At the same time they need to cater for a smooth evolution to a multi service environment where new revenue generating services are offered in a profitable way- operators need an efficient evolution to all-IP**

The opportunities and challenges for operators today are several, but there are three major driving forces for the ongoing evolution to all-IP. The first one is the rapid roll-out of broadband access on both the fixed and mobile side. High capacity access and core networks are necessary to support a multitude of new multimedia services, bundled services that should be delivered in a profitable and secure way. In addition these new services must be appealing to consumers and leverage on key telecom aspects such a high quality, security and interoperability in order to compete with similar services offered for free.

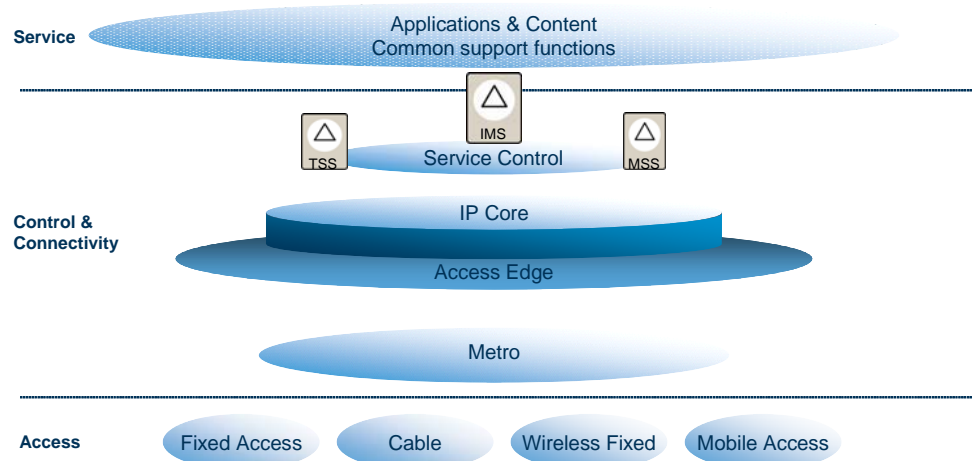
Furthermore, the possibility of increased convenience for consumers and the promise of reduced operating expenses are driving the need for network and service convergence. A trend that is further fuelled by the rapid introduction of new converged devices supporting different access technologies. Convergence is an opportunity that after many years of debate is now within reach due to the maturity of the IP protocol and the IP Multimedia Subsystem (IMS)

The final driving force is the challenge to modernize and expand the network in a cost efficient way, without jeopardizing the current revenue streams generated by traditional telephony. A challenge that requires a step wise and secure evolution of today's resources, both from a technical, competence and end user perspective.

The industry solution to the challenges and opportunities mentioned above is an evolution of networks and services to IP, and solutions based on this paradigm, such as IMS. However this evolution is a fundamental change for an industry that has delivered traditional telephony services for more than 100 years. Thus a secure, incremental and profitable migration is required for continued service assurance.

## Ericsson proposal

Ericsson proposes a stepwise and secure evolution based on telecom quality, well proven and cost efficient solutions that can be implemented differently depending on operators' specific needs and desires. The evolution will start in the core of the network and then evolve towards the access parts as radio bearers are optimized for IP based telephony traffic. The target architecture will be the same, regardless of evolution path and pace- an IMS and SIP centric network where all services are based on IP technology, all transport of user data and control signaling is handled by IP and a multitude of access methods supporting IP connectivity is in place. The figure below outlines on a high level the all-IP network.



## Stepwise and secure evolution

The first step in the evolution is to evolve the traditional telephony service to an IP connectivity network. Driven by the possibility of reducing network operating expenses by up to 50%, operators around the world are implementing **Ericsson Softswitch solutions**. The solution is enabling a true separation of call control and connectivity, where the softswitch servers are handling the call control and the IP connectivity network the payload. The Ericsson softswitch portfolio consists of the Telephony and Mobile softswitch solution, abbreviated as TSS and MSS in the figure above.

In addition to the softswitch solution, Ericsson proposes as a second step or as an initial step if required, the introduction of the **IMS solution**. IMS enables operators to deliver attractive services over the IP packet domain using Session Initiation Protocol (SIP) as the standard signaling mechanism for all services.

A fundamental requirement of the whole evolution is the need for a reliable and secure **IP core and access edge network**. All services and traffic, both signaling and content, are carried over the IP network. Thus it needs to be as secure and dependable as traditional telecom networks, i.e. there is no room for the deterioration of service quality. Ericsson's offering for telecom quality -IP infrastructure is based on our world leading IP packet core solutions and a verified and tested IP packet backbone solution consisting of world class products and Ericsson service and integration expertise.

Over time, as IP Telephony becomes a reality for the majority of all calls on both the fixed and mobile side, subscribers will migrate from the softswitch domains to the IMS and multimedia domain. By then the softswitches are evolved to handle the access gateways and the media gateways needed for interconnect and access control. The network has by then reached the structure outlined above- an IMS centric network where consumers benefit from a richer communication experience.

### **Efficient Softswitching**

Ericsson has developed a softswitch evolution strategy to help operators securely evolve to a layered architecture, delivering telephony, data and multimedia services in a cost effective way. Layered architecture improves efficiency through network consolidation and supports revenue generation from both fixed and mobile services while meeting telecom-grade demands for scalability and flexibility.

Central to this evolution is a full-featured softswitch solution that enables operators to maintain their existing telephony offering and the margins they produce.

Ericsson's **Softswitch solutions** help achieve significant cost reductions while offering traditional telephony. First, the capital expenditure (Capex) required is lower than for traditional circuit-switched equipment, as the distributed switching architecture enables efficient node consolidation. Second, there is the continuing lower operating expenditure (Opex) due to simplified operation and maintenance and network planning. Furthermore the solution reduces the need for power and site rental cost and allows for substantial transmission savings. Business cases around the world show core network Opex savings up to 50 %.

### **Ericsson's softswitch capabilities**

One of most important benefits of Ericsson's Softswitch solution is that much of the existing equipment can be reused, especially in the access network, being fixed or mobile. For fixed operators the access equipment can be phased over from the circuit-switched nodes to the Media Gateways of the Telephony Softswitch (TSS) network in a controlled way maintaining all customer services and interfaces. For mobile operators the Mobile Softswitch solution supports both 2G and 3G access networks.

Another benefit to operators is the compatibility of subscriber services, signaling and billing systems with existing legacy networks. As today's networks are so widely deployed, with many legacy functions developed over several decades, operators must be assured that they can modernize their networks but still support the functions of the traditional networks.

Ericsson's expertise in real-time traffic and systems integration capabilities are combined with partnerships with the world's leading IP vendors, such as Cisco Systems and Juniper Networks, in order to minimize risk of the migration from circuit switching to IP. A softswitch solution from Ericsson provides full PSTN and PLMN compatibility with 99.999% availability – over IP.

As of June 2006, Ericsson had well over 70 commercial Softswitch contracts on Telephony and Mobile Softswitch solutions. Customers around the world are industry leading operators such as 3, Telefónica Móviles, TIM, Telcel, TeliaSonera, BT Global Services, MCI, TeliaSonera, Korea Telecom and Telecom Egypt.

## **IMS**

IMS is all about enriching communication. Our IMS vision is a converged and fully integrated user experience where consumers can combine various content and communication types, share it with others, and invite multiple contacts, all in one session, on any terminal using the best available access.

IMS is the foundation for a range of applications, which will provide additional revenue streams for operators. Operators will realize clear cost benefits when having one IMS solution on which multiple applications can be launched. Reusability of components, less training and common interfaces to be integrated into the existing network system is lowering overall costs.

Ericsson IMS is available for fixed and mobile networks. A range of services is available today and further new and enhanced services will be introduced over time.

- Ericsson IMS in a fixed network today offers residential users IP Telephony in combination with multimedia capabilities such as video telephony, presence and instant messaging over broadband connections. Business users can today use IP Centrex with broadband IP Telephony, conference calling, collaboration (sharing of documents and web pages) and a full range of virtual PBX services.
  
- Ericsson IMS in a mobile network today offers users push-to-talk (complying with Push-to-talk over Cellular, PoC) and a family of weShare services. WeShare enriches mobile phone calls by adding various types of content during the call, enabling additional revenue-generation from every call made in the network. Examples of weShare-enriched calls are: sending a stored picture or film clip; sending a live video of what happens around you; and drawing on a shared whiteboard in the mobile phone, all at the same time as the conversation continues.

These services are all mass-market communication services that, if successful in a specific market, will be expected by consumers regardless of terminal and operator, in the same way normal phone calls or text messaging can be used today.

To ensure a unique offering in each market, the above-mentioned services can be used initially. Operator-specific services can also be defined and introduced over time. Ericsson can support this process through the Ericsson IMS Studio. Another possibility is match-making of small and successful application developers on one market with an operator on another market through the Ericsson Mobility World organization.

## **Ericsson IMS offering**

Ericsson offers an end-to-end IMS system allowing operators to stepwise move into a rich multimedia offering. We have the system expertise, application knowledge, complete solution portfolio and terminal platform capabilities. Ericsson Consumer & Enterprise Lab constantly evaluates consumer interest in the market, for example by annual interview studies with more than 13,000 people distributed across 10 countries.

Our professional services organization is globally distributed with vast local know-how. An end-to-end IMS perspective requires that the layered architecture in the network setup is reflected also in the terminals – to ensure that upgrades for each new service can be introduced. Ericsson Mobile Platforms is a leading provider of the core terminal technologies required and has a large number of manufacturers licensing its platform, several among the leading phone manufacturers in the world.

Ericsson has vast knowledge from years of work in the IMS area, from both standardization and development points of view. Ericsson has the capability to integrate and optimize networks to handle packet-based services with the quality, security and reliability expected, ensuring a telecom grade experience.

Ericsson has signed IMS system agreements with fixed operators such as Telefónica and mobile operators such as Vodafone and Telecom Italia Mobile (TIM). Ericsson has signed 19 IMS contracts for commercial launch and an additional 40 trials, all based on the IP Multimedia Subsystem standard. The contracts are distributed over the Americas, Europe, Asia and Africa and include GSM/GPRS, WCDMA, CDMA2000 and fixed network implementations. The various contracts include a mix of applications such as weShare (combinational services), Push to Talk, IP Telephony (Voice over IP) and IP Centrex.

## **Packet core and Packet backbone**

Softswitch and IMS network domains require a telecom quality IP core to provide the service availability and consistent high performance demanded by end users. Scalable and efficient capacity is also needed to handle extreme traffic growth from multiple sources. Softswitching enables a telephony migration from circuit to packet transport creating very high volumes of "delay and error sensitive traffic" on the IP backbone. New broadband and multimedia communication services create large volumes of data traffic with differing Quality of Service requirements.

In addition to efficient capacity and full telecom grade performance the packet core must also support service differentiation features that allow the network operator to deliver premium value in an all-IP service environment. Packet inspection capabilities within the packet core allow the operator to optimize the handling of the different data flows according to service type, subscriber type, customer preferences and so on.

For example, an improved Quality of Service can be allocated to particular services and/or subscribers, by increasing available bandwidth or changing forwarding treatments for those services and/or users. Location functions and emergency calls, which are prerequisites for future converged IP telephony services, are also supported in this way.

### **Ericsson Packet Core and Packet Backbone solutions**

Ericsson has a complete solution offering in both the area of packet core and packet backbone solutions. **Ericsson's packet core** nodes are rich in functionality, strong in real-world performance and will be able to reliably handle the anticipated mass-market traffic volumes. The proven and market-leading product portfolio consists of a GGSN, an SGSN and a combined SGSN/GGSN node in a single cabinet – the CGSN. Ericsson's portfolio has been deployed in GSM and WCDMA networks worldwide and represents the industry's largest installed base for these type of nodes. Moreover, the GGSN is Ericsson's platform for delivering Service Aware Charging and Control (SACC) functions which is required for service differentiation. The solution enables operators with powerful tools for visibility and control over traffic transport and the services they deliver.

**Ericsson's Packet Backbone Networks** provide commercially-proven network solutions encompassing all the IP infrastructure requirements for operators' core networks, as well as connectivity to a range of fixed and wireless access networks. External connectivity to roaming partner operators, the Internet, and corporate networks are also provided.

Fundamentally, the solutions provide reliable, scalable, and secure IP transport solution for circuit- and packet-switched traffic, and the associated signaling and management traffic. All traffic types are transported with appropriate quality of service assurances - guaranteeing telecom quality network availability. The Ericsson solutions ease the process of core network evolution and support the real-time transport and signalling requirements of circuit-switched voice over IP and ATM. The solutions and all included network elements are readily available, and in commercial deployment with operators worldwide.

More than 100 fixed and mobile operators worldwide have launched commercial services based on Ericsson's Packet Backbone Network solutions and associated Global Services.

*Ericsson is shaping the future of Mobile and Broadband Internet communications through its continuous technology leadership. Providing innovative solutions in more than 140 countries, Ericsson is helping to create the most powerful communication companies in the world.*

Read more at <http://www.ericsson.com>

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