Ericsson Business Communication Suite

This comprehensive software package offers enhanced communication services for organizations and operators.

CHRISTIAN OLROG AND ULF OLSSON

Ericsson’s Business Communications Suite (BCS) is a set of applications that an operator can install to offer enhanced communication services to companies in the small and medium enterprise (SME) segment. With BCS, operators can extend their portfolios – and consequently revenue streams – with a branded end user experience spanning multiple devices into the rapidly growing Unified Communications (UC) market.

Here we present an overview of the Ericsson BCS package in the very important enterprise communications segment.

The business communications challenge

Attention to customer needs has always been a cornerstone of a successful business. In today’s business environment, characterized by accelerated pace and diversity, multiple devices, constant connectivity and rapidly expanding data volumes, this business principle is perhaps even more critical than ever for success. Organizations that can successfully maintain focus on their customers, whose needs are constantly changing, will distinguish themselves from the competition.

Unanswered phone calls and e-mails, information that cannot be accessed, or experts that cannot be reached result in questions that cannot be answered and ultimately lost business, lost revenue, and worse still, customers lost to the competition.

Ericsson’s BCS was designed to resolve such issues, which modern organizations confront daily, to enhance the efficiency and reach of a business with emphasis on usability and enriched user experience (UX).

BCS helps operators’ customers to be more competitive, in turn strengthening the operator’s enterprise customer base and supporting long-term business sustainability.

Functionality

BCS provides efficient business communication support tools, including:

- videoconferencing;
- multimedia;
- document sharing;
- interactive collaboration tools, such as instant messaging (IM) and presence indicators;
- mobile telephony; and
- IP telephony.

BCS supports user devices ranging from ordinary mobile phones to feature-rich, IP-based terminals providing a context-sensitive UX.

Using BCS, operators can offer attractive services to the enterprise customer market to support employee efficiency as well as offering cost control. In this way, BCS helps the operator attract and retain valuable business customers, as well as raising ARPU for business users.

Fully featured, easily integrated

A complete business communication solution encompasses a variety of features for end users and organizations. Such communication solutions need to be tightly integrated into an organization’s IT infrastructure.

To achieve this without excessive integration costs, Ericsson employs

BOX A Terms and abbreviations

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>A-SBG</td>
<td>Access Session Border Gateway application programming interface</td>
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<tr>
<td>API</td>
<td>average revenue per user</td>
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<td>ARPU</td>
<td>Business Communication Suite</td>
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<td>BCS</td>
<td>Customized Applications for Mobile networks Enhanced Logic</td>
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<td>CAMEL</td>
<td>CAMEL application part version 2</td>
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<tr>
<td>CAPv2</td>
<td>central processing unit</td>
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<td>CPU</td>
<td>Digital Subscriber Line</td>
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<td>DSL</td>
<td>Enhanced Ericsson Generic Magazine graphical user interface</td>
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<td>EGEM</td>
<td>IMS Initial Filter Criteria</td>
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<tr>
<td>GUI</td>
<td>IMS low entry</td>
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<tr>
<td>IFC</td>
<td>Instant Messaging</td>
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<td>IM</td>
<td>IP Multimedia subsystem</td>
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<td>IMS</td>
<td>Intelligent Networks</td>
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<td>IN</td>
<td>Implicit Registration Set</td>
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<td>IRS</td>
<td>Java database connectivity</td>
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<tr>
<td>JDBC</td>
<td>JavaScript Object Notation</td>
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<tr>
<td>JSON</td>
<td>Java specification request</td>
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<td>JSR</td>
<td>Linux Open Telecom Cluster</td>
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<tr>
<td>LOTC</td>
<td>Multimedia Application Server</td>
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<td>MMAS</td>
<td>Network Address Translation</td>
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<td>NAT</td>
<td>Original Equipment Manufacturer</td>
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<td>OEM</td>
<td>Open Multimedia Platform</td>
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<td>OMP</td>
<td>point to point</td>
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<tr>
<td>P2P</td>
<td>Presence and Group Management payload</td>
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<td>PGM</td>
<td>PL</td>
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<td>RCS</td>
<td>Rich Communication Suite</td>
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<tr>
<td>SAF</td>
<td>Service Availability Forum</td>
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<td>SC</td>
<td>System Controller</td>
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<td>SIP</td>
<td>Session Initiation Protocol</td>
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<tr>
<td>SIP-URI</td>
<td>SIP Uniform Resource Identifier</td>
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<tr>
<td>SME</td>
<td>small and medium enterprise</td>
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<tr>
<td>Tel-URI</td>
<td>Transport Layer Security</td>
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<tr>
<td>TLS</td>
<td>Unified Communications</td>
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<td>UC</td>
<td>user experience</td>
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<td>UX</td>
<td>voice over IP</td>
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<td>VoIP</td>
<td>Web Client Enabler</td>
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<tr>
<td>WCE</td>
<td>eXtensible Markup Language</td>
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<td>XML</td>
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an out-of-the-box approach. A key design goal has been to ensure that BCS-specific components and the supporting infrastructure are well integrated. Consequently, BCS applications are designed with inherent IT integration in mind. Configuration management and client software integration are part of the BCS package, as is the integrated company self-care provisioning web GUI. This interface gives a company administration control over user accounts and allows end users to manage their personal communications settings.

Even though BCS utilizes the core functions of IMS, it can run without the need for full-scale IMS implementation. Ericsson’s IMS Low Entry (ILE) package is a cost- and size-optimized IMS Core configuration that together with BCS offers an attractive alternative to operators. A default parameter setting supporting BCS within ILE minimizes integration overhead.

**Time to deploy**

This is a fundamental aspect of the decision-making process. In other words, the time it takes to set up and complete an initial delivery project to enable an early soft launch is of vital importance to the business customer.

Ericsson’s BCS supports early soft launch to help the operator’s customers transfer smoothly to the BCS environment.

**Box contents**

No two operators are alike. Consequently, Ericsson’s BCS has been designed as a set of applications from which operators can choose, to suit their customer base. These applications are:

- Business Voice;
- Collaboration;
- Conferencing; and
- Mobility.

Each application can be used in standalone mode, or together to provide an integrated, homogeneous and branded user experience across many devices and services.

**BCS Business Voice**

The voice application server offers a feature set designed to enable streamlined workflows and solve immediate “pain points” typically experienced by small companies. Some of the key features designed to enhance voice reachability include:

- call forwarding options and parallel alerting to separate numbers;
- short number dialing;
- support for On-Net/Off-Net indication via Diameter charging records;
- automated attendant function;
- call distribution group; and
- company self-care web GUI, with provisioning systems integration.

**BCS Collaboration**

Collaboration is a package of client software and supporting server components that together offer:

- directory search;
- presence;
- MS Exchange calendar integration;
- P2P IM and file transfer;
- software and configuration management of clients;

Client software can be divided into two main categories:

- IMS-native clients; and
- thin or Web Client Enabler (WCE) enabled clients.

WCE, shown in Figure 2, is an integral part of BCS Collaboration, allowing Ericsson and third-party developers to rapidly produce clients for new platforms that...
do not yet have a full IMS stack. Operators can in turn provide IMS-based services to a much wider range of devices.

The major platforms supported today include BlackBerry, Symbian S60, iPhone, MS Windows and the SNOM 870 VoIP desk phone, with more coming.

The Windows PC client and Symbian S60 clients are IMS-native; iPhone and Blackberry are WCE-based clients. The SNOM 870 VoIP desk phone is a hybrid option, which relies on native IMS signaling for voice and WCE for presence and directory search functionality.

The BCS client and its functionality vary slightly for each platform. The following features are enabled:

General
- secure signaling connections (TLS);
- automatic software upgrade;
- automatic client configuration;
- MS Office applications integration.

Contact management
- favorite ("buddy list") for contacts;
- access to local and directory contact details via unified search functionality with integrated presence display; and
- communication initiation from context (voice/IM/SMS/MMS).

Presence management
- display presence status of contacts;
- manage own presence, including activity and smiley-enabled text note;
- show "in a call" status.

IM
- smiley-enhanced IM;
- file transfer in IM session.

Communication history
- unified history log.

BCS Conferencing

BCS Conferencing allows streamlined sharing of documents, video and audio using a PC. It provides an essential tool to help reduce the environmental impact of geographically distributed operations. The user experience includes:
- Web-based participation facilitated by a meeting-unique URL via, for example, an MS Outlook calendar booking or e-mail; and
- ad-hoc participation via the BCS PC client where a conference session can be set up by selecting participants from the presence-enabled directory search.

BCS Mobility

BCS Mobility enables the use of GSM phones as IMS endpoints for voice. It allows BCS Business Voice to provide telephony services to GSM phones, such as short number dialing and parallel ringing.

This means that all BCS devices are served by the same service implementation, ensuring a consistent user experience across all terminal types. These mechanisms can potentially be extended to provide IMS services to GSM phones.

The BCS Mobility application utilizes media gateways and CAPv2 IN integration to ensure that calls are brought to the application server residing in IMS, where originating and terminating services are executed.

Deploying BCS

Ericsson BCS including IMS

The recommended identity setup within IMS is to have a single Implicit Registration Set (IRS) consisting of one Tel-URI and one SIP-URI. In practice, this means that users can be identified with a telephone number (Tel-URI), or an e-mail address format (SIP-URI). The typical setup offers parallel alerting on all the user’s devices, such as mobile phone, PC client and desk phone.

An operator that has deployed BCS can offer GSMA Rich Communication Suite (RCS) services by reusing the supporting core infrastructure, such as IMS and Ericsson PGM (presence enabler). Furthermore, an RCS-enabled business customer or family member communicating with a BCS company user will be able to enrich the communication with, for example, IM and presence.

The BCS Application Server

All BCS applications, except conferencing, run in a standard Java environment, supporting key communication standards, such as JSR-154 (the web servlet API) and JSR-289 (the SIP servlet API) along with JDBC.

OMP

BCS applications are deployed and verified on the Open Multimedia Platform (OMP) and Multimedia Application Server (MMAS).

OMP provides BCS with an efficient Linux-based cluster optimized for telecom-grade environments. OMP and MMAS are used by several of the

Figure 3 BCS architecture (excluding MSC).
Applications within the cluster are implemented according to Service Availability Forum (SAF) standards. SAF controls which applications run on the cluster, on which blade and on how many blades. Common fault management and performance management interfaces are aligned between applications running on OMP 2.

The currently recommended hardware is Sun Blade 6000, supporting up to 10 blades per chassis, each blade equipped with two Intel Xeon series multi-core x86 CPU’s.

A simplified view of how the BCS applications (except BCS Conferencing) can be deployed on a 10-blade cluster, is shown in Figure 5. The System Controller (SC) blades boot from local redundant disks and manage the cluster’s payload (PL) blades. Except for the database blades the PL blades are diskless. The database blades also boot from the SC blades and use local (redundant) disks for persisting objects into the database.

**Scaleability**

Depending on the desired characteristics, BCS applications can be deployed in other constellations with upward scalability to 18 PL blades with two SC blades spread over two Sun blade chassis.

For deployments where more than 18 PL blades are needed, the system can be deployed across multiple OMP clusters. For extremely large deployments, a single BCS application is installed within an OMP cluster; the user base can be partitioned, for example, using IMS Initial Filter Criteria (IFC). This way, different users can be allocated to different OMP clusters using standard IMS mechanisms.

An 18-blade BCS Voice 2.1 installation is expected to handle roughly one million business users depending on the traffic model.

**Deployment in reality**

Offering IP-based services, including presence, requires a constantly active IP connection, which can negatively impact battery life, especially for mobile devices. BCS clients employ an optimization scheme that significantly reduces the load on the presence enabler (for example, the Ericsson PGM product), while providing a substantial improvement in battery life.

Initial tests on an optimized Symbian S60 show an increase in standby time by a factor of about 25, transforming the presence capability from a seldom used function into a practical feature.

BCS PC client users typically connect over a shared DSL line with a basic gateway located at their company premises. These gateways normally provide firewalls and Network Address Translation (NAT) services, which complicate or restrict IP connectivity.
Ericsson’s BCS clients are enhanced, utilizing advanced functionality in the A-SBG to provide seamless access even when such gateways are present.

**Conclusion**
Ericsson BCS offers operators the opportunity to enhance and leverage existing investments to attract businesses and their corresponding high-ARPU, low-churn users.

Ericsson BCS brings together several advanced technologies in a combined package that offers the possibility to present an operator’s brand across multiple devices with a focus on user experience.

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> has a background in software architecture for distributed military Command and Control systems. He joined Ericsson in 1996, working mainly with architecture issues concerning packet-based systems, such as packet PDC, GPRS, UMTS and the CDMA2000 packet core network. He is now senior expert with Business Unit Multimedia, Portfolio Management and Technology group. He focuses on Data Management, Business Support Systems, IMS and developer-oriented issues. He holds an M.Sc. in engineering physics from KTH in Stockholm.

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2. Open multimedia platform framework, Ericsson Review 1, 2009

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**25 years ago**

† In 1985, Ericsson Review published an article on the field trial of an optical fiber cable TV system carried out jointly by the Swedish Telecommunications Administration and Ericsson. In this project, Ericsson developed and supplied the digital transmission system, the equipment for the analog subscriber lines and the optical fiber cable. For part of the field trial, Ericsson developed demo equipment using wavelength division multiplexing (WDM) for fiber optic subscriber lines. The equipment demonstrated one of several possible solutions for subscriber connections in future interactive networks. The subscriber lines were arranged in a star-shaped structure and employed WDM to provide a complete multi-service subscriber connection using only one optical fiber.

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**50 years ago**

† In 1960, an article was published about a new method of constructing transmission equipment. The technology had been developed to meet equipment demands from telephone administrations. It provided optimum performance for a reasonable technical outlay and fulfilled the following requirements:• occupying a small space;• consuming low power; and• needing little maintenance.
The new method was a response to the rapid expansion of the telephone networks at the time. Figures for the Swedish national network showed that the number of circuit kilometers increased three times from 1948 to 1958, with 50 percent of this increase occurring after 1955.

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**75 years ago**

† In 1935, the Great Depression had a dramatic effect on the number of telephones sold. North America, which at the time accounted for 57.2 percent of the world’s telephones, and Oceania were most affected. The decrease was significant enough to lower global telephone density from 1.8 to 1.54 telephones per 100 inhabitants, even though in all other parts of the world density increased slightly. The study on telephone sales, which appeared in Ericsson Review showed a constant rise in telephone density up until 1930, with the decline starting in 1931 and ending in 1933, in line with the bottom of the depression.

www.ericssonhistory.com