

Verax Systems Business Support Systems

Whitepaper



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Abstract

This paper presents an overview and discusses current market trends in the area of Business Support Systems (BSS). The area of IT systems for telecommunications operators (including also smaller players such as tier-2, multi-play and VoIP operators) is rapidly changing and particularly requires following market and technology trends. Next generation networks promise high quality end-user experience, multitude of products and services as well as flexible business models. The most critical challenge confronting operators is optimizing their OSS and BSS platforms, systems, and processes to meet customer requirements.

The primary objective of presented software is to offer proven business support solution which will help operators to obtain high level of customers service and control all key aspects of business. Verax Systems BSS Suite described in this document is a billing and fulfillment solution for smaller players facing rapid growth that enables a variety of communication providers to achieve their business objectives and prepare them for next generation technology and services.

Intended audience

This paper is a publication created by Verax Systems' experts and specialists. Its purpose is to highlight the most important issues related to OSS and present our customers and partners the key information about offered products.

1. Introduction

This white paper provides a perspective on the rapidly changing communications industry and outlines the impact of these changes on communication operators' business and operational support systems (BSS/OSS). As we know during the last years there have been seen a change on the telecommunication market. Technologies and services such as Voice-over-Internet Protocol (VoIP) or 3G mobile that did not existed in not long distance past, now are huge separate industries. Telecommunication industry is changing all the time from traditional services to mix of traditional voice and information services.

Nowadays customers require new services that offer a mix of traditional telephony, Internet and mobile technologies as well. To sustain competitive position on market it is crucial for telecommunications companies to concentrate on key areas: technology, business model and customers. That efforts embrace changing technology issues and business models evolving from typically based on time and distance pricing to more flexible subscription and transaction models. Moreover market demands are driving the innovation in telecommunications. Customers are demanding mobility, access, and ease of use at the user level and at the device level. They want real-time access to their information and the ability to order and provision their preferred features. Customers want more control over selection and management of their services so results in situation that operators must continually work to enhance user loyalty by providing these capabilities. To become more and more competitive, operators should concentrate directly on customers. That strategy is possible by implementing proven OSS and BSS systems that support both operational and business processes within company.

Today it is obvious that the back-office systems managing service providers' revenues and service provision are critical to success in the next-generation environment. Unfortunately years of investment in business support systems (BSS) and operations support systems (OSS) have resulted in back-end infrastructure that, in many cases, is expensive to run and maintain, inefficient and unable to support convergent, next-generation services. Now service providers are beginning to invest strategically and restructure implemented IT systems that support their evolving businesses. Implementing new generation BSS/OSS solutions will provide a critical competitive advantage that will help service providers to assure new revenue streams.

Aforementioned transition from existing systems to component-based OSS and BSS solutions enables faster introduction of new technical capabilities. Proven BSS suite might provide following features:

- Billing and payments.
- Revenue assurance and profit maximization.
- Customer Relationship Management: CRM, loyalty management, mobile sales, partner management, workflow, call center, e-business.
- Business Intelligence, Data Warehouse, Fraud Management System.
- Supporting systems: product catalogue, business process management, content management system.

All mentioned components should allow to manage all business processes in the operator's organization. Furthermore, operators should be able to use the same OSS/BSS infrastructure to manage customers for traditional, mobile and fixed telecommunications services. Moreover an operator's own systems and any systems belonging to external 3rd party services providers need to be as pluggable as possible.

2. What are Business Support Systems?

Business Support Systems (BSS) are the components that Telco companies use to run its business operations. The term of Business Support Systems (BSS) is a comparatively new term and typically refers to business domain of telecommunication activities such as customers relationship management (taking orders , processing bills, and collecting payments) and offering B2B and B2C services. Business Support Systems are linked to Operational Support Systems (OSS) in the enhanced Telecom Operations Map (eTOM) that maps processes into the functional areas of fulfillment, assurance and billing. BSS and OSS platforms are linked in the need to support various end-to-end services. Each area has its own data and service responsibilities. The two systems together are often abbreviated BSS/OSS or B/OSS. B/OSS plays an important role to support and enhance operations of a service provider and its increasing business services including voice, data, VOIP and multi-media.

To clarify the basis of distinction between OSS and BSS systems TM Forum (TMF) has developed a communications domain model. BSS supports the more customer facing domains, when the OSS supports the traditional resource domains. For example, problem handling activities (part of Assurance) inside a service provider define the interaction between the customer, service, resource and supplier/partner entities to resolve the reported problem. That cause that problem management applications have to provide access to customer, product, service, resource and supplier/partner information as a support of the problem handling activities that occur throughout the problem management process lifecycle.

Customer

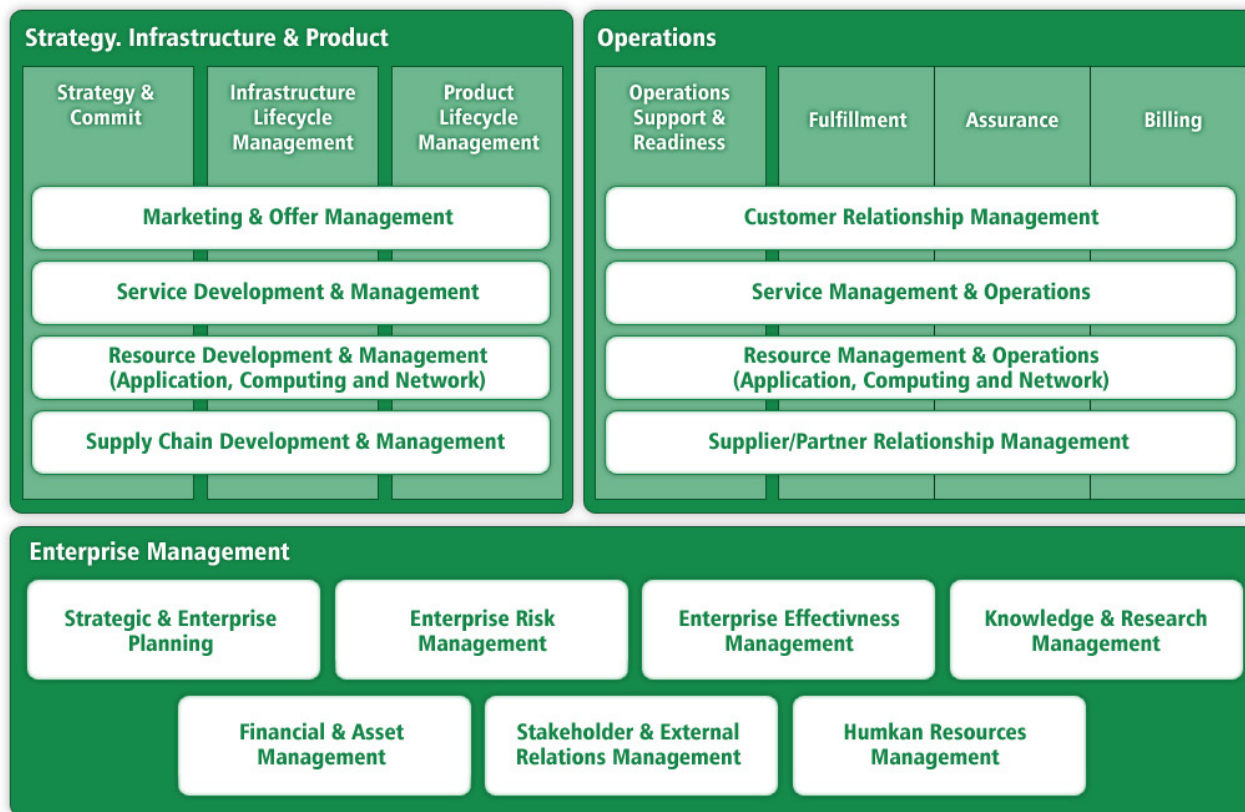


Figure 1: TM Forum New Generation Operations Support Systems/enhanced Telecommunications Operational Map components.

Business Support Systems should provide support of four main areas:

- **Product Management** – supports the sales and management of products, offers and bundles to businesses and mass-market customers, this feature should also support cross-product discounts, appropriate pricing and customer loyalty programmes.
- **Customer Management** – operators require a single view of the customer and groups of customers as well. Customer Management also covers requirements for partner management and 24x7 web-based customer self-service.
- **Revenue Management** – this area focuses on billing, charging and settlement, that can handle any combination of OSS services, products and offers. BSS Revenue Management supports OSS order provisioning and often partner settlement.
- **Fulfillment Management** – as a part of assurance is normally associated with Operational Support Systems. Though Business Support Systems are often the business driver for fulfillment management and order provisioning.

Proven BSS/CRM Suite must have a flexible, scalable and open architecture that supports the entire billing chain and allows integration with most third party systems. Suite should include revenue sharing and settlements, the deployment of next generation services, and convergent billing.

Most important components of BSS include:

- **Billing and Payments** – scalable system with a powerful rating engine providing services for various business and payment models and 3G services and supporting inter-partner billing embracing:
 - Billing System.
 - Invoicing.
 - Receivable and Payments.
- **Customer Relationship Management**, including:
 - Loyalty Management – for managing loyalty programs.
 - Mobile Sales – CRM tool for sales departments of Telco operators who need to extend customer base, increase sales and develop relationships with customers.
 - Partner Management – tool to management partner's data stored for inter-partner billing.
 - Call Center,
 - Workforce Management – system supports the coordination of teams and making staff and resources usage to be more efficient. The system supports scheduling tasks and forecasting workgroups load.
 - E-business – system providing customer and partner services via an Internet.
- **Business Intelligence (BI)**, including:
 - Data Warehouse & BI for Telco – an OLAP system for data stored in OLTP solutions, like billing and CRM. Main function of BI is to analyze and present data acquired from such external systems.
 - Fraud Management System – system delivers detection of multiple fraud types, real-time credit fraud control, enhanced fraud analysis and prevention of the same fraudulent event from happening in the future.
- **Supporting systems**, including:
 - Product Catalogue – a central product repository for service providers.
 - Business Process Management – system enables management and automation of business processes, flow of documents, information and tasks.
 - Content Management System – a website content and structure management system.

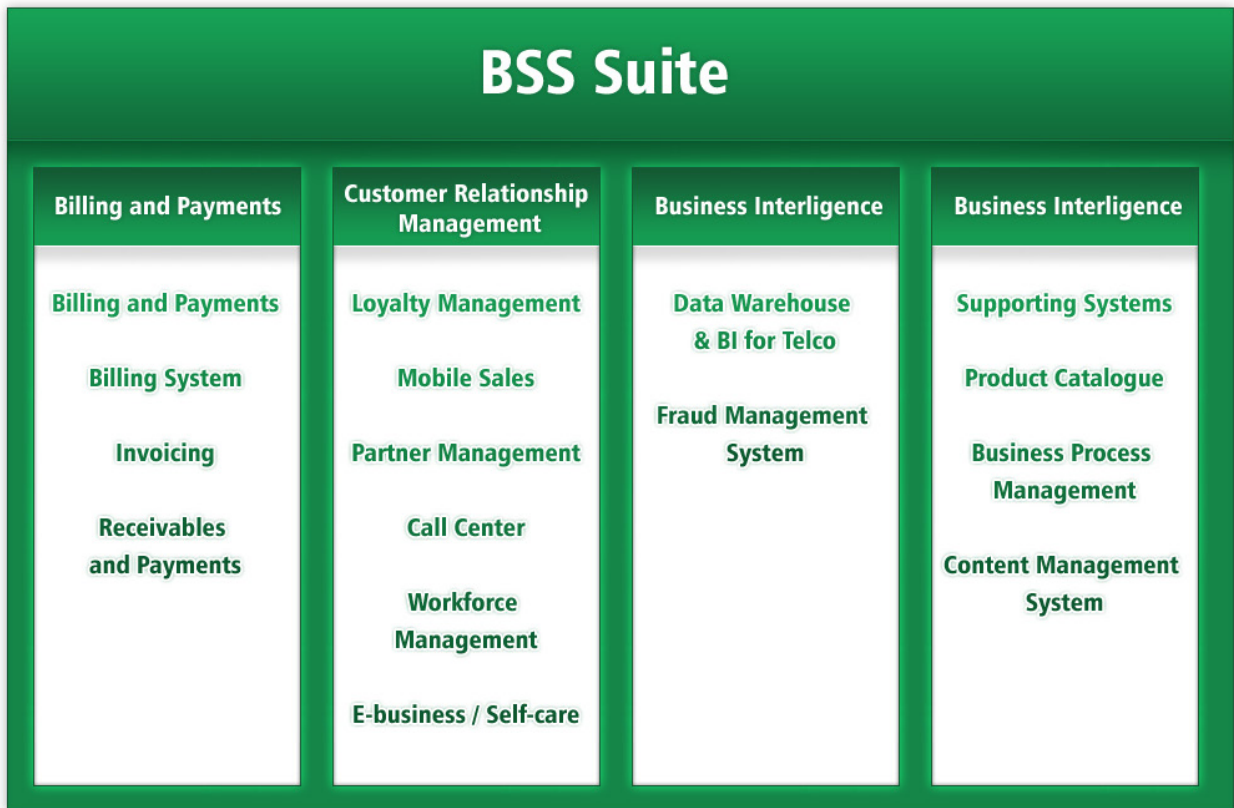


Figure 2: Key BSS Suite components.

3. Trends in modern BSS design

Changing telecommunication market has a profound influence on Business and Operation Support Systems. Most existing systems are obsolete, have not effective products and customers data interchange what is the barrier of fast and appropriate new product market delivery.



Figure 3: Traditional BSS/OSS.

Main objective of new BSS/OSS systems is to provide support for new services market introduction. Hence, new generation BSS/OSS should deliver new features, such as::

- Partner Management.
- Content Management.
- Business and payment models.
- Product catalogue.

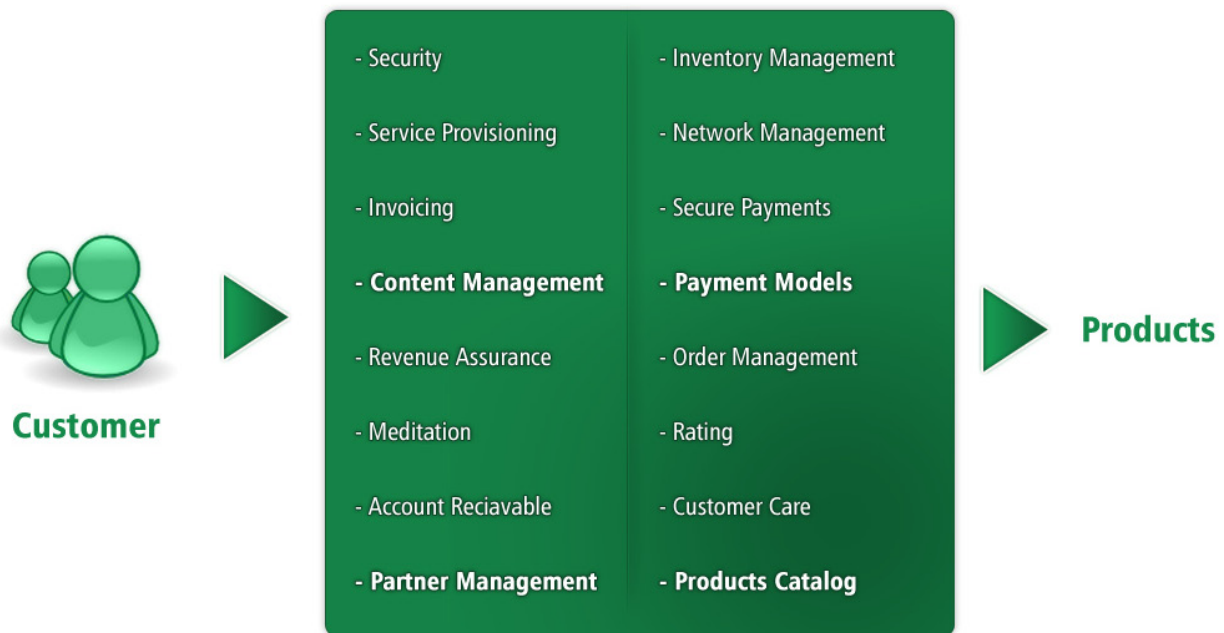


Figure 4: New generation BSS/OSS features.

Major change direction on the BSS market determine the necessity to concentrate on customer needs. Focusing on customer relationship force operators to implement new generation functionalities. An important component of the new generation BSS/OSS is the ability to manage the relationship with all partners/content providers that are part of deployment model. To be up to market demands it is crucial to offer a wide variety business and payment models including standard prepaid or postpaid models and hybrid models. Different payment models must be applied for the same customer but for different accounts (parent-child) or for different services for the same account (voice-content). Moreover customers want more control and reporting features to change services, modify minute or content balances and review their billing details. Customer self-care capability should result in better customer satisfaction and reduction of customer services costs.

As we know, changing macroeconomic environment force Telco operators to spend their resources on multiple billing systems, systems for pre and postpaid customers, for various services, for roaming and interconnect. The customization of these billing systems also means additional costs for consultants, maintenance, change requests and the necessary middleware. These expenditures eat up a huge portion of the operator's revenue. That causes the challenge for Telecommunication companies to choose the reliable high-speed rating, billing and accounting of virtually any type of service, such as: fixed line, GSM, GPRS, UMTS, content, interconnect, roaming, IMS, VoIP, internet with subscriber accounts handled either pre or postpaid.

4. Benefits of modern BSS

Proven Operations Support Systems/Business Support Systems are powerful tools for managing company's telecommunications resources. Once implemented system should enable the operator to provide its customers the required level of information services. The best results and return on investments can be provided by building an comprehensive solution that closely integrates OSS/BSS, CRM, Business Intelligence and billing/payment systems. The benefits of integration include reduced total cost of ownership and decreased cost of operation and maintenance of the information system.

Implementation of a new age OSS/BSS systems brings benefits in:

- Integration costs reduction.
- Automation of operations to enable customer provisioning and self-care.
- Reduction of time-to-market delivery.
- Reduction of dependencies with suppliers.
- Spread the risk and the investment over other industries.
- Reuse of process, architecture and solution patterns and components.
- Higher customer loyalty.
- Higher productivity and efficiency of services.

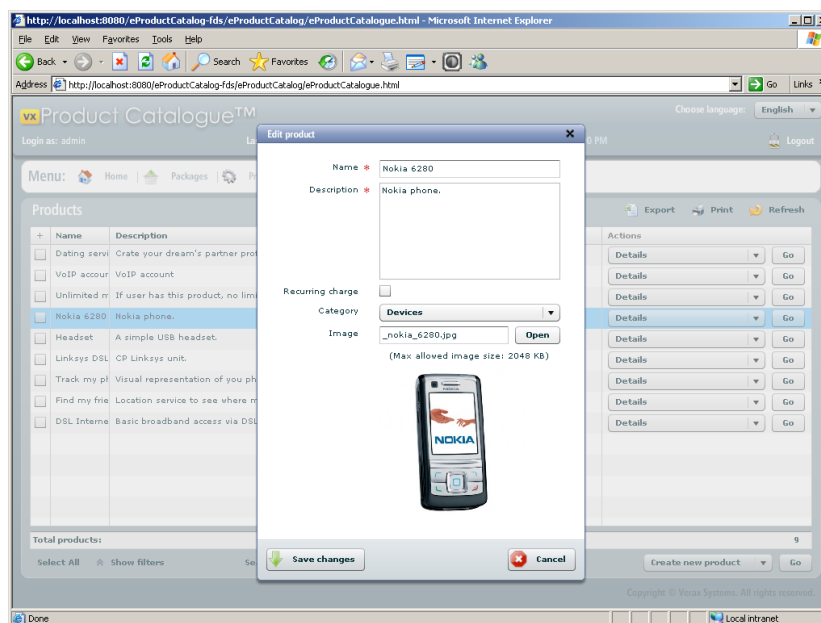


Figure 5: Verax Systems product catalogue.

Reliable and modern billing and payment systems guarantees:

- Easy expansion and scalability.
- Costs control in real time, including discounts and prepaid support, online payment and cost analysis functions.
- Variety of customized billing and payment schemes.
- Wide range of business processes with prepaid-postpaid convergence.
- New revenue streams support with 3G billing (IP, GPRS and UMTS), and openness to future 4G services.
- Revenues management with a variety of charging scenarios (subscription fee, per transaction, per byte, by time units, by QoS).

Benefits of BSS and CRM integration embrace:

- Implementation any kind of business model with comprehensive functionality.
- Better business processes management with integrated workflow designer.
- Possibility to offer attractive tariffs and increase customer retention with flexible rating engine.
- Leverage 3G offerings and new revenue streams with better time-to-market.
- Management of partners' accounts details with access to full history of cooperation.
- Accurate customer targeting and optimized customer interactions.
- Increasing loyalty of customers and revenue growth from new and existing customers.
- Better customer service by implementing self-care e-business solution, a new communication channel with customers which brings benefits in direct marketing and customer retention.

Appropriate implementation of Business Intelligence and Fraud management systems supporting Telco services can bring benefits in:

- Increased customer retention thanks to precise and up-to-date information.
- Better performance of analytical processing in your company thanks to separation of analytical data from operational data.
- Performance of any level of ad-hoc queries or reports concerning offered products, diversity of customers or suppliers.
- Detection of multiple fraud types and prevention of the same fraudulent event from happening in the future.
- Real-time credit fraud control and active blocking of suspect credit operations.
- Enhanced fraud analysis.

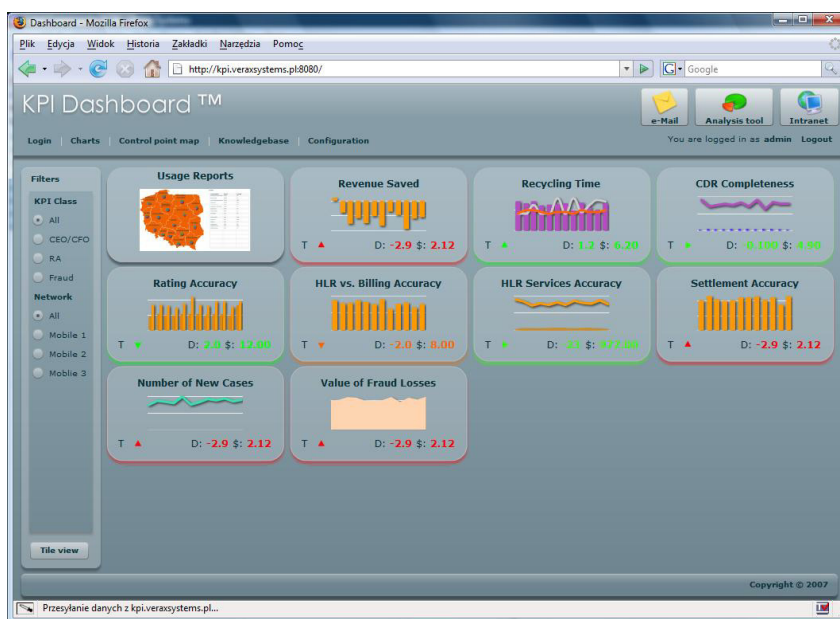


Figure 6: Verax Systems KPI Dashboard.

Additional supporting systems which can be implemented by Telco companies can be also valuable to keep market competitiveness:

- Product Catalogue give the possibility of:
 - Faster introduction of new products.
 - Better organization of existing products by grouping them in the manageable portfolio.
 - Reduced product development costs because of many ways of reusing existing product specification.
 - Lower system integration costs by utilization of standardized API.
- Business Process Management system results in:
 - Shorter work cycles thanks to control and automation of the lifecycle of any business process.
 - Improved customer service with prompt and effective response to customer's requests.
 - Faster adaptation to changes in the market.
- Content Management System allows complete control over website content and reduction in website maintenance costs.

Efficient deployment of all crucial BSS components positions Telco organizations ahead of competition by introducing the following features:

- Customer-centric approach supporting a hierarchical customer model of multiple accounts that obtain multiple products and services.
- Advanced and sophisticated marketing strategies which allows sales personnel to package products, cross-sell and produce tariffs targeted at particular market segments.
- Effective communication with customers by introducing on-line self-care and targeting offer on a demand basis.
- Pricing and billing flexibility which allows to adapt an operator's existing or evolving rating and discounting policy and minimizes the time required to bring new products to market.
- Convergence important for customers who acquire multiple products (possibility of issuing a single, consolidated bill or separate bills via automatic pricing of multiple product packages).

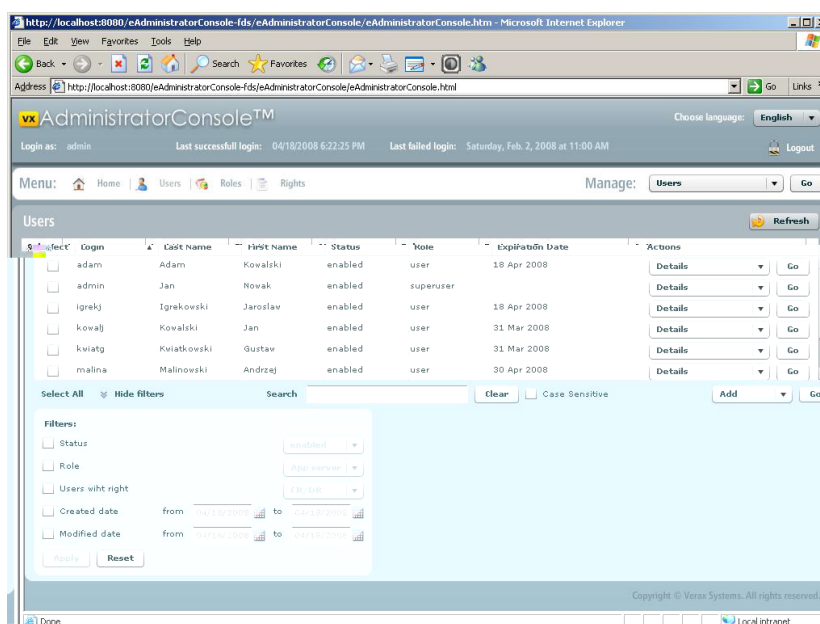


Figure 7: Verax Systems BSS Administrative Console (user management).

5. Verax Systems' BSS Suite– an overview

Verax Systems BSS Suite is an integrated set of products for tier-2 operators, cable providers and ISPs. The Suite consists of the following components:

- **Product catalogue (PC)** – allowing to define operator's products and services (including pricing and discount policy) in a clear and efficient way.
- **Customer Care and Billing (CCB)** – allowing to manage customer accounts and services provided. CCB also supports template based invoicing as well as reconciliation (in case of services for which operator pays to the customer, such as Internet sharing on a WiFi access point). Invoice printing (both PDF and hardcopy) supports placement of advertisements from any source (including Verax content server).
- **Self-care Portal (SCP)** – responsible for customer interaction such as review and upgrade of services, payment status and invoice monitoring, account top-ups, etc.
- **Mediation layer and rating engine** – allowing collection of usage data records and aggregating them into end-user statements and bills.
- **Content server (CS)** – is a policy based, advertisement and content delivery system providing flexible Internet content delivery. Content server is integrated with SCP and CSC to execute marketing campaigns on subscribers (advertising is displayed in the self care portal and placed on bills) and also generate revenue via downloadable content defined by an operator (such as ringtones).
- **Business Intelligence (BI) layer** – allows for collection, integration, analysis and presentation of business information and improve business decision making by using fact-based support systems. BI layer consist of Business Reports and Key Performance Indicator dashboard.
- **Administrative console** – managing all the components of the BSS suite.

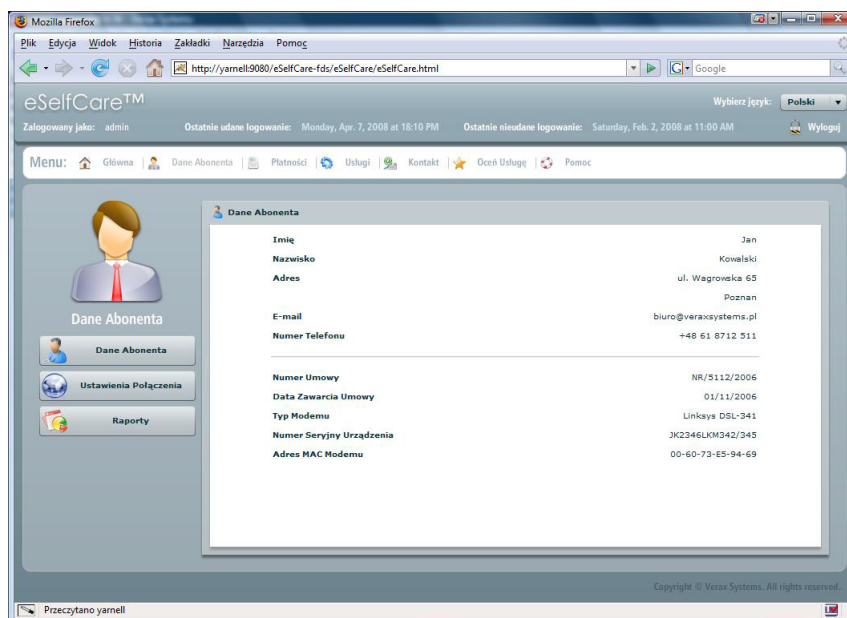


Figure 8: Verax Self-care portal.

Technology

All BSS Suite user interfaces utilize **RIA** (Rich Internet Application) architecture and Adobe® Flex technology. Such a design brings value not only internally (clear presentation, increased productivity) but more importantly it changes the way in which the operator engages and interacts with its customers and users (e.g. increased customer loyalty).

Built around **Java distributed architecture**, Verax BSS Suite is capable of working on a cluster of cost effective machines and more importantly, is able to scale with number of supported users by adding more computers to a rack.

BSS Suite supports Oracle and MySQL databases with the first one being recommended. BSS database is divided into two instances: **data warehouse** used for usage data record processing and business intelligence and **transactional** instance holding rest of the system data.

By default all BSS Suite components support localization and change of user interface language **at runtime**.

EAI Ready

Each functional element of the Verax OSS Suite is open via Java RMI or web-service interfaces and relies on interfaces exposed by other services, which can be implemented by different back-ends. Such a design allows EAI-style (Enterprise Application Integration) integration of suite components with third party applications. The integration may take place directly or via an Enterprise Service Bus (ESB) solution such as Tibco or WebMethods.

6. Summary

Telecom operators are facing great changes in every aspect of their business. They must to provide a variety of services adjusted to customer needs, intelligently use partners to supplement their own capabilities, and understand their customer's desire for choice, control, and management of their own services.

Understanding new trends of telecommunication market Verax Systems offers comprehensive Verax BSS Suite. The major goal of our efforts is to deliver a flexible, scalable and open architecture that supports the entire billing chain. This approach gives service providers the tools to retain customers, deliver new services and helps to reduce the cost and maintenance of the overall systems.

Verax Systems' BSS Suite is a proven comprehensive solution for Telecom operators. It is a reliable, efficient and secure system that guarantees successful business support and benefits in some crucial for Telecoms competitiveness areas, such as:

- Billing and payments.
- Customer Relationship Management.
- Product Catalogue.
- Business intelligence and analytics.

To learn more about our services and products, please contact one of our offices or visit us on the Internet at www.veraxsystems.com.