Comarch 3arts

End-to-End Billing & Network Management for WiFi & WiMAX

COMARCH
INFORMATION TECHNOLOGY

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Introduction

Currently, technology is evolving rapidly and new telecommunications technologies are being created on an almost daily basis. Organizations with the funds necessary to exploit this situation are able to quickly launch companies that provide a variety of different and new services. In order to establish themselves and acquire financial stability, young companies traditionally offer only a limited scope of services in the initial phase of operations.

Comarch has offered BSS and OSS solutions to such companies for many years. Our experience has shown us, for example, that billing solutions targeted at such customers should be adjusted to their needs and be financially affordable. At the same time solutions must meet the highest quality standards in terms of the software used and implementation processes.

We have identified the following as the most critical customer requirements in the telecommunications field:
• Need for AAA and Real-Time Rating
• Straightforward and efficient customer handling
• Need for flexible provisioning
• Fast new service creation

The introduction of new kinds of Internet services is accompanied by new problems concerning their integration with existing services.

Many complex issues arise, including: questions about how to create a common interface, a unified accounting system, or common administrative procedures. The answers to these questions are of paramount importance to decision makers.

Comarch's extensive experience in the development of systems for carriers has enabled us to create a new standard. Our offer has been enriched by **3arts** (Authentication, Authorization and Accounting Real-Time Server), a modern application dedicated to a wide range of Service Providers. The system can be used in two ways: as a stand-alone billing system or fully integrated with existing billing solutions, enabling a simple way of issuing invoices for Internet access and other services, thereby providing a full range of customer services (including a document flow interface).

Key Features

- **Service control** (session authorization and disconnect)
- **Real-Time Rating** (with setup, recurring, usage fees, bonuses, discounts and more)
- **Prepaid, post-paid and mixed services**
- **Multiple payment methods** including credit cards, singlue-use passwords, scratch cards and more
- **Standard interfaces** (RADIUS, WebServices, Parlay/OSA)
- **Customer, Account and Identity management**
- **Rate, Topology and Package Management**
- **Built-in card generation and management**
- **Partnership management**
- **Trouble Ticketing**
- **Roaming partners billing support**
- **Integrated Provisioning Module**

- **Integrated Reporting Engine** (with export to XML/Excel)
- **Easy integration** (many technologies and protocols)
- **Multilanguage and multicurrency**
- **Web-based management and customer care**
- **Web-based sign-up and customer self-care** (with reseller branding)
- **Compatibility with most popular network equipment on the market**
- **Live statistics and analysis**

Target Group

Comarch 3arts is targeted at small and medium-sized telecommunications operators and services providers who want not only to control prepaid services but also to offer simple postpaid billing services such as postpaid rating and the creation of simple invoices and reports.

The second group of interested players is startups looking to obtain a high quality, low-cost solution for rolling out their business.

The **Comarch 3arts** system is preconfigured for WiFi services and is able to handle the following types of end customers:
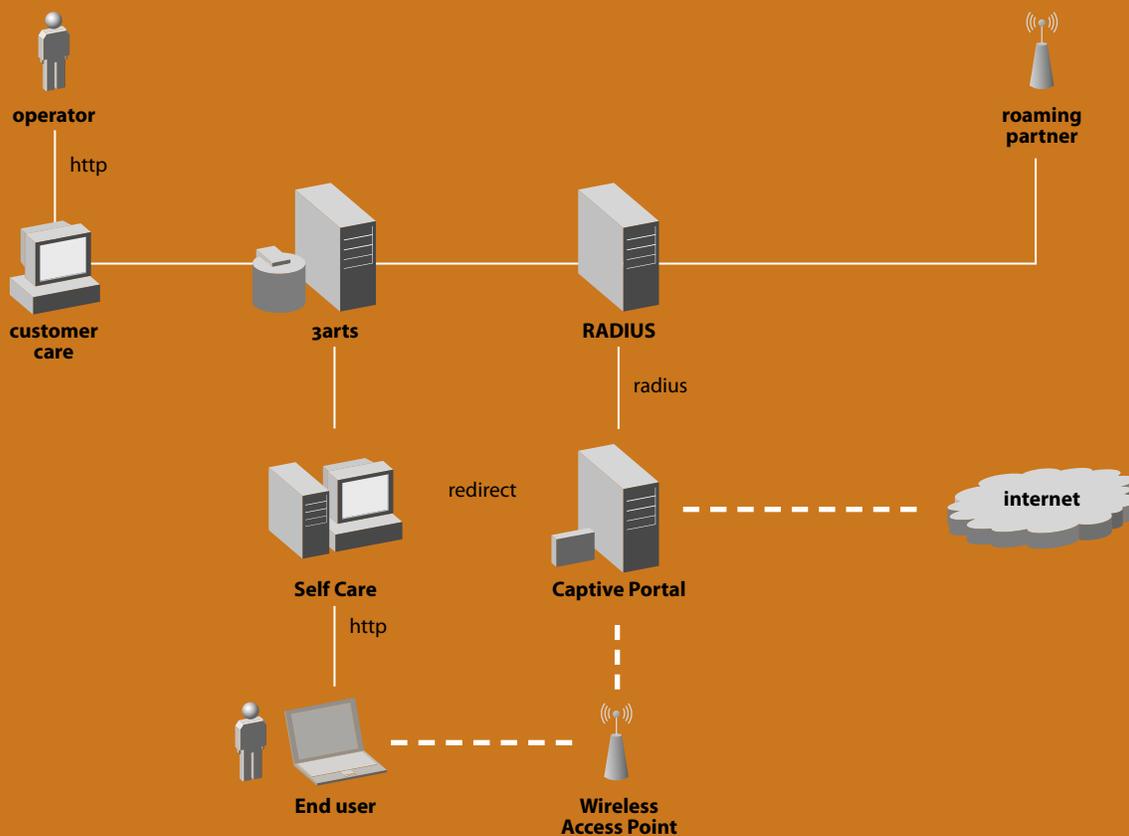- **Occasional Use for a daily or weekly fee**
- **Business Customers with basic Internet access**
- **Business Customers with additional services like VPN, firewall, etc.**

WiFi/WiMAX Service

The **Comarch 3arts** system can control all users trying to access a WiFi network. On the establishment of a connection users are redirected to the Captive Portal where they are prompted for authentication data. **Comarch 3arts** gathers usage data and controls user sessions. It is possible to bill and control sessions for both local and roaming users thanks to the possibility of connecting to the remote RADIUS server or Roaming Brokers.

WiFi/WiMAX-specific features important for Occasional Use:
- **Captive Portal and customer Self Care**
- **One-time-use passwords by SMS**
- **Roaming partner support**
- **Different branding for different locations**
- **Replenishment using credit cards**
- **Flexible rating definition**
- **Concurrent login control**
- **Late payment control**
- **Integration with Access Points**

operator

http

customer care

3arts

RADIUS

roaming partner

radius

redirect

Self Care

Captive Portal

internet

http

End user

Wireless Access Point

Supported Services

Comarch 3arts is dedicated to support existing and future services. Our developers have stressed the flexible definition of services with rating plans. The system facilitates various charging scenarios (subscription fees, surcharges, fees per transaction, byte, time unit, etc.)

Advanced configuration and administration tools allow operators to quickly define and publish new kinds of services.

Comarch's solution supports sets of Value-Added Service classes, including payments, notifications, account recharging and provides a methodology for the creation of new Value-Added Services for core services.

The following list presents some examples of service types supported by **Comarch 3arts**:

- **Internet Access** – Internet Access services may be offered in prepaid and postpaid mode. The system supports WiFi, WiMAX, Dialup and xDSL access types. Occasional service usage with credit card subscription is also available.
- **Voice and Fax over IP services** – VoIP is currently the largest market for AAA systems. Services can also be offered in both prepaid and postpaid mode. Full rating based on prefix topology is included.
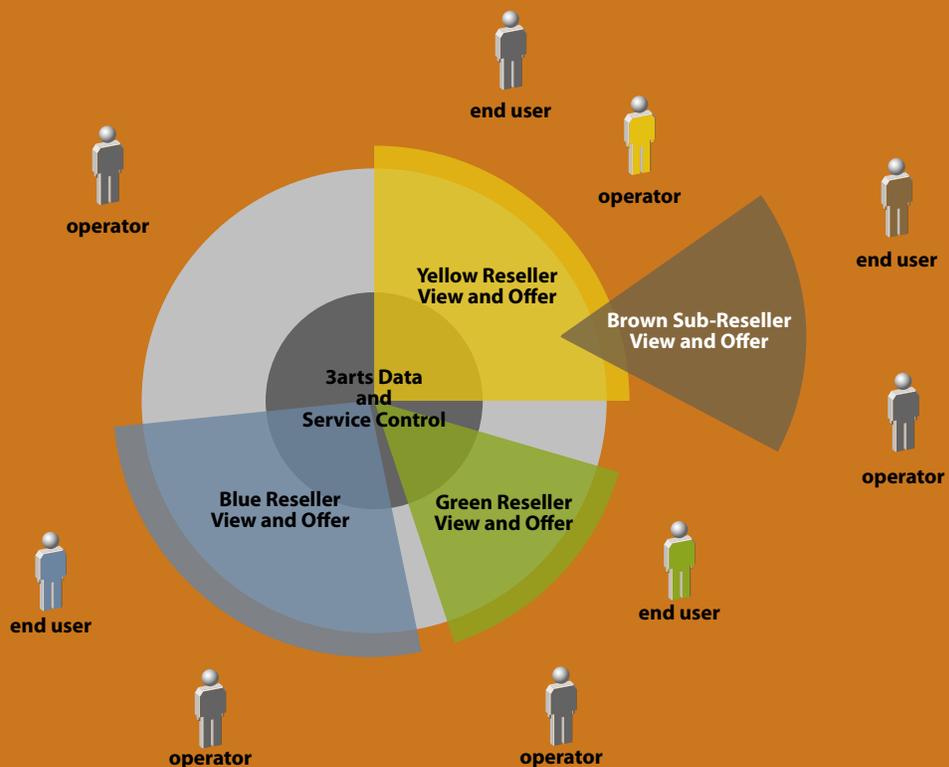- **VPN services** – VPN services are very important for the creation of services such as Mobile Office, a commercially popular service for business thanks to its profitability potential. The system also offers such services in both prepaid and postpaid mode. Subscribers willing to access a VPN network can be authenticated using a preconfigured method, for example, a username and password.
- **IPTV** – The system supports a set of mechanisms which are particularly useful for delivering IPTV services. Its AAA features may be used for service or content authorization. **3arts** is able to generate monthly reports on the content that has been viewed. It is also possible to offer VoD functionality managed by **3arts** in real-time mode. Users using the **3arts** Self Care functionality can order specific content and can be charged afterwards in real-time.
- **Hosting Services** – Hosting Services are part of the supported Value-Added Service classes, which are commonly provided by operators who offer additional services such as, in this case, Internet access. The system supports a set of provisioning methods and service configuration which is necessary for the existence of such services.

Resellers

Indirect sales is a functionality accessible from **3arts** Customer Care. This feature enables third-party resellers to register and manage their customers online. Each reseller can then access data on particular customers. Such an option is critically important and potentially profitable especially for VoIP and ISP services; however,there are no restrictions on where the 'Reseller Management' service can be used.

From the perspective of end-users each reseller looks like an independent operator.

Besides customer management **3arts** also allows the calculation of commissions for revenue sharing between resellers.

end user

operator

operator

end user

Yellow Reseller View and Offer

Brown Sub-Reseller View and Offer

end user

operator

3arts Data and Service Control

Blue Reseller View and Offer

Green Reseller View and Offer

end user

end user

operator

operator

Real-Time Rating

Real-time operations are crucial for ISP operators. Continuous monitoring of service usage helps prevent unwanted revenue leakage. The **Comarch 3arts** system significantly reduces the risk of income loss by the use of AAA functions and Real Time service Rating. Both operators and users are able to see traffic and their sessions even while a service is in use. **Comarch 3arts** also monitors system load and can notify administrators about possible problems in the system with the help of the standard SNMP protocol.

Payments

The **3arts** online payment interface supports all popular payment types. An embedded functionality also exists for cooperation with the most popular card authorization centers (e.g. LinkPoint, VeriSign, etc).

In this case wireless users can use credit cards for the purchase of single Internet access sessions or for replenishing existing accounts.
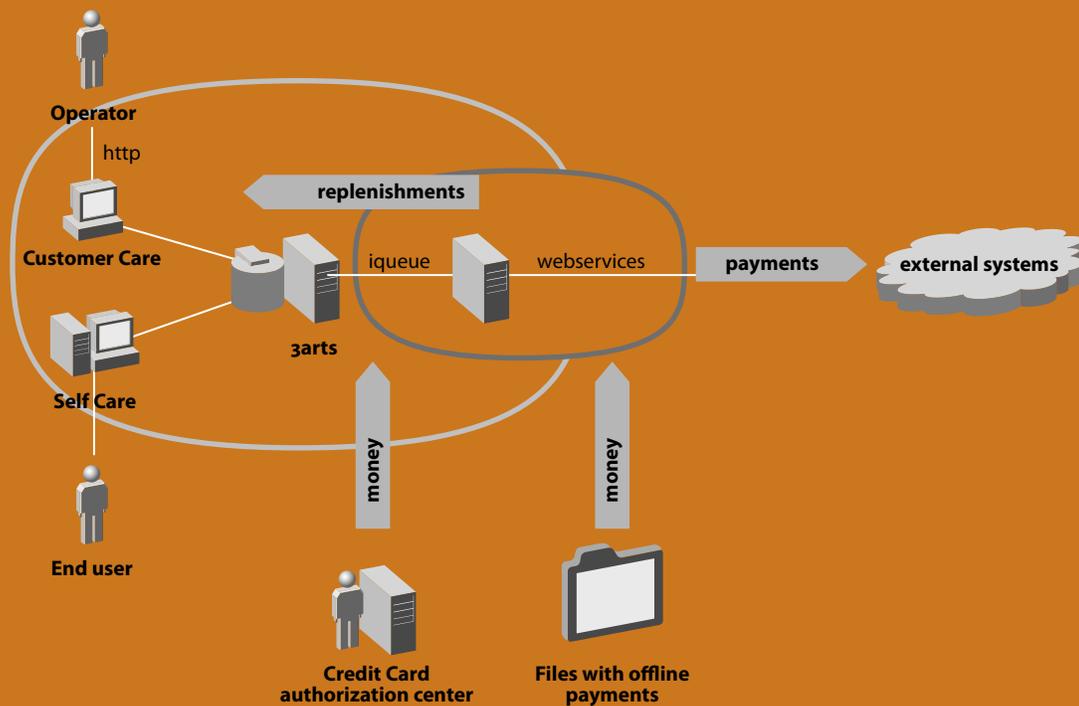
Prepaid and Postpaid Services

The evolution to prepaid services is driven by the market. The reason is that the sale of services in this way is cheaper, faster and safer.

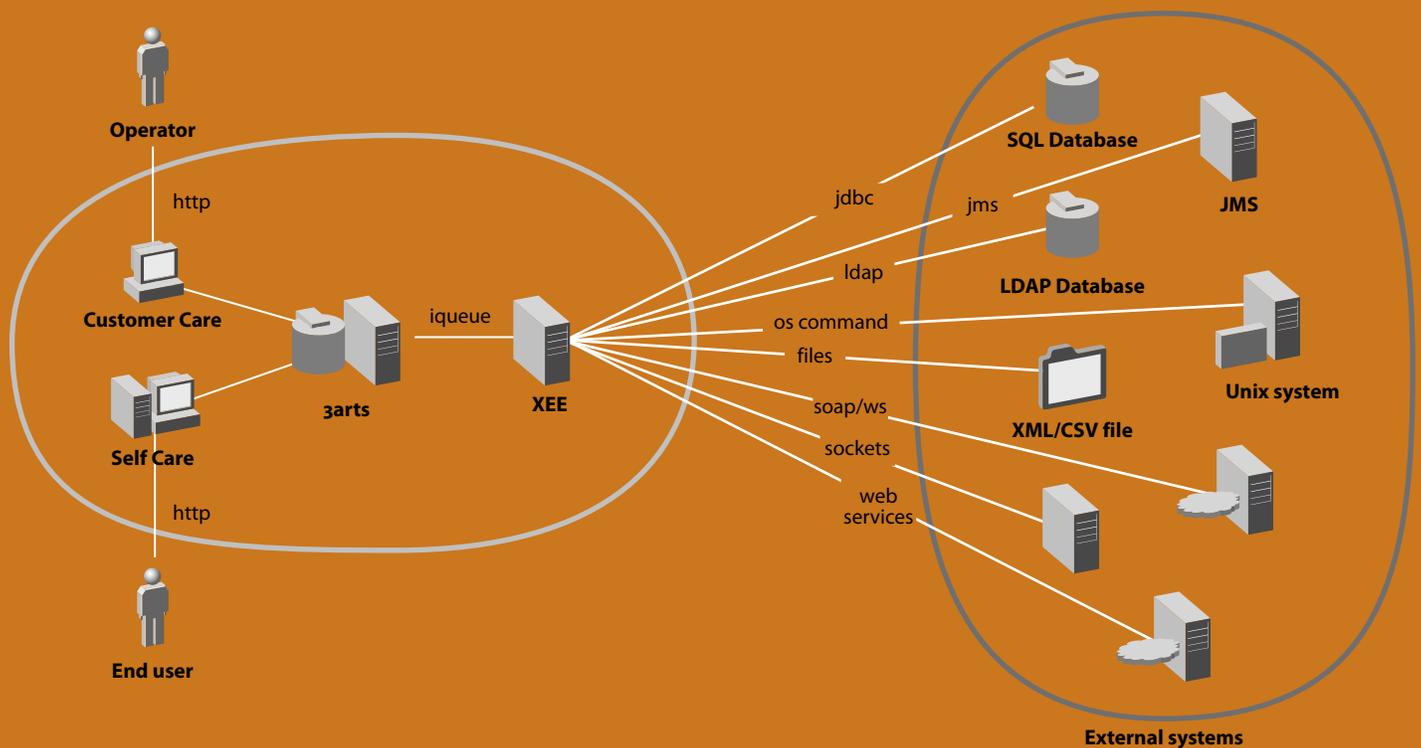The **Comarch 3arts** solution can serve as the base system for an operator's billing and pre-paid platform. The system is equipped with card generator module which helps users create and manage prepaid cards in the system – a functionality useful for occasional service usage.

Comarch 3arts is able to bill simple services in post-paid mode and is also capable of generating customer invoices.

Integration with 3ʳᵈ Party Systems

By design, **Comarch 3arts**' openness allows it to work with other applications and hardware. It is possible to distinguish two aspects of cooperation: on the application side and on the hardware side, with the former providing data and the latter gathering data from the system.

Operator

http

Customer Care

iqueue

3arts

XEE

Self Care

http

End user

jdbc

jms

ldap

os command

files

soap/ws

sockets

web services

SQL Database

JMS

LDAP Database

Unix system

XML/CSV file

External systems

We can qualify the following data sources on the application side:
• Internet applications based on LDAP,
• Hardware that supports the RADIUS protocol (access gateways, service selection gateways, voice gateways etc.),
• Applications used for data mediation (e.g. Comarch Mediation, IP routers, ATM or FR switches, access gateways, etc.),
• External data collection and rating software (e.g. XNT, Clarent).

Other applications can also provide data in XML format (e.g. CRM systems).

Applications which receive data from **3arts** are:
• Batch billing systems (e.g. Comarch Billing System),
• Interconnect applications (e.g. Comarch InterPartner Billing),
• Data warehouses (e.g. Comarch Analyzer),
• Internet kiosks (e.g. Infomat).

Aside from the embedded software interfaces for integration with external systems **Comarch 3arts** also provides the following functionalities:
• An open XML interface for data extraction from **Comarch 3arts**
• An XML/SOAP messaging bus interface

Communication with network elements is based on the RADIUS and SIP protocols. Hardware vendors that use these protocols include:
• Cisco
• Ericsson
• Lucent Technologies
• Alcatel
• Motorola
• Quintum

Comarch also offers a Mediation System which collects data from any number of other sources.

A Hosted Solution

Comarch 3arts can be installed on-site or offered in a hosted model, whereby Comarch installs the system at its Data Center. Users – referred to as operators – can access the system via the Internet because the system applications are web-based. All security issues are addressed and resolved by Comarch.

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Summary

The **Comarch 3arts** system has been created to support providers on the Internet market. Service providers often lack the proper tools and work with a set of different substitute applications. With the **Comarch 3arts** system, service providers will see the following advantages shortly after installation:
• Reduced Total Cost of Ownership
• Integrated Internet systems and applications
• Improved time to market for the roll-out of new services

• Increased network security
• Enhanced image as a service provider
• Increased customer satisfaction levels
• Support for real-time and postpaid billing.

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