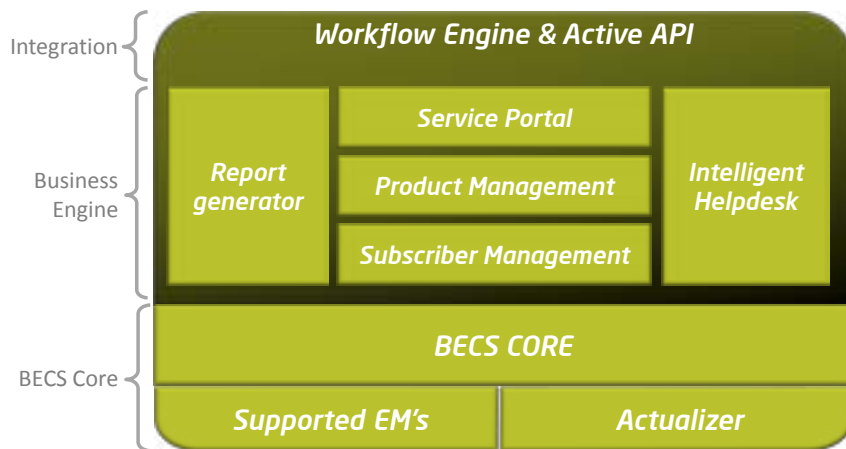




*BECS and BBE Product Suite
for City Carriers*

BECS and BBE Product Suite



BECS

BECS takes care of all aspects of the network within the fulfillment process including design, creation, configuration and activation of services. BECS also harmonizes the network by completely remove dependencies between OSS/BSS layer and the network.

BECS is especially designed for multi-vendor environment enabling fully automated, end-to-end network management from CPEs up to core level.

BECS provides a highly adaptive approach to element management where you can use PacketFront supported Element Managers (EM) and/or the Actualizer, a framework that allows you to extend existing or create your own EMs.

BBE

The BBE provides the operational and business mechanisms required for running a network business. It has tools for the different actors (e.g., Sales, PM, CS, end-users and building contractors) involved in delivering products and services to the end-user.

Supporting a high level of automation ensures end-to-end automation with shortest possible time to market, as well as assures the highest possible customer retention.

Integration

Every function in the product suite is represented by an API call. The Active API provides abstracted functional API-calls for daily operations, and the API can also be expanded with new functions and calls.

The BBE Workflow Engine defines, schedules and enforces operational and business related processes across the OSS/BSS layer, ensuring data and process integrity through the entire organization.

KEY FEATURES

BECS

BECS Core

- Network Planning & Roll-out
- Resource Management
- Service Management
- Service Provisioning

Supported EM's

- Element Management
- Service Configuration
- Software Management

Actualizer

- Any element type
- Element Management framework
- No programming skills needed

BBE

Product Management

- Service Development
- Product & Lifecycle Mgmt
- Offer & Campaign Mgmt

Subscriber Management

- Customer awareness
- CRM support

Service Portal

- Selling fulfillment
- Product marketing
- Customer Retention

Report generator

- Statistics gathering
- Data analysis

Intelligent Helpdesk

- Troubleshooting
- Pro-active fault management
- Problem handling

Integration

Active API

- OSS/BSS Integration
- Flexible and expandable API

Workflow Engine

- Process Engineering
- Process Automation

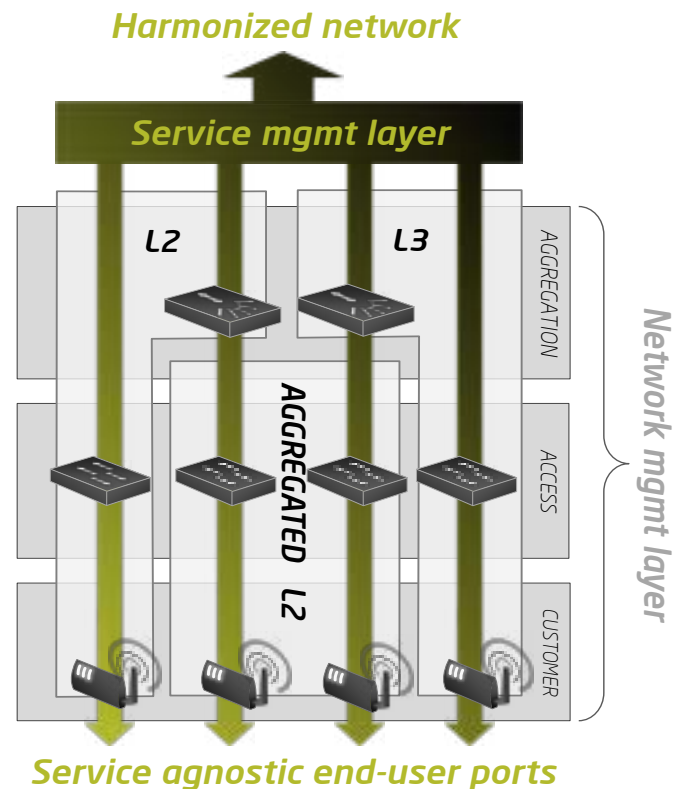
BECS

Service Management

BECS API exposes a catalogue of all available services via a simplified API interface, i.e. OSS/BSS systems do not need to know about the underlying hardware infrastructure or network topology. BBE or any other system can pick and choose from these services and activate them by simply pointing out the service and location(s).

Thanks to BECS topology awareness, it knows about dependencies in regards to the service activation. This means that BECS automatically activates configuration in all required network elements enabling end-to-end service provisioning. It also means that it will remove configuration not needed when services are deactivated.

The end result is a harmonized network with completely service agnostic customer connections (*ports*), where all network complexities and considerations are hidden.



Network Management

Beside the service management, BECS also automates other network operations, such as:

- Zero Touch configuration – BECS configures an element directly placed in the network without any interaction needed by an engineer.
- Resource Management – By letting BECS handle resources, such as IP addresses, VLANs and routing parameters, a common problem is solved. No longer will you have resources accidentally used in several locations.

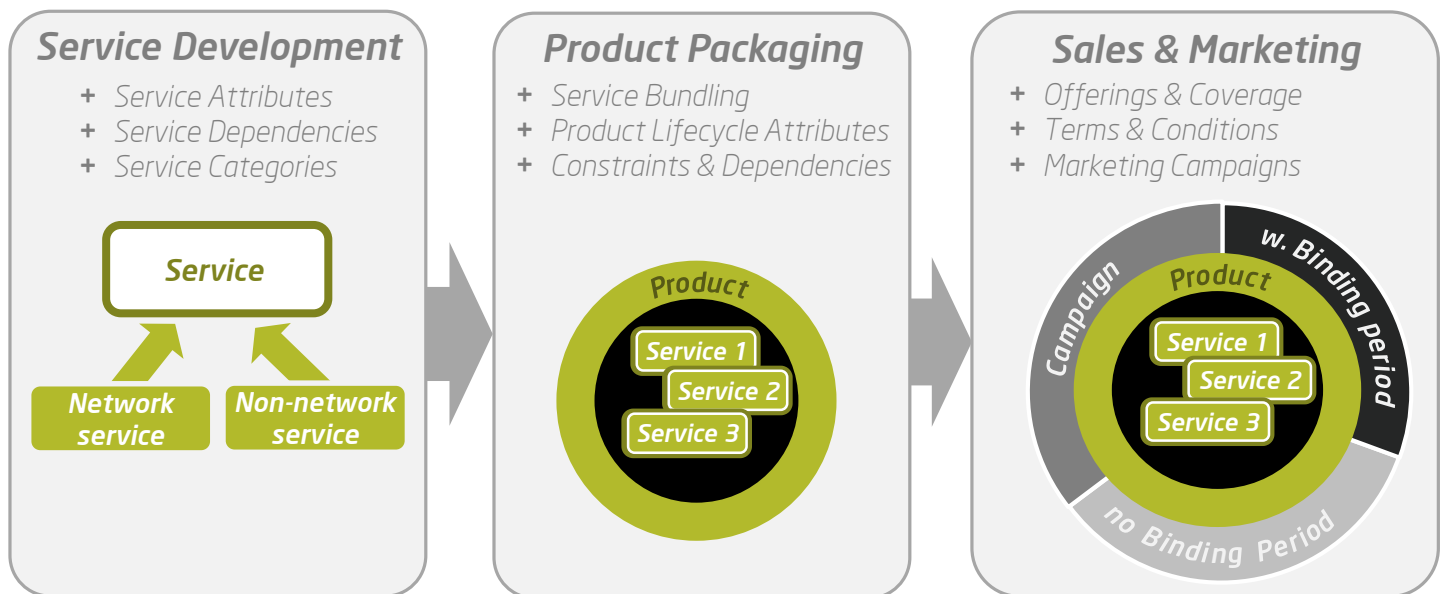
Element Management

BECS can manage the entire network, even if it is composed of network elements of varying kinds, from multiple vendors, or of different access technologies. PacketFront provides certified, supported element managers for most of the common network elements in the market. If there is a need for a new element manager, PacketFront only needs approximately 1 month to deliver such a product.

The Actualizer toolkit allows customer to define and build own element managers. The development environment is the BECS GUI, which has intuitive wizards guiding through the process. This means that the element manager can be created without any deeper BECS knowledge or programming skills. **"As long as you know your hardware, you're set!"**

Besides communicating directly with the network elements an integration to product specific element managers can be used.

BBE Product Management



Service Development

The service development fulfills the technical requirements of a Service. The First step is to define your service as one of two types of services: "Network Service" or "Non-network Service".

- **Network Service:** This type represents the actual network services (*with QoS, Bandwidth, Element configuration etc.*) provided and supported by the BECS Service and Network Management modules.
- **Non-Network Service:** This service type encapsulates anything that does not concern the network aspects of a service (*E-mail addresses, web-hotel accounts, etc.*). The service may exist as a place holder, send an email form or trigger a workflow or a script towards external systems (*e.g., create a work order for shipping and configuring set-top boxes*).

The next step is to categorize the service (*Internet, IPTV, VOIP, etc.*) and add any technical Service Attributes, (*e.g., phone number in a VOIP service*) and/or Dependencies (*e.g., IPTV add-on channel require IPTV Basic*). When all technical requirements are met the service is ready for next step: Product Packaging.

Product Packaging

The services are the building-blocks of the products. A product may consist of any number and constellation of services.

Product Lifecycle Attributes (*sales start, product availability dates, etc.*) are applied, and product constraints and dependencies are defined for the product. (*e.g. an upgrade to a higher priced product is done instantly, while switching to a cheaper product will enforce binding time*).

Sales & Marketing

Sales and marketing applies any number of offerings (*i.e. commercial subsets for the product in question*) and coverage (*e.g., the city/area where the offering is valid*) for each product. Each offer is defined with Terms & Conditions where price, binding periods, and other commercial factors are outlined.

Marketing campaigns and loyalty programs may be created and targeted for specific areas (*e.g., low take-rate areas*) or particular demographic groups (*Students, existing-customers, etc.*).

The Service Portal

Selling Fullfilment

The Service Portal is a one-stop-shop for your customers. The service portal has interfaces for different roles in the organization (e.g., marketing and sales functions, installation-portal for field technicians), all inteded to support the objective of minimizing the delivery cost and time-to-market and at the same time speeding up the order-to-cash process as much as possible.

A fully automated, customer oriented roll-out and delivery is the most efficient way to reach your untapped revenue potential.

Product Marketing

Marketing your network and services have never been more important and the service portal is your window towards the world. The Service Portal facillitates an editorial administration tool with a WordPress interface.

This enables a sales organisation and external partners to easily change and update the portal with the latest marketing campaigns and commercial banners without technical IT-assistance.



Customer Retention

"My Pages" provides the customer with an overview of current services, account information etc. In addition, a support tab displays network status, provides trouble shooting guides and means to raise trouble tickets.

Based on customers current service and service history, marketing can be specifically tailored and targeted towards customers with value add promotions creating cross- and up-sale opportunities.

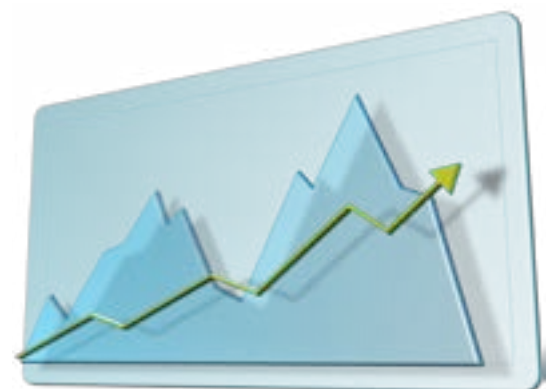
Report Generator

Statistics Gathering

BECS and BBE generate statistics throughout the entire system, from detailed network data from elements, CPEs, and resources to Customers subscription history and detailed billing records. BECS and BBE also accommodates a distribution function where this data can be sent to external receiving systems.

Data analysis

All information in BECS and BBE is available for data analysis. BBE includes a number of standard reports for billing, subscriptions, delivery addresses etc. A report generator, based on JasperReport engine, is used to create customized reports allowing complex input and output variables.





Subscriber Management


Customer awareness

The Subscriber Management module facilitates a customer database with fully customizable data fields. The customer database enables customer oriented functions and enhances functionality and automation in areas where the customer association is of central significance (such as marketing analysis, Service provisioning and helpdesk).



Intelligent helpdesk

Network	Customer	Cases
	<p>Element name: VRS_HGB_12_1</p> <p>Model: SE2</p> <p>MAC: 0008.ae45.14fd</p> <p>Uptime: 11w2d1h54m10s</p> <p>Element IP: tenggigabitethernet:(10.97.190.2) tenggigabitethernet:(10.197.190.21) loopback0:(10.197.192.64)</p>	
up		
Admin up		
Link up		
1000 Mbps		
	<p>Element name: VRS_HGB_12_1-1</p> <p>Model: MSR2024G</p> <p>MAC: 0008.ae7a.00fb</p> <p>Uptime: 10w5d16h05m23s</p> <p>Element IP: gigabitethernet:(10.97.190.58) gigabitethernet:(10.197.190.61) loopback0:(10.197.199.14)</p>	
up		

Network	Customer	Cases			
	<p>CPE Information</p> <p>Mac Address: 000f.d532.65e0</p> <p>IPv4 Address: 10.197.192.98</p> <p>Version: DR7xx_4.5.1_R7</p> <p>Service: DHCP_static_std</p>				
DRG761_MK12					
CPE Ports					
Port:	fa1	fa2	fa3	fa4	WAN
Status:	down	down	down	down	up
Speed:	10-half	10-half	100-half	10-half	1000-full
Clients:	<p>Client 1</p> <p>MAC: 0003a.5d81.00f4</p> <p>Latest IPv4: 130.244.112.96</p> <p>Latest Srvc: Tele2_100MB</p>				<p>Router</p> <p>0008.ae55.c65</p> <p>n/a</p> <p>n/a</p>

Troubleshooting

BBE has an advanced trouble shooting view for the first line Customer Services. Accurate network and service information is available immediately improving the customer experience. At the same time the need for escalation to technical personnel can be minimized reducing the over all trouble shooting cost. BBE can be easily integrated with an external ticketing system providing streamlined trouble ticket handling.

Pro-Active

When doing troubleshooting the Customer Service just follows the "Green lights", from the top element all the way down to the CPE. If anything is "Red" a number of countermeasures are available for immediate problem solving. The Customer Service can use a BBE function to check the desired service configuration in the network and in case a mismatch a repair button will correct the configuration error. Other corrective actions available are for example DHCP lease, reload CPE and run configuration check.

Workflow Engine



Process Engineering

Every action in BBE is part of a workflow. The workflows are the means of controlling your processes throughout the organization. The workflow engine makes sure that correct person and department always knows what to do and when.

By utilizing the Workflow Engine you can easily model your own workflows reaching well outside what BBE normally does and integrate towards external systems to ensure end-to-end control. And since everything is workflows it is easy to fork or extend existing processes using BPMN.

Process Automation

The Powerful scripting capabilities can fully automate parts of, or complete processes and only use human interaction when required (*any human interaction will show up on a dash-board for assigned person or organization with input criteria and exit conditions*).

Network automation is crucial in itself but add process automation on top of that and you will significantly reduce lead time between roll-out and actual service delivery.

Active API

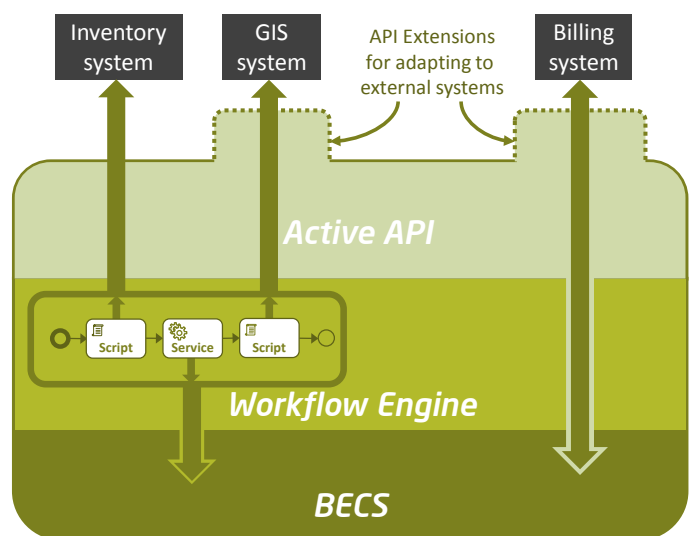
OSS/BSS Integration

Everything BECS and BBE can do is represented and accessible as an API-call. On top of that, the Active API facilitates abstracted API-calls that represent long chains of actions. This means that integration towards the network does not require any knowledge of neither BECS, nor the network

Flexible and expandable API

The Active API is the common SOAP/XML interface for all integrations. It can be extended with API-extensions that publish new API-calls and functions to cater for any systems integration needs.

A straight-forward integration (*e.g., sending billing records to a billing system*) is done by BBE directly, while more complex processes (*e.g., linking GIS data with an inventory system before deploying a new fiber port*) are done towards the workflow engine that synchronizes the systems ensuring both data and process integrity.



PacketFront

Software Solutions

PacketFront Software Solutions

...offer our customers and partners a solution to automate operational and business processes in any network, independent of the selected network topology, access type or business model. We work with several of the largest equipment vendors and operators.

The Team

...of PacketFront Software Solutions has been developing network and service management solutions for broadband networks since 2000. Several of the people in the staff were part of the original buildup of Bredbandsbolaget, the first FTTH network in the Nordics at the turn of the century. Following this, the company has gained experience from more than 100 networks around the world, covering a wide range of business models and network environments. Our main customers are City Carriers and Telecom companies and we approach them via our partner network consisting of system integrators and equipment vendors.