Prudent counsel house
DEVELOPED FOR FUTURE

WELCOME TO SPA®!

WHAT IS SPA®?

Service Provisioning & Activation platform is designed to provide flexible framework to support service provisioning and activation processes by automating service design and NMS activations.

SPA was designed according to e-TOM model in order to support medium-term and long-term CRM strategies of telco companies. SPA serves as a new layer that makes resource systems and CRM systems independent of each other.

- CRM gateway
- Workflow engine
- Decompositions
- Provisioning system gateway
- Workforce management gateway
- NMS gateway
- Frame system

Next-generation services require fast, accurate activation. Thanks to personalized services, hybrid networks and end-to-end service guarantees service configuration is becoming more complex all the time.

Zero-touch, first-time-right automated fulfillment is the essence of multi-play service delivery. It ensures against provisioning delays, activation outages, and the subsequent SLA violations that result in customer churn.

SPA is capable to support and optimize the entire service delivery process from service design and resource assignment, to order taking, service activation, and upstream systems notification.

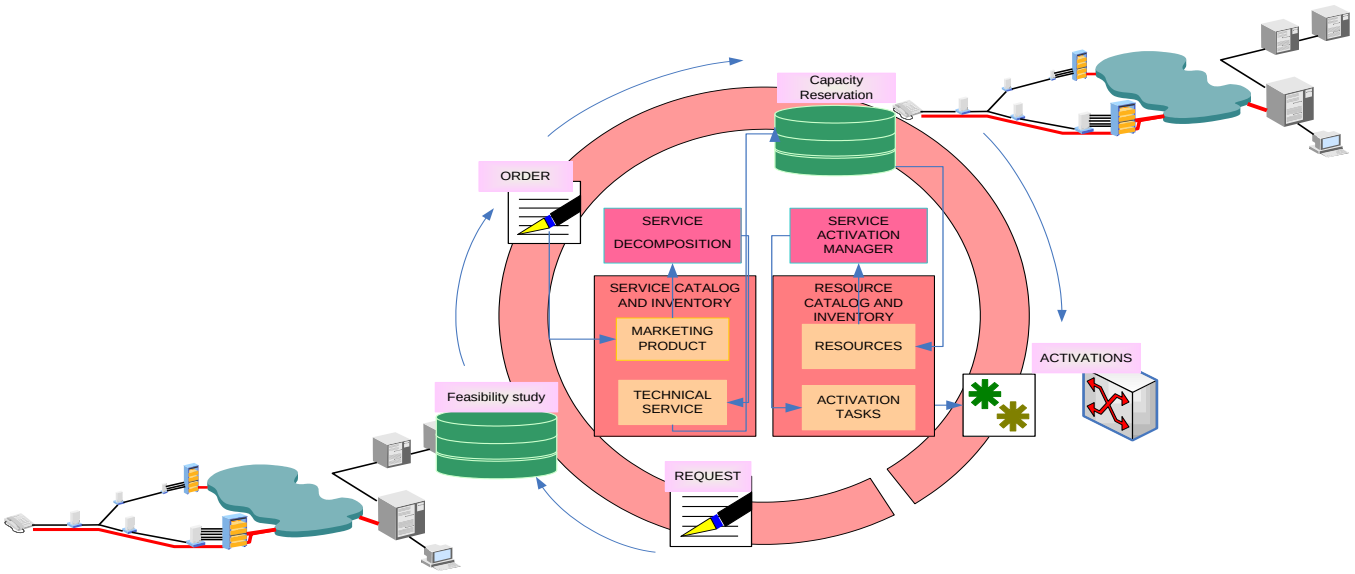
THE PROVISIONING PROCESS

Fully integrated to CRM, NMS, Technical Inventory and Resource Management and Workflow management systems, SPA Service Provisioning & Activation supports the entire fulfillment process.

Phase 1: Feasibility studies The provisioning process starts with discussions with customer and/or prospective customers. The call system operator identifies the customer in the CRM system. While communicating with the customer the call center operator will check what services can be provided at the customer's address. During the discussion with the customer, several checks can be executed via sending feasibility study requests to SPA that SPA decomposes and forwards to Technical Inventory & Resource Management system (TI&RM). Technical Inventory & Resource Management system performs auto routing for the selected service and responds whether the service can be provided on the given address. If no services specified in the feasibility study request then some information on available services (e.g maximum bandwidth) can be obtained.

Based on customer request soft capacity reservation can be executed prior to the order processing.

Feasibility study also supports service planning for business customers. While for residential customers response time is a key issue, for business customers the principle challenge arises from the complexity of the service. **Phase2: Service Design** After exploring what services can be provided on the customer's address, the next step is the registration of the order in the CRM system. SPA takes the order from CRM and starts the appropriate order business workflow (BWF) for the order.



The first step of the order process is to request a resource description for the related circuits. Based on the resource description the existing services (if any) the decomposition will be started. The result of the service decomposition is the basis of the resource allocation.

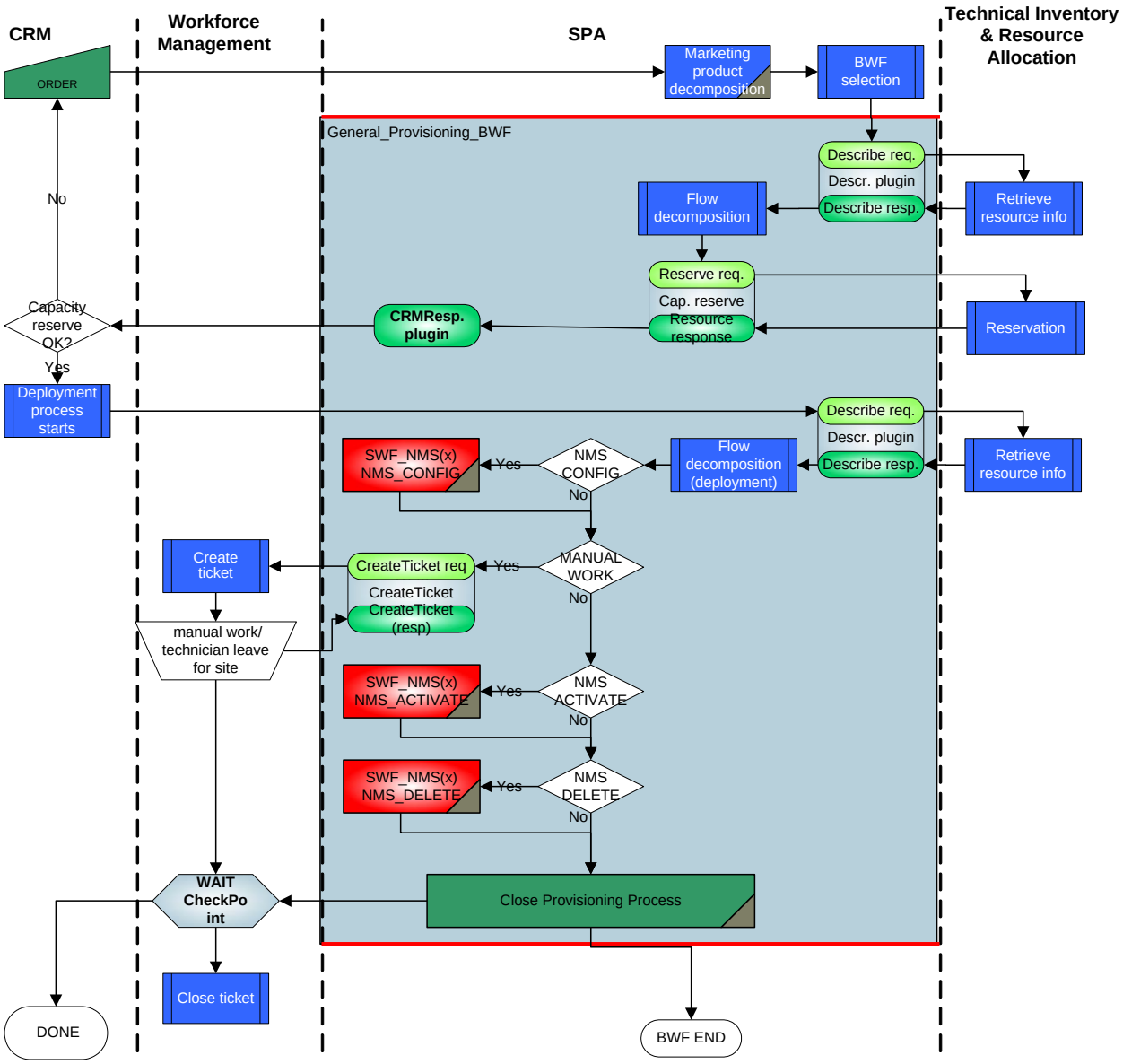
SPA calls the TI&RM system to make the capacity reservation. The result of the resource allocation is sent back to the CRM system and the SPA workflow enters a waiting state.

The next message incoming to SPA

from the CRM system may change the order, cancel the order or initiate the service deployment process. Cancellation in fact may occur at any time before the BWF is finalized

Phase 3 Activation. After CRM has initiated service deployment, the SPA Service Activation Manager determines the activation tasks. For instance, if TI&RM has reserved a CPE that is required to be activated then SPA will initiate the appropriate NMS transaction, otherwise it will not.

Whenever a manual step is to be carried out SPA will hand over the control to Workforce Management where the manual work orders are created and the manual work process is managed. When the manual work is finished the control is taken back and the NMS calls will be carried out via HPSA plug-ins. The SPA Service Activation Manager controls the execution of the activation tasks.



Phase 4 Finalization An important part of the business workflow is the closure process. SPA will synchronize the status of the order among all the systems involved (SPA, CRM, WFM, TI&RM, Billing and SLA).

SERVICE DESIGN AUTOMATION

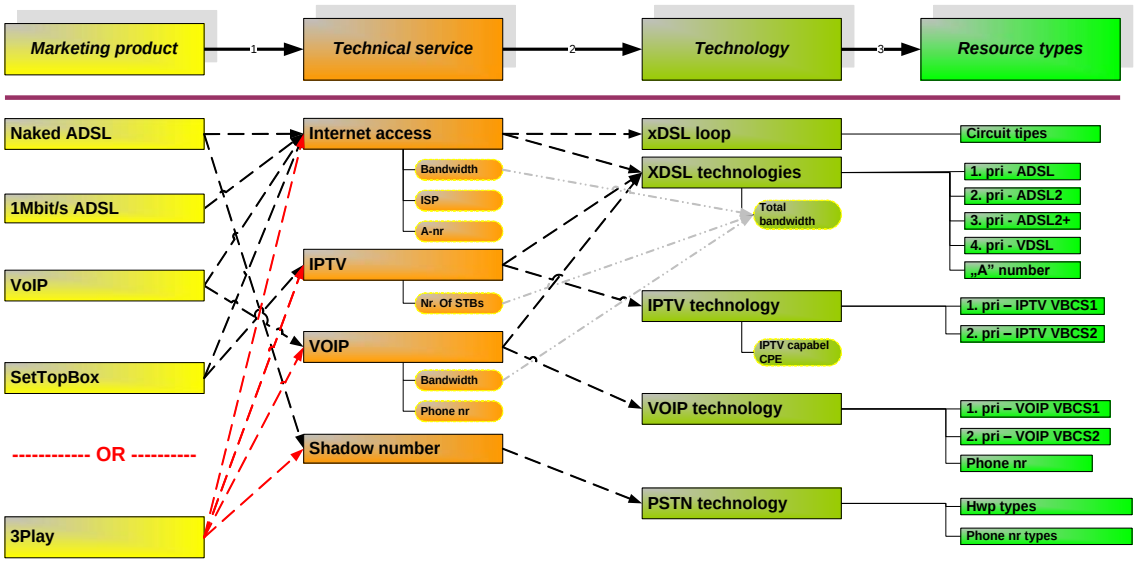
Service design automation is vital in minimizing provisioning times and costs. The service design automation capability of SPA enables telco companies to execute the most effective resource allocation for service fulfillment. In doing so, it relies on comprehensive inventory data. Based on the results of the decomposition and the up-to-date resource utilization data stored in the inventory, the auto-routing engine of TI & RM has the capability of supporting automatic service design.

SERVICE DECOMPOSITION

The task of service decomposition is to determine the technical services and the corresponding technical resource needs related to the incoming marketing product. The decomposition determines the technical services, technologies and finally the resources types.

In SPA the connection to CRM catalogue stops at technical services level. Bellow the technical services level the SPA catalogue can be set independent of the CRM systems. For instance if 3play arrives as a single marketing product or as VoIp plus IPTV plus Internet access (3 marketing products) the result of the decomposition will be the same.

Whenever a new marketing product is introduced that uses the existing technologies it will be easy to set the catalogue since the technical products, technology and resource type catalogue and rules need not be touched. Only the marketing product – technical services mapping have to be defined.



SERVICE ACTIVATION MANAGER

New resources, deleted resources, changing resource attributes may invoke NMS transactions. Service activation manager will optimize NMS transaction calls for SPA.

Having reliable resource information, executing optimized configuration transactions SPA has the power to make service activation fast and first-time right.

THE WORKFLOW ENGINE

BWF/SWF Workflows are a set of tasks organized in a tree structure. The execution of a workflow means to perform the operation described in each task in the order obtained by the depth-first traversal of the tree.

- Business workflows (BWF)
- Subworkflows (SWF)

BWFs are the highest level workflows while the subworkflows are building blocks that can be used in several higher level workflows. Subworkflows can be attached in static or dynamic fashion.

Context area - The workflow engine can properly operate if all variables and data that control the operation of the workflow engine are available in a persistent manner. The variables and data will be stored in a specific structure that is called the context area (CA). CA is global for the entire business process. In case of order cancellation the CA of the original process will be available for the UNDO BWF.

Workflow templates - Workflow templates describe set of nodes, the execution order of the node sequence and node access logic for workflows. Access logic of workflow nodes is controlled by flow control variables. Templates can be modified until the first workflow instance is created. In case further modification of the template is required, new version of the template can be created.

Workflow instances - Based on workflow templates the workflow engine generates workflow instances.

The context are is broken into partitions as follows:

- User defined flow control variables
- Order info (received from CRM)
- Relevant circuit info
- Marketing decomposition info
- Flow decomposition info
- Service & movement info
- Reserved resources (TI&CR)
- SPA - CRM response data
- HPSA activation info

NODE TYPES

Workflow nodes (BWF, SWF)

Workflow nodes are root nodes. There can be two types of workflow nodes defined, the business workflow node (BWF) and the subworkflow node (SWF).

Dynamic nodes (DWF)

Dynamic nodes (DWF) make the possibility of linking SWFs into BWFs dynamically. There are plug-ins that evaluate certain pre-defined conditions via context area analysis. Based on the result of the evaluation the plug-in links the appropriate sub-workflow into the BWF.

Action nodes

Action type nodes are used to execute action plug-ins. Action plug-ins normally initiate transactions to other systems (CRM, TI&CR, NMS systems) or execute an SPA process.

Branching nodes

In a branching node the workflow template administrator defines a logical expression. Based on the value of the logical expression the flow will select the appropriate branch of the workflow. For instance there is a branch node

preceding any NMS call. The branch node decides whether the NMS action plug-in node has to be visited or not.

The logical expression may contain the general record, string and date functions, such as Count, Index of, Index of by field, Replace, Substr, Min/Max, etc.

The result of the expression has to be a logical value.

Value setting

Values of variables can be defined by an expression. In case the variable is not there in the CA yet the workflow engine creates the CA entry for the variable.

For the value setting expressions there are certain rules similar to the rules for logical expressions of branch nodes.

There are no constraints on the number of user defined CA entries.

↓ **Link nodes**

SWFs can be attached to higher level workflows via link nodes. At the time a link node is defined the referred SWF has to be identified by its version independent definition At the time the workflow engine starts to run the BWF, the BWF instance will be generated using the version of the SWF template that is valid at the moment the BWF instance starts. For instance the finalization SWF is linked at the end of all BWFs.

Wait nodes

Wait nodes synchronize interfaces with partner systems. Wait nodes control waiting for responses from other systems. The waiting node type can be set by selecting the appropriate wait plug-in.

There is a special wait node for timeout setting.

Jump nodes

Via the jump nodes the flow control can be transferred to a node that has previously been executed.

INTEGRATION

In order to enable a seamless and automated orchestration across applications and to make service definition and deployment possible within hours, SPA is a highly integrated system.

Customer Relation Management

Customers, requests, orders are first registered in CRM. CRM automatically sends requests and orders to SPA.

Billing & SLA

Service activation is reported to Billing and SLA.

Workforce Management

Workforce Management system coordinates the manual work associated with service deployment, while SPA coordinates the automatic tasks, namely the NMS activations.

SPA and WFM co-operate in order to successfully carry out service deployment processes. The control is transferred between the two systems via checkpointing.

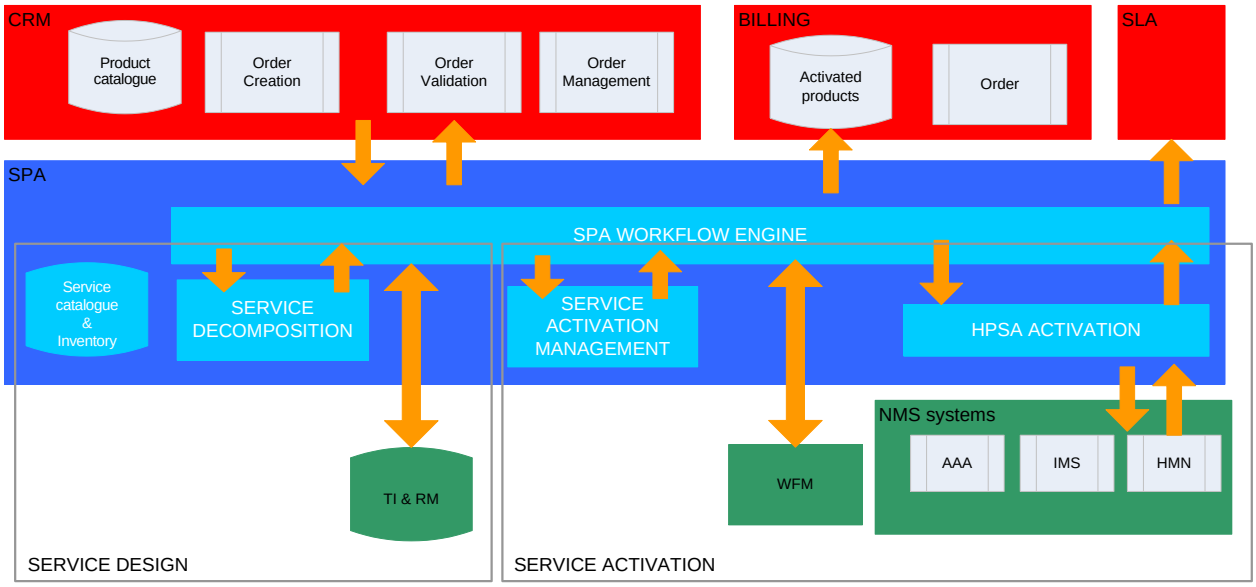
Technical Inventory and Resource Management

Executes feasibility studies, allocates resources. TI& RM is Equipped with an auto-routing engine that uses rule-based route-finding algorithms to identify optimal network paths based on fully parameterized search criteria.

NMS transaction

NMS configurations and activation are executed in a two-layer architecture. The service activation manager determines the NMS transactions to be called. The communication to the NMS system is executed via HP Service Activator (HPSA). Based on service profiles and NMS command parameters HPSA validates activation input before calling the appropriate NMS system.

NMS blocks and WFM/TI&RM calls can be freely set up in any BWF:



System advantages

- The system reduces service delivery and fault detection time, so improves your customer satisfaction.
- Flexibility and openness creates competitive advantages by accelerating the rollout of new services.
- High level process automation increases provisioning success rates and cuts operating costs.
- Enables zero-touch provisioning
- Enables First-time-right fulfillment
- Highly integrated to other systems involved in provisioning and activation such as CRM, Workforce Management, TI & RM and several NMS systems.
- Enables seamless and automated orchestration across applications and multi-vendor, multi-technology networks including DSL, FTTx, WiMax, Ethernet, MPLS and more.
- Empowers service provides to rapidly provision and cost-effectively deliver NGN context services, such as DSL, IPTV, VoIp, VPNs and multi-play.
- The system is fully parameter driven which highly reduces software development needs (NMS plug-ins to be developed) when introducing new technologies.
- ISO9001 certified development and support processes at the developer company ensures stable and reliable service maintain in the future.

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