SAP Integrated Business Planning

Overview Response & Supply

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PUBLIC
Agenda

OBP Overview

Capabilities and Processes of OBP

Focus Topics and Demos
- SOS Supply Selection - Inbound Quota, Alternating Source of Supply
- Sub-networks
- BoM Component Validities
- Demo

Roadmap Update

Q&A
Digital Business Planning in the Intelligent Enterprise

**SAP Business Suite Capabilities**
- Supply Network Collaboration
- Supply Chain Info Center
- Enterprise Inventory & Service Level Optimization
- APO Supply Network Planning
- APO Demand Planning
- Production Planning / Detailed Scheduling
- Global Available to Promise

**Next Generation Planning Capabilities**
- **State-of-the-art business processes**
  Leverage SAP solutions to enable new end-to-end business processes, new business models and new revenue streams
- **Synchronized planning processes**
  Break down planning silos through connected and integrated planning processes
- **Leverage end-to-end visibility**
  End-to-end visibility on strategic, tactical and operational level and across siloed or external data
- **Faster planning cycles**
  React faster to changes in the business through complete integration

**SAP Digital Supply Chain Capabilities**
- SAP Ariba
- Supply Chain Collaboration
- Supply Chain Control Tower
- IBP Sales & Operations Planning
- IBP Inventory
- IBP Demand
- IBP Response & Supply
- SAP S/4HANA
  - Production Planning
  - Available to Promise
  - MRP
End to End Processes with **SAP Integrated Business Planning**

**Strategic & Tactical**
- **Financial Plan**
- **Marketing Plan**

**Tactical & Operational**
- **Sales History**
- **Sales Plan**

**Operational**
- **Execution Orders**
- **Sales Orders**
- **Sales and Shipment History**

**S&OP Process**
- **Review & Consensus Demand Plan**
- **Create & Review Supply Plan**
- **Balance Demand & Supply**
- **Management Review**

**Supplier Forecast Commit** (Integration with SAP Ariba)

**Supply Proposals & Product Allocations**

**OBP**

**Real Time Analytics & Exception Handling**
Operational Supply Planning – Where do we head to

Supply Chain Network Planning in IBP Response & Supply...

...supports operational planning
• across the extended supply chain network
• on order-level
• spanning from supply planning to allocation planning to confirmation

...is tightly integrated
• to execution systems
• with tactical planning processes
• to provide visibility across the supply chain

...runs automated, but flexible
• interactive with the planner
• with flexible configuration of processes and parameters
• with fast simulation capabilities

...provides deep analytic capabilities
• to understand planning results
• to identify bottleneck and capacity overloads
• with a view on the full supply chain network
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Process Overview

Monitoring & Controlling of the Planning Process

Supply Planning Run

- Pegging & Gating Factors
- Order-based priority Heuristic
- Management by Exception
- Manual Input by Planners
- Optimization

Master & Transactional data

Profiles & Settings

Integration to execution Systems
Key processes supported in Operational Supply Planning

Generate a finite capacity supply plan based on prioritized and categorized demand such as orders and forecasts

### Supply Planning & Allocations Planning
- Create a supply plan based on prioritized forecast demands and supply chain constraints
- Optionally, generate and provide allocations to ATP for online confirmations of sales orders

#### Unconstrained or constrained priority heuristics and optimization

### Response Planning
- Create order confirmations and an adopted supply plan based prioritized demands, allocations and supply chain constraints

#### Unconstrained or constrained priority heuristics

### Deployment Planning
- Create a deployment plan, adjust other supply proposals and order confirmations based upon prioritized demands, allocations, supply chain constraints, and deployment settings

#### Constrained priority heuristics
Comparison of Order-based Planning Algorithms

**Priority Heuristics**

- Propagate demand through your network
  - Run priority heuristic in infinite mode (e.g., no capacity constraints, planning start date in past, …)
  - Plan end-to-end supply network with suppliers, factories, and distributors
  - Multi-level demand propagation from finished good to raw material level

**Infinite Order based Planning**

Create a feasible plan by fulfilling the highest-priority demand first:
- Constraint-based heuristic planning approach considering material and capacity constraints
- Rules based matching of demand and supply based on priority
- First feasible result is taken.

**Finite Order based Planning**

Create the BEST feasible plan:
- Considers entire network at all levels simultaneously (production, distribution, procurement) to minimize total cost
- Inventory balancing across the network
- Looks for the optimal result.

**Optimizer**

Finite Bucket oriented Planning with pegging and order creation

**Quality of Planning results**

**Complexity**

- Comprehending results
- Training aspects
- Modelling solution
The Priority Heuristic will plan individual demand elements, one by one prioritized by flexible demand prioritization rules.

The planning algorithm plans multi-level. Constraints like production capacity, supplier constraint, material availability and lead time are considered.

The planning algorithm selects highest priority source of supply first. In case of shortage or lateness secondary sources are used.

The planning run writes order results and pegging. It identifies gating factors for faster resolution.

The planning run can also be run infinite by configuration/maintenance (Automatic switch on/off is planned roadmap item for IBP2008 release: "switchable constraint")

 How does the Priority Heuristic work?
 Execute Supply and Allocation Planning Run
How does the Optimizer work?

Execute Supply and Allocation Planning Run

The optimizer enables cost-based planning. Independent of the use case, it always minimizes the total cost of the supply plan. During the optimizing process, it searches through all feasible solutions to find the most cost-effective one in terms of total costs.

A solution is feasible for the optimizer when it respects all the planning constraints, for example, the source of supply options and available resource capacities. A feasible solution can contain non-deliveries, that is, not fully satisfied demands, safety stock constraint violations, or violate other constraints.

The most prominent costs are the ones for the source of supply decisions (production, transportation, and procurement) and the non-delivery costs for demands.

The output is a feasible production, distribution, and procurement plan for the selected supply chain network.

The planning run writes order results and pegging.
SAP Integrated Business Planning for response and supply

Existing Capabilities

- Out-of-the-box inbound integration from S/4 onPrem and ERP or from file
- Outbound integration of order-level planning results to S/4 onPrem and ERP
- Closed-loop integration with key completion
- Analytics outbound interface for detailed planning result extraction (e.g. orders, pegging information)
- Enable a separate integration source/target for each order-based planning area
- Multiple integration sources for one common planning area
- Integration from central Master Data Hub

- Safety stock consideration
- Safety/target days of supply inventory targets
- Minimum, maximum, fix and rounding lot sizes
- Freeze Horizons (production, distribution)
- Flexible forecast consumption (+TS operator)
- Multiple forecast types
- Multiple modes of transport
- Goods receipt processing times
- Inbound quotas
- Alternating sources of supply
- Production lead-times with component offset
- Assembly scrap
- Constraints on production resources
- Supplier constraints
- Maximum lateness of demands

- Version-dependent master data (change)
- Support of multiple PDS activities
- Consider process and production orders

- Bucket view of planning result: MS Excel or Web-based planning
- Dedicated Fiori apps for order results (e.g. View Projected Stock)
- Supply and resource usage analysis (Detailed Pegging)
- Gating factor analysis
- Supply chain dependencies analysis
- Manual adjustments

- Deployment heuristics (pull)
- Deployment optimizer (push/pull)
- Flexible available-to-deploy quantity definition
- Fair share distribution in heuristics
- Transportation and shipping/receiving calendars

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Q&A
## Modes for Source of Supply Selection

<table>
<thead>
<tr>
<th>Heuristic</th>
<th>Source of Supply Selection by Priority</th>
<th>Source of Supply Selection by Inbound Quota</th>
<th>Alternating Source of Supply Selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Behavior: Only if demand cannot be</td>
<td>• Behavior: Choose source of supply</td>
<td>• Behavior: Instead of using the</td>
<td>• Behavior: Not relevant for Optimizer</td>
</tr>
<tr>
<td>fulfilled using the highest priority source</td>
<td>that fulfills the Inbound Quotas the</td>
<td>highest priority source of supply,</td>
<td></td>
</tr>
<tr>
<td>of supply, the planning switches to the</td>
<td>best</td>
<td>consuming constraints on this level</td>
<td></td>
</tr>
<tr>
<td>next Source of Supply according to priority</td>
<td>• Mainly relevant for infinite supply</td>
<td>for the full horizon, planning switches</td>
<td></td>
</tr>
<tr>
<td>• Relevant for finite and infinite supply</td>
<td>chain levels, for which no other</td>
<td>to lower priority sources of supply which</td>
<td></td>
</tr>
<tr>
<td>chain levels, as a source of supply can</td>
<td>criteria exist to level the supply on</td>
<td>can fulfill the demand nearer to the</td>
<td></td>
</tr>
<tr>
<td>be constrained on the upstream levels of the</td>
<td>multiple sources of supply</td>
<td>demand date</td>
<td></td>
</tr>
<tr>
<td>supply chain</td>
<td></td>
<td>• Only relevant for finite supply chain</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>levels. For infinite supply chain</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>levels, planning will behave as for</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Source of Supply by Priority</td>
<td></td>
</tr>
</tbody>
</table>

**Optimizer**

- Source of Supply decision is done based on the overall procurement costs defined for the upstream supply chain
- Behavior: Inbound Quotas are an additional soft constraint which can be violated weighted by cost
- Not relevant for Optimizer
Sub-Networks

Subnetworks are a new selection parameter for the scope of planning

Benefits of using Sub-Network to plan only parts of the complete supply chain network to allow:

- Higher frequency of planning runs to improve reaction on short term issues
- Keep parts of the plan stable
  - Keep production supply stable while do planning for final assembly or distribution
- Split network because of business responsibilities
  - Horizontally: Deployment vs. Production Planning
- Vertically: Factory A vs. Factory B
- Use different planning algorithms for parts of the supply chain

Subnetworks are supported in the following planning run templates:

- Confirmation Run
- Constraint Forecast Run, Constraint Forecast Run using Optimizer
- Deployment Run
- Planning Runs “as Operator” do NOT support subnetworks
Sub-networks - Good to know

All selected connected subnetworks are planned as one big subnetwork

- To plan subnetwork by subnetwork, multiple planning runs need to be setup
- Pegging, Detailed pegging, Gating Factors, Sales Order Confirmations, Constraint Forecast and Deployment Status for Stock Transfer
Requisitions are always calculated for the complete network
- Sales Order Confirmations or Constraint Forecast might change in other subnetworks if demand situation or demand prioritization changed after last planning run

Lock granularity remain on complete network

Subnetworks are only supported for Downstream planning

- Upstream Supply is considered as fixed and constrained. There is no option to consider upstream supply as infinite as it would be needed for upstream planning

No option to ignore or prioritize Downstream Demands

- Downstream demands are handled as fixed dependent demands in pre-allocation segment. Prioritization by date, time together with all other demands in the pre-allocation segment.
**Component Validities**

Component validity determines the time range when PDS components should be used for production as per your processes. Together with the BOM explosion rule applied to your production data structure, it allows you to improve the accuracy of your supply chain planning, helping you to assess the operational and financial impact of BOM changes.
Demo Data
Demo Data – Source of Supply Selection

Inbound Quota:
Weekly quota profile

- FA71 (80%)
- FA72 (20%)

Alternating Source of Supply:
Alternating Profile for specific prio

- PDS 001
- PDS 002
Demo Data - Subnetworks

Subnetwork
Two subnetworks:

- Distribution Network:
  - DEMO_DC_Phone_A

- Production Network (Production + Procurement Planning):
  - DEMO_FA71 +
  - DEMO_VH71
Use subnetwork + switch off constraints (e.g. lead time constraint)

Step 1:
- Demand Propagation
- All subnetworks
- Constraint(s) off

Step 2:
- Subnetwork by subnetwork (e.g. downstream)
- Constraint(s) on
- Resolve issue(s)
Component Validities

Component validity determines the time range when PDS components should be used for production as per your processes. Together with the BOM explosion rule applied to your production data structure, it allows you to improve the accuracy of your supply chain planning, helping you to assess the operational and financial impact of BOM changes.

Support for PDS components that replace each other in a manufacturing process

BoM explosion date will determine which components are considered for planning either at start or at end of planned order

OBP Planning Runs will consider the BoM component validities and explosion rule to calculate the dependent demand of the right components
Demo Data - Component Validity

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DC72

FA71

FA72

VH71

S1

S2

S3

CUST 01-03

DEMO_CPU_A

DEMO_Packaging_A

DEMO_BulkPhone_A

DEMO_CPU_A

DEMO_BulkPhone_A

DEMO_Packaging_A

replacement

10:1

DEMO_Packaging_A

DEMO_BulkPhone_A

DEMO_Packaging_A

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Long Term Roadmap for Operational Supply Planning
Operational Supply Planning – Key Investments in 2020

Functionality
- Enhanced deployment planning
- Component validities
- Capacity consumption at start
- Goods issue time

Harmonization
- Configurable data model
- Real-time Integration

Flexibility
- Interactive planning
- Navigation from Control Tower and to ERP
- Planning in subnetworks

Planning Processes
- Synchronized planning (connecting IBP and S/4 ePPDS)
- Order-based Demand-Driven MRP
- Characteristics-based planning (Customer Engagement)

Simplification
- Switchable constraints
- Supply planning as planning run
Important Consulting Notes

- [2640432](#) - Details on Restrictions for SAP IBP Order-Based Planning
- [2776077](#) - Order-based planning using time-series based forecast consumption operator
- [2602733](#) - Handling of Safety Stock and Safety Days of Supply
- [2633495](#) - Demand attributes in IBP for order-based planning
- [2680555](#) - Usage of planning results from time-series-based supply planning in order-based planning
- [2479514](#) - Sample IBP SDI integration (File Adapter)
- [2680725](#) - Process orders in IBP order-based planning
- [2600836](#) - Gating Factor Information
- [2866791](#) - Subnetworks in IBP Order-based planning
- [2922352](#) - Numerical issues in Supply or Deployment optimization
- [2800780](#) - Additional parameters for order-based planning
- [2589262](#) - Analyze Supply Usage (Pegging) in Excel UI: Tips to configure a custom ASU planning level

Integrated Business Planning for response and supply – available scope items
- IBP for response and supply – supply review – optimizer
- IBP for response and supply – supply and allocations planning – heuristic
- IBP for response and supply – supply and allocations planning – optimizer
- IBP for response and supply – response planning
- IBP for response and supply – deployment planning
- IBP – order-based planning inbound integration with SAP S/4HANA
- IBP – order-based planning outbound integration with SAP S/4HANA

Where to get it:
http://help.sap.com/ibp
http://rapid.sap.com/bp/rds_ibp

To learn more about order-based planning in SAP Best Practices for SAP IBP:
Webinar 28th of May, 2020
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Thank you.

Contact information:

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