SESSION 3510: SAP Variant Configuration / IPC 101

Trips & Tricks, Best Practices
Daniel Naus
ABOUT ESPLINE

- Developer of a SAP VC Tools
  - SAP VC Extraction solution for 3 global configurator suppliers
  - Integration of Sales Docs to SAP
  - Model Health Check, Model View, Model Compare, Model Testing
  - PMEVC integration
  - Integration with automated VC Testing solution

- Consulting / Software company focusing on SAP product configuration & pricing since 2006
  - 15+ years experience with SAP-VC and IPC
  - 20 years experience with 3rd party configurators

- Developer of SAP VC Tools assisting modeling teams
- Offering unique SAP VC / IPC Training
- Integration with SAP is certified

SAP Partner
LEARNING POINTS

SAP Variant Configuration
- What is VC (for)?
- High level process overview
- Benefits / who uses it
- Master Data Supporting VC
- Tips
  - Material-Class Allocation
  - Constraints and why not fear them
  - (p)functions and why not fear them
  - Classification in BOMs

SAP Internet Pricing & Configuration
- What is IPC (for)?
- IPC and VC
- How to get started with IPC?
- IPC User Interface
- Solution Sales Configuration

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WHY THIS PRESENTATION?

- Sharing answers to very common questions.
- Quick review of the major areas with pointers for more info.
- The art of possible – “who knew you could do that with VC / IPC?”
- OSS notes references throughout – the “real” manual.
- Latest developments @SAP and partners
ORDER TO CASH PROCESS

SAP Variant Configuration

Schedule

Production

Cost

Pick

Pack

Sales Order

Collect Cash

Ship

Invoice

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PRODUCT OPTIONS FOR CONFIGURATION

Acme Bike Company

Purpose
- Road
- Mountain
- Tandems
- Touring
- BMX

Color
- Red
- Blue
- Green
- Black

EXTRAS
- Handlebar
- Baby seat
- Tape Handlebar
- Fenders
- Chain

Brakes
- Mechanical
- Hydraulic
- Pedal

Services
- Cleat Fitting
- Bike Fitting
- Tandem Fitting
- Bike Fitting

Alignment
- Rear Triangle
- Rigid Fork
- Frame

Bike Rental
- Sport Touring
- Road
- Tandem
- Mountain

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Create Standard Order: Configuration

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sold-to party</td>
<td>3400 Hershey Corporation</td>
</tr>
<tr>
<td>Material</td>
<td>WP-940 Web Phone 940</td>
</tr>
<tr>
<td>Quantity</td>
<td>1 PC</td>
</tr>
<tr>
<td>Req. deliv. date</td>
<td>11/17/2011</td>
</tr>
</tbody>
</table>

Product: Web Phone 940
Total Net price: USD 74.00 / 1 PC
Status: The configuration is consistent and complete

**General**

- **Screen**: LCD Screen
- **Communication technology**: Digital
- **Web Phone Options**
  - Cable for connecting monitor
  - Voice mail
  - Camera
- **Web Phone Installation**: No

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BENEFITS OF VARIANT CONFIGURATION

- Massive Reduction in Master Data TCO
  - One VC product model defines all variations of product content and pricing.

- Ability to offer more choice to the customer
  - VC characteristics can capture additional service, software, customer specific information.

- Tremendous reduction in error rates / returns
  - Examples – double digit error rates to < 1% on shop floor.

- “Codifies” and consolidates product knowledge
  - One master for product definition, drives data quality
Approx ~2000-3000 SAP Customers worldwide

Some of the largest SAP customers in numerous industries

- High Tech: IBM, HP
- Industrial Machinery & Components: Siemens, Caterpillar
- Automotive: German auto makers, Tesla
- Healthcare: Philips
- Furniture: Steelcase, Hayworth, Kimball
- Aerospace: Bombardier
- Mills: Cascades
- Other verticals: Software, Telco
VARIANT CONFIGURATION ELEMENTS

Material Master
BLACK

Classes & Characteristics

Tables

Conditions

Object Dependencies:
Selection Conditions, Procedures, Constraints

BOM & Routing

Functions
MASTER DATA ENABLING VC

Object Dependencies

Procedures (P)
Selection Conditions (S)
Constraints (C)
Tables
Price Conditions

(P, C)
(P, S)

Classes

(P, P)
(P, P)
(P, P)

BOM

Configuration Profile

Material Master

Routing

Routing

PRT

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Less known technique to set / restrict values
- Best technique if all you need is restrict / set values of shared cstics statically
- No overhead, no fuss
Most VC implementations use constraints sparingly if at all

- “thanks” misleading training / help, questionable design patterns
- they just “look” complicated!

Objects: truck is_a (300) MY_TRUCK
Condition: truck.engine = ‘V8’
Restrictions: truck.suspension = ‘super_duty’
Inferences: truck.suspension

But ...
- They are well-behaved (do their own cleanup)
- Scale well and allow you to focus on a single situation / pattern
- Are easily understood be engineers (not programmers)
Use the right tool for the right job and sometimes ABAP / Java is the right tool - not VC.

**Good use cases**
- Parsing strings / substring logic
- Engineering calculations that can be encapsulated / service enabled
- Intentionally deleting user entered cstim values
- Complex domain restrictions
- Smart defaulting - e.g. smallest value larger than restriction
- Also good for repetitive pricing logic

**Important things to note**
- Use official SAP interfaces (both ABAP / Java) and you’ll be safe
CLASSIFICATION IN BOMS IS YOUR FRIEND!

- Being organized sometimes trumps being clever
- Classes in BOMs (class types 200 and 300)
  - Excellent for shared items where “one out of many” is picked
  - Single class replaces many bom items and selection conditions

Beware of:
- Excessive use of classification can be harmful
- Very careful with unspecified values – VC / IPC treat this differently
WHAT IS IPC?

- **Highlights**
  - IPC = Internet Pricing and Configuration.
  - SCE = Sales Configuration Engine, SPE = Sales Pricing Engine
  - SAP Application Platform (AP) = SCE + SPE + Tax Engine
  - Proven, stable, robust, high performance configuration and pricing engine from SAP since ‘98.
  - 1000+ implementations.

- **Scenarios**
  - CRM: Online, E-Commerce, Mobile Sales
  - ERP: ERP E-Commerce, ECC (OSS 855860)
  - SRM, SCM, Industry solutions – Vehicle Management, AFS, etc.
  - Solution Sales Configuration (SSC)

- **Tips**
  - If you are considering an e-commerce implementation with SAP backend, do not leave IPC off of your short solution list!
WHAT IS IPC?

- 1996 - SAP starts development of SCE (SPE in 1997)
- 1998 - SCE 1.0
  - initially without pricing engine, breaking ground work with Java
- 2000 - IPC 2.0
  - with Sales Pricing Engine, offered for standalone scenarios only
- 2002 - IPC 3.0
  - IPC released as CRM 3.0 component, support for Java 1.3.x
- 2004 - IPC 4.0
  - Part of CRM 4.0 also “ISA R/3 Edition”, support for Java 1.4.x
- 2006 – IPC 5.0 also called AP 7.0
  - integrated as part of the 2004S / 7.0* SAP NetWeaver
  - IPC only supported on SAP Virtual Machine Container (VMC)
compare IPC & VC
- IPC = VC: 95%+ of VC syntax and behavior
- IPC > VC: advanced mode, user interface, performance & scalability
- IPC < VC: preconditions on restrictable cistics, interval vals in tables
- (In) famous IPC delta list (go to SAP help / ERP / ECC / LO / VC / ERP Master Data and Configuration Engine), OSS: 837111, 664274

Highlights
- IPC uses an optimized “snapshot” of VC data – knowledge base.
- Runtime version – T’s CU31-6, KB check in CU34/35 or PMEVC.
- AP or ERP: CFG_*_INITIALISE_DB, CFG_*_REQUEST_DB

Tips
- Think what to include in KB (all or model by model) – OSS 930440.
- Runtime version – T’s CU31-6, KB check in CU34/35 or PMEVC.
- Exchange KBs - CU36 TXT, XML format (OSS 1436337), COM_CFG_DB_DOWNLOAD_KB, statistics OSS 1248104
HOW TO GET STARTED WITH IPC?

- Two pieces – the engine and the user interface.
- How to get it?
  - You already have the engine! Installed standard on ECC 6.0 and CRM (even older versions). OSS 848412 (installing on Netweaver only).
  - UI – download from OSS (modules SHRAPP, CRMDIC), run on J2EE.
- How much does it cost?
  - IPC is “free” - no special license for using IPC.
- What about?
  - Do I need to have SAP CRM to use IPC? No!
  - Have to buy new servers? Maybe, IPC leverages ECC / CRM HW.
  - Do I have to maintain two models? No!
  - Do I have to work with multiple user interfaces? No (qualified).
IPC IS JAVA so how come it runs ABAP?

- Virtual Machine Container – part of Netweaver ABAP
  - SAP custom Java VM with shared memory and light-weight VMs (based on Java micro). Efficient communication with ABAP.
  - Great idea whose time has come and went ...
  - IPC is the only application running on the VMC

- Tips
  - SSC runs IPC within J2EE, not VMC, better performance & scalability

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Highlights

- Delivered as J2EE Apps (SHRAPP, CRMDIC), runs on SAP J2EE.
- Web based, now rather “old-fashioned” (page refresh).
- Quite customizable (XCM, biz object layer, JSP changes).

Nice features to know about

- User messages, UI Designer, snapshot compare, (dynamic) images, conflict handling, customer “tab”

Tips

- Want AJAX with IPC UI? Contact ConfigAir, SAP custom development
- Want 2D/3D visualization? Contact ConfigAir, Fysbee, Sybit, itelligence, ...
- Changing CSS – OSS 1284244
- Integrate Images - CFG_DOCUMENT_PUBLISHER
- Easy – user buttons, radio buttons/drop-downs,
- Good docs: ISA Development and Extension Guide and Tutorial
- New AJAX configurator UI in the SAP Web Channel Product
### Characteristics

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<table>
<thead>
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<tbody>
<tr>
<td><strong>Application</strong></td>
<td>Road</td>
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<tr>
<td><strong>Type of Loading Arm</strong></td>
<td>Top</td>
</tr>
<tr>
<td><strong>Loading Mode (Load / Unload)</strong></td>
<td>Loading</td>
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<tr>
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<td>EW Standard</td>
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<tr>
<td><strong>Safety Access</strong></td>
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<td><strong>Product</strong></td>
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<tr>
<td><strong>Flowrate UOM</strong></td>
<td>Gallons per Minute</td>
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<tr>
<td><strong>Flowrate</strong></td>
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<tr>
<td><strong>Viscosity</strong></td>
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<tr>
<td><strong>Design Pressure UOM</strong></td>
<td>Pounds per Square Inch</td>
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<tr>
<td><strong>Design Pressure</strong></td>
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<tr>
<td><strong>Temperature UOM</strong></td>
<td>Fahrenheit</td>
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<td><strong>Minimum Design Temperature</strong></td>
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<tr>
<td><strong>Maximum Design Temperature</strong></td>
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</tbody>
</table>
SAP PRODUCT CONFIGURATION & MOBILITY

- **SAP**
  - Port of SAP IPC to Android
  - SAP Custom Development

- **Partners**
  - ConfigAir Mobile Sales iPad / Android
  - Configit windows based
  - Others
IPC Advanced Mode Highlights

- Original next generation configuration engine
- For problems big (solutions) and small (CRM PME).
- Turn it on in ECC using CFG=SCE user profile parameter

Major features

- ADT = Abstract Data Type = pointer
- Multiple instantiation of BOM items
- Resource provision and consumption

SSC Additions

- Solution Modeling Environment in Eclipse
- KB decomposition, Order Mapper and much more..
VC / IPC Novice

- There is much to learn about VC / IPC, but this was a good start. Need to attend more ASUG sessions and dig into the references / OSS notes listed.
- Who knew SAP could do all that?

Existing VC / IPC User

- Ah, I did not know about that tip / trick, let me try it at home.
- Glad to see so much good activity (CDP, partners) around an “old” subject – my job is not likely to go away anytime soon!
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