SmartVista on NonStop

Latest developments and enhancements

Stephen Peters
BPC Global Head of Product
BPC Banking Technologies
Overview

- BPC Banking Technologies is a globally recognized leader in e-payments software development
- Developer and distributor of SMARTVISTA® - a complete platform for transaction processing, card and merchant management and e-payments
- Global presence with offices in 15 countries – 500 FTE
- Rapidly expanding client base – 143 clients in 50 countries in 5 continents – including multinational financial institutions, governments and large corporates
- Financially strong and profitable with multiple revenue sources
BPC Banking Technologies
Global Customer Base

5 continents, 49 countries, 143+ clients, 200k+ ATMs, 1m+ POS, 180m+ Cards
BPC Solutions Today

- Financial Institutions
- Telecom/Mobile Operators
- Micro-finance Organizations
- Fuel companies
- Airlines
- Customs
- Railroad
- National ID
- And many more
SmartVista Functional Overview

• Complete international payment scheme support for
  – Visa, MC, DC, Amex, CUP, JCB
• Switching and routing engine
  – Flexible routing rules
  – Extensible routing table
• Stand-In authorization module
  – Flexible authorization rules
  – SAF engine
• Electronic channel formatters
  – Kiosk and Self-Service devices connectivity
  – Mobile provider and mobile operator interfaces
  – USSD and SMS banking adapters
  – Internet banking portal interface
  – e-Commerce merchant interface
  – e-Wallet host interface
• ATM management including online monitoring
  – NDC/DDC/Wincor
  – Full-fledged monitoring including ATM replenishment features
• Traditional channel formatters
  – ATM and ATM Hosts connectivity
  – POS and POS aggregator connectivity
  – NFC support
• Notification engine
  – Email
  – SMS
• Switch and Core Banking adapters
  – Online Core Banking interfaces
  – Online switch interfaces
• Online fraud prevention and monitoring interface
  – ISO based connection to external solution
  – Internal rule based engine
• Transactions postings engine
  – Transaction extracts with multiple extracts per day
  – Includes forced POS cutover batches
• Online fee calculation with currency conversion capability
  – Pre-auth fee calculation
  – Online currency conversion
  – DCC features
• HSM interface
  – Online interfaces to HSM devices
  – Master control process for multiple HSMs
• P2P/EFT module
  – Funds transfer module
  – Payment service hub features
  – Multi-auth and split transactions
• Standard reporting module
  – Jasper Reports integrated engine
  – Frozen Queries ad-hoc reporting engine
• Web interface layer with web services
  – Full-fledged remote user access layer
  – Web services for integrations
  – XSLT transformation engine
• Master data update module
  – CAF and PBF updates
Architectural Innovations
Migration History and NonStop Architecture

- **Step 1.**
  - Database migration from Oracle/DB2 to SQL/MX
  - C-code compilation using OSS API
- **Step 2.**
  - Moving from UNIX Queues to TS/MP (async->sync)
  - Process pairs for mission critical processes
  - TMF for atomic transactions and recovery
- **Step 3.**
  - Benchmark in Böblingen and Palo Alto
  - RDF for data replication between sites
SmartVista “classic” message transporter
What About Performance on NonStop?

![6,128 TPS Authorized](Image)

<table>
<thead>
<tr>
<th>Model type</th>
<th>HP NonStop Blade Server</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine type</td>
<td>NB54016</td>
</tr>
<tr>
<td>Number of CPU cores</td>
<td>16 processors</td>
</tr>
<tr>
<td>Processor type</td>
<td>Intel® Itanium® processor 9300</td>
</tr>
<tr>
<td>CPU clock rate</td>
<td>1.66 GHz</td>
</tr>
<tr>
<td>RAM</td>
<td>Total 512 GB</td>
</tr>
<tr>
<td></td>
<td>Each quad-core CPU has 32 GB memory</td>
</tr>
</tbody>
</table>
Technology Innovations
Tokenization service

- PCI DSS compliant without 3rd parties
Socket Preservation

- Increases availability of comms for the full application update
- Uses ACS Domain features for virtualization
- Builds process pairs for application comms
- Utilizes unique socket multiplication feature at CLIMs
Debug and Pilot Modes

- Uses Pathmon virtualization and ACS features
- Enables keeping different SV versions on the same machine
- Transaction restart/replay mode available
- For simulation/debug uses previously recorded packets
- QA made easy in the same environment
Transaction Router and Monitor

- Setup transaction workflow
  - Uses script language to define routing
- Supports online transaction monitoring and service availability
  - Endpoints
  - Transactions in-flight
  - Timeouts
- Protects transaction data
  - Fault tolerant on application level
  - Automatic rollback and restart
- Application and database level transaction management
  - Partial commits
  - Application level compensation logic
  - Alerts
Functional Innovations
Development Toolkit – Universal Formatter

- Channel converter for different formats
  - TLV
  - Plain text
- Different data for message building
  - User entered data
  - Transaction (and previous) data
  - Constants
- Data transformation
  - Formatting
  - Arithmetic/logic formulas
  - Various conditions
- Transaction matching and validation
  - MAC fields definition
  - Matching criteria
Development Toolkit – Java SDK

- Web services / SMPP / FTP / MQ / Files
- Message transformation using XSLT
- Spring based framework
- User defined adapters
Host Card Emulation

- Simplified business model - no need to perform integration with SIM provider or mobile device manufacturer
- High security and reliability levels of payment instruments’ issuing process reached by using the cloud-services along with persistent algorithms
- The cost of payment card delivery issued by HCE is several times lower than comparable products issued using a hardware equipment (SE/TSM)
- The ability of reusing existing SE/TSM environment for implementation the HCE solution
HCE Payment Process

- Digital signatures
- IP monitoring
- SSL/TLS encryption
- Regional limitations
- Fraud monitoring and prevention
- Personal data encryption
- User activity auditions
Biometrics

- Finger Print
- Finger Vein

- Branch or ATM enrollment
- Integration with 3rd party scanners
Fraud Prevention

Prepare transaction data for analysis
- Neural network
- Scoring engine

Transaction

Positive

Negative

Neural network VS Scoring engine

- Self learning mechanism
- Two models
  - Typical fraud behavior
  - Typical non fraud behavior

- Cardholder behavior model
  - Typical countries
  - Typical currencies
  - Typical MCCs
  - Average amounts

- Black & White lists
- Alerting
Strategic Roadmap
Using NonStop as a Payments Hub

Source: McKinsey analysis
Payment Hub Features

- Transactions
  - Card based
  - Account based
  - Mobile based
  - ID based (passport, social security, etc.)
- Support for biometric IDs, QR codes, Virtual IDs, ...
- Authentication services for ID based transactions
- Multi-bank clearing and settlement
- RTGS and ACH interfaces
- Real time fraud prevention
- Outsourcing capability, plugins and user exits
- Business Process Engine
Questions?

Stephen Peters
Neuhofstrasse 5a
6340 Baar
Switzerland
stephen.peters@bpcbt.com

Evgeny Kozhin
Bld. 2, 50A/8 Zemlyanoy Val St.
Moscow, Russia, 109028
kozhin@bpcbt.com