SmartVista on NonStop

Latest developments and enhancements

Stephen Peters
BPC Global Head of Product

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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

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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

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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

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Architectural Innovations

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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

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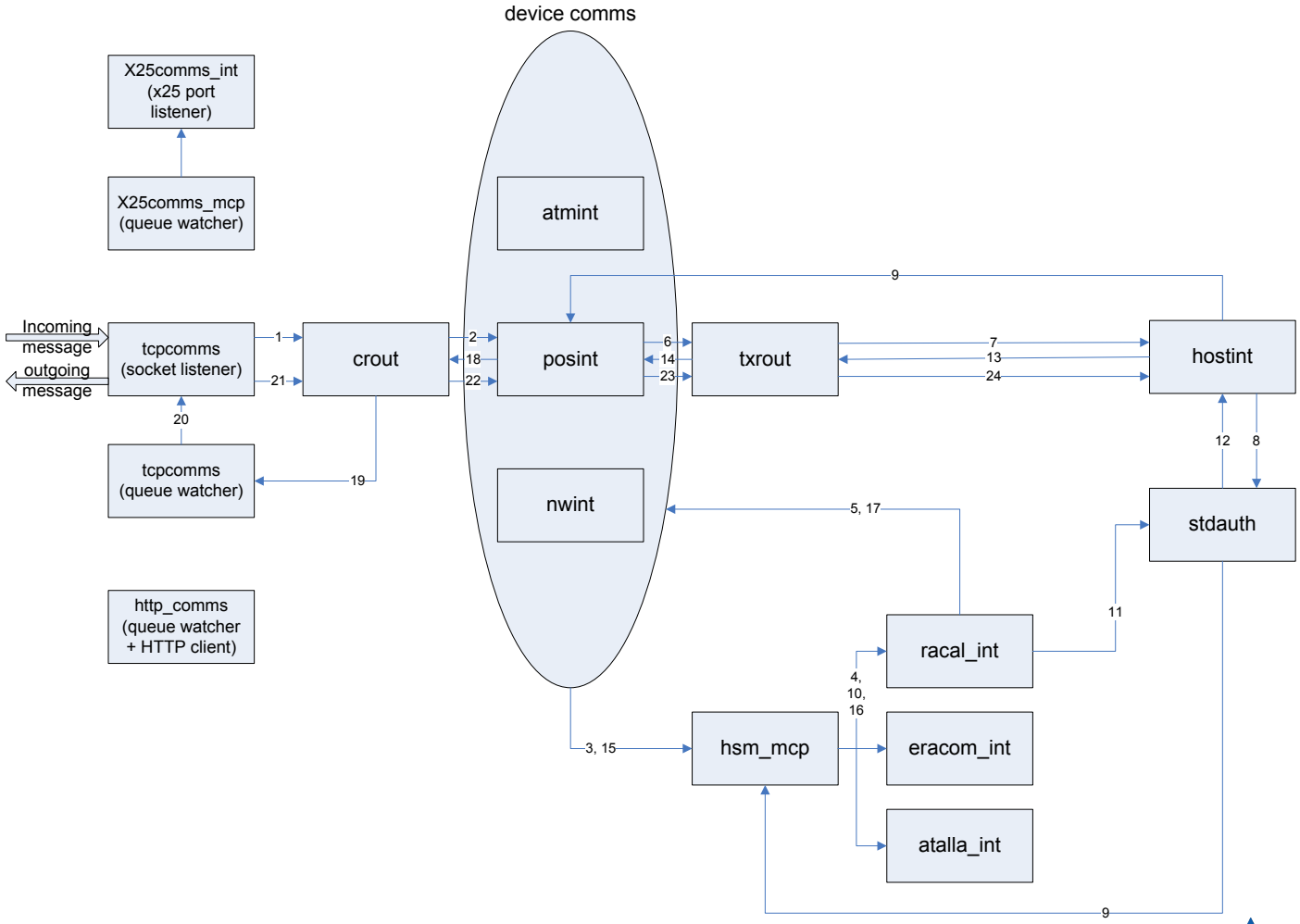
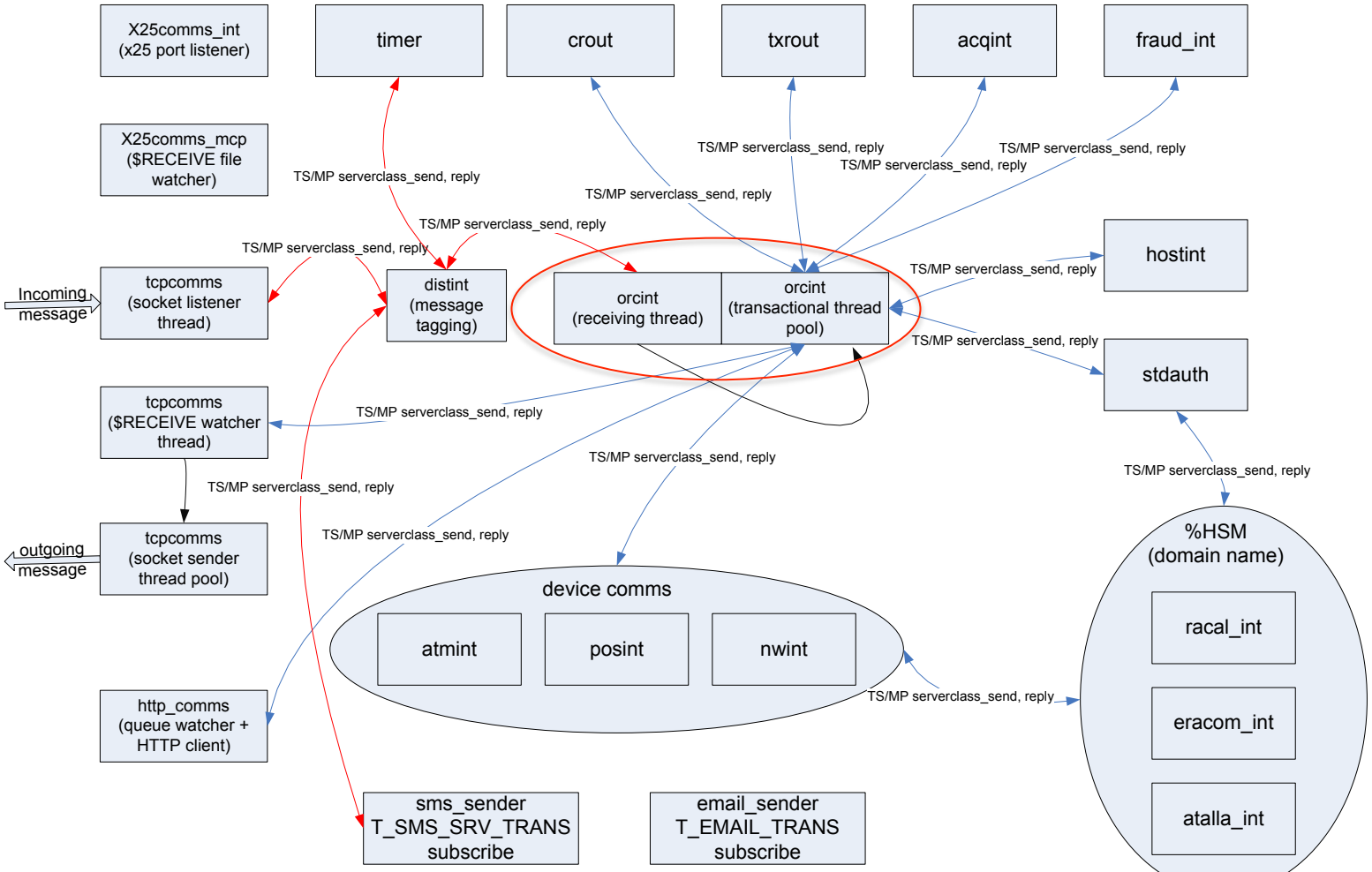
SmartVista “classic” message transporter



SmartVista Guardian Edition architecture scheme



What About Performance on NonStop?

6,128 TPS
Authorized

Model type	HP NonStop Blade Server
Machine type	NB54016
Number of CPU cores	16 processors
Processor type	Intel® Itanium® processor 9300
CPU clock rate	1.66 GHz
RAM	Total 512 GB Each quad-core CPU has 32 GB memory

Technology Innovations

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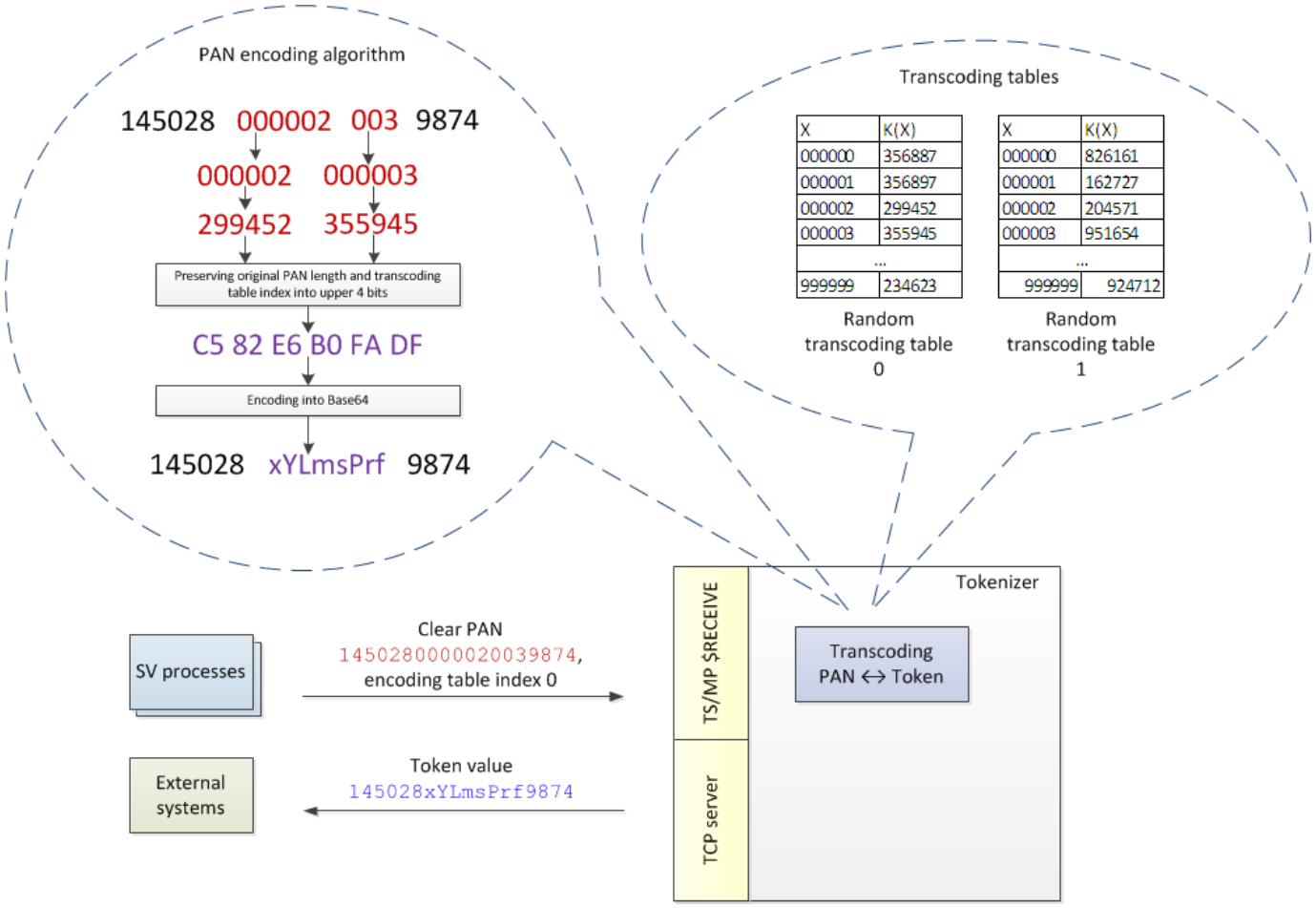
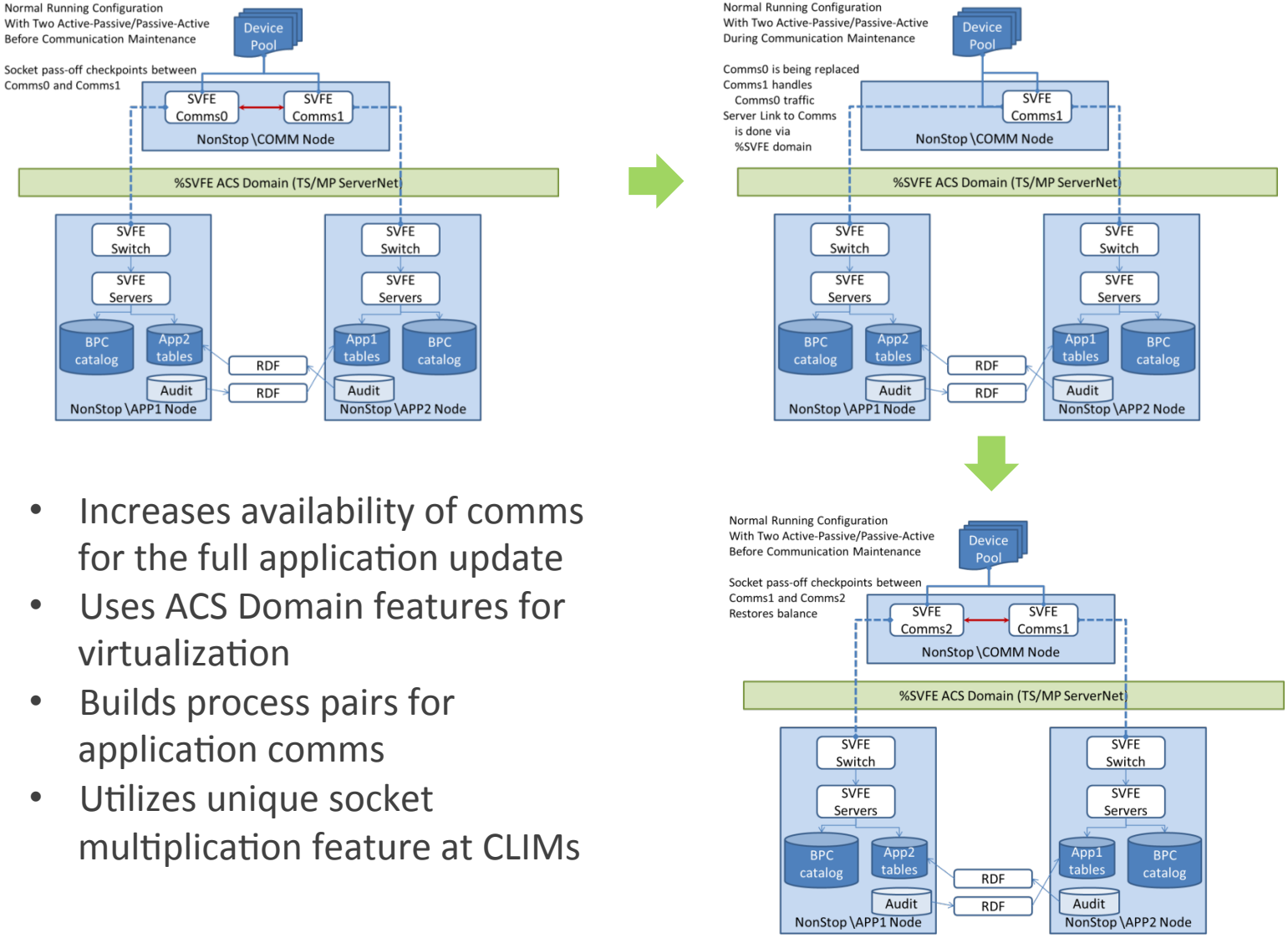
Tokenization service



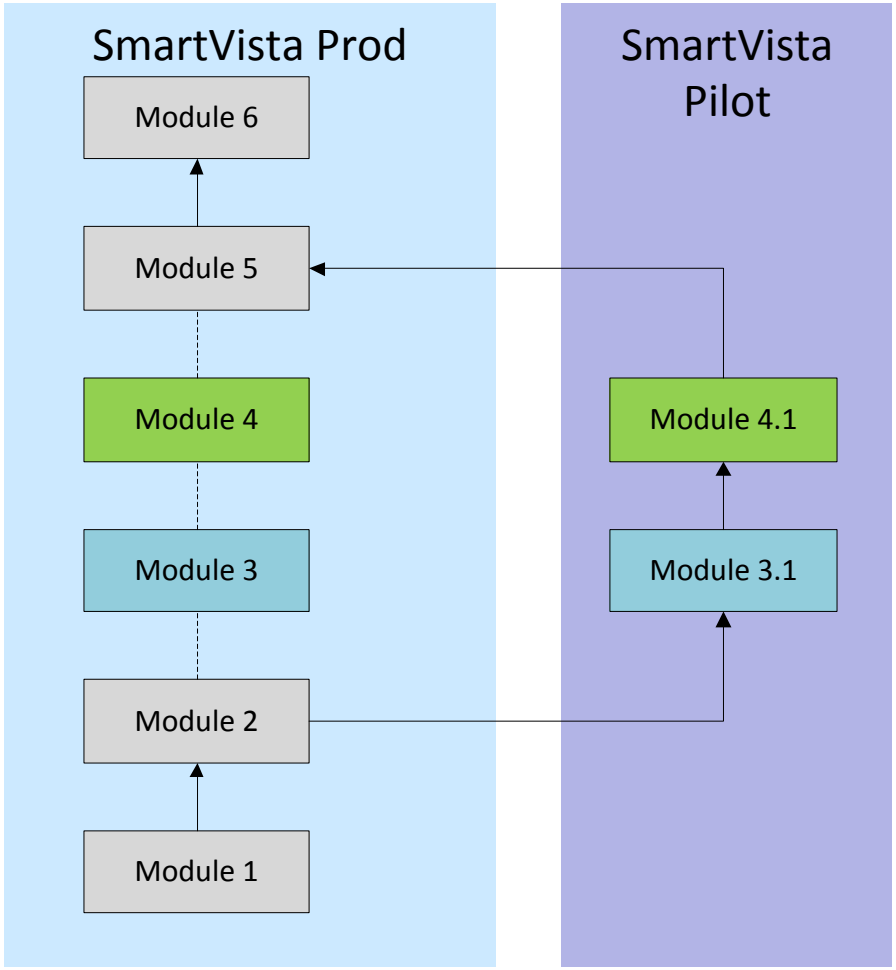
- PCI DSS compliant without 3rd parties

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

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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

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Functional Innovations

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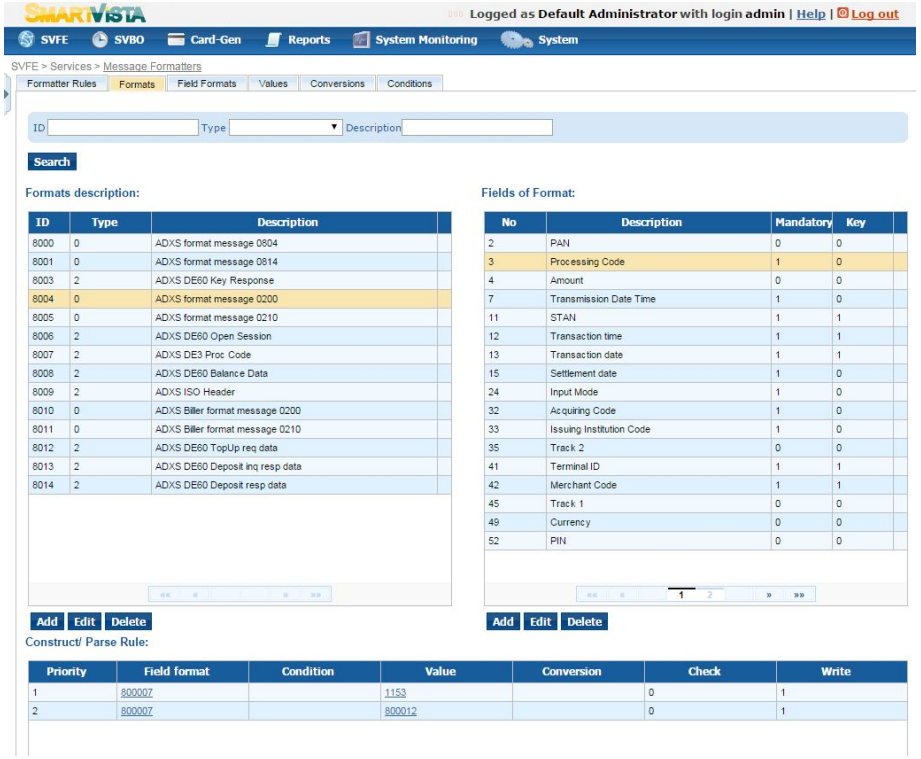
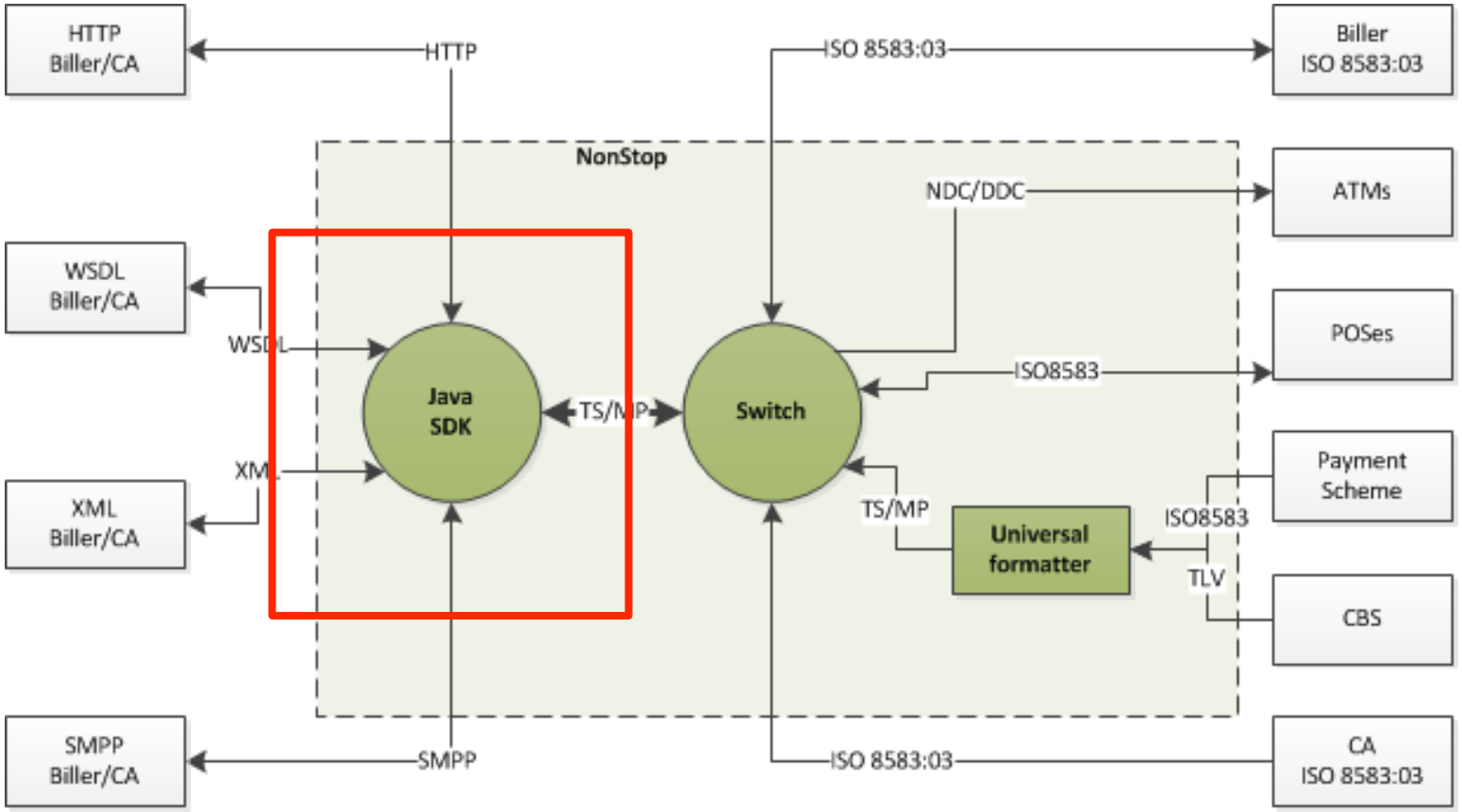
Development Toolkit – Universal Formatter

- Channel converter for different formats
  - ISO 8583:1987-2003
  - 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

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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

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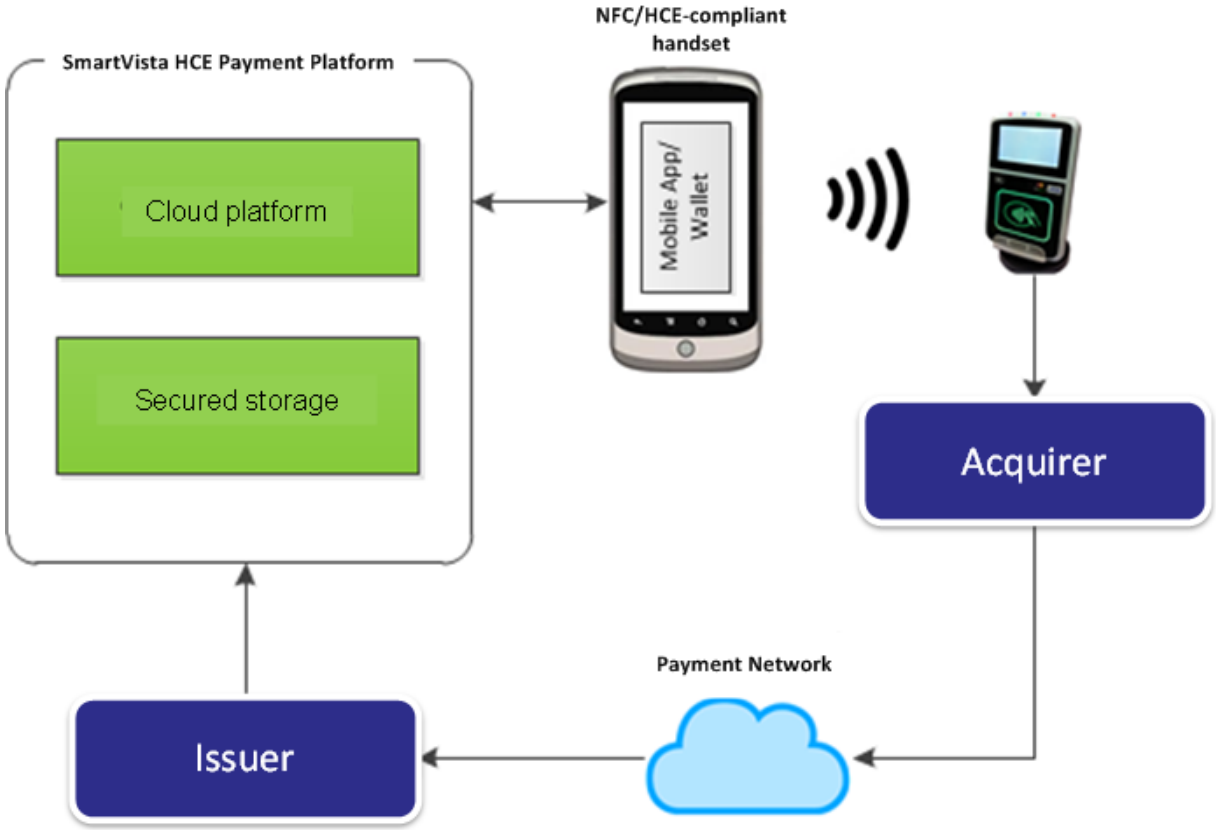
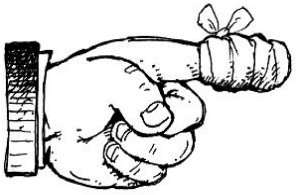
HCE Payment Process

- 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

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Fraud Prevention

Transaction

Prepare transaction data for analysis

- Neural network
- Scoring engine

Negative

Positive

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

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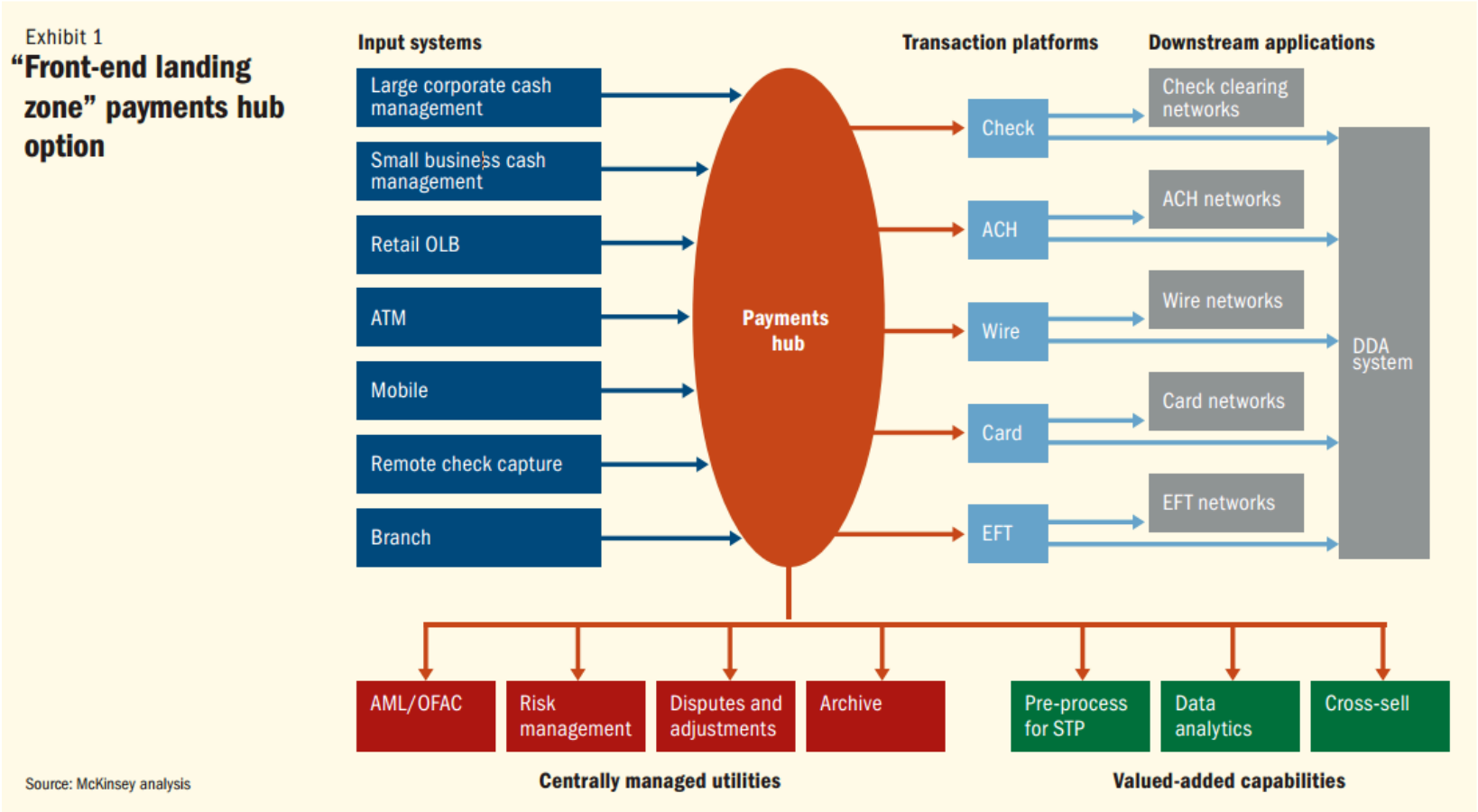
Using NonStop as a Payments Hub



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

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Questions?

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