Next-Generation Mainframe Management

MD520SN

zIIP Enabling CA-based Web Services: Tales from the Trenches

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Founder & CEO
HostBridge Technology

ca world®'11

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TECHNOLOGY

Abstract

Three undeniable facts confront System z customers today:

1. the move toward cloud-based architectures,
2. the cost-efficiency of System z specialty engines,
3. the future potential of the zEnterprise platform.

So how does an organization with a significant investment in CA Ideal™, CA Datacom® and CA IDMS™ apps leverage these trends to create new business value?

This question drove the development of the latest version of HostBridge's flagship product. This session will describe the HostBridge approach to creating zIIP-enabled web services and will include a number of customer scenarios that highlight real initiatives to integrate CA-based apps into a cloud-based world.

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Tales from the Trenches

- **Five real-world customer case studies**
  - Full service financial institution
  - Department of education
  - Public health care service administration (Medicare)
  - Life insurance, pensions and asset management (international)
  - Health insurance (international)

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Who Is HostBridge Technology?

- **CICS integration software company**
  - Founded in 2000 (but we go way back!)
  - We create and deliver software products that help System z customers reduce costs and make money
- **Serving large organizations worldwide**
  - BB&T, Navy Federal CU, Edward Jones, Clarke American, PACCAR, State of Arizona, Lockheed-Martin, NYCDOE, NISSAN, Aegon
- **CA and IBM Technology Partner**
  - Ready for SOA, Ready for Tivoli, Ready for Rational
  - CA Smart Certified: CA Ideal™, CA ADS™, CA Gener/OL™, CA Telon® Application Generator

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“Modernization” Approaches

SOA Enable / Integrate

Reuse / Enhance in Place

Re-Architect

Re-Host

“Modernization”

Replace

Migrate

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CA Ideal/Datacom Case Study

Swiss Healthcare Law

- Mandatory basic insurance
- Supplemental insurance for higher care levels
- eHealth records by 2015 – digital ID card

Insurance Industry Impacts

- No profit from basic insurance
- Profit allowed from supplemental insurance
- Care and insurance costs rising

Industry Challenge

- Find efficient solutions
- Cut costs
- Improve profitability

Technology Challenge

- Must leverage existing CA Ideal/CA Datacom investment!

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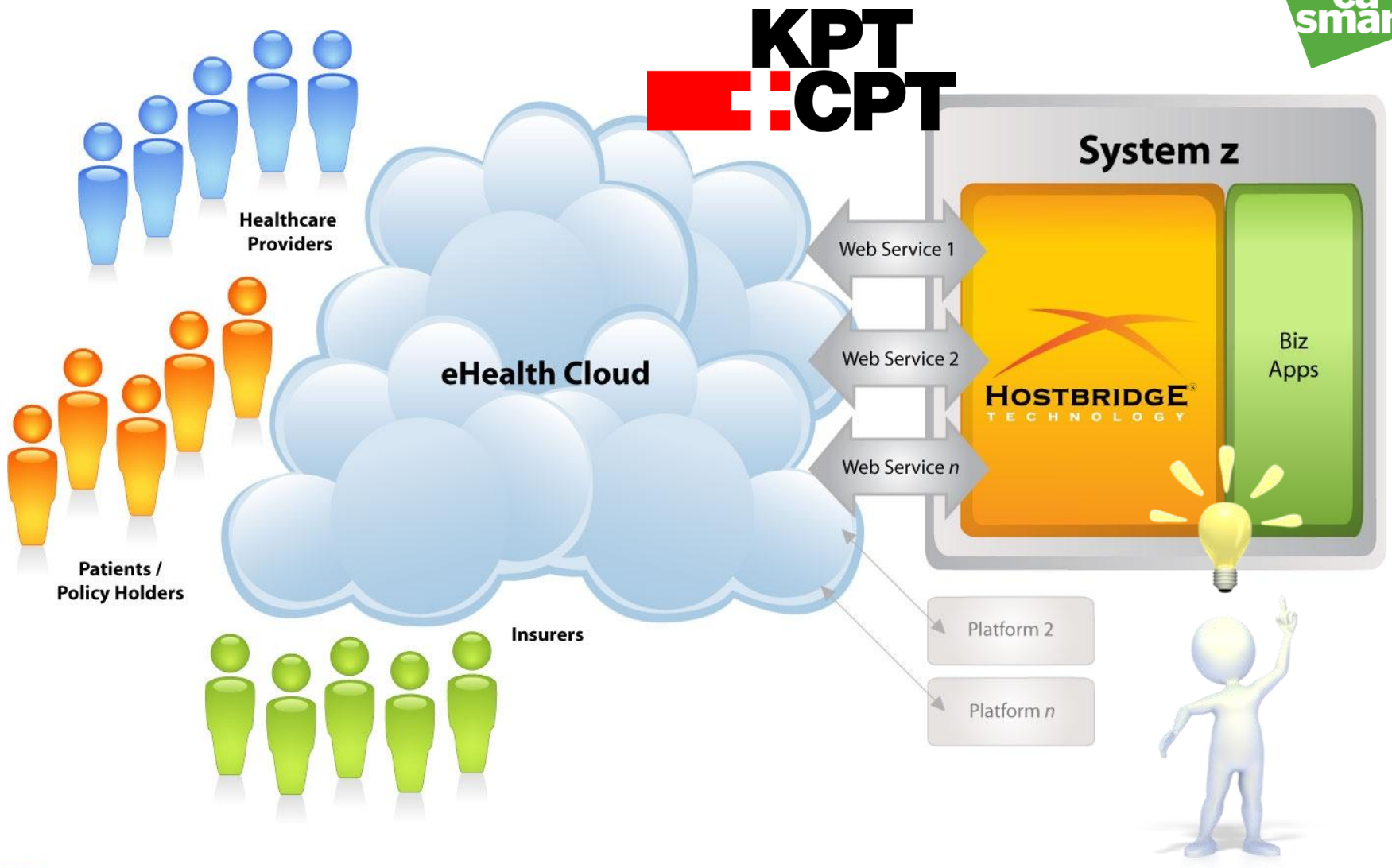
System z in an eHealth Cloud



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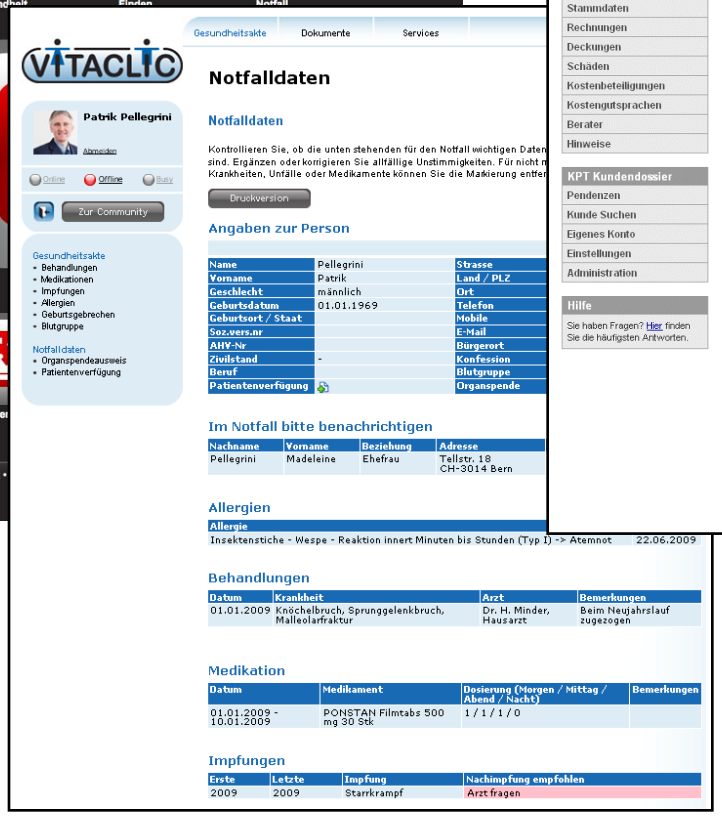
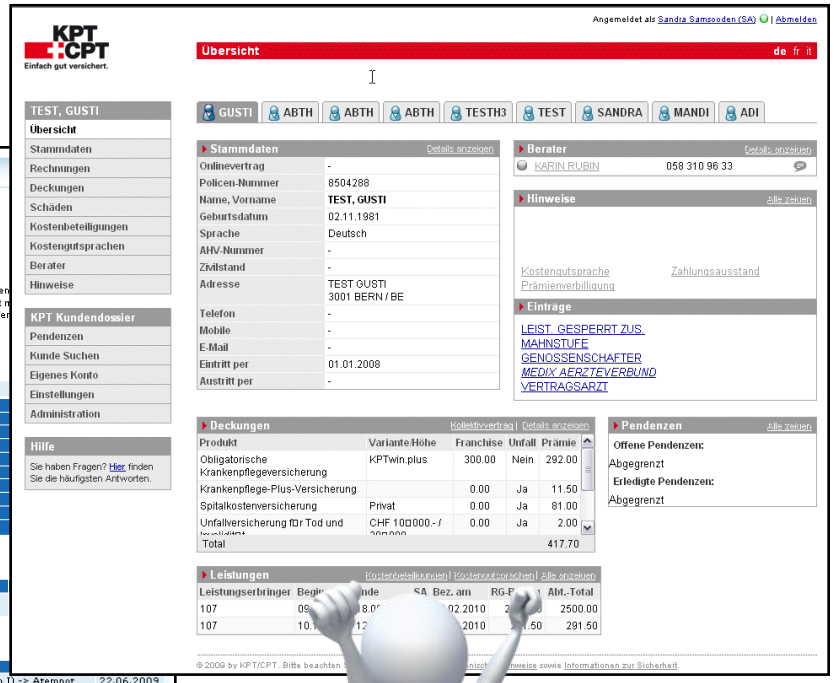
Cloud Applications

VitaClic (www.VitaClic.ch)



Onsurance (insurance intranet)



KPT CPT

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KPT/CPT Results

- **Business with the Cloud**
  - Community interaction, information sharing, user self-service for all
  - Lower operational costs
  - Stronger competitive position: industry-best service, first to market
- **Mainframe in the Cloud**
  - Modernize mainframe resources – wrap & reuse
  - Offload development, maintenance of user-facing systems to cloud
  - Reduce TCO for user-facing systems by 75%
- **HostBridge to the Cloud**
  - Reusable standards-based services
  - Rapid development, faster deployment
  - Scalability, performance, fidelity

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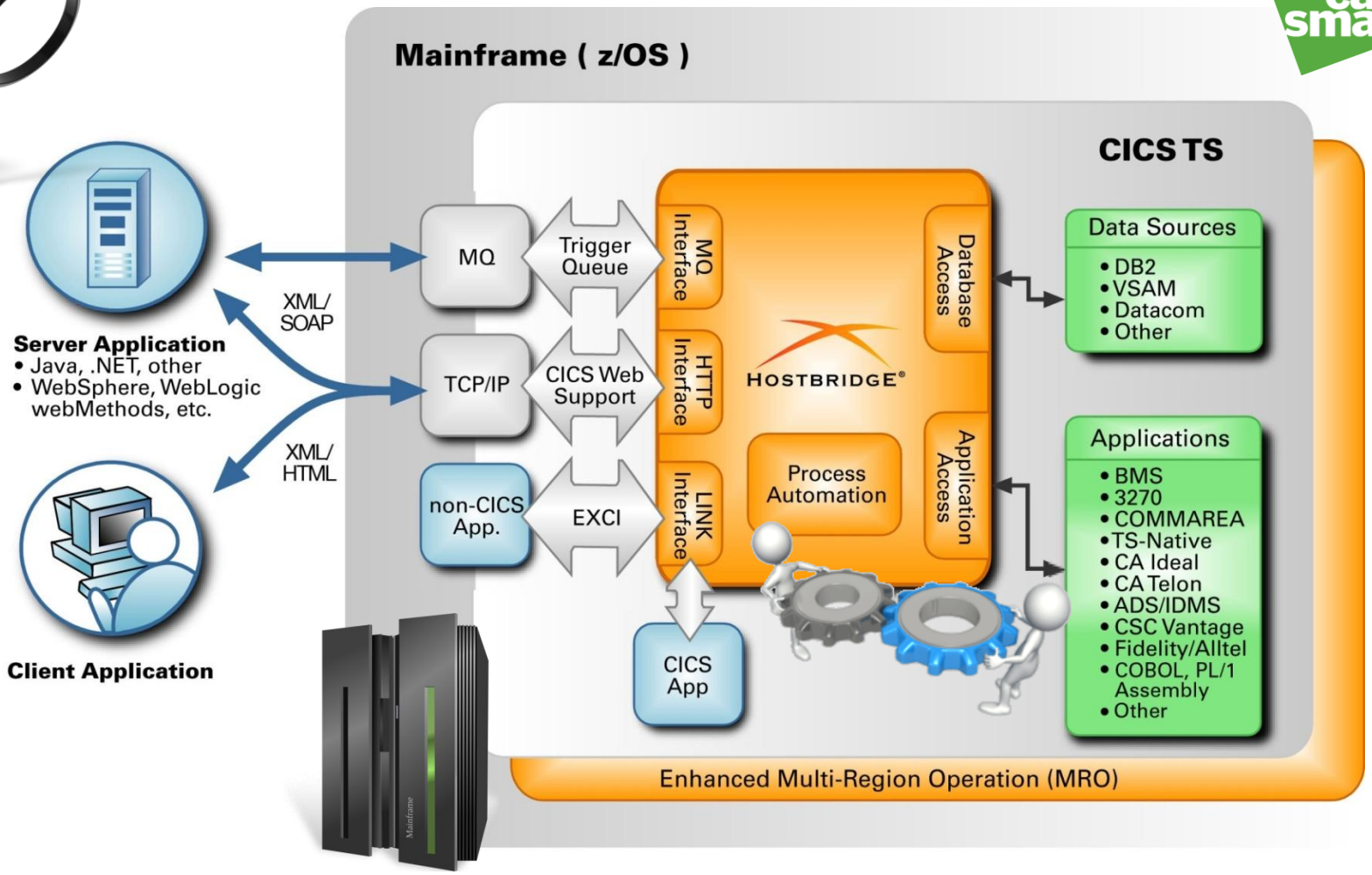
Integration Architecture



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Our Mission

- **Make System z apps more valuable**
  - Complex, high-volume environments
  - Deep integration with real-world apps
- **Provide extreme precision & control**
  - Micro-flow & service orchestration
  - Full SOA or light-weight WOA – you chose
- **Accelerate integration projects**
  - Standards-based; leverage existing skill sets
  - No changes to existing apps
- **Lower costs**
  - 100% of your integration services run on zIIP
  - Flexible licensing – from volume based (pay-as-you-go) to enterprise-wide licensing

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Customer Scenario

- **Background**
  - Life insurance, pensions and asset management products
  - Operations in 20+ markets
    - Americas, Europe and Asia
  - ~ 40 million customers worldwide
  - Recently downsized their internal IT group by 50%
    - Highly reliant on outsourced development
  - Long-standing investment in CA Ideal/CA Datacom
  - Implementing new BPM and CRM platform (Pega)
  - Strict architectural requirements
    - MQ Message Broker
    - Custom MQ message formats and defined XML schemas

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Customer Scenario

- **Motivation**
  - Recently received an estimate from their outsourcer for a simple CICS-to-Web integration project
    - Quote: 1+ person year of development!
  - Customer wanted faster, cheaper methodology to encapsulate CICS processes as reusable services
- **Outcome**
  - As part of initial POC project, HostBridge developed the CICS portion of the project in two days
    - MQ interface
    - XML document handling
    - CA Ideal transaction integration

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Customer Scenario

Customers

Agents

Employees

Pega
BPM
CRM

WebSphere
MQ
Message
Broker
(XML payloads)

IBM System z

CICS TS
CA Ideal
CA Datacom

HOSTBRIDGE™

Life insurance, pensions and asset management

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We Like to Pioneer

- **CICS integration using the 3270 Bridge and XML**
  (US, Canadian, EU Patents)
- **Enhanced MRO support**
  (overcomes "symmetrical AOR" assumption of 3270 Bridge)
- **Support for BMS PAGE, ACCUM and PAGING**
  (allows use of 3270 Bridge with broader range of apps)
- **Deep, map-level support for CA and other app platforms**
  (Ideal, ADS/IDMS, Telon, Gener/OL, CSC, Fidelity/Alltel)
- **Dynamic scripting inside CICS to implement services**
  (absolute control of service flows using JavaScript)
- **Eclipse as basis of HostBridge integration tooling**
- **zIIP enablement of LE-compiled code**
- **zIIP exploitation inside the CICS environment**

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System z Specialty Engines

- **What are they?**
  - "Specialty engines are processors that can help users expand the use of the mainframe for new workloads, while helping to lower cost of ownership."
    - IFL (Linux)
    - zAAP (Java)
    - zIIP (DB2; other IBM and ISV "eligible workloads")

- **Value Proposition**
  - Shift MIPS to less expensive (and possibly faster) engines
  - Reduce software costs related to GP capacity (IBM and ISVs)
  - Delay/Avoid GP capacity upgrades
  - Significant potential performance improvements (not "knee capped")

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zIIP Facts of Life

- **All workload must run as an "Enclave SRB"**
  - "Enclave SRBs … are preemptable, and can be run at a lower major dispatching priority than tasks in the same address space."
- **The rules for SRB's still apply**
  - Can obtain, reference, use, and free storage areas, but the areas must be owned by a TCB
  - Cannot issue SVCs except ABEND
  - Others
- **WLM Enclaves have a few implications**
  - Interaction with WLM Execution Delay Services
- **What an ISV can/cannot zIIP enable is governed by a license agreement with IBM**

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Integration Workloads

- **Integration workloads are different**
  - They involve orchestration of other application and data assets
  - They involve customer-written orchestration scripts, instructions or specifications
  - Some aspects are CPU intensive - others not
- **Implications**
  - What you can/cannot do under an SRB is important
  - Processor switching must be understood and optimized

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CICS Integration Workloads

- **CICS is a melting pot of apps and data**
  - Illustrates its strengths -- and what we are up against!
- **CICS has its own approach for separating program logic from CICS services**
- **CICS offers a growing degree of run-time "freedom"**
  - Open TCBs, OPENAPI, etc.
- **CICS still has rules, such as…**
  - All EXEC CICS commands must be executed under a CICS managed TCB
- **CICS owns its own relationship to WLM**
- **Thus… CICS integration workloads have very unique characteristics!**

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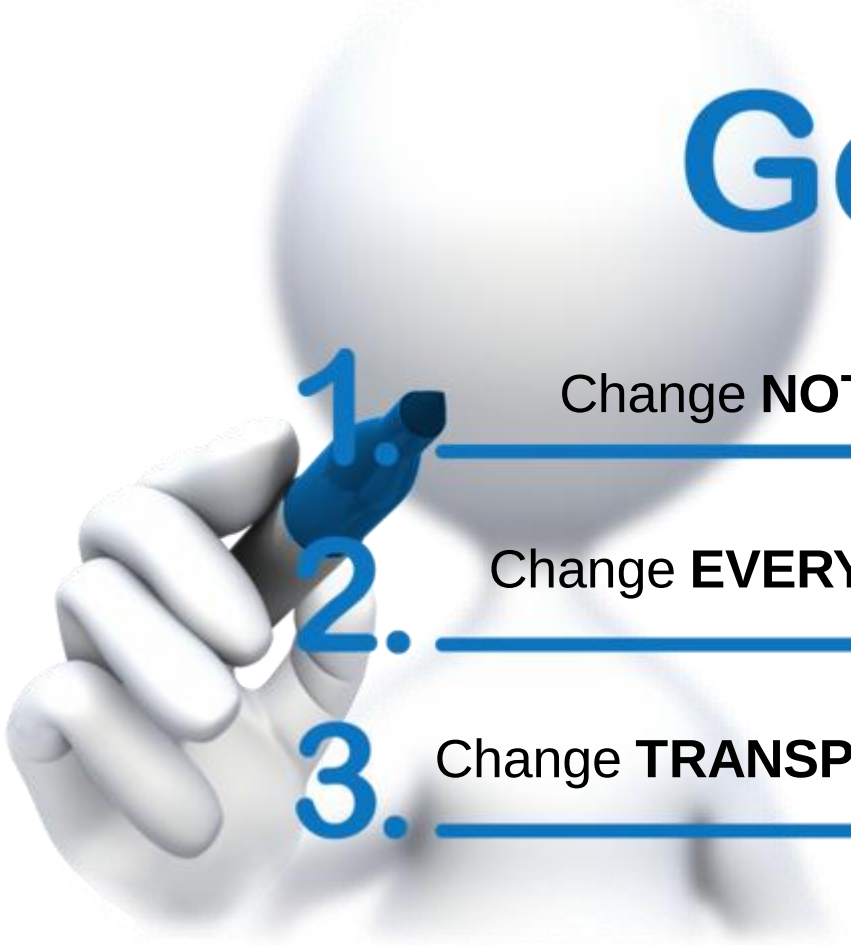
What Customers Wanted…



Goals

1. Change **NOTHING** (about your scripts)
2. Change **EVERYTHING** (about how they run)
3. Change **TRANSPARENTLY** (we handle the details)

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The Plot Thickens

- **By design, the HostBridge components that run on System z are written in multiple languages**
  - IBM Assembler (Low-level stuff)
  - IBM XL C/C++ (Bulk of product functionality)
  - IBM Enterprise COBOL (very limited; mgmt tooling)
- **Question: How do you zIIP enable a product that…**
  - Is intended for high-performance integration
  - Traditionally runs under CICS
  - Compiled with IBM LE compilers
- **And… complies with the IBM zIIP license!**

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Choices, Choices

- **Answer: Very nicely, thank you!**
  - CICS and zIIP are **NOT** antithetical
- **But there are some important design issues**
  - Where you do what you do is critical!
  - One choice is not best for all customers or workload cases
- **And, we need a vocabulary to discuss how programs run in relation to CICS**
  - "Under CICS" – code that runs inside a CICS address space and under a CICS managed TCB
  - "Inside CICS" – code that runs inside a CICS address space, but not under a CICS managed TCB
  - "Outside CICS" – code that runs in a private address space

(Don't worry, we'll take care of it.)

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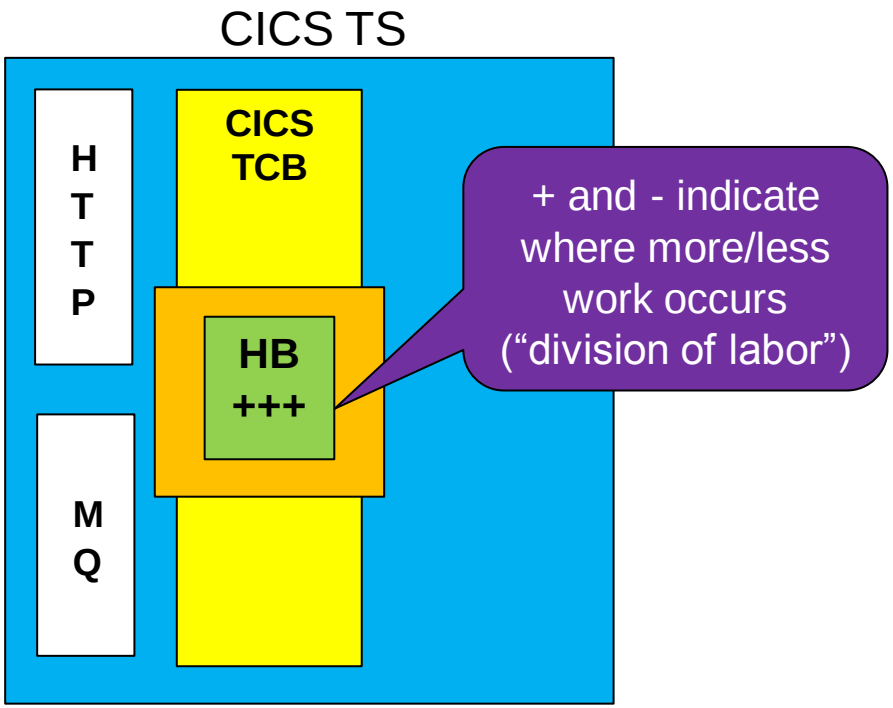
Without zIIP Enablement



This is the way HostBridge has always worked. It can still work this way if it's best for your integration requirements (e.g., super heavy on EXEC CICS calls and light on other processing). It can be controlled on a request-by-request basis.

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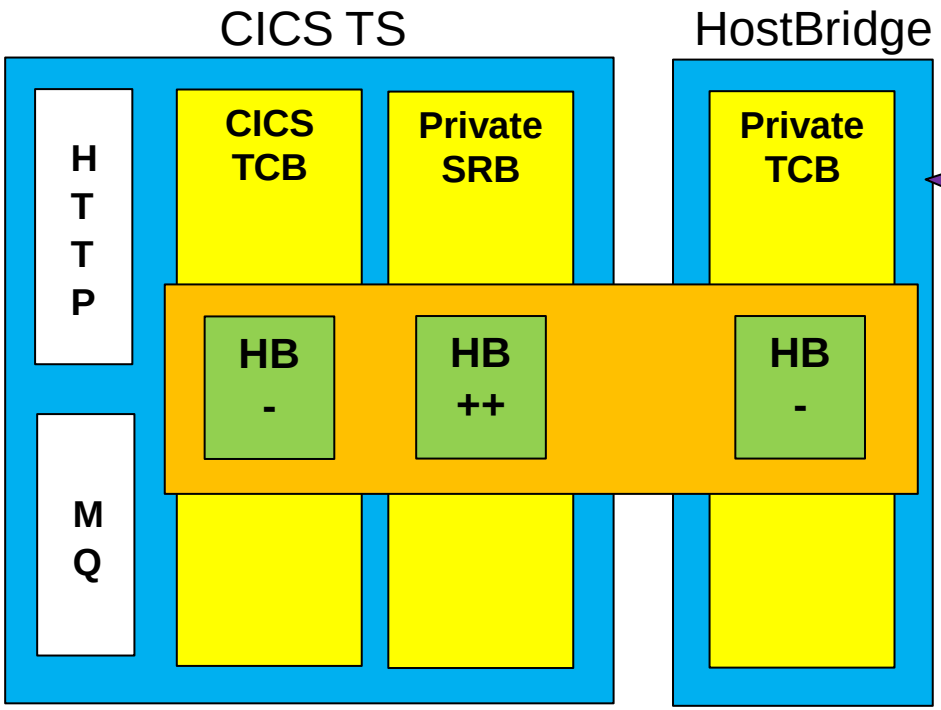
With zIIP Enablement



With zIIP support, a HostBridge address space is used to provide certain services.

The bulk of the action still happens inside the CICS address space, but runs on the zIIP. All EXEC CICS commands are serviced under a CICS TCB. If your GP's are "knee capped" (relative to your zIIPs), prepare to be blown away by the performance.

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HostBridge for zIIP

- **System z Requirements**
  - z9, z10, zEnterprise (and future models)
  - z/OS 1.9+ (any supported version)
  - zIIP Processor
- **HostBridge Requirements**
  - HostBridge V6.5+
  - CICS TS 3.1+
  - Scripts run on HB v6+ Process Automation Engine (“HBJS”)
- **Bottom Line**
  - 100% of HB Base product requests run on the zIIP
  - 100% of HB JavaScript engine runs on the zIIP
  - 100% of customer written scripts run on the zIIP
  - 0% of existing CICS apps run on the zIIP (that’s a good thing)

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Customer Scenario

- **Background**
  - Full service financial institution (worldwide customers; ATM's in all 24 time zones)
  - CICS-based banking applications
  - GPs not currently running at full capacity
  - zIIPs installed but not utilized heavily
    - GP's and zIIP run at same speed
  - Significant HB request volume (millions/day)
  - HB for zIIP installed to shift CICS integration/SOA workload from GPs to zIIP
  - Objective: reduce System z cost of ownership (current and future)

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Customer Scenario

- **Representative use case**
  - Customer logs onto Internet banking site
  - First page includes dashboard of accounts and balances (checking, savings, credit card, etc.)
  - Web activity causes real-time Web service request to be sent to HB (“Get Account Overview” service)
  - HB script orchestrates execution of several CICS programs to gather customer data
  - HB aggregates responses into a single response
  - Similar processing scenario when transaction driven via other channels (e.g., ATM)

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Customer Scenario

- **HB for zIIP Benefits**
  - Response-time improves due to orchestration inside CICS and on zIIP
  - Organization accruing substantial savings by shifting Web service and integration processing to zIIP
  - Lower processing cost (per transaction) means the organization can promote customer access to its services through an even broader array of channels (e.g., iPhone apps, etc.)
  - Customer experience can be enriched (and transaction volume increased)… AFFORDABLY!

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Customer Scenario

- **Background**
  - Department of Education (top 5 US city)
  - CICS-based apps used for financial accounting
  - GPs run at 100% during peak processing times
    - For extended periods… hours!
  - Response time suffers for all workloads and business units battle over scarce resources
  - Processing demand continues to grow
  - zIIP installed but scarcely utilized
  - zIIP runs 20% faster than GPs

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Customer Scenario

- **Representative Use Case**
  - Microsoft BizTalk Server and .NET apps exchange HTTP/XML requests/responses with HostBridge
  - HB allows BizTalk and apps to interact with existing CICS-based financial transactions and data sources
  - Significant HB Base product request load
    - Orchestration performed by BizTalk and other .NET apps
    - Long-time HB customer (before we offered CICS-based process automation)

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Customer Scenario

- **HB for zIIP Benefits**
  - HB response times improved dramatically
    - So much so we didn't believe it at first
  - Double benefit due to:
    - GPs being completely swamped
    - zIIP being idle AND faster
  - By zIIP-enabling the CICS integration workload, overall demand on the GPs was reduced
    - Yielded incremental performance improvements for all other System z workloads

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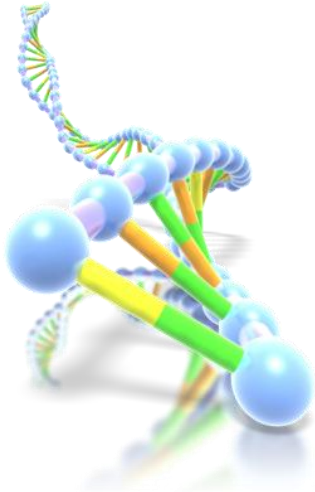
Our DNA

- **Focus on customer's priorities**
  - Every major feature reflects customer collaboration
- **"High-Fidelity" integration**
  - Deep application integration and micro-flow control
  - Specific enhancements for CA products
- **Obsess about performance**
  - Every microsecond counts
- **Leverage industry standards**
  - XML, HTTP, JavaScript, Eclipse, WOA, SOA
- **Innovate and do the hard stuff**



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Customer Scenario

- **Background**
  - State Government (top 20)
  - Health Care Service Administration (Medicaid)
  - ~ 250,000 members served
  - ~ 34,000 health care providers
  - 100’s of employees
  - Multiple plans (benefits/member varies)
  - CICS-based apps used for patient benefit management & accounting
  - > 20-year investment in CA Ideal and CA Datacom applications

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Customer Scenario

Secure Public and Private Networks

Microsoft .NET Web Server and Apps

IBM System z

CICS TS
CA Ideal
CA Datacom

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State Government Health Care Service Administration

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Customer Scenario

- **Representative Use Case**
  - Patient enters clinic with medical requirement, but without member id card
  - First question: is patient a plan member?
    - Provider can use a secure web-based app to inquire as to patients status
  - Second question: what are the benefits of the members plan?
    - Provider has immediate access to relevant plan details
  - Third question: what can be charged for services rendered?
    - Provider can accurately (and immediately) begin the billing process

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Customer Scenario

- **Requirements**
  - Consistency across all delivery channels
    - Data and biz logic
  - Rapid evolution of new functionality
  - Reduce training time/cost
  - Allow provider and member self-service
- **Assessment**
  - Business logic was fine (CA Ideal apps)
    - Infeasible to consider replacing/duplicating
  - User Interface was a problem
    - Consolidate information (across existing screens)
    - Eliminate the special knowledge required to understand

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Customer Scenario

- **Solution**
  - Continue investment in CA Ideal/Datacom apps
  - Adopt .NET as middle-tier platform for web-based access (UI)
  - Use HostBridge to transform CA Ideal/Datacom apps into XML-based web services
- **Outcomes**
  - Access improved for ALL providers and members
  - Superior usability (up to 10:1 screen consolidation)
  - Training time/cost DOWN
  - HB & CA Ideal/Datacom are transparently embedded into web-based business processes

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HostBridge for zIIP is…

- **Industrial strength, standards based, integration software for CICS and System z applications…**

- **built on the foundation of industry standards and the power of zIIP specialty processors…**

- **in a safe and secure manner…**

- **that moves your business forward, and improves your bottom line.**

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But Wait…

- **CA Datacom + HostBridge = zIIP² !**
- **CA Datacom zIIP exploitation**
  - 30% CPU offload to zIIP in r12
  - Almost 50% zIIP offload in MUF seen by v14 BETA sites
- **Together…**

The combination of CA Datacom and HostBridge yields a web-enablement and integration platform for System z that exploits the value proposition of zIIP specialty engines to the maximum level possible.

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recommended sessions

SESSION #	TITLE	Date / Time
MD540SN	Impact – How a CA Ideal Application at U.S. Treasury Manages the Development Life Cycle	11/16/2011 at 1:15 pm
MD560SN	Transforming CA Ideal Applications To Meet 2011 Business Needs	11/16/2011 at 2:45 pm
MD600SN	CA Datacom® Online Data Reorganization Update	11/16/2011 at 4:00 pm

Exhibition Center: related technologies

- Booth 516 – CA Datacom, CA Ideal

Session # MD520SN

Please scan this image to fill in your session survey on a mobile device or complete a hard copy session evaluation form

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Mainframe networking lunch

Engage in CA solution discussion with your peers
and
CA experts

Where: Exhibition Center

When: Tuesday and Wednesday

Time: 12:00pm – 1:15pm

Thank You

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