Global Payments Uses OPTA2000 Virtual Time Zones to Consolidate on Blades

OPTA2000
virtual time-zone and clock simulator

FileSync
replication & synchronization software

TMF-Audit Toolkit
easily converts non-audited TMF files to audited TMF files

Enscribe-2-SQL Toolkit
flexible, affordable alternative for Enscribe to SQL conversion

Command Stream Replicator
automatically replicates DDL structure, non-audited and HP utilities operations to backup system

Jack and Amanda Di Giacomo

- President, TANDsoft, Inc.
- 25+ years of experience in the design, development and support of NonStop software solutions
- Former Tandem instructor
- Specialist in intercept technology

Today's Agenda

Global Payments Uses OPTA2000 Virtual Time Zones to Consolidate on Blades

- **Global Payments is consolidating onto NB50000c blades its U.K.-based production and DEV systems and its Canadian-based production and DEV systems.**
- **The newly consolidated system will reside in Eastern Canada with a system clock set to GMT -5 (EST) / GMT -4 (EDT), aka Eastern Standard Time / Eastern Daylight Time.**
- **Applications previously running in the U.K. still will require timestamps that reflect U.K. time: GMT +0 (WET) / GMT +1 (BST) , aka Western European Time / British Summer Time.**
- **Challenge: How can Global Payments consolidate on one system multiple applications that need to run in *user* time, not *system* time?**

globalpayments

Global Payments Inc.

Overview

- One of world's largest electronic transaction processing providers.
- A Fortune 1000 company.
- Headquartered in Atlanta, Georgia.
- Processes approximately 5 billion transactions/year.
- Serves over one and a half million merchant locations.
- In 2008, Global Payments and HSBC Bank formed HSBC Merchant Services to provide payment processing services to merchants in the U.K.

Global Payments Migrates from S-Series to Blades…

Hardware

In process of migrating production systems from S72000s to NB50000s.

In process of migrating development system from S-Series to NS2200.

Applications

Base24 for POS, Visa, MasterCard, Custom Apps.

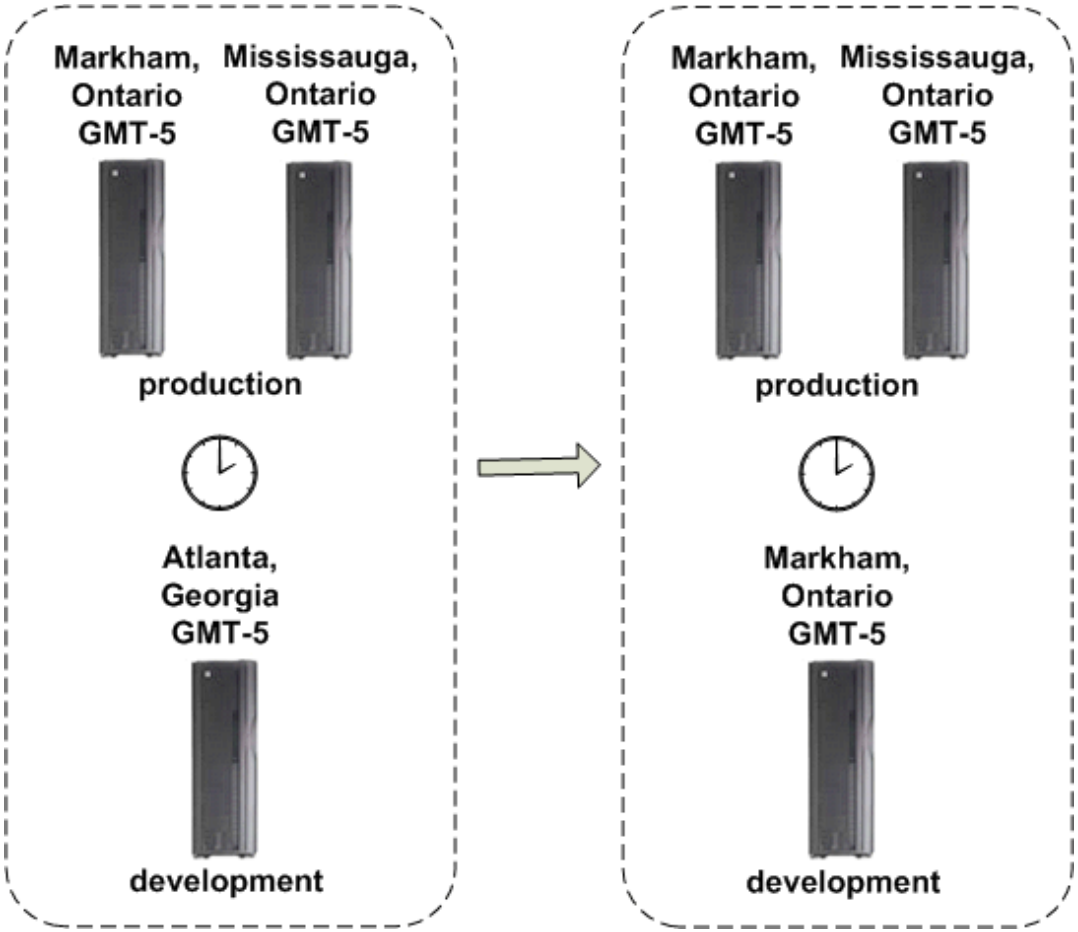
HP subsystems – TACL, EMS, NetBatch, etc.

globalpayments

…with the help of HP Enterprise Services

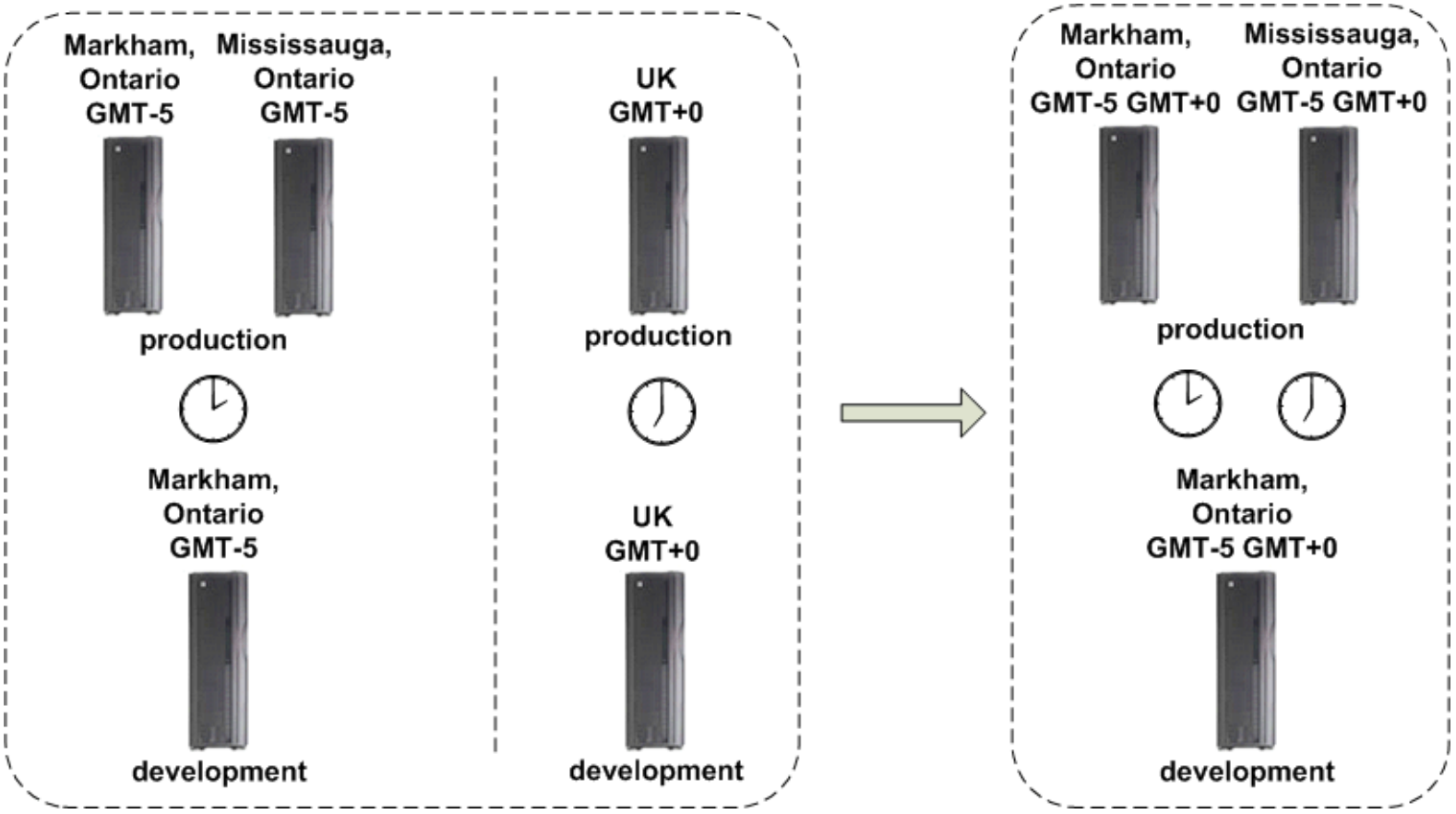
HP Enterprise Services

Global Payments Migrates from S-Series to Blades…



…with the help of HP Enterprise Services

Global Payments Decides to Consolidate…



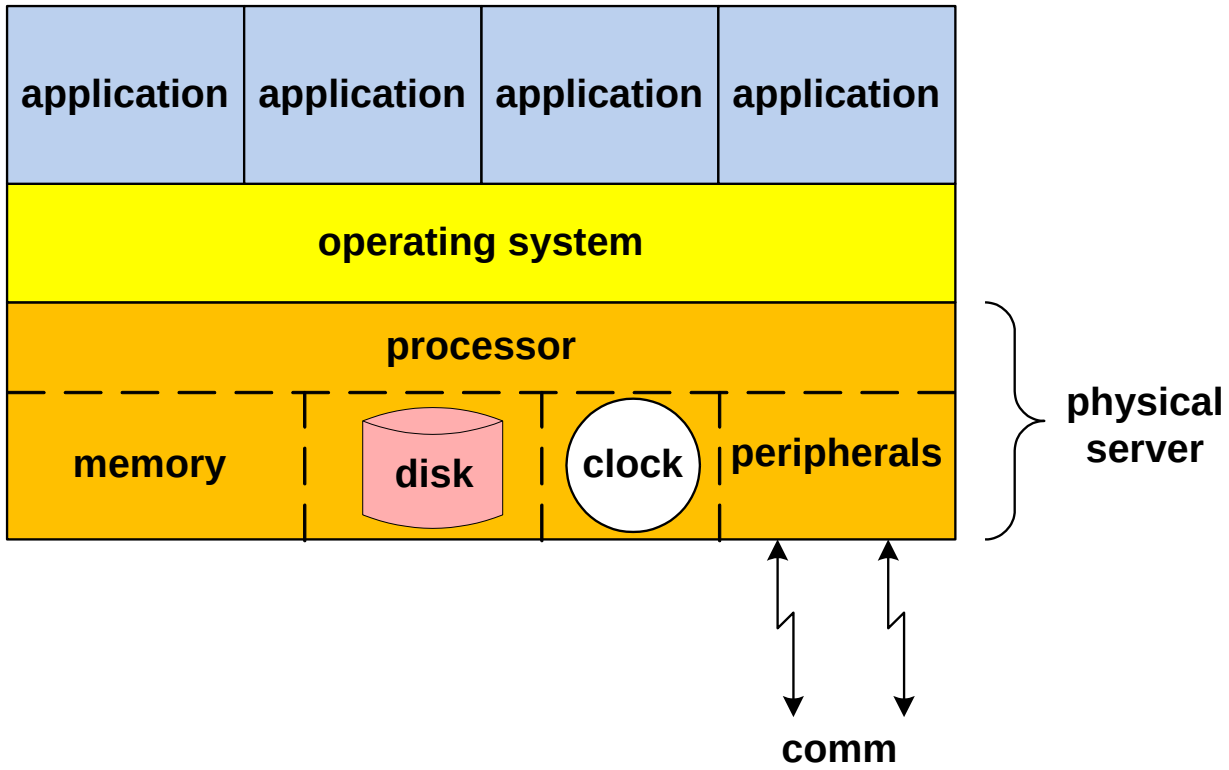
globalpayments

…with the help of HP Enterprise Services

HP Enterprise Services

Global Payments Faces a Time-Zone Challenge

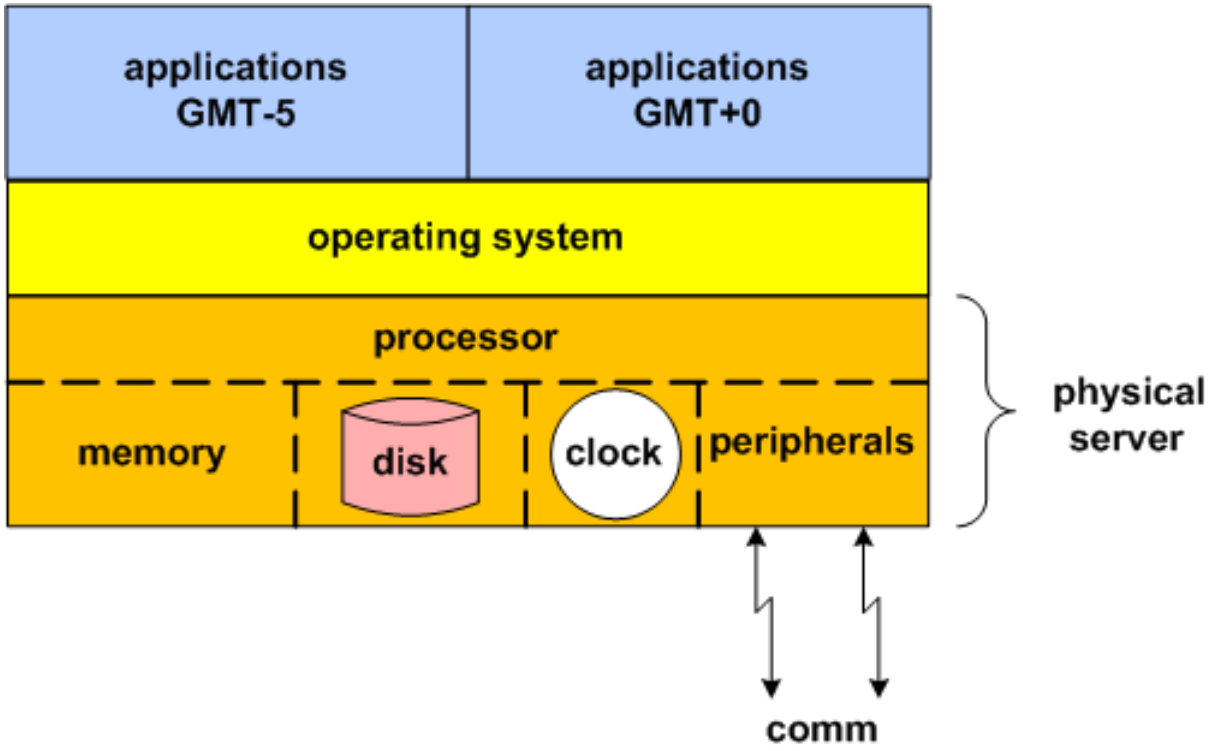
Typically, all applications run off the system clock



One system clock. One current time. One time zone.

Global Payments Faces a Time-Zone Challenge

Global Payments needs to execute applications that are different than the system clock



One system clock. One current time. Multiple time zones.

Time- Zone Simulation

Global Payments' Consolidation Challenge

Time-sensitive applications cannot be constrained by…

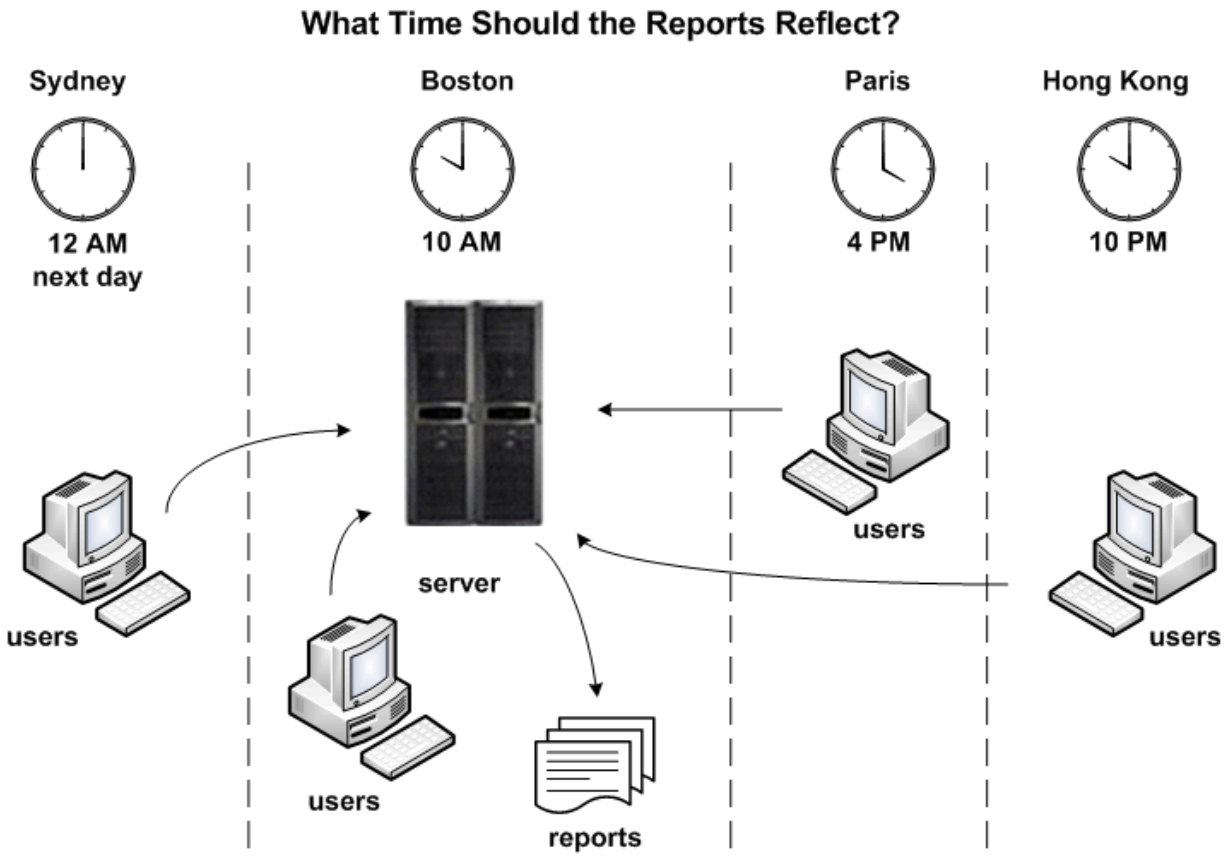
…one system clock. one current time. one time zone.

How do you support the hosting of multiple applications with different date/time requirements on the same platform…

…without constantly resetting the system clock?

How do you accommodate applications that need to run in user time, not system time?

Consolidation requires virtual time zones



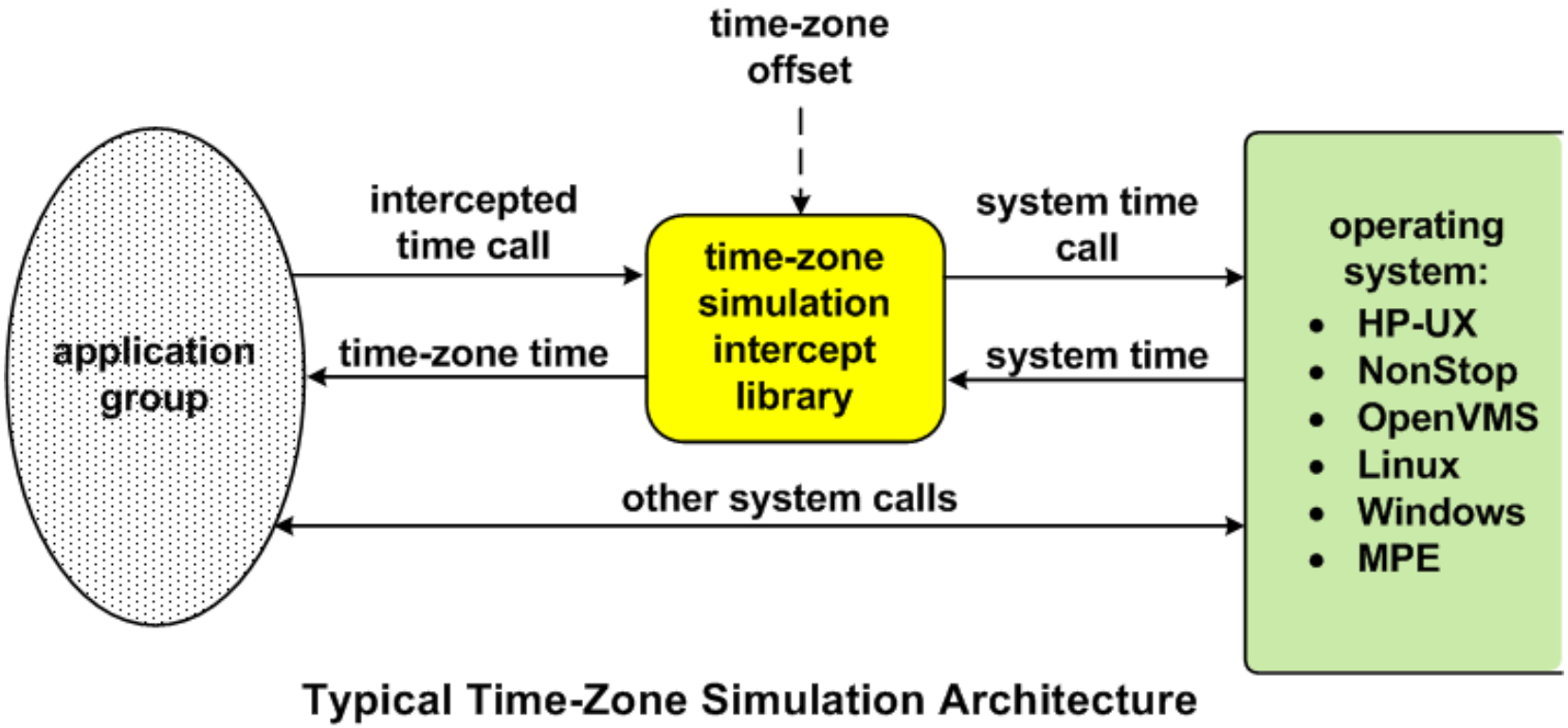
One system clock. One current time. Multiple time zones.

Here's the Challenge!

What must you do to accommodate applications that need to run in *user* time, not *system* time?

One system clock. One current time. Multiple time zones.

Here's the Solution!



Typical Time-Zone Simulation Architecture

One system clock. One current time. Multiple time zones.

No Problem!

Time-Zone Simulation

Creates virtual time zones that allow existing production, development, and backup systems to support worldwide consolidated environments.

One system clock. One current time. Multiple time zones.

Resolving the Time-Zone Dilemma

Option 1: Don't consolidate. Maintain servers in each time zone affected.

<u>Expensive, Expensive, Expensive</u>

- **Massive costs**
- **Loss of consolidation benefits**

Resolving the Time-Zone Dilemma

Option 2: Allow applications to be GMT-dependent. Don't convert to local times.

Disgruntled Users

- People think in local time
- Customers want local timestamp, not GMT on
  - bills • statements • receipts
  - email • reservations • reports

Some legacy applications only run in local time

Resolving the Time-Zone Dilemma

Option 3: Create a custom time-sensitive solution

Expensive, Risky

- **Source code required. Do you have it?**
- **Potentially huge programming effort**
- **Expensive**
- **Why risk damaging an application that works well?**
- **Must support all application types (TNS, TNS/R, TNS/E, SQL)**

Resolving the Time-Zone Dilemma

Option 4: Use off-the shelf product

Does one exist for your environment?

If so, they are usually

- **user friendly**
- **easily installed**
- **cost-effective**
- **require no application modifications**

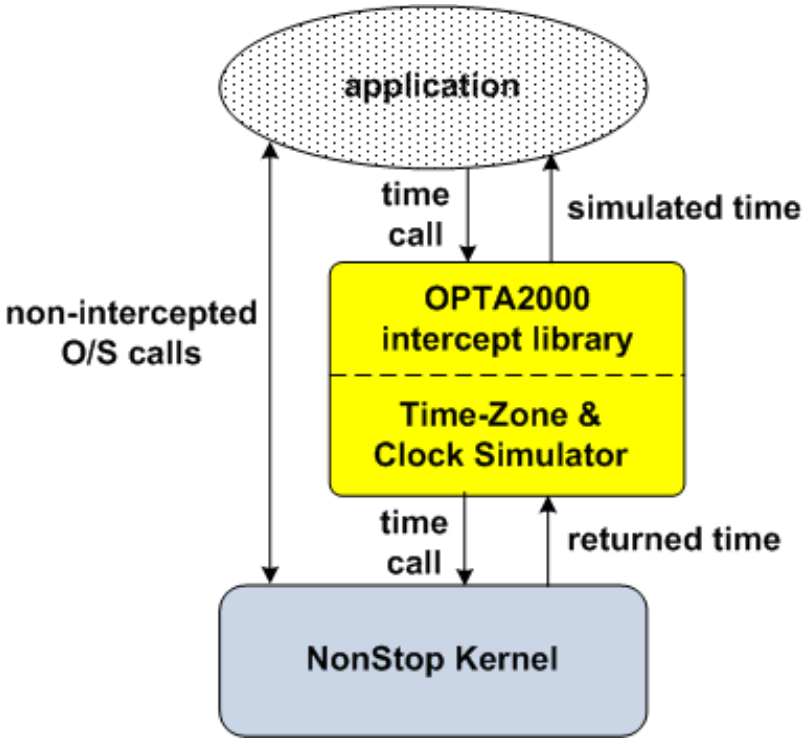
Resolving Global Payments' Time-Zone Dilemma

HP Enterprise Services Chose Option 4

Use off-the-shelf time-zone simulation product

- **Cost-effective alternative to Options 1, 2, & 3**
- **Permits ease of operations**
- **Permits ease of maintenance**
- **Permits faster failover**

HP Enterprise Services Chose the OPTA2000 Time-Zone and Clock Simulator



To the best of our knowledge, there is no other off-the-shelf time-zone and clock simulation solution for the NonStop environment.

OPTA2000
Time-Zone and Clock Simulator

Time-Zone Simulation

OPTA2000 creates virtual time zones that allow existing production and backup systems to support worldwide consolidated environments.

Clock Simulation

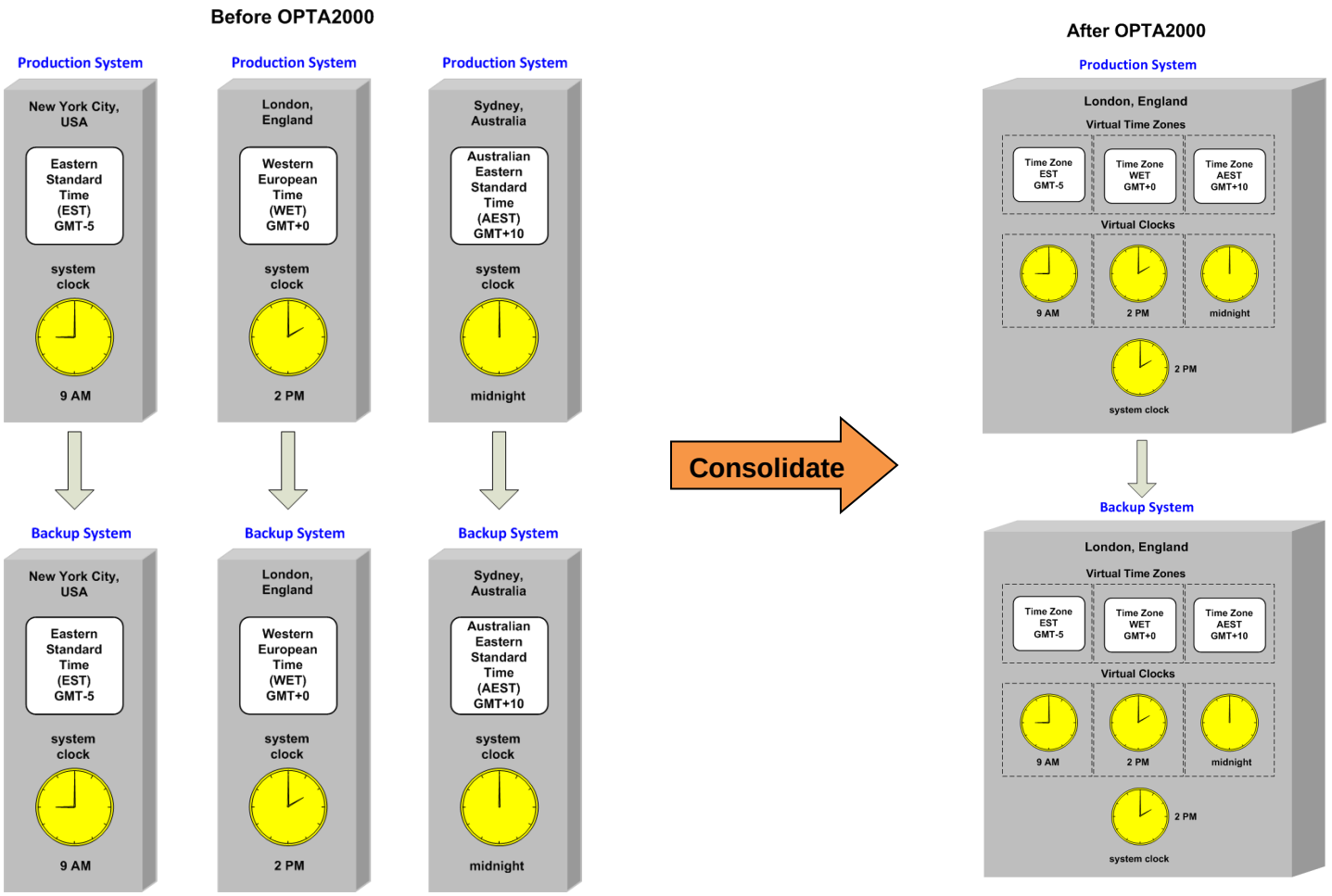
OPTA2000 creates virtual times that can be offset arbitrarily from the system time. Remember Y2K?

One system clock. Multiple current times. Multiple time zones.

No Problem!

OPTA2000

A single system can host thousands of time-sensitive applications



Introducing OPTA2000

Clock Simulation Began With Y2K. So Did OPTA2000.

January 1, 2000

Clock simulation arose from the panic surrounding Y2K.

Everyone was required to upgrade their systems for Y2K compliance.

Developers had to recreate the millennium rollover without changing the system clock and risking a crash.

One system clock. One current time.

Introducing OPTA2000

The Need for Clock Simulation Did Not Disappear at the Stroke of Midnight on January 1, 2000.

- **Y2K7** - caused by the U.S. Daylight Saving Time date change in 2007
- **Y2K12** - Leap Year 2012 bug (MS Azure Cloud)
- **Y2K38** - Unix bug of 2038
- **Y10K** - Where will you be in the year 10,000?

One system clock. One current time.

How does OPTA2000 Work?

Benefits of Clock Simulation With OPTA2000

- **Cost-effective**
  - *consolidation saves costs of hardware, licenses, IT resources*
- **Evaluate multiple applications simultaneously**
  - *each application has own virtual clock*
- **Test round-the-clock**
- **Test 3rd-party solutions' impact on stable production systems**
- **Evaluate "what if" scenarios**
  - *Leap Year rollovers • monthly / quarterly reports*
- **Ensure production consistency in batch-testing applications**
  - *test overnight runs for date continuity*

One system clock. Multiple current times. No problem!

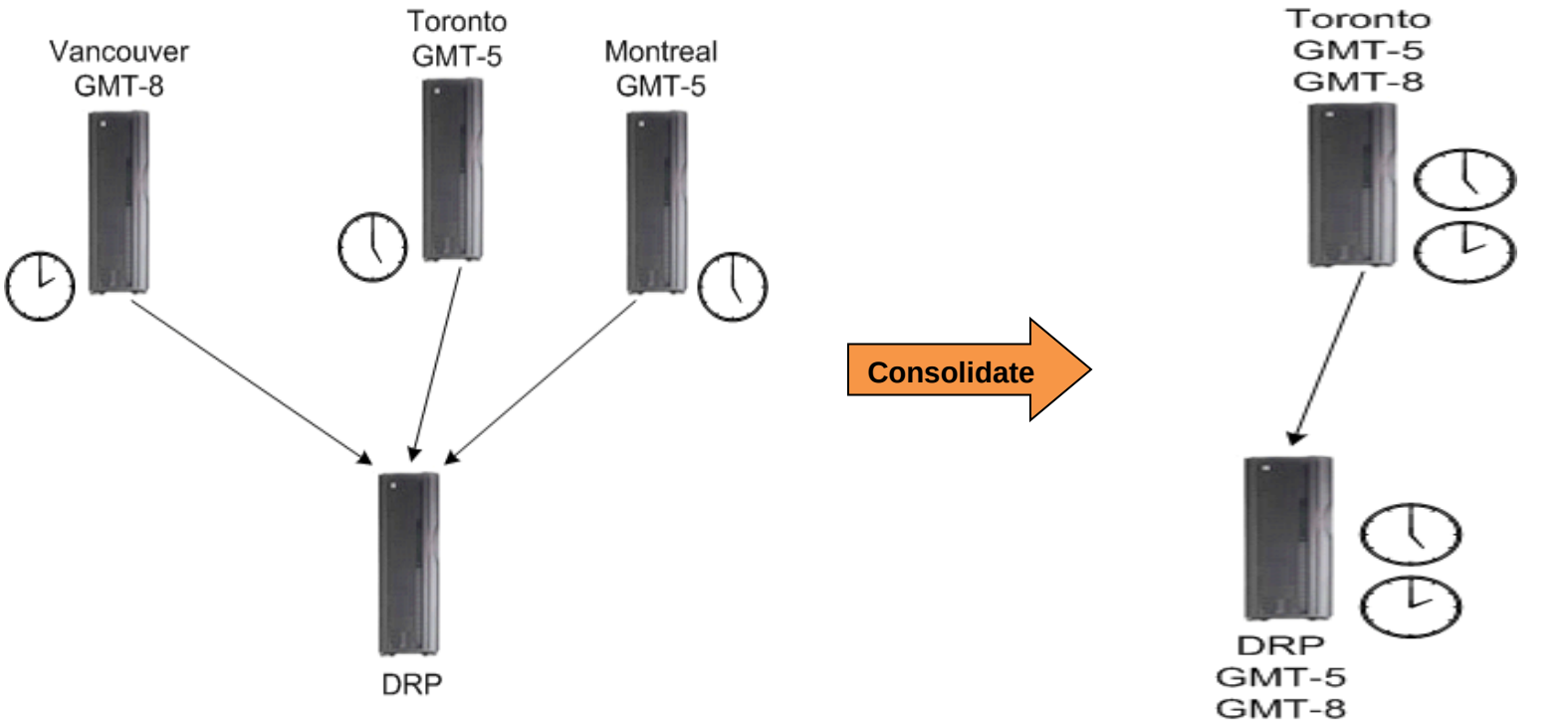
OPTA2000 Features

Supports All NonStop Application Types (TNS, TNS/R, TNS/E, Guardian, OSS, SQL/MP/MX)

- No changes necessary to customer applications.
- Supports major third-party applications.
- Virtual time-zone feature supports worldwide consolidated environments. Multiple time zones on one NonStop server.
- Virtual clocks allow consolidation of multiple environments. Multiple system clocks on one NonStop server.
- Supports Daylight Saving Time (DST) transition tables.
- Does not interfere with other applications on the same system.
- Ideal for customers consolidating servers onto NonStop Integrity or Blades.

Time-Zone Simulation – A Consolidation Challenge

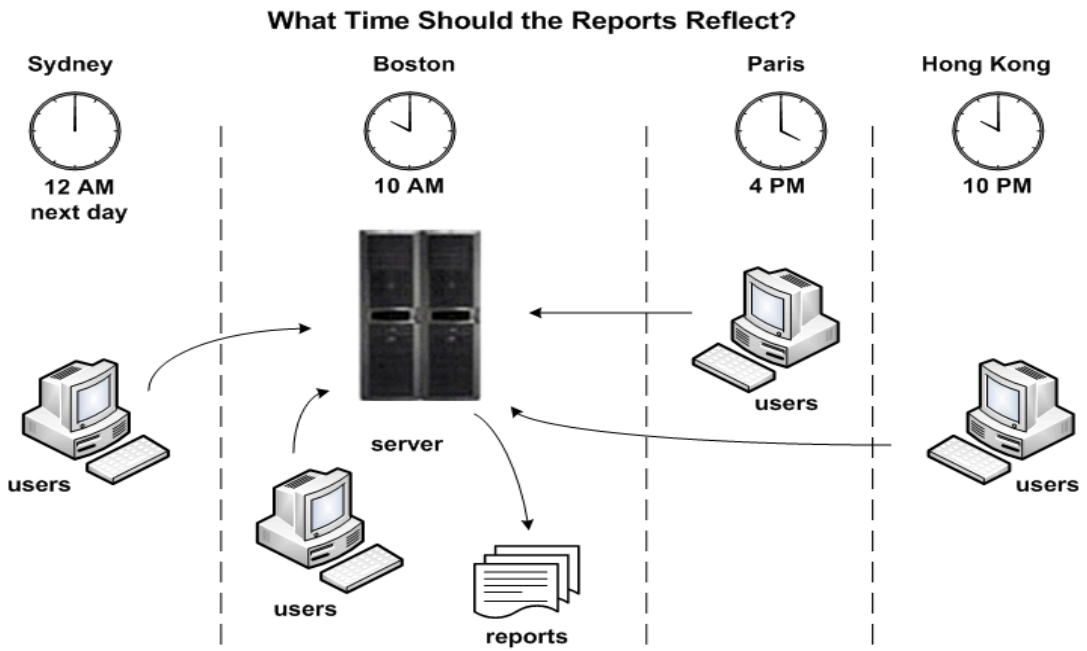
Royal Bank of Canada Uses OPTA2000 to Consolidate 3 PROD Sites and 2 Time Zones into One PROD Site with 2 Time Zones



One system clock. One current time. Multiple time zones.
No Problem!

Time-Zone Simulation – A Consolidation Challenge

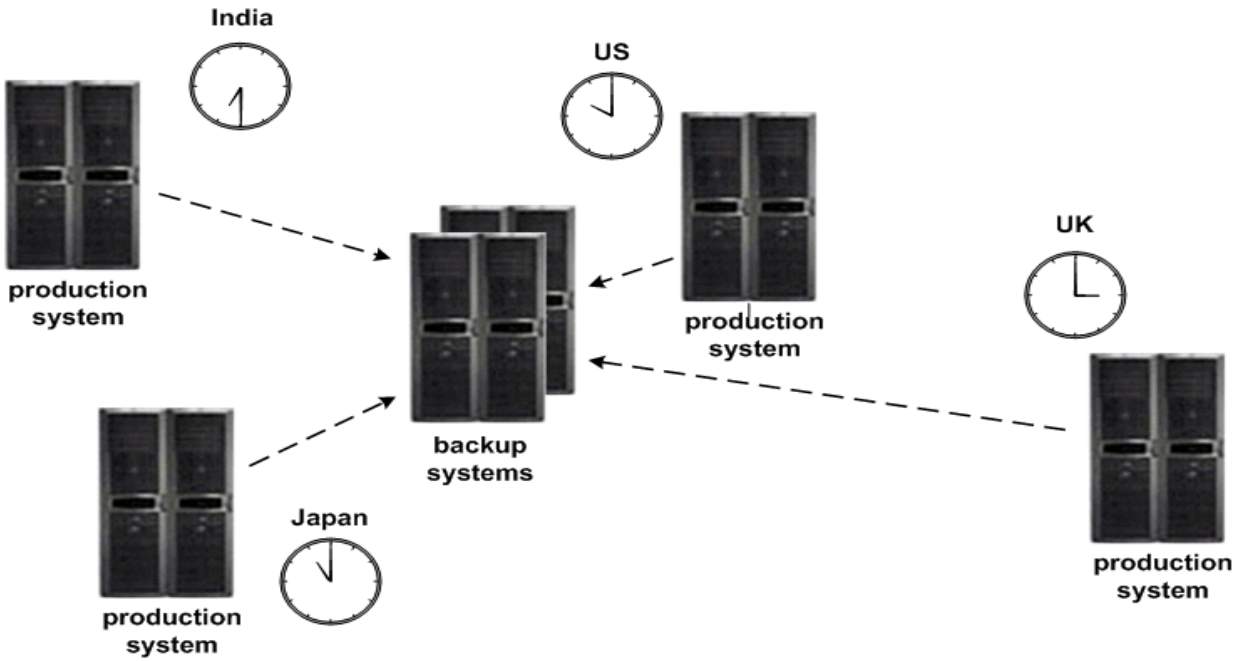
A Major U.S. East Coast Bank Uses OPTA2000 to Run Global NetBatch Environments From Its Central Data Center.



One system clock. One current time. Multiple time zones.
No Problem!

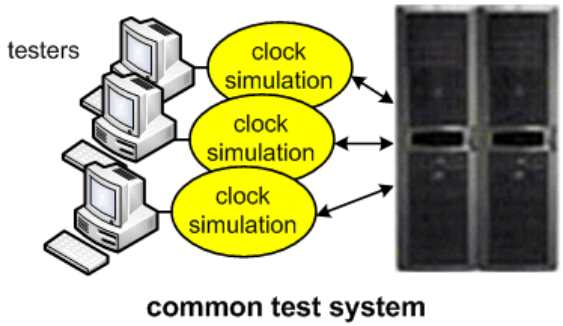
Time-Zone Simulation – A Consolidation Challenge

A Global Manufacturer Uses OPTA2000 to Consolidate All of Its Worldwide Disaster-Recovery Systems into One U.S. Based Center.

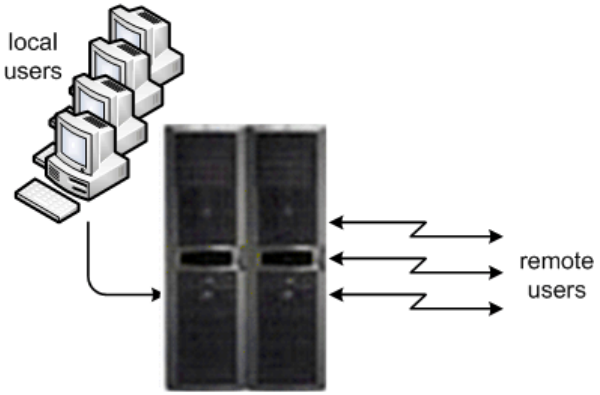


One system clock. One current time. Multiple time zones.
No Problem!

Clock Simulation – What Time Is It In Your Test Bed?



common test system



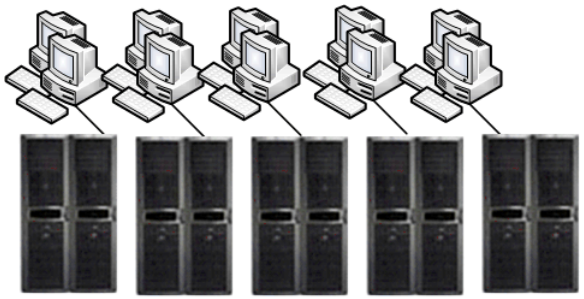
production system

A prescription drug insurance provider uses two S7400 NonStop servers. One handles production; the other uses OPTA2000 to handle all backup, development, and testing apps.

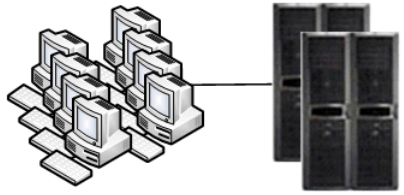
One system clock. Multiple current times.

No Problem!

Clock Simulation – What Time Is It In Your Test Bed?



5 UAT test groups
5 NonStop S-Series servers



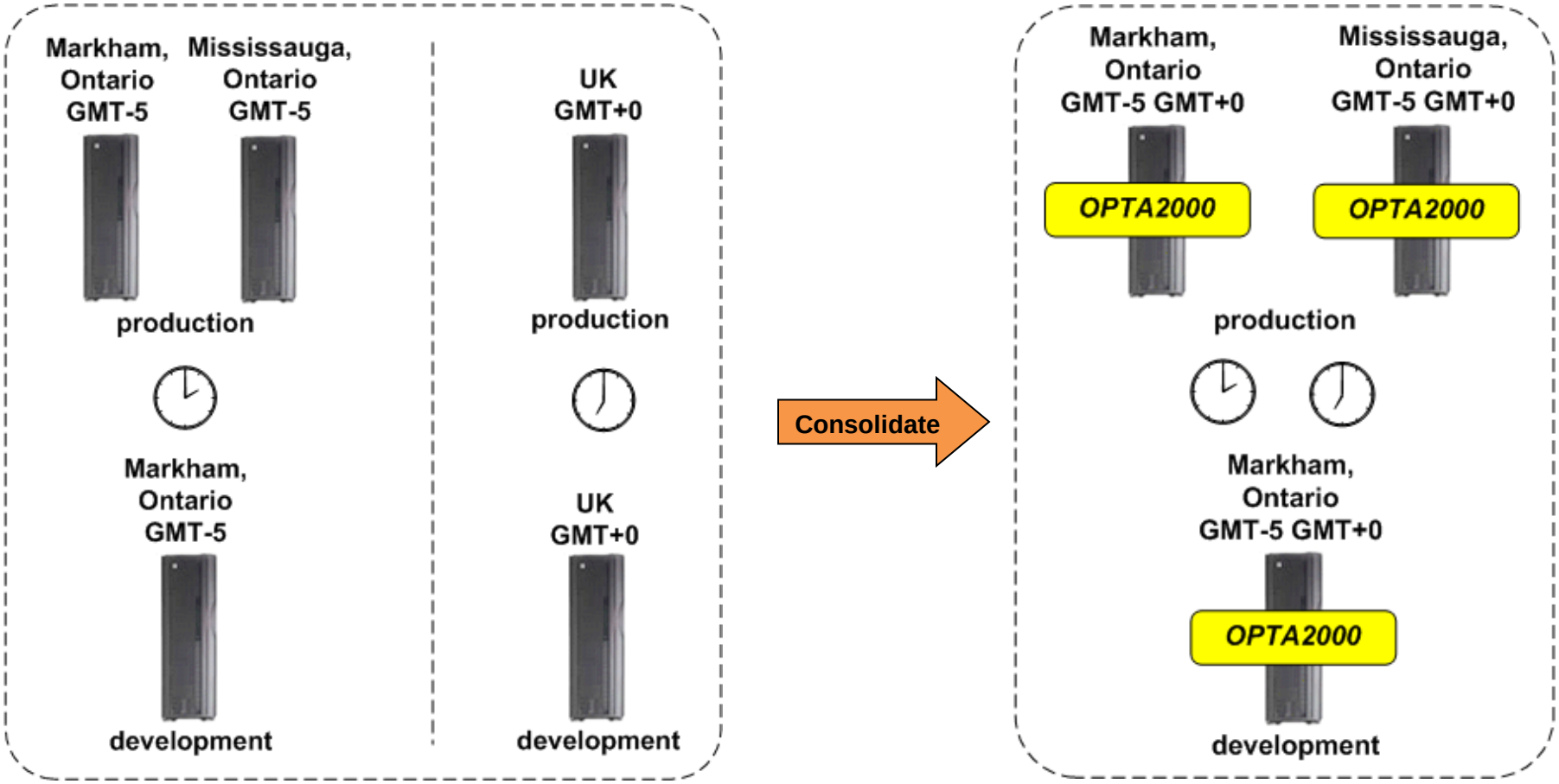
5 UAT test groups
2 Integrity NonStop servers

A major enterprise uses OPTA2000 to consolidate five test groups, each with its own NonStop S-Series server, into two groups sharing two Integrity NonStop servers.

One system clock. Multiple current times.

No Problem!

Today's Agenda Revisited



Global Payments is using OPTA2000 to consolidate onto NB50000c blades its U.K.-based production and development systems and its Canadian-based production and development systems.

Want To Learn More About OPTA2000?

The Connection

Application Jet Lag: Consolidating Global Data Services

What Time Is It In Your Test Bed: Understanding the Benefits Of Clock Simulation

Availability Digest

Virtualized Time From TANDsoft
www.availabilitydigest.com

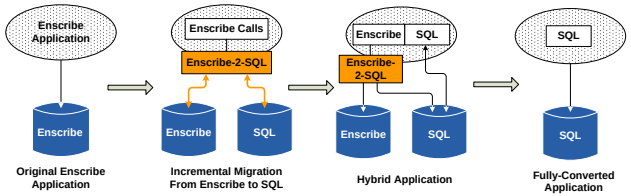
Find all three articles in the Resources Section of www.tandsoft.com

Thanks for Attending

Any Questions?

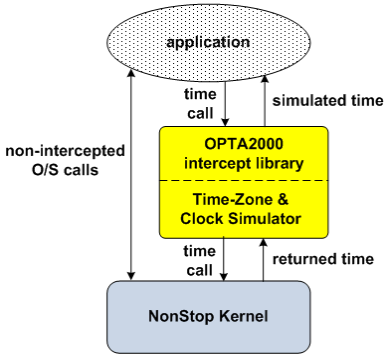
Ask them now, or contact me later at
jack.digiacomo@tandsoft.com

Enscribe-2-SQL Toolkit

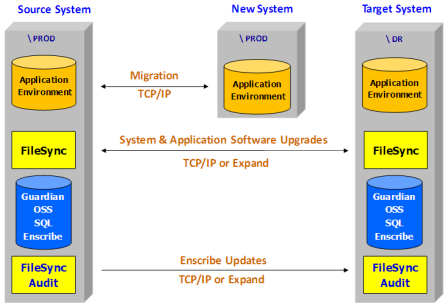


Migrating from Enscribe to SQL with the Enscribe-2-SQL Toolkit

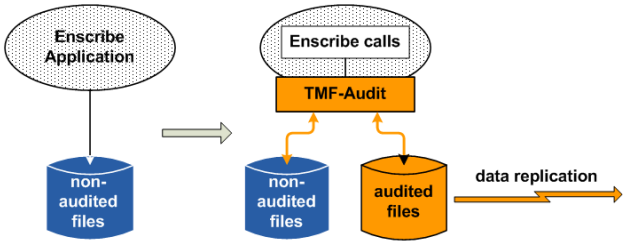
OPTA2000



FileSync



TMF-Audit Toolkit



Command Stream Replicator