



GET CONNECTED

PEOPLE. TECHNOLOGY. RESULTS.

Time-Sensitive Applications in Virtualized Environments

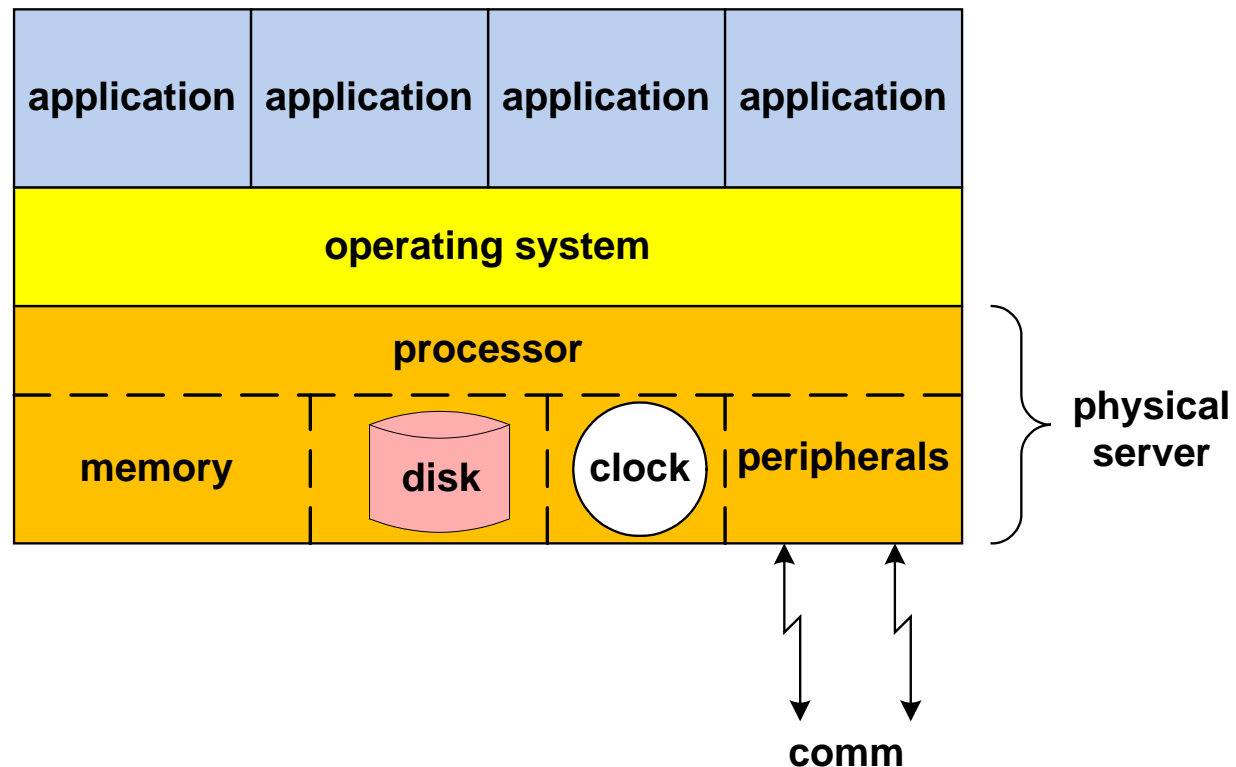
Jack Di Giacomo
TANDsoft, Inc.

© 2009 TANDsoft, Inc., www.TANDsoft.com



What is a Time-Sensitive Virtualized Environment?

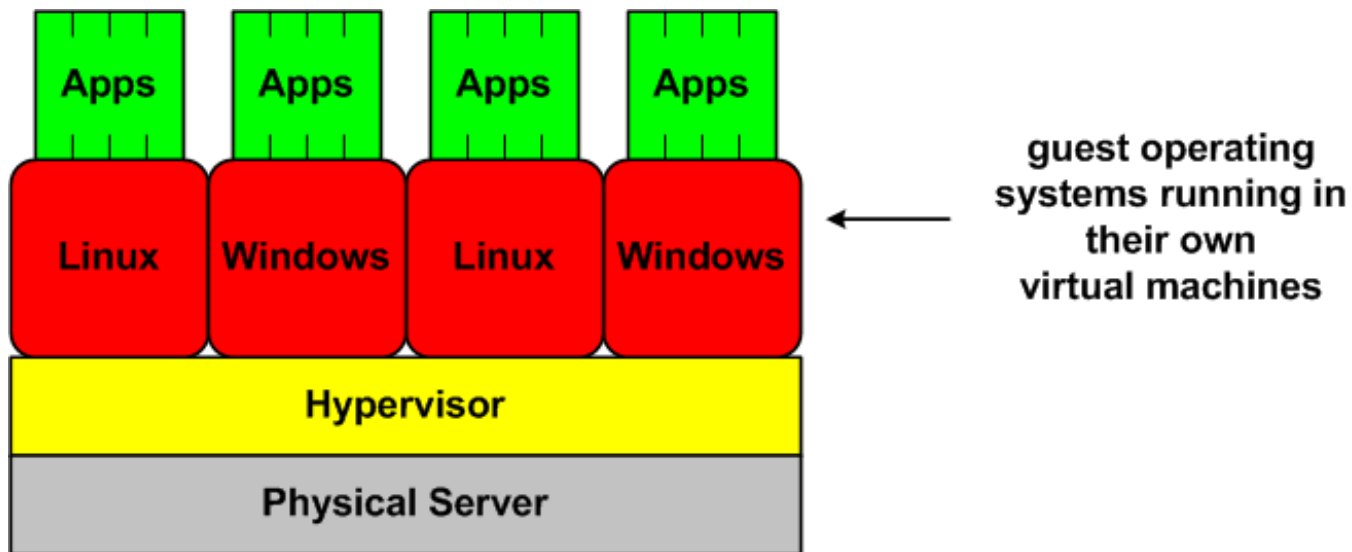
Let's start with a few definitions. A physical environment is the actual computer system.



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

What is a Time-Sensitive Virtualized Environment?

A virtual environment is one in which multiple virtual machines (VMs), running perhaps different operating systems, can reside in a single physical server.



A Virtualized Server

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

What is a Time-Sensitive Virtualized Environment?



**HP NonStop Systems Support
Virtual Environments.**

HP NonStop systems have *always* provided virtualized environments that allow many applications to share physical resources.

Example: Running several instances of a Pathway environment.

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

What is a Time-Sensitive Virtualized Environment?

A time-sensitive application is one that requires a date/time specification that is different than that of the system clock.

Examples:

- **Testing before production**
- **Consolidating global applications**
- **Consolidating disaster-recovery systems**
- ***Oldie but goodie* – Y2K testing**

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

Here's The Problem!

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?

Here's The Problem!

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

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

Here's Your Solution!

Time-Zone Simulation

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

Clock Simulation

**Creates virtual times that can be offset arbitrarily from the system time.
Remember Y2K?**

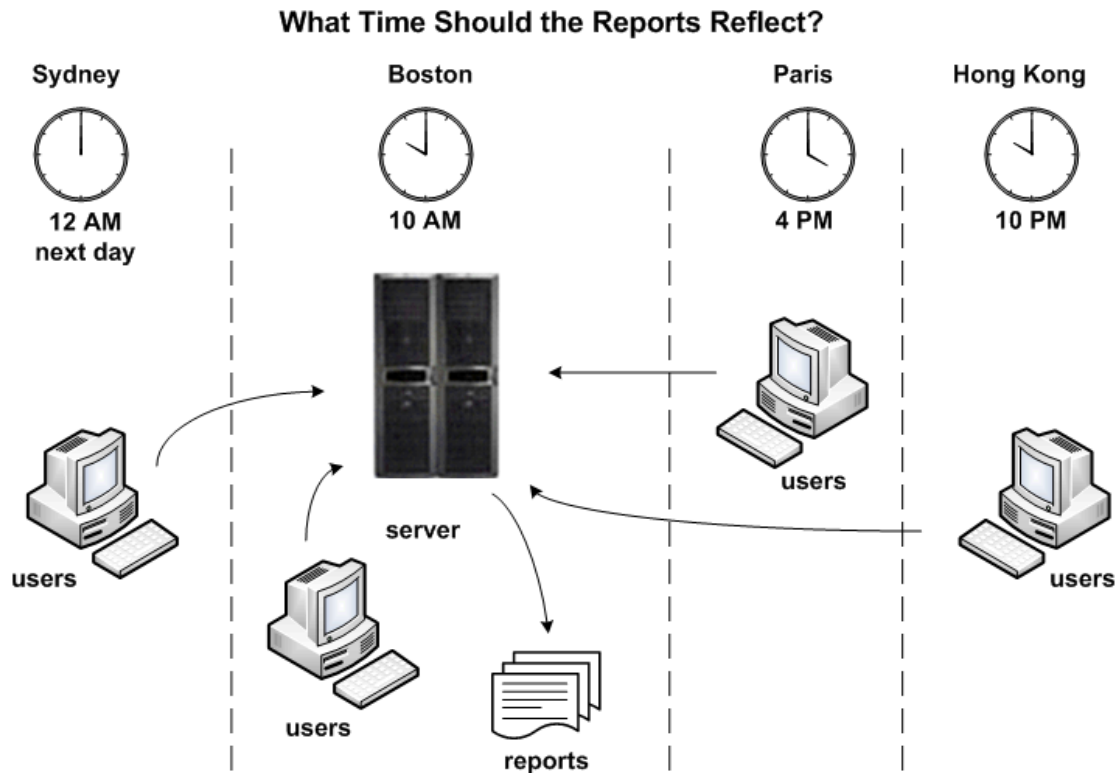
***One system clock. One current time. One time zone.
No Problem!***

Introducing Time-Zone Simulation

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

Time-Zone Simulation – A Consolidation Challenge

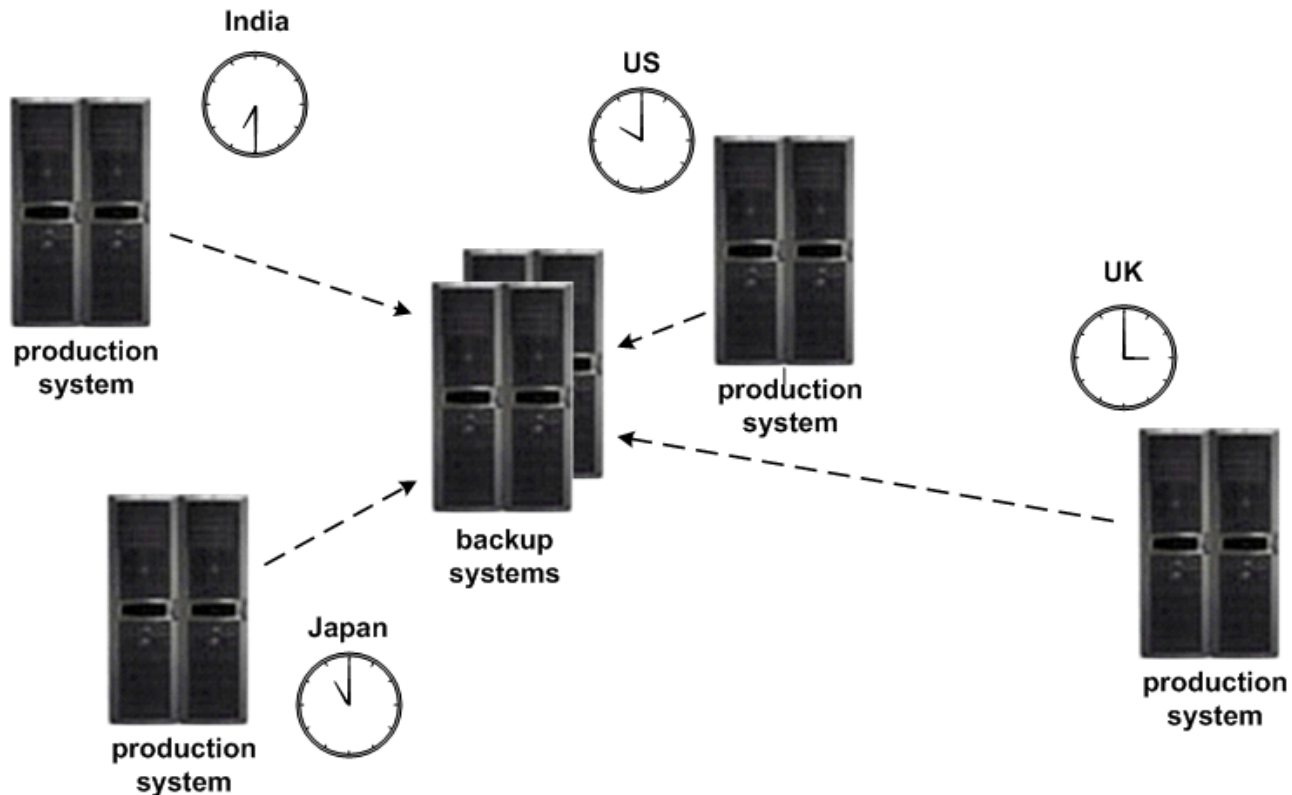
A major U.S. East Coast bank uses time-zone simulation to run global NetBatch environments from its central data center.



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

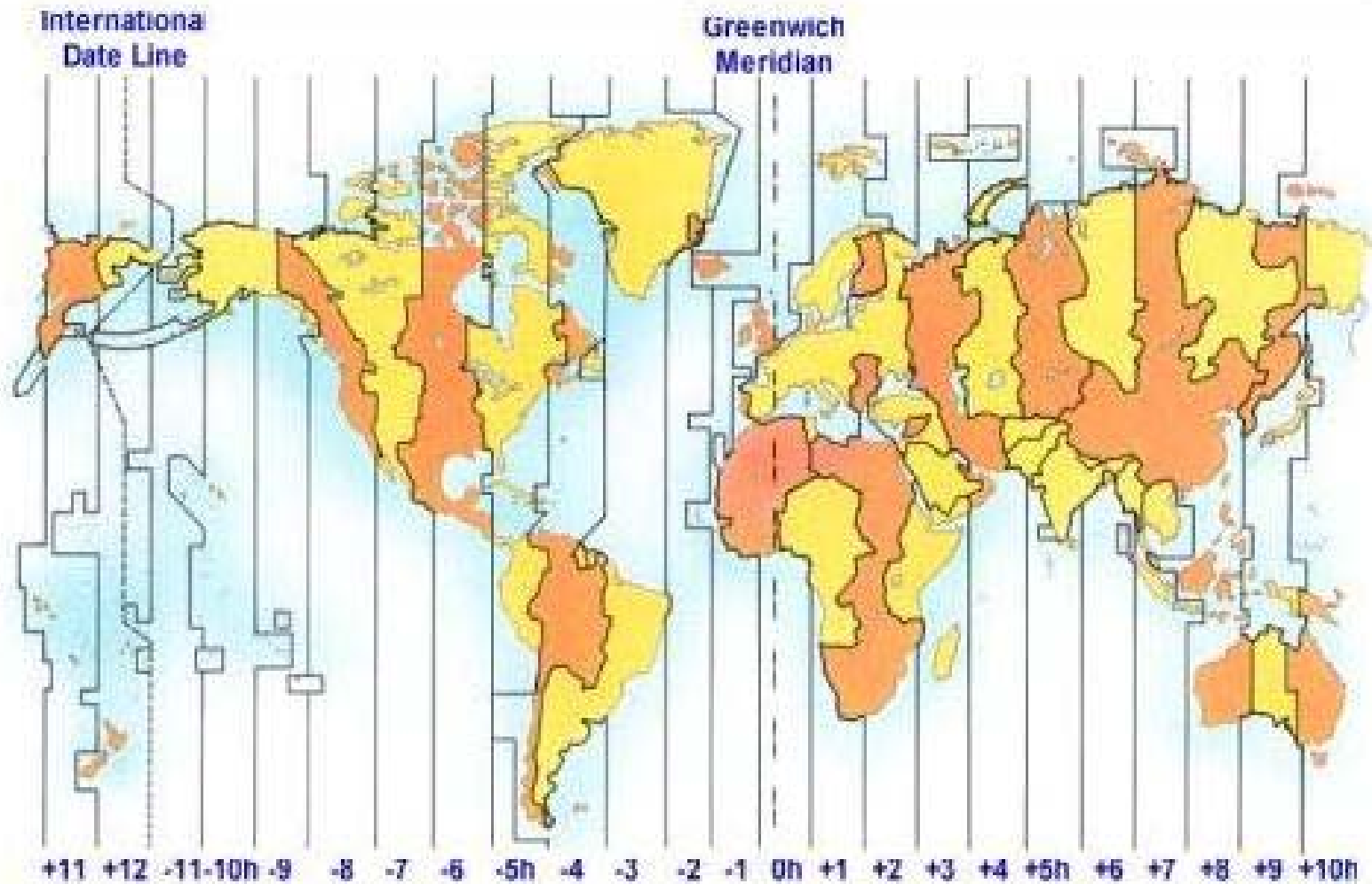
Time-Zone Simulation – A Consolidation Challenge

A major global manufacturer has consolidated all of its worldwide disaster-recovery systems into one U.S.-based data center.

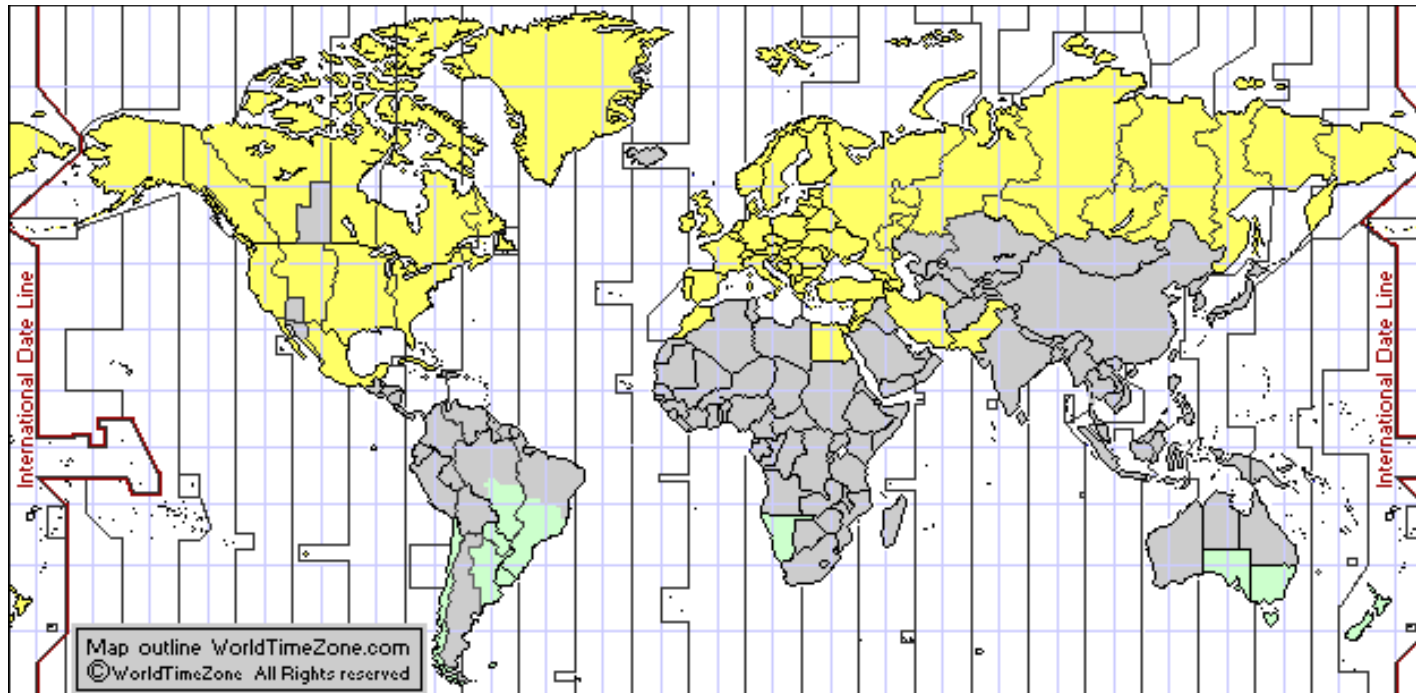


One system clock. One current time. One time zone.

How Does Time-Zone Simulation Work?



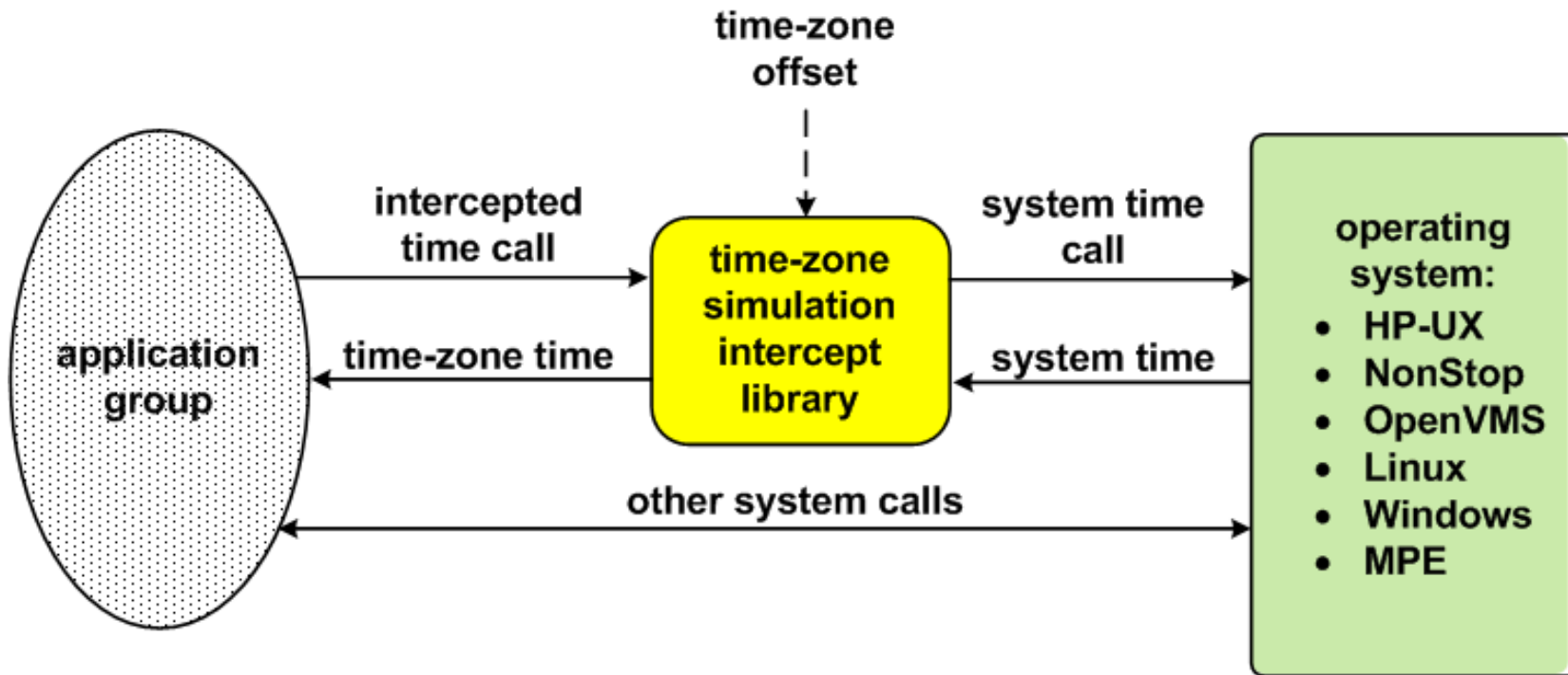
How Does Time-Zone Simulation Work?



Countries and territories operating Daylight Saving Time (2008/2009) (Note: Many countries/territories change days of transitions to DST from year to year.)	
	- Countries / Territories operating DST
	- Countries / Territories do not use Daylight Time

Daylight Saving Time (DST)

How Does Time-Zone Simulation Work?



Typical Time-Zone Simulation Architecture

Resolving The Time-Zone Dilemma

Option 1: Reverse the consolidation effort. Restore servers to each time zone affected.

Are you crazy?

- massive costs
- Loss of consolidation benefits
- I dare you to explain to upper management

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

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?

Resolving The Time-Zone Dilemma

Option 4: Use off-the-shelf product.

Does one exist for your environment?

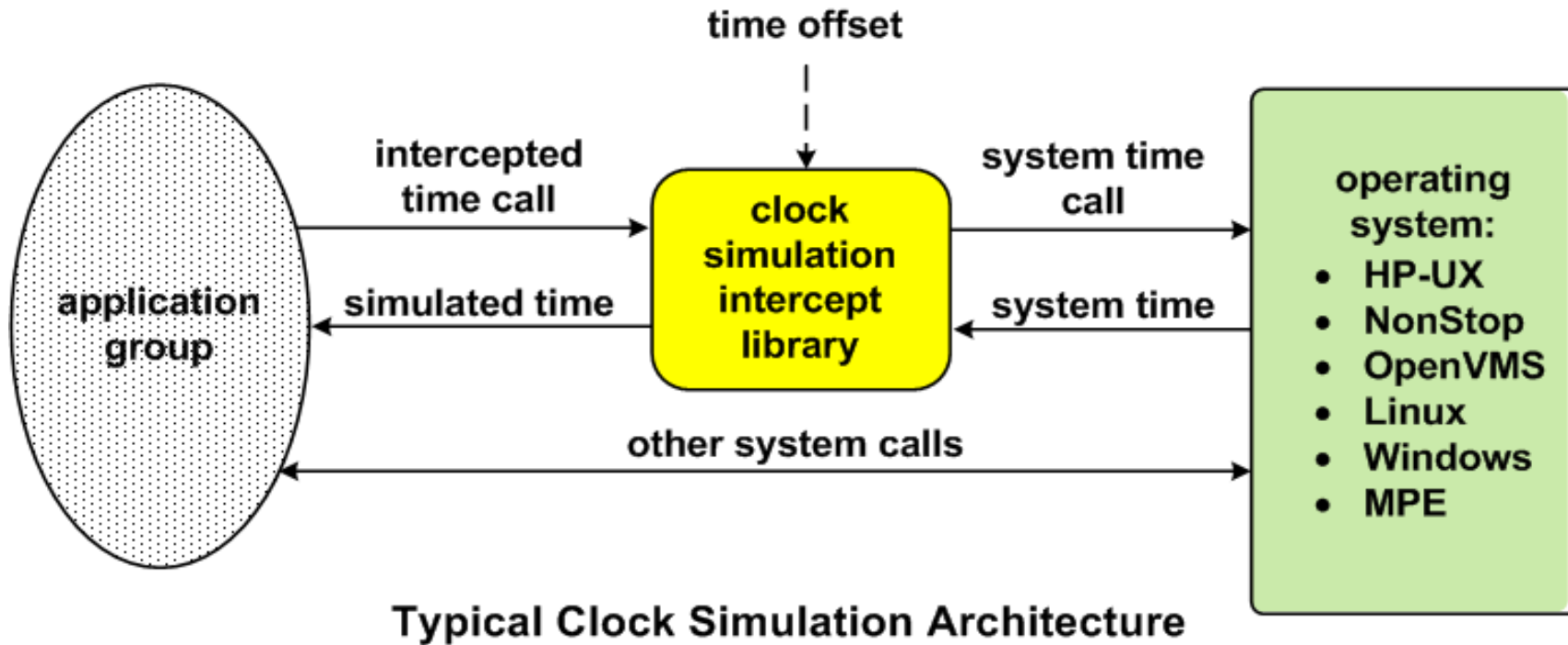
If so, they are usually

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

Introducing Clock Simulation

One system clock. One current time.

Clock-Simulation Architecture is Like Time-Zone Simulation Architecture



Clock Simulation Began With Y2K



January 1, 2000

Clock simulation arose from the panic surrounding Y2K.

Long thought to be a figment of the imagination of alarmists.

One system clock. One current time.

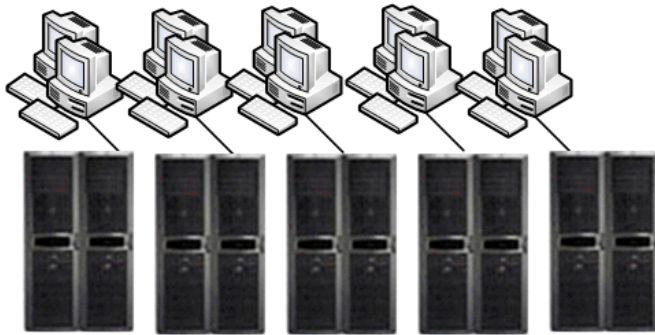
Clock Simulation Did Not End With Y2K

The need for clock simulation did not disappear at the stroke of midnight on January 1, 2000.

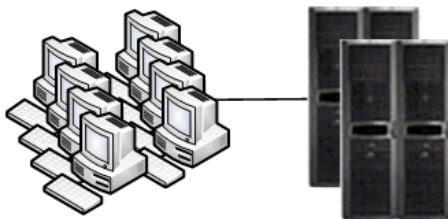
- **Y2K7** – caused by the U.S. Daylight Saving Time date change in 2007
- **Y2K38** – Unix bug of 2038
- **Z2K9** – Microsoft Zune MP3 player bug
- **Y10K** – Where will you be in the year 10,000?

One system clock. One current time.

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



5 UAT test groups
5 NonStop S-Series servers

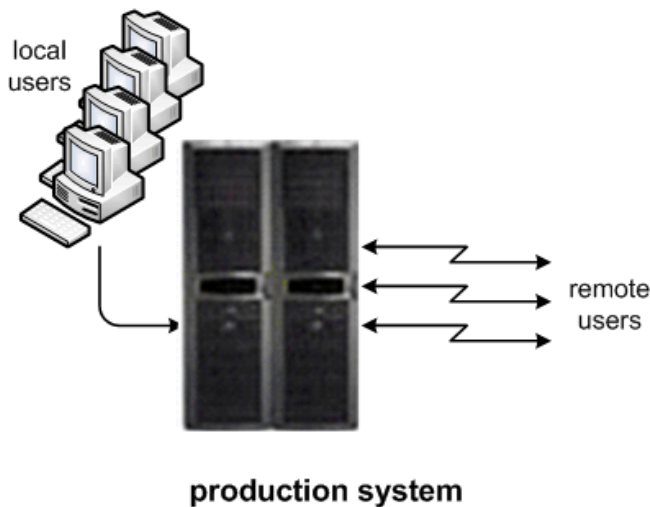
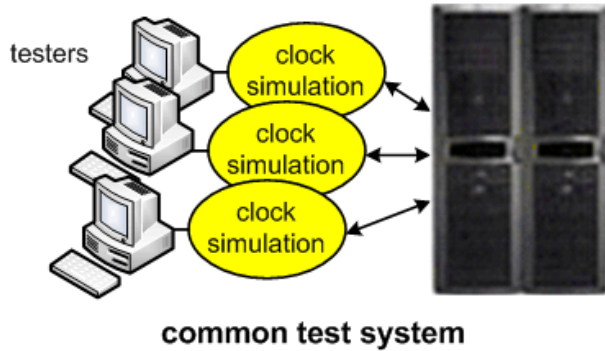


5 UAT test groups
2 NonStop Integrity servers

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

One system clock. One current time.

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



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

One system clock. One current time.

How Do You Test Applications?

Traditional Approach Has Risks

- **Reset system clock**
 - *increases development time*
- **Forget to restore system clock**
 - *deny users and applications access to system*
- **Licenses and passwords may expire**
- **Only one time-sensitive application at a time**
- **Scheduled jobs may be impacted**
- **Complicated coordination between IT admin and development staff**

One system clock. One current time.

How Do You Test Applications?

Some Benefits of Clock Simulation

- **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. One current time. No problem!

Conclusion

Time-Zone & Clock Simulation Products for HP Systems

Time Machine ®	Solution-Soft	www.solution-soft.com	HP 3000 MPE, Linux, Windows, HP-UX
OPTA2000 ™	TANDsoft	www.tandsoft.com	HP NonStop
HourGlass ™	Allegro	www.allegro.com	HP e3000 (MPE/iX), HP-UX, HP 9000
DateWarp ®	Vedant	www.vedanthealth.com	OpenVMS, VAX

Want To Learn More?

The Connection

Application Jet Lag: Consolidating Global Data Services
May/June 2009

***What Time Is It In Your Test Bed: Understanding the Benefits
Of Clock Simulation***
Upcoming issue in 2009

Thank You For Attending

Any Questions?

Ask them now, or contact me later at

jack.digiacomio@tandsoft.com