NonStop Tuxedo

Agenda

- High level description of Tuxedo
- Goals motivating project
- More about Tuxedo
- NonStop Tuxedo on Tandem
- Why buy NonStop Tuxedo
- Project information
- Coexistence and migration
- Summary

What is Tuxedo

Tuxedo is a leading open transaction monitor providing a framework for Enterprise Transaction Processing

- Consistent application programming interface for client/server communication
- OLTP performance characteristics
- Configuration and management of OLTP applications
- Distributed transaction processing, hiding underlying network protocols

Important TUXEDO Attributes

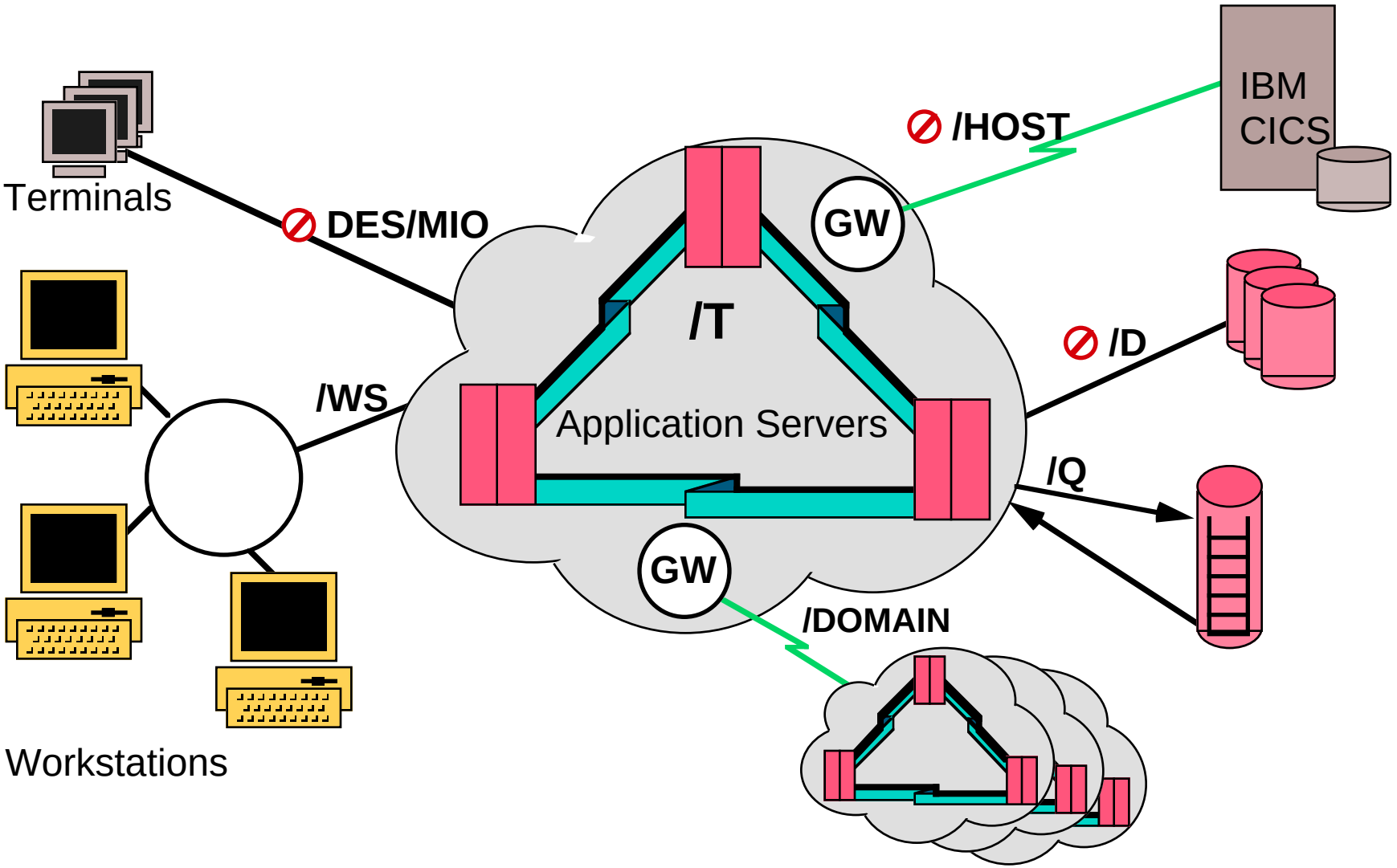
- Supports multiple environments
  - Workstation front ends (DOS, Windows, OS/2, Mac, Unix)
  - Networks of Unix system servers
  - Proprietary (IBM) servers
- Modularly constructed so an application can:
  - Plug in DBMS systems
  - Plug in front-ends
  - Plug in network interfaces
  - Plug in various hardware platforms
- Implements standards and drives emerging standards
  - XATMI
  - Tx
  - TxRPC (Future)
  - XA
  - XAP-TP (OSI-TP) (Future)

Goals Driving NonStop TUXEDO Project

- Provide real Tuxedo APIs and FAPs
  - ATMI API and network protocols
  - Portability of programs and programming skills
  - Heterogeneous application interoperability
  - Standards compliance with XATMI, TxRPC
- Exploit Tandem differentiation
  - Availability, scalability, networking, manageability
  - PATHWAY, TMF, NS Kernel

The same application runs better on Tandem systems.

TUXEDO Components

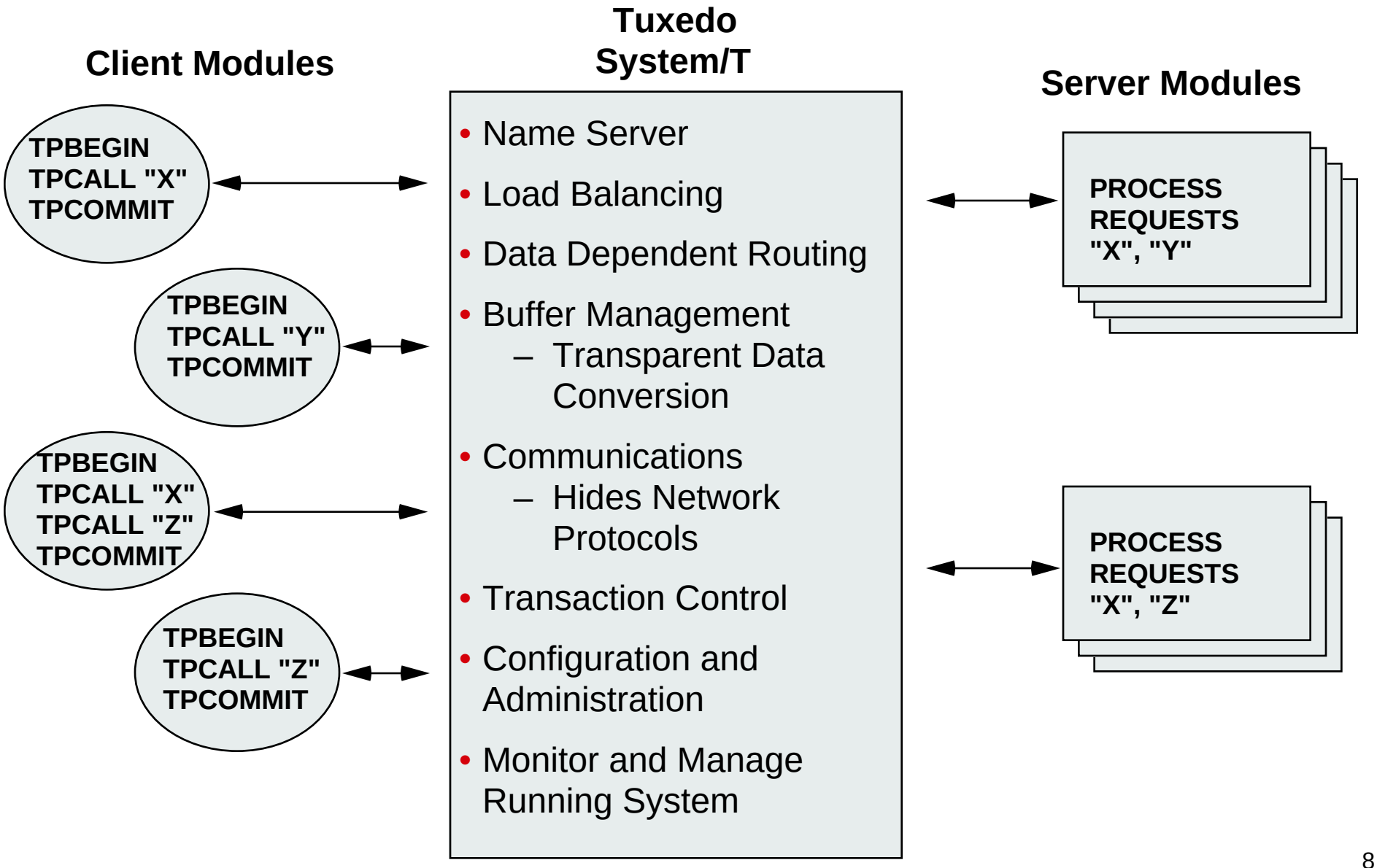


TUXEDO Component Descriptions

- /T — Core services, Application Transaction Monitor Interface (ATMI)
- ⊘ DES/MIO — Data Entry System - terminal handler
- /WS — Client-Side ATMI for workstations
- ⊘ /D — OLTP DBMS
- ⊘ /HOST — Communication to MVS/CICS
- /Q — Queued messages
- /Domain — Communication to separately administered appls
  - /TDomain - TUXEDO to TUXEDO
  - ⊘ /OSI-TP - TUXEDO to TP system over OSI-TP

⊘ We are not currently pursuing these components

Core Services of Tuxedo /T



ATMI Highlights

- Demarcate transactions
- Call synchronously and block while waiting for reply
- Call asynchronously and do more work while waiting for reply
- Establish a conversation with a service
  - Open a connection
  - Send and receive multiple messages
  - Close the connection
- Reliably queue request for future execution
- Buffer management
- Services

ATMI and Tx Verbs

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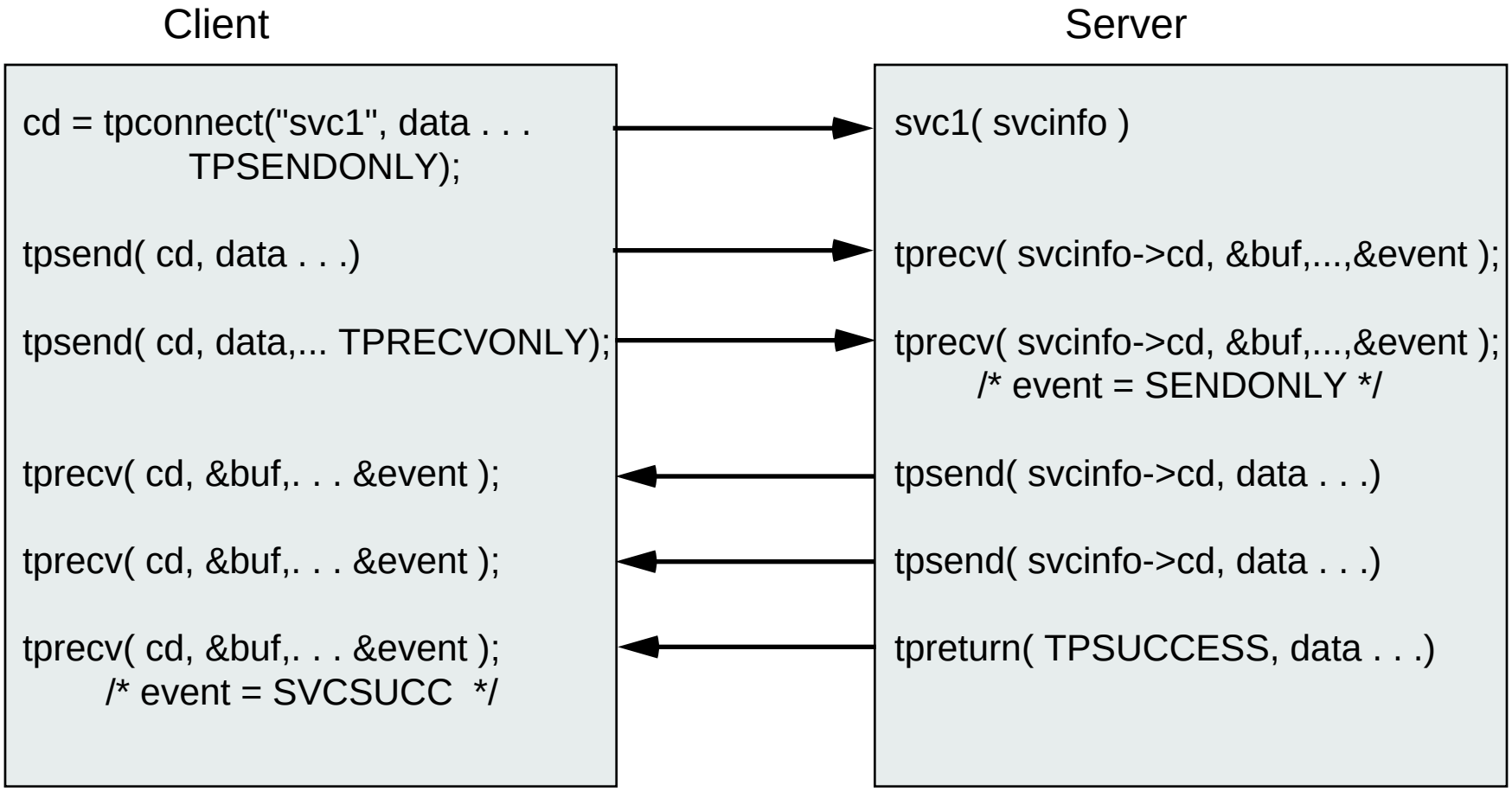
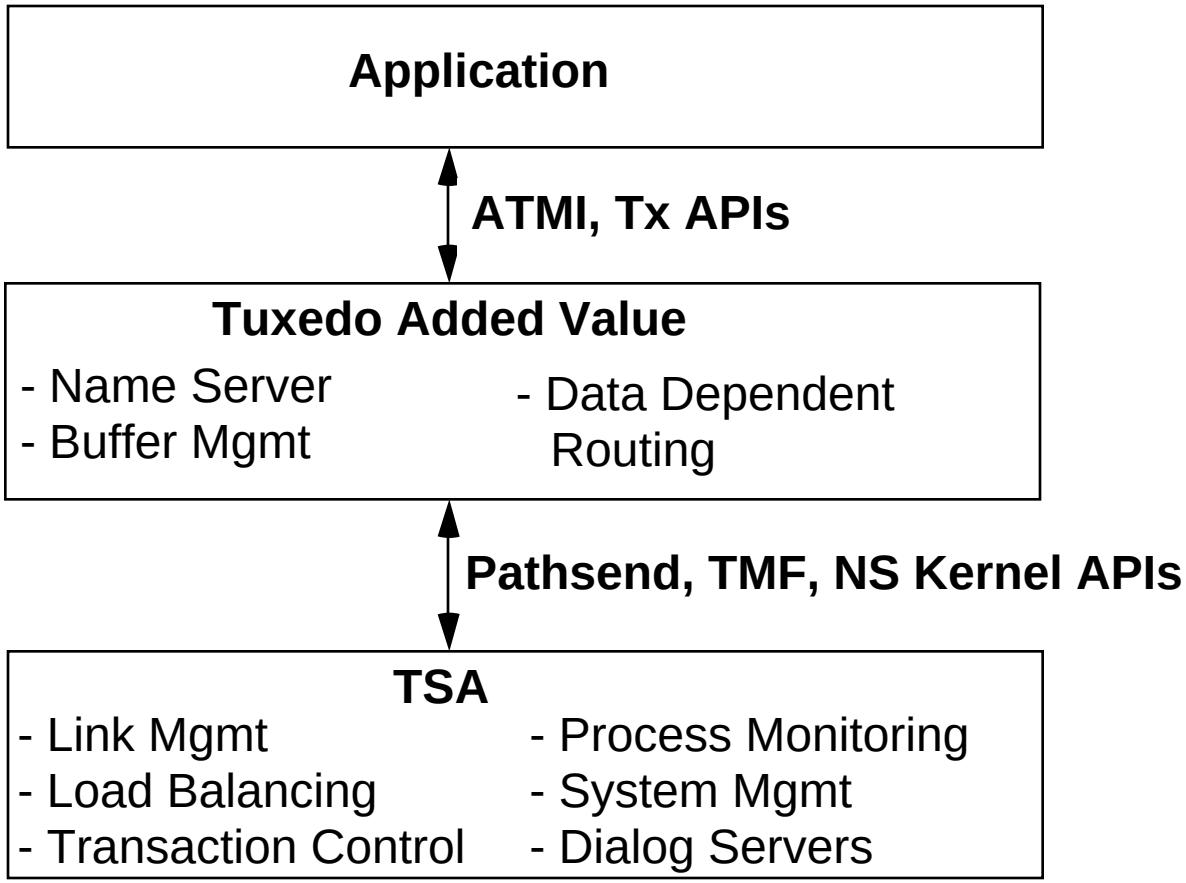
ATMI Conversation Example



NonStop TUXEDO Externals

- Full TUXEDO API
  - ATMI (superset of X/Open's XATMI)
  - C and COBOL bindings
  - X/Open's Tx API
  - FML and VIEW functions (80+ calls)
  - Integration with I18N
  - Miscellaneous utility functions
- Tuxedo application administration tools
  - tmloadcf, tmboot, tmconfig, tmadmin, etc.
- /WS and /DOMAIN interoperability
- TUXEDO development tools
  - buildclient, buildserver, mkfldhdr, viewc, viewdis, etc.

NonStop TUXEDO and TSA



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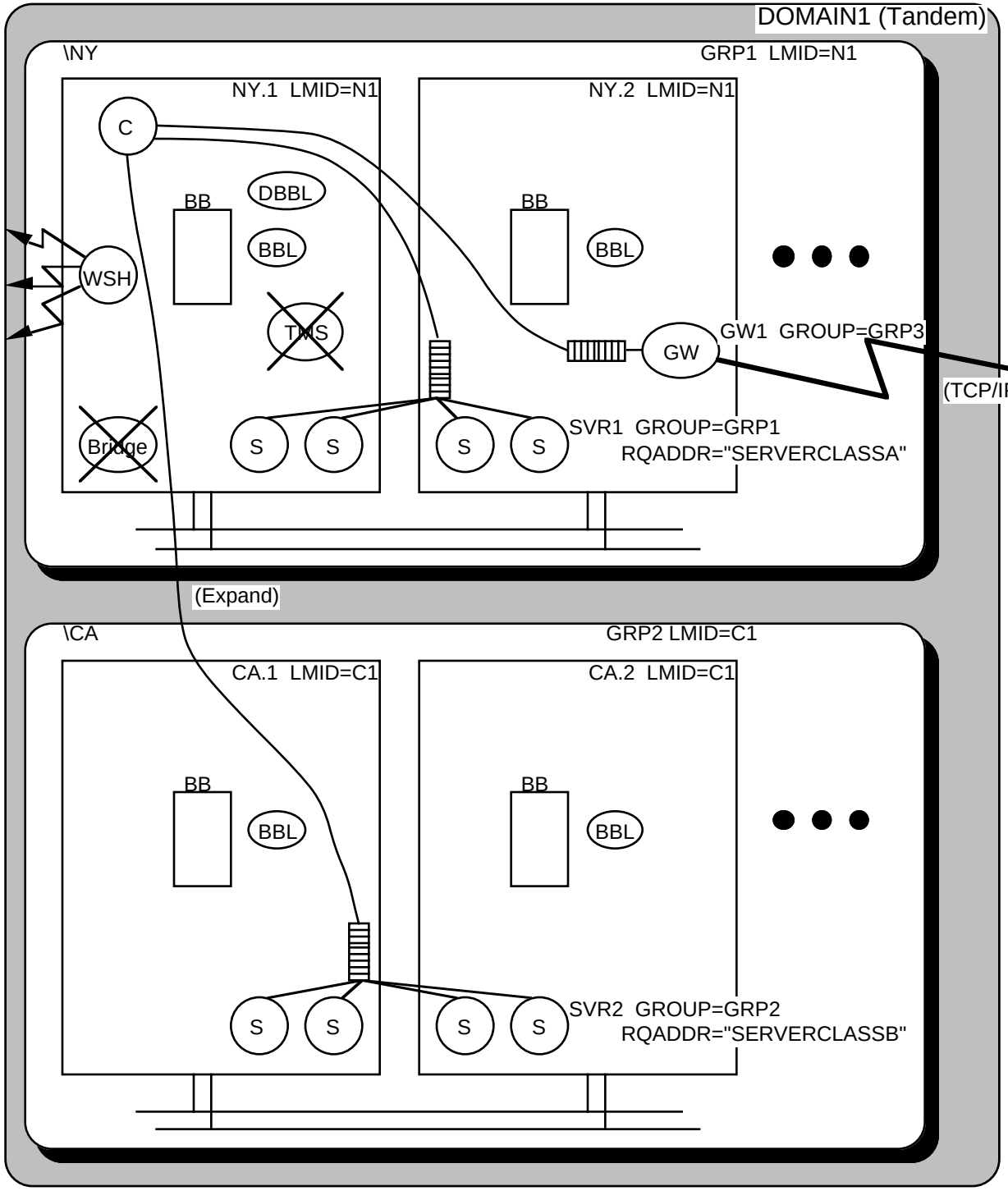
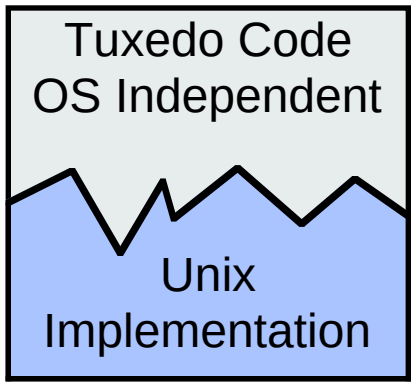
Architecture

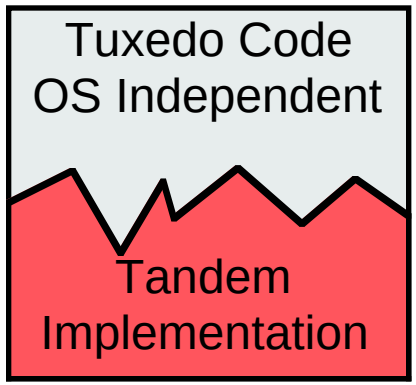


- Multiple CPUs in one Logical Machine
- BB, BBL in each CPU
- Spans nodes
- Pathway servers
- Pathway manages processes
- No process pairs (other than Pathmon)
- No TMS
- No Bridge

Porting Attributes

- Expose Tandem fundamentals
- Performance similar to native calls
  - TPCall ≈ Pathsend
  - No extra messages
- Future releases readily move to Tandem
  - Well defined interfaces between OS dependent and independent code
  - Novell incorporates interface changes into base product





Why Would a Tandem Customer Use NonStop TUXEDO?

- Openness and standards prevent vendor lock in
- Interoperability with other systems (including Integrity)
- Tuxedo value added
  - Logical service names
    - Location independent naming
  - Data dependent routing
  - Buffer management
    - Automatic data conversions
  - Single service can span Tandem nodes
  - Reliable queued messages for long operations

Why Should a Non-Tandem Customer Use NonStop TUXEDO?

- Can use the leading open Transaction Monitor
- Can use the best OLTP platform
  - Scalability
  - Availability
    - No single point of failure
    - NonStop availability, 7 x 24 x Forever
  - Manageability
    - Single log per system
    - Easier/automatic tuning characteristics
    - Load balancing over multiple CPUs
    - Richer system management tools
  - Process Management
    - Process restart after CPU failure
    - Better failure detection

Why Should a TUXEDO Customer Switch to NonStop TUXEDO?

- Because they can!!!!
- NonStop Tuxedo removes another road block preventing an application from moving to the best OLTP platform
  - Scalability
  - Availability
  - Manageability
  - Process management

The same application runs better on Tandem systems.

Project/Product Phases

- Prototype the chosen design approach (done)
- Release 1 - One Tuxedo system, many Tandem nodes and cpus
- Release 2 - Tuxedo interoperability between Tandem & "other" Tuxedo domains

NonStop Tuxedo - Release 1

- Single, NS Kernel domain – no non-Tandem nodes
- ATMI (superset of XATMI) – client, server
- /WS, WMIO clients
- PATHWAY server classes, TMF transactions
- Tuxedo Administration tools
- C and COBOL API - clients and servers in both languages
- Unix (including Integrity) to NS Kernel via /WS
- NS Kernel to Unix via /WS
- No /Q, no /DOMAIN, no interoperability

NonStop Tuxedo - Release 2

- /Domain support
  - /TDomain - Tuxedo to Tuxedo (possibly not on Tandem) over Tuxedo FAP
- Interoperability with non-NS Kernel Tuxedo Domains
- Heterogeneous Transactions (needs Open TMF)
- /Q support

- Outplan items
  - TxRPC (lack of funding)
  - /OSI-TP Domain - Tuxedo to TP system over OSI-TP (requires OSI-TP services)

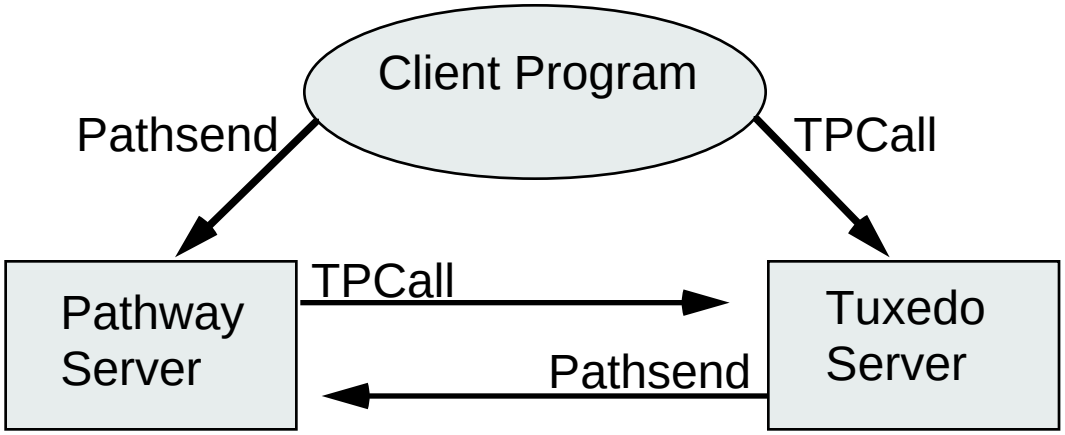
Open TMF

- Heterogeneous Transaction
  - Import Transaction - Tell TMF to be subordinate
  - Export Transaction - Include Gateway in 2-phase commit
  - Logging of Gateway Info
  - Recovery Service
- Follow on to TMF3

NonStop Tuxedo Platform

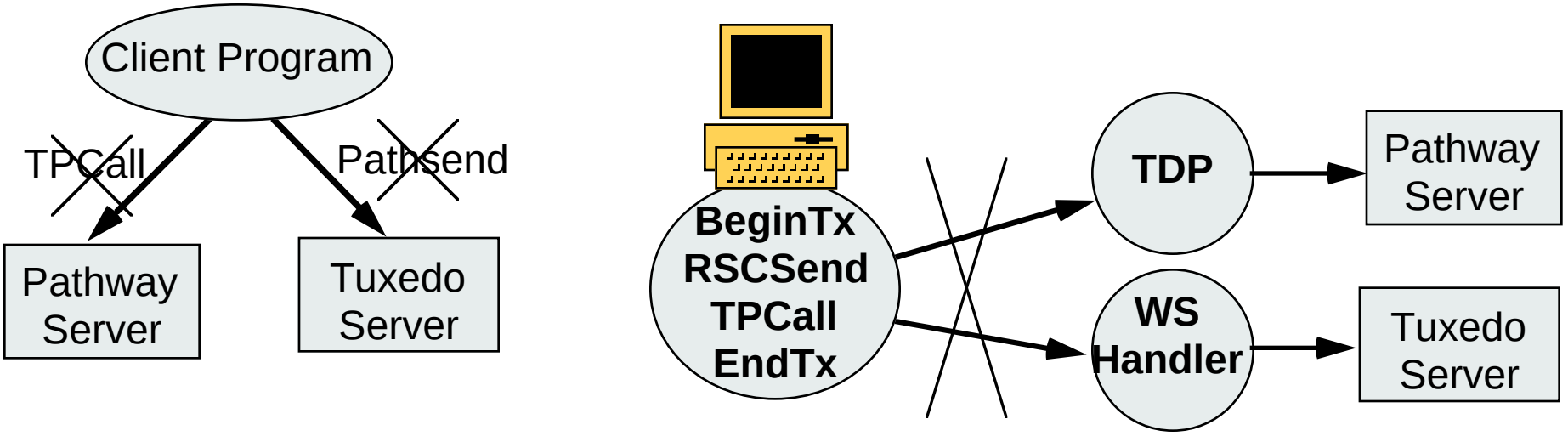
- RISC only, (need multiple active extended segments)
  - CLX/R, Cyclone/R, Himalaya
- D30 based, (Various dependencies, including semaphores)
- OSS clients and servers
  - Pathway to support OSS servers

Coexistence - Positive



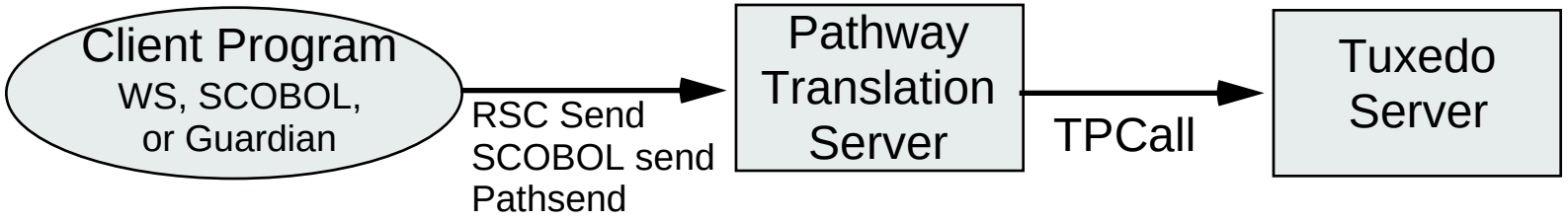
- Tandem client can both Pathsend to Pathway servers and ATMI to Tux Servers
- Similarly for WS clients using RSC and ATMI
- Pathway servers can TPCall to Tux Servers
- Tux Servers can Pathsend to Pathway server
- Transactions flow across both sends and TPCalls

Coexistence - Negative



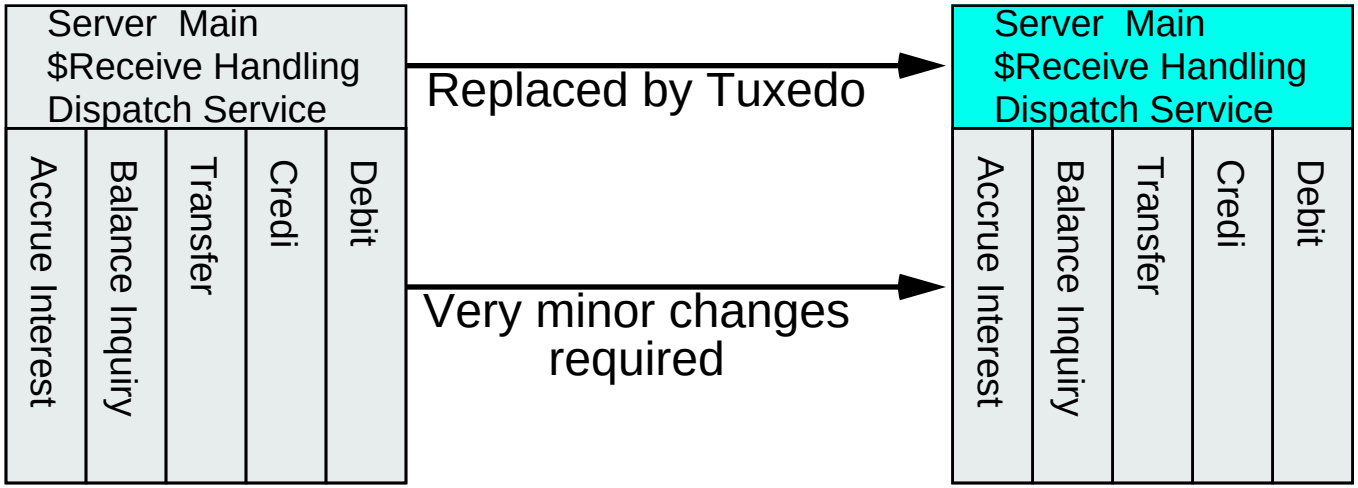
- Cannot Pathsend (or SCOBOL send, or RSC send) directly to Tux Server
- Cannot TPCall directly to a Pathway server
- WS client cannot do both RSC and TPCall under same transaction

Coexistence - Translation Servers



- Can translate an old-style send to a TPCall
- Converts DDL described message into Tuxedo Buffer (FML or VIEW)
- Can be used for migration
- Terminal support is a requirement
- Simple translation server will be provided

Migration



- Can write servers in anticipation of Tuxedo
- Will require less that 10% of code to be converted
- Can provide simple examples

Summary

- NonStop Tuxedo will give Tandem users an Industry standard Transaction monitor
  - Standard APIs for portability (programs and skills)
  - Standard FAPs for interoperability
  - Additional capabilities for Tandem OLTP applications
- NonStop Tuxedo is built on top of Tandem's core OLTP products
  - Pathway, TMF, NS Kernel
- NonStop Tuxedo inherits Tandem Fundamentals
  - Scalability, Fault Tolerance, Availability, Manageability . . .

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