



Tivoli software from IBM

IBM System z Software Teleconference

Best practices for enterprise job scheduling

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ON DEMAND BUSINESS™

Why a Teleconference Today?

- **Tivoli Workload Scheduler for z/OS**
 - ▶ Workload Manager integration
 - ▶ IBM System Automation integration
 - ▶ IBM Tivoli Business Service Manager
 - ▶ Tivoli Enterprise Portal integration
 - ▶ E2E solution and recent enhancements

- **Tivoli Workload Scheduler for Distributed**
 - ▶ Updates on Tivoli Workload Scheduler 8.3
 - ▶ Tivoli Workload Scheduler LoadLeveler

- **Tivoli Workload Scheduler for Applications**
 - ▶ Updates on Tivoli Workload Scheduler for Applications 8.3

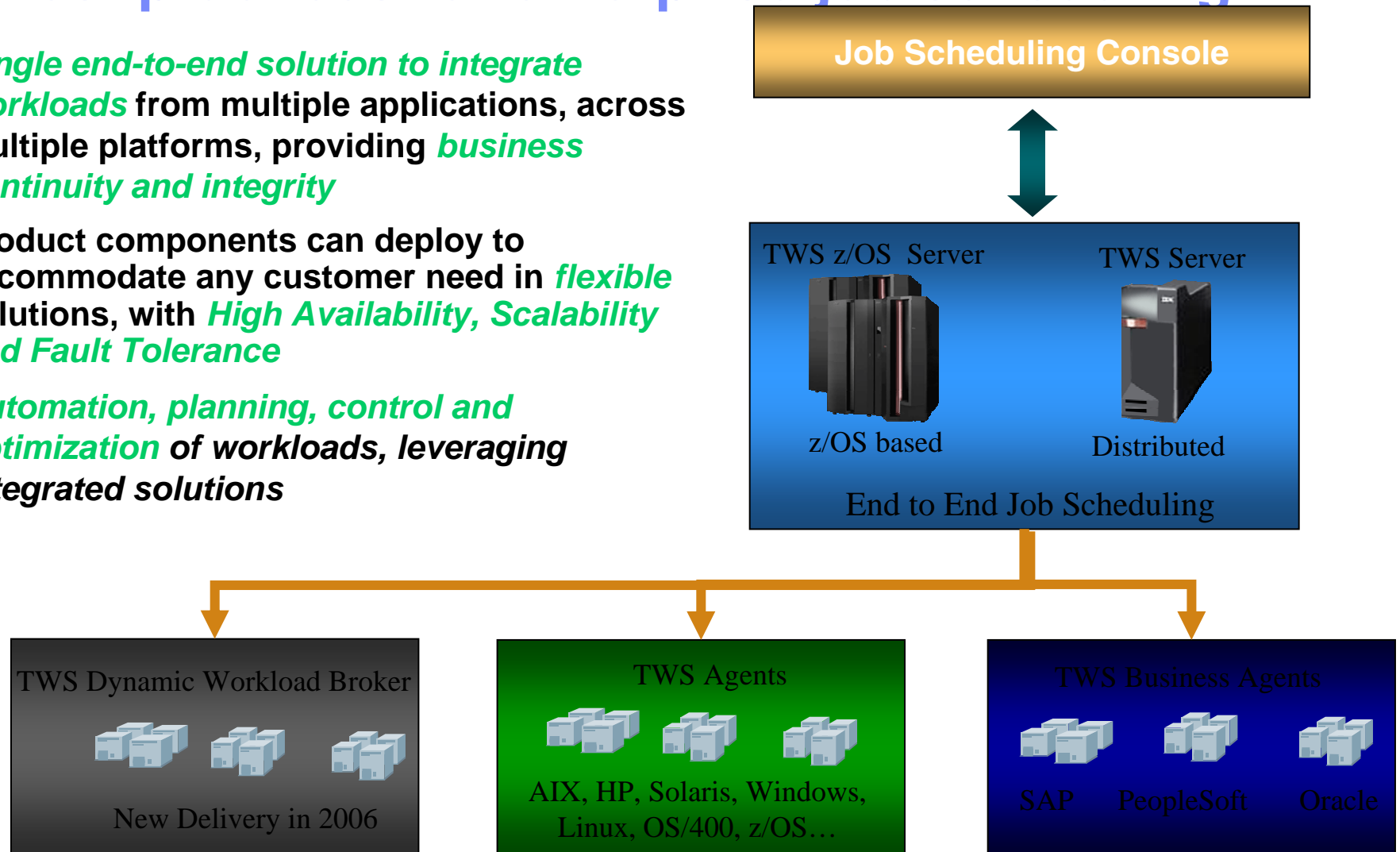
- **Overview of Tivoli Workload Scheduler for z/OS v8.3**

- **Migration strategies**

IBM Tivoli Workload Scheduler

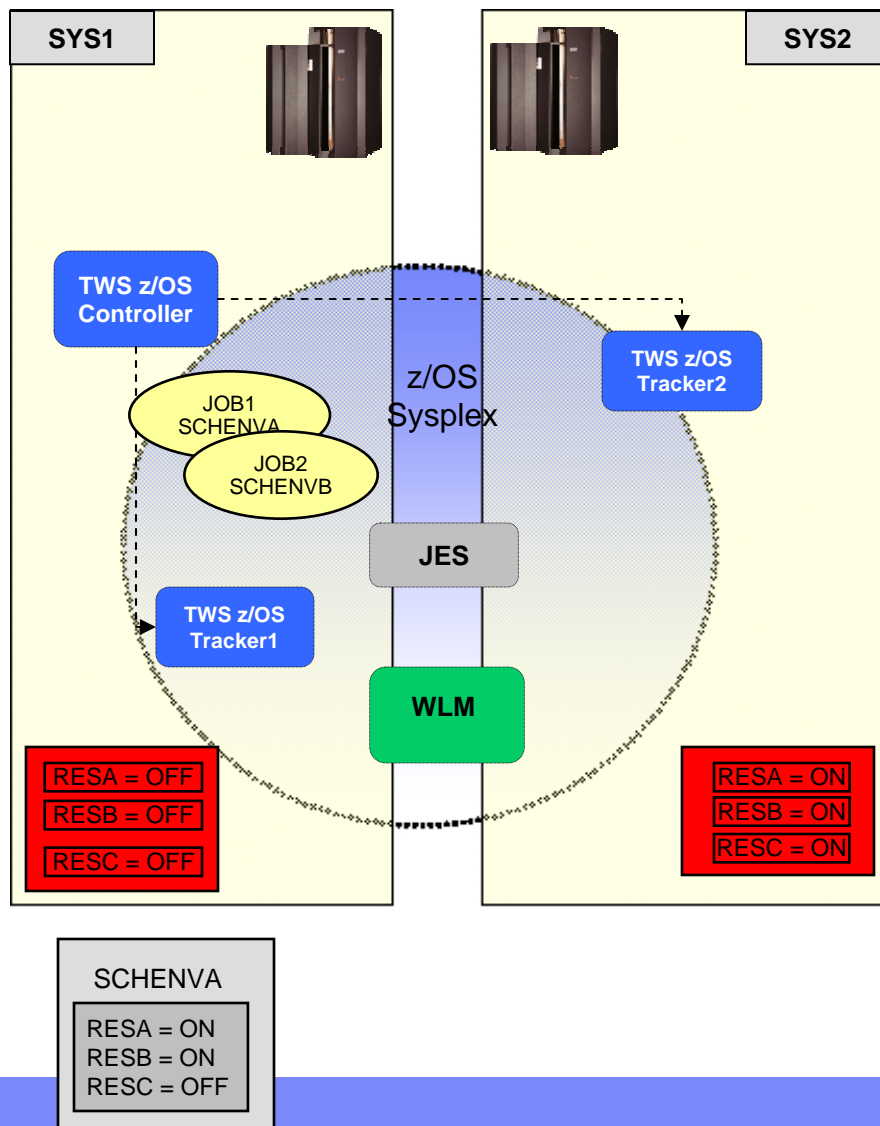
→ Best practices for enterprise job scheduling

- *Single end-to-end solution to integrate workloads* from multiple applications, across multiple platforms, providing *business continuity and integrity*
- Product components can deploy to accommodate any customer need in *flexible* solutions, with *High Availability, Scalability and Fault Tolerance*
- *Automation, planning, control and optimization of workloads, leveraging integrated solutions*



IBM Tivoli Workload Scheduler

-> WLM integration with ITWS for z/OS



Defining

- ▶ WLM Scheduling Environment to TWS for z/OS operations
- ▶ Application Description and Current Plan
- ▶ Operation granularity and massive way

Monitoring

- ▶ Before submitting jobs, TWSz checks for SE status
- ▶ SE not available or not existing prevent job submission
- ▶ New status flag and error codes allows easy monitoring

Automatic resubmission

- ▶ Trackers activate a mechanism listening SEs status
- ▶ Produce a new event as soon as SE gets available
- ▶ When Controller receives the event, jobs waiting for SE are automatically resubmitted

Multi-sysplexes support

- ▶ SYSPLEXID parameter allows to manage multiple-sysplex environments

Multi-Jesplex support

- ▶ JESPLEXID parameter allows to manage multiple-jesplex environments

IBM Tivoli Workload Scheduler

-> IBM SA integration with ITWS for z/OS

Current Command Interface

- SA requests inserted in oper text
- Naming convention for operation workstation (NVxx)
- Limited string for SA commands
 - ▶ Operation text is 24 chars
 - ▶ No TWSz variable substitution
 - ▶ No piping
- Need to define SA policy
- EXIT7 used to send SA commands Via Netview
- Unnecessary processing, since EXIT7 is invoked at each op status change
- SA msgs not logged into TWSz logs

IBM SA integrations

Current Command Interface

New Command Interface

IBM Tivoli Workload Scheduler

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IBM SA integrations

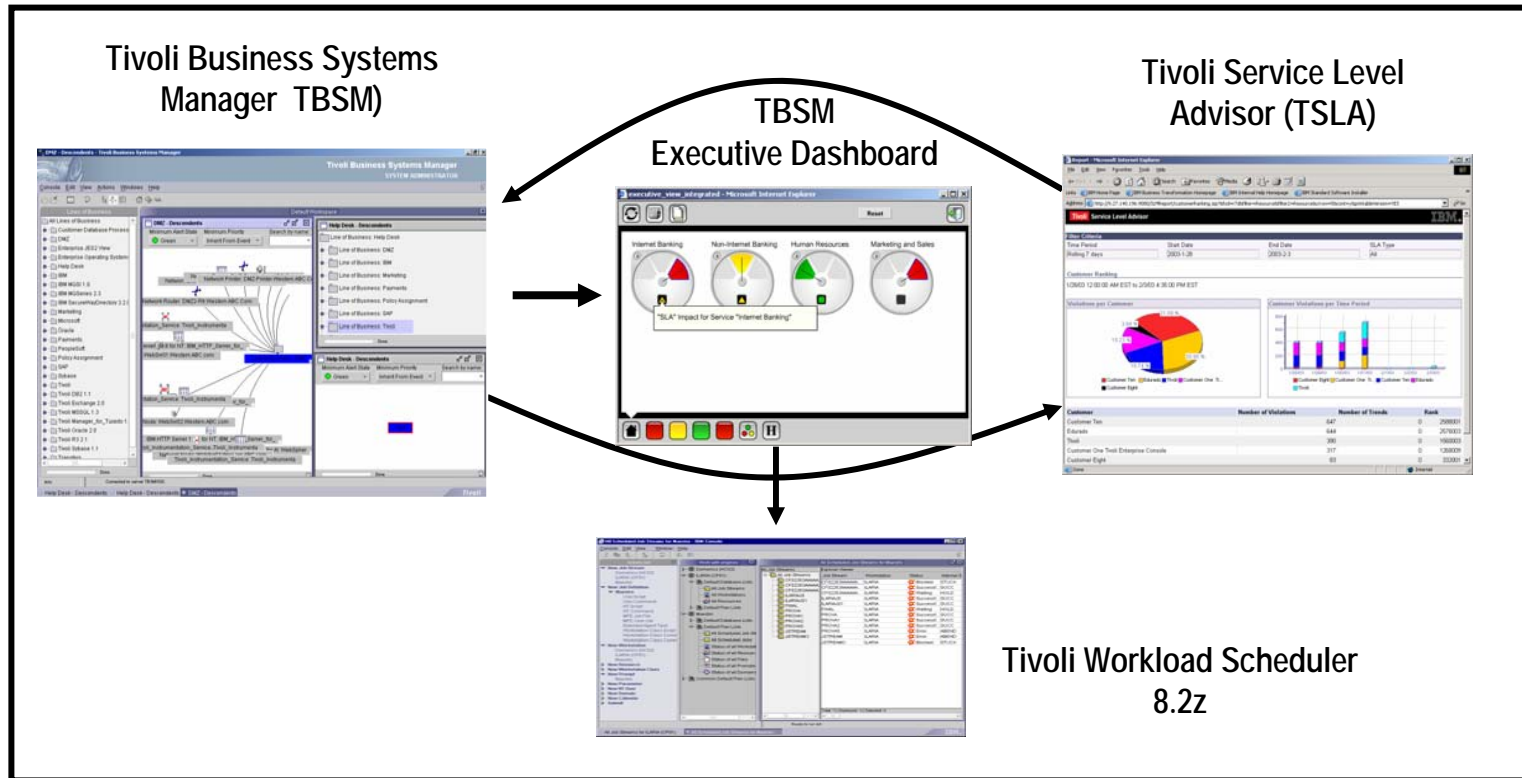
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New Command Interface

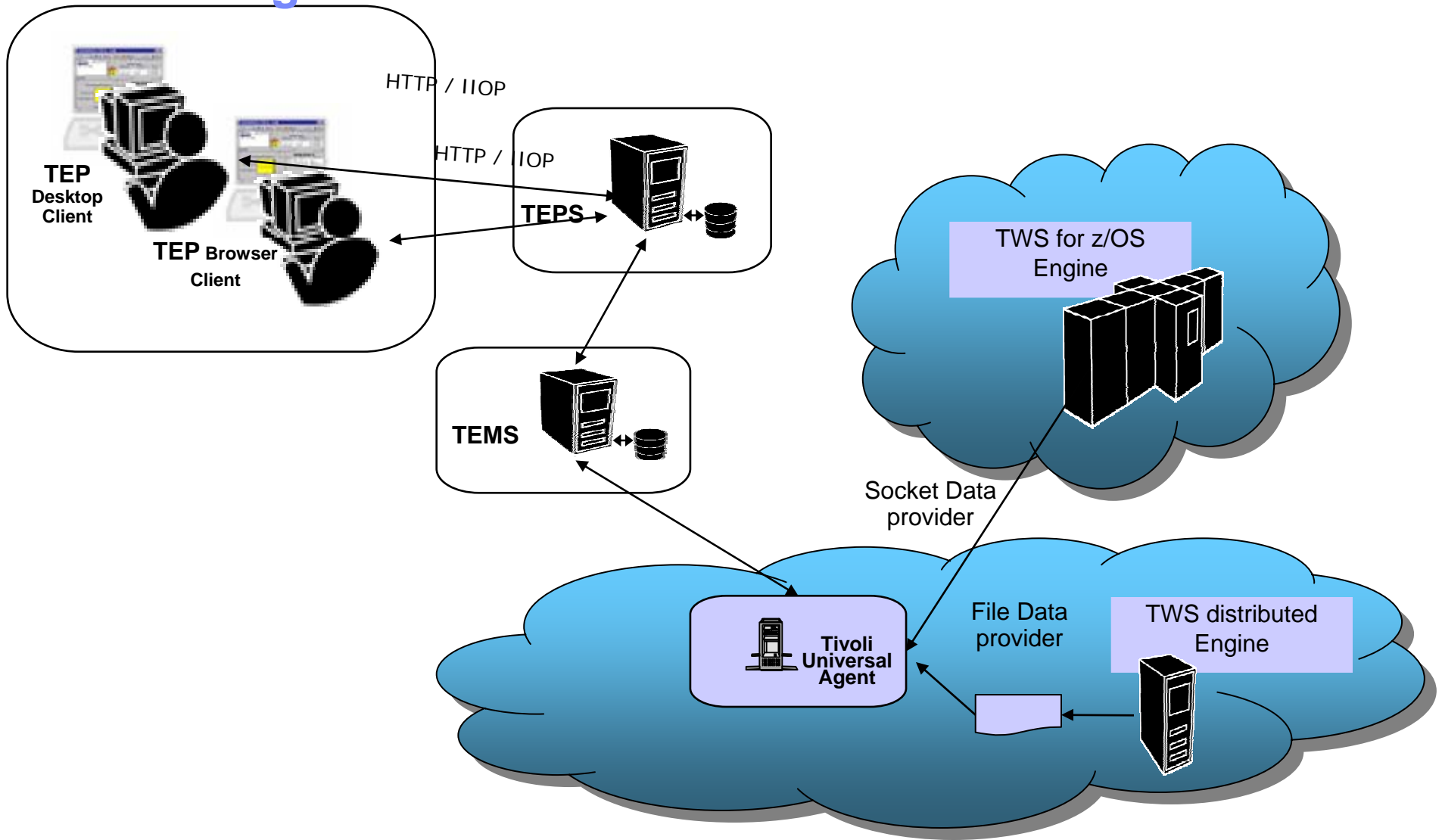
- New “Automation” option for general automatic workstations
- New ISPF Dialogs for automatic operations (AD and CP)
 - ▶ Command text (256 chars)
 - ▶ Automated Operator
 - ▶ Security Element
 - ▶ Completion Info
- TWSz variables in command text
- Multiple commands piped
- No need to define SA policy
- New exit **EQQUXSAZ**, invoked for automatic operations at submission time
- SA messages logged within a TWSz message in **EQQMLOG**

IBM Tivoli Workload Scheduler -> TBSM integration with ITWS for z/OS



Enables a common definition of service levels from a single console, allows for monitoring of critical paths between jobs and job streams, and provides for policy based recommendations for capacity adjustments

IBM Tivoli Workload Scheduler -> TEP integration with ITWS

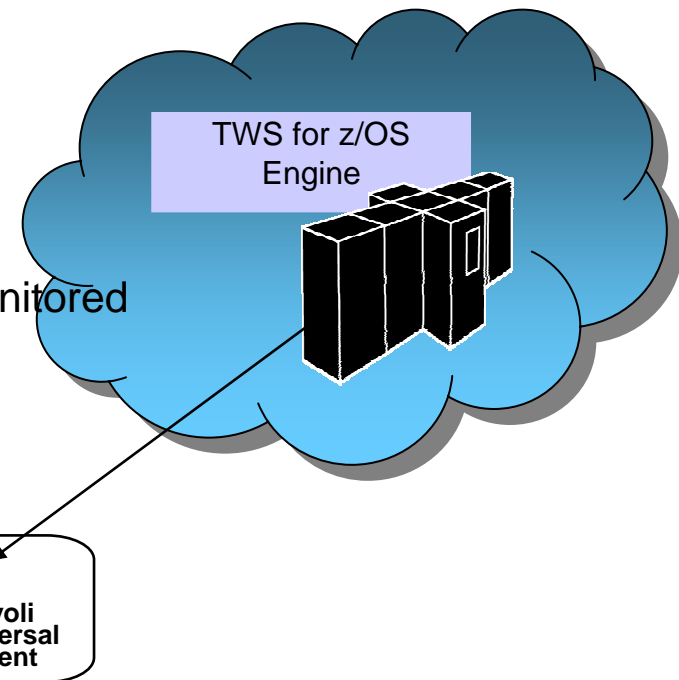


IBM Tivoli Workload Scheduler

-> TEP integration with ITWS for z/OS

Job related events

- Optional initial bulk discovery of **pre-defined critical jobs**
- Following events will be monitored for **pre-defined**
 - **Job start**
 - **Job end**
 - **New job added to the Current Plan**
- Furthermore, for all **jobs**, following alerts will be monitored
 - **Alert for ended in error jobs**
 - **Alert duration**
 - **Alert for late jobs**
 - **Alert for time out of a Special Resource**



Subtasks related events

- **Alert for TWSz subtask ended in error**
- **Alert for TWSz subtask queues exceeding threshold**

IBM Tivoli Workload Scheduler

-> Recent enhancements on E2E solution

E2E Server messages to System Console Log

APAR PK11314 (delivered 4Q2005)

- ❖ E2E Server messages consistently logged to Server log
- ❖ Possibility to route them to system console
 - SA and Netview can monitor E2E Server and trigger automated processes
- ❖ Possibility to filter messages, based on user-defined criteria

E2E Reduce Network Shut-down

APAR PK11811 (delivered 1Q2006)

- ❖ Minimize the distributed agents stop period
- ❖ Postpone agent stopping after Symphony creation
- ❖ Progressive shut-down feature
- ❖ Additional Mailman server
- ❖ Automatic evtsize

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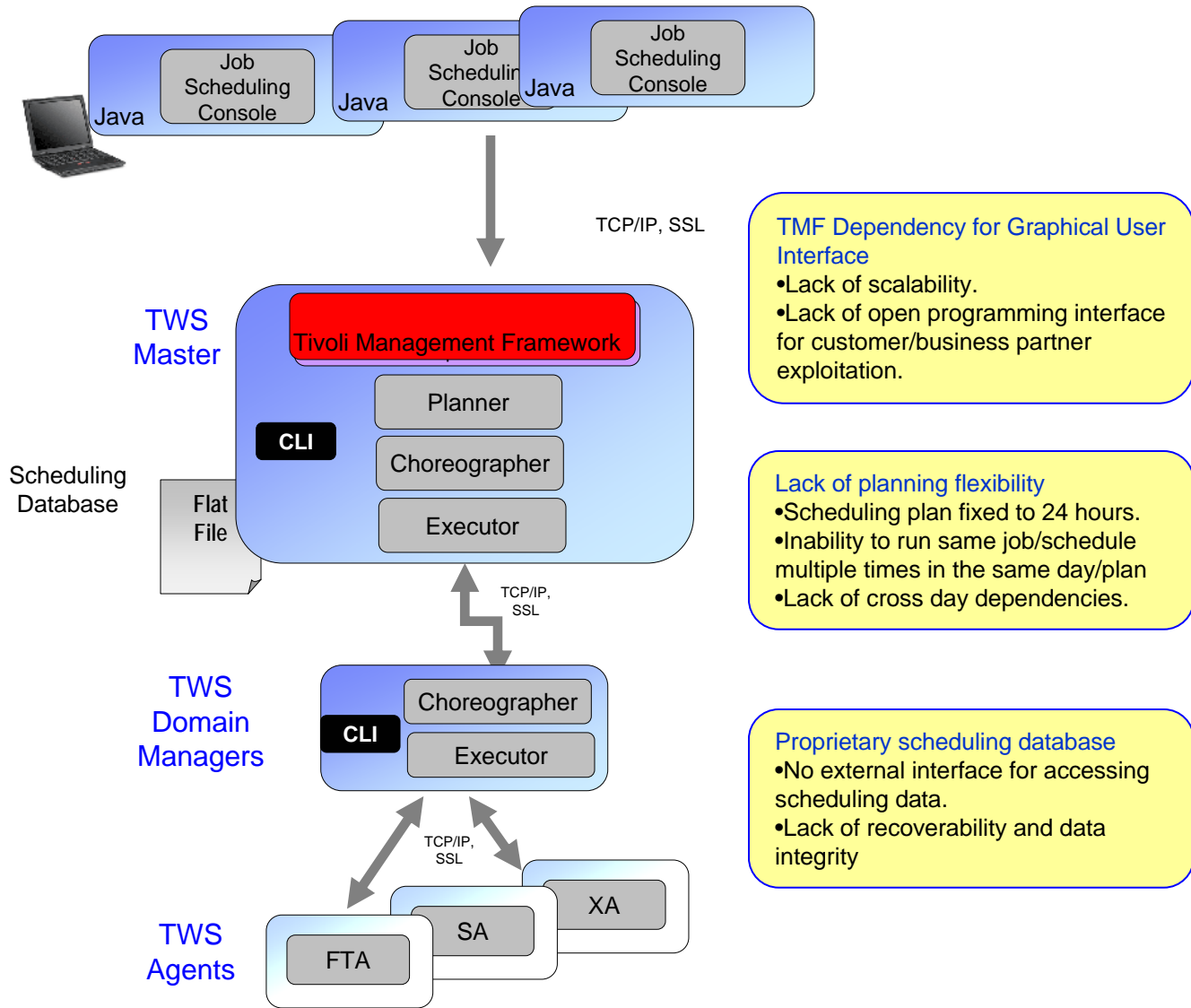
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Tivoli Workload Scheduler



TMF Dependency for Graphical User Interface

- Lack of scalability.
- Lack of open programming interface for customer/business partner exploitation.

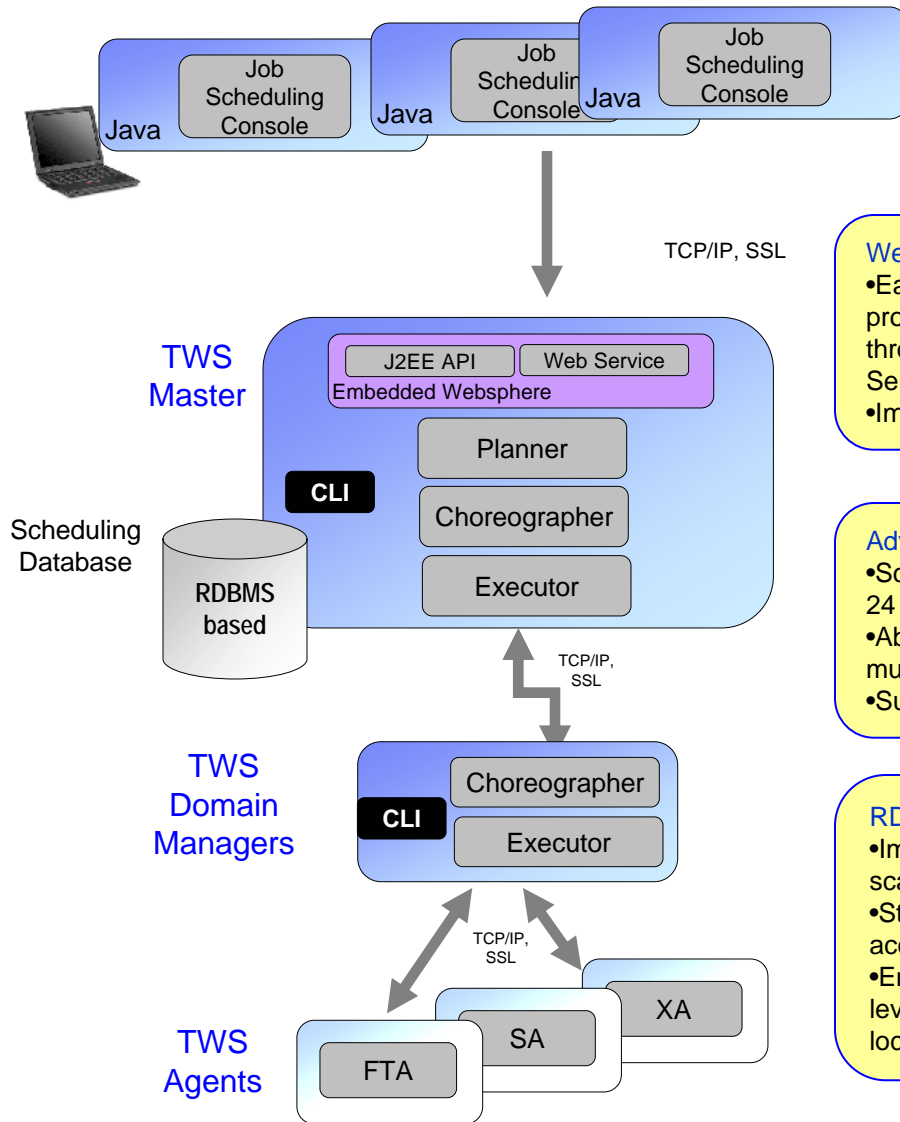
Lack of planning flexibility

- Scheduling plan fixed to 24 hours.
- Inability to run same job/schedule multiple times in the same day/plan
- Lack of cross day dependencies.

Proprietary scheduling database

- No external interface for accessing scheduling data.
- Lack of recoverability and data integrity

Tivoli Workload Scheduler



TWS V8.3 4/28/2006

WebSphere based infrastructure

- Easier integration with business processes and third party products through Standard J2EE/Web-Services Interface
- Improved reliability and scalability

Advanced scheduling flexibility

- Scheduling plan spans more than 24 hours.
- Ability to run same job/schedule multiple times in the same day/plan
- Support of cross day dependencies

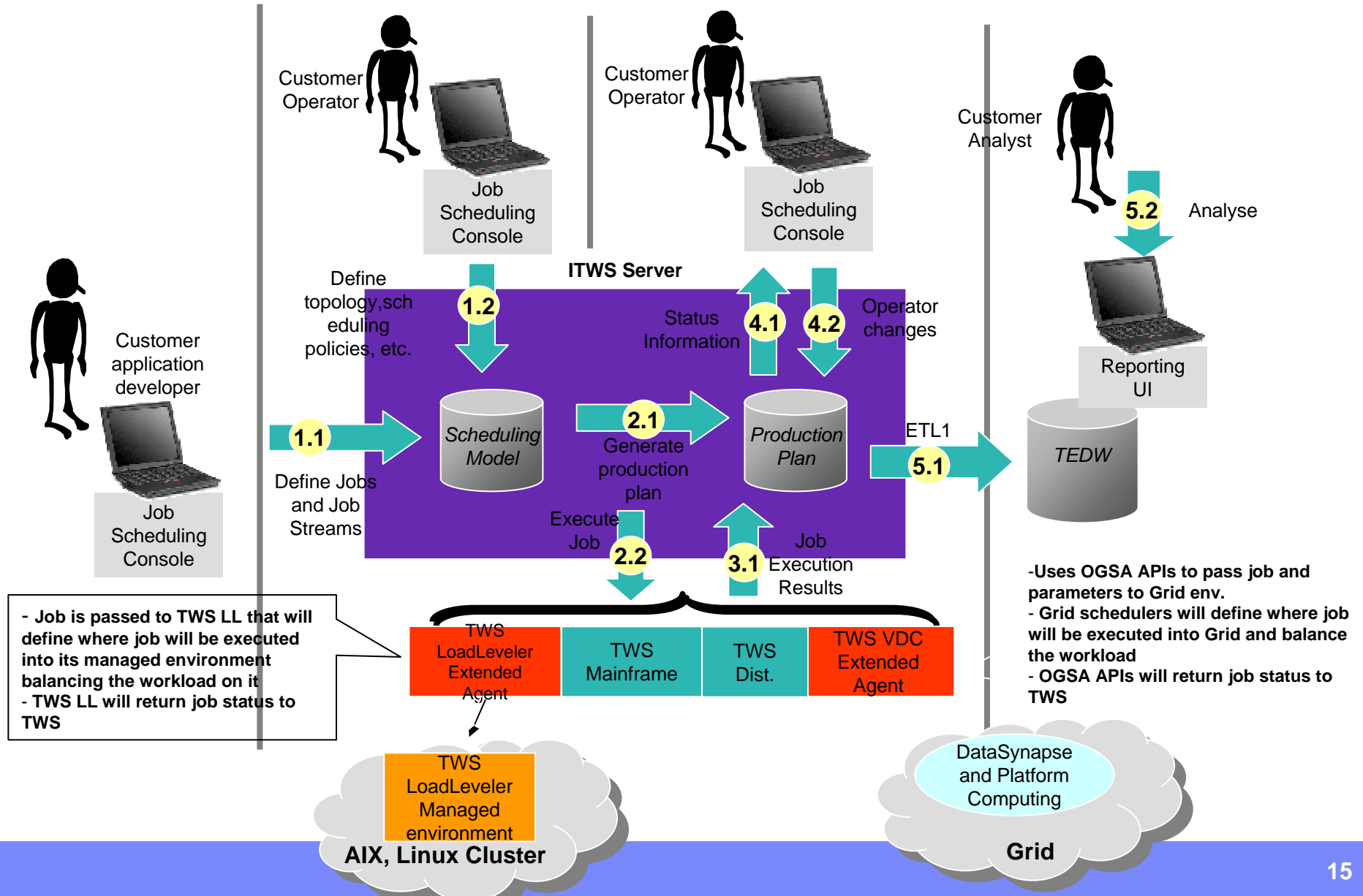
RDBMS based scheduling repository

- Improved reliability, availability and scalability.
- Standard external interface for accessing scheduling data.
- Enhanced data integrity by leveraging RDBMS transactional and locking mechanisms

TWS LoadLeveler v3.3.1

- TWS LoadLeveler is a job management system that allows Tivoli customers to optimize workload execution and performance on AIX and Linux clusters of systems by matching the jobs processing needs with the available resources.
- TWS LoadLeveler extends the TWS Family to support:
 - ▶ Cluster environments where the customer wants to improve resource utilization and job throughput across a variety of servers
 - ▶ Cluster environments where the customer wants to exploit idle server cycles
 - ▶ A Beowulf cluster environment for running massively parallel MPI applications
 - ▶ Environments where customers are new to cluster computing and need an easy-to-use, fully documented and supported job scheduler.
 - ▶ Grid environments in which multiple applications are being dispatched across virtualized resources

TWS 8.3 with TWS LoadLeveler



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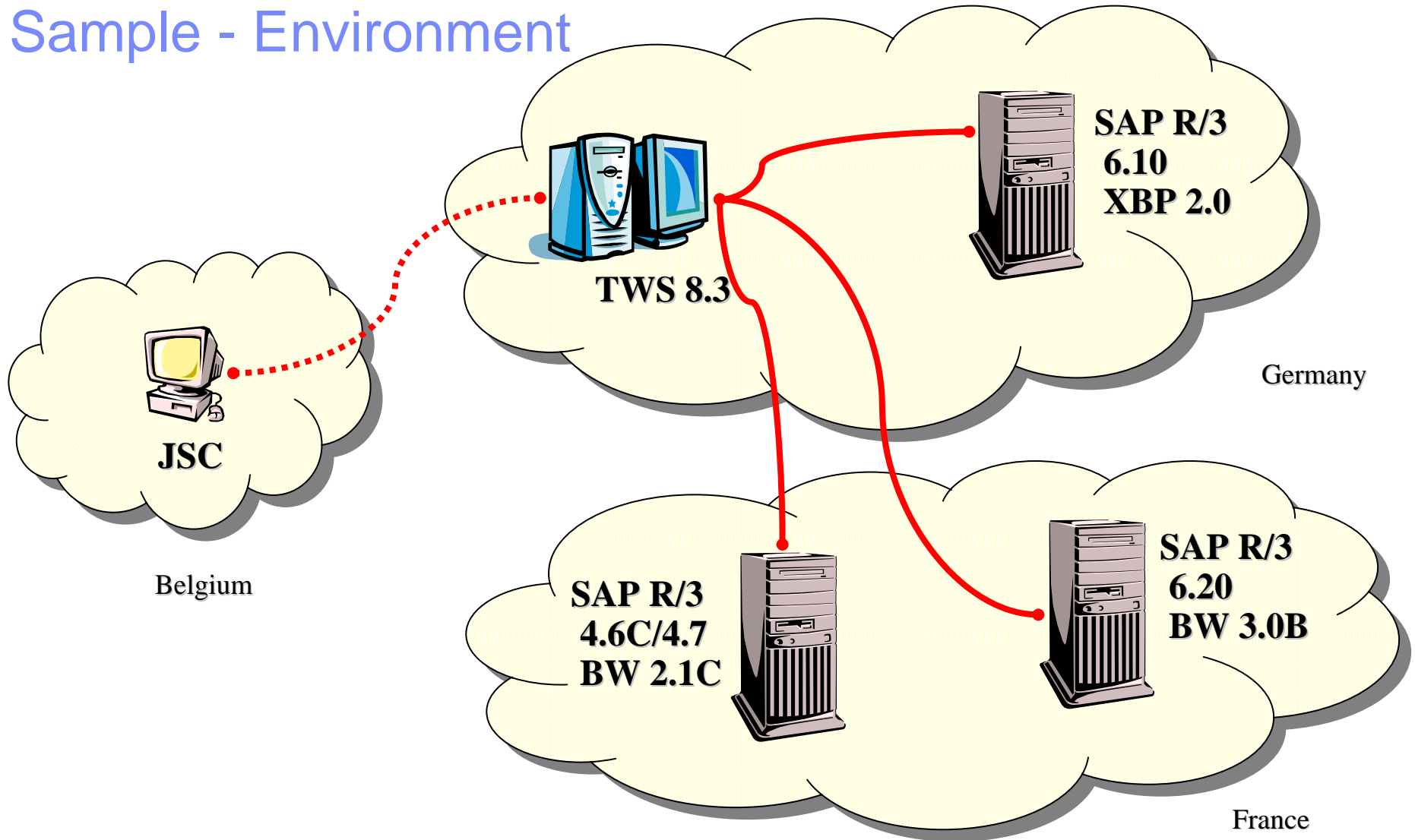
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TWS for Applications (SAP)

- IBM Tivoli Workload Scheduler for Applications provides direct integration between the Workload Scheduler engine and SAP R/3 (and R/3 Business Information Warehouse)

- IBM Tivoli Workload Scheduler 8.3 for Applications is certified by SAP for:
 - Background Processing, Job Scheduling (BC-XBP 2.0) - R/3 6.20; 6.10
 - BIW - Scheduling (BW-SCH) - BW-SCH 3.5; 3.0
 - External Alert & Monitoring (BC-XAL) - BC-XAL 6.10
 - XML Monitor Write (BC-XML) - R/3 6.20; 6.10
 - Enterprise Portal Business Package Certification (EP-BP) - EP-BP 6.0

Sample - Environment



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IBM Tivoli Workload Scheduler

-> TWS for z/OS v8.3 overview



- **Enhance planning and choreography capability**
 - Critical Path Management and Monitoring
 - Every runcycle improvement (i.e: schedule Application every 1hr, every 15 minutes etc...)
 - Introduce delay between jobs (i.e: start jobB after 10 minutes of jobA completion)
 - Loop dependency analysis improvement

- **Improve event-driven scheduling**
 - Enhance variable support in events triggered jobs
 - Increased capability to schedule unplanned workload (via ETT)
 - More flexibility in defining Special Resources

- **Enhance E2E scheduling capabilities**
 - Standard Agents connected to Master Domain Manager

- **Integration with other SWG products**
 - Integration with Tivoli Enterprise Portal

- **Serviceability**
 - IBM Support Assistant

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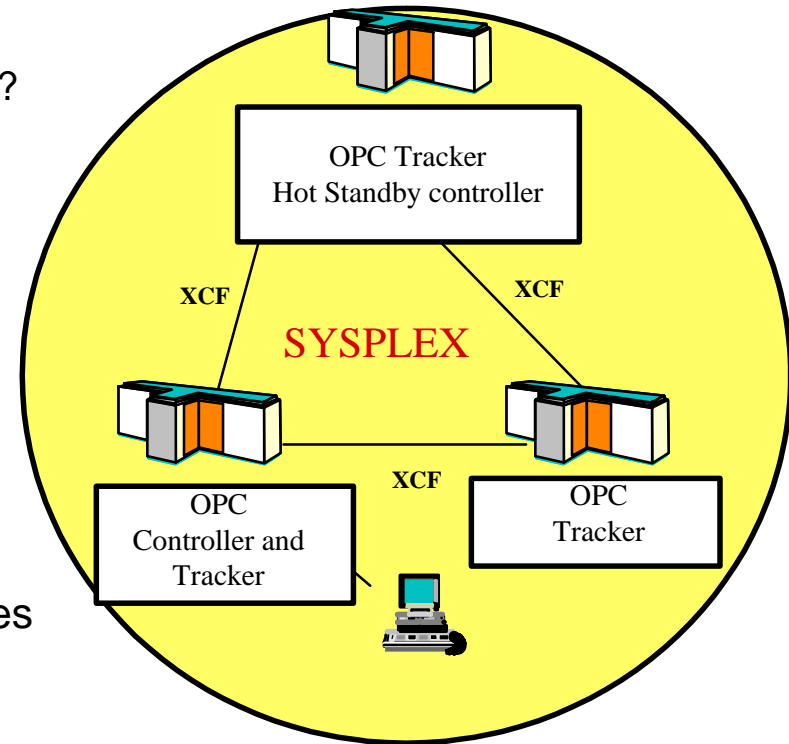
Why Migrate ?

- Lower your Cost – multiple schedulers, duplicate operations staff
- Future Direction –Bring your environment under the control of industry leading processes and systems management practices
- End to End Management: Migrating to ITWS enables true end to end batch management.
- Dissatisfaction with the future prospects of existing scheduler
- Dissatisfaction with existing product support. One of IBMs biggest strengths with many customers is our willingness to take ownership of a problem.



Install and Customize ITWS for z/OS

- Determine required configuration
 - ▶ Job Scheduling Console (JSC – GUI) ?
 - ▶ DB2 History Database ?
 - ▶ Dialog, API, e2e, JSC Servers ?
 - ▶ Restart & Cleanup ?
 - ▶ DataStore ?
 - ▶ Automatic Recovery ?
- Build a Development environment
- Customise startup parameters
- Design and Build Security Access Rules
- Build a Production environment
- Build Planning & Housekeeping Batch



Free Migration Analysis

- IBM will analyze your current ISV scheduling environment (CA, BMC or ASG only) through data collection and conference calls.
- A high level write-up of findings (likely one or two pages) will be generated from the supplied information.
- A review of the findings will be conducted approximately two weeks after all completed and validated information and data is received



Summary

- Tivoli Workload Scheduler provides:
 - ▶ Single end-to-end solution to integrate workloads from multiple applications, across multiple platforms, providing business continuity and integrity
 - ▶ Product components can deploy to accommodate any customer need in flexible solutions, with High Availability, Scalability and Fault Tolerance
 - ▶ Automation, planning, control and optimization of workloads, leveraging integrated solutions



Additional Contact Information

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