



Dynamic Resource Management As A Part of Enterprise Process Orchestration



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What is Job Scheduling In The Datacenter?

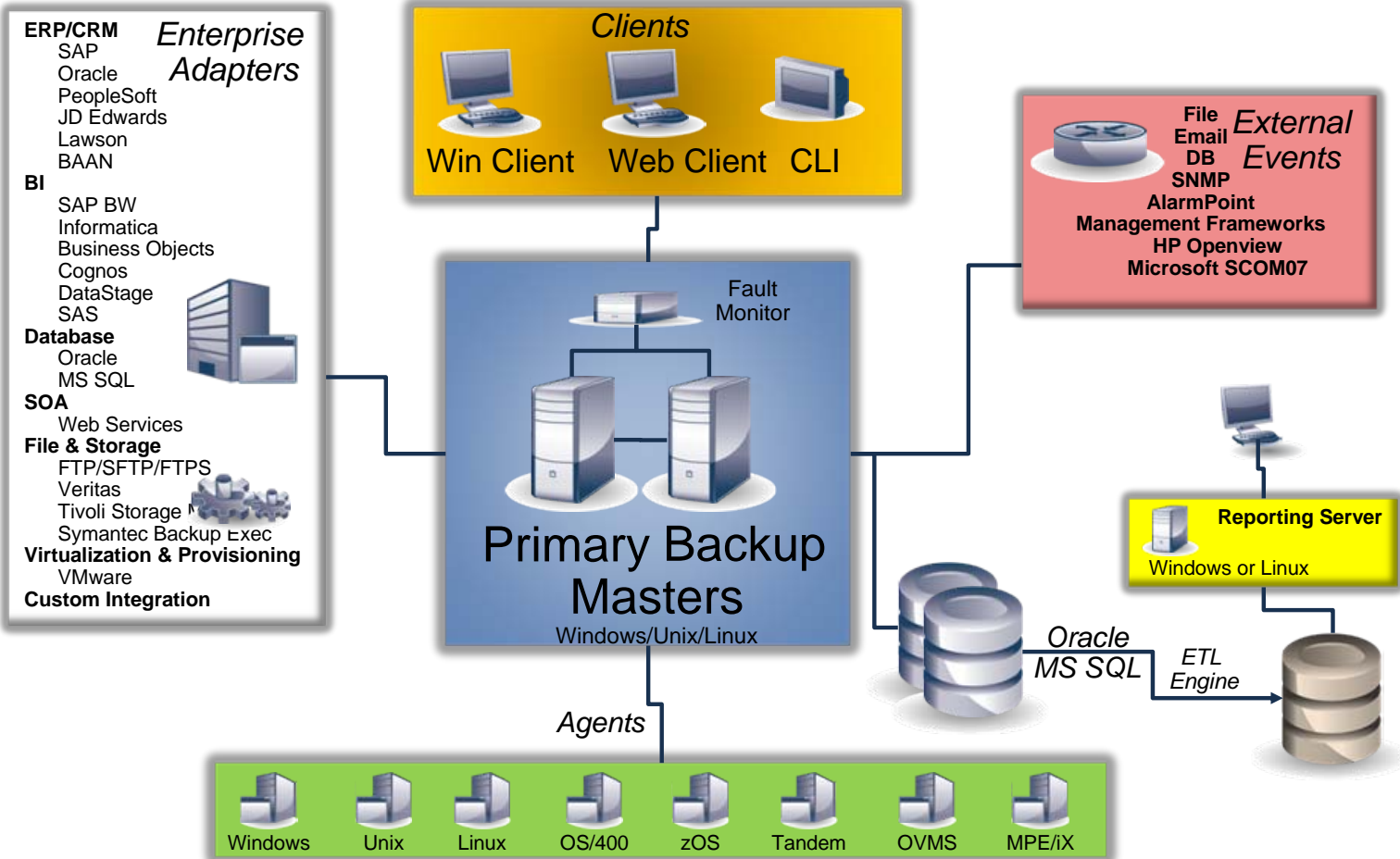
- All major applications running in the datacenter require a series of standard and event driven processing actions. Examples Include:
 - ERP Runs
 - Data Transfers Between Entities and Companies
 - Financial Processes
 - Business Intelligence ETL and Report Generation
- There are often dependencies across different platforms and technologies that need to be managed as part of a standard process flow.
- Complex business calendars, security schemes and error recovery approaches are often needed to meet business and IT SLA's.
- Dynamic use of environments to support processing loads and meet business process performance SLAs is a key requirement of next generation datacenters.

Tidal Enterprise Scheduler Capabilities

Tidal Enterprise Scheduler orchestrates and manages complex business processes across the enterprise. Capabilities provided include:

- Connection to and scheduling of jobs and processes across a wide array of target platforms and resources, including virtualized environments.
- The ability to support complex calendar management, dependency mapping and error recovery.
- Support for complex event, action and variable management.
- Support ITIL processes around change management, incident management and request fulfillment, linking with various systems management tools and processes.
- A robust failover platform to ensure availability based SLAs can be achieved.

Tidal Enterprise Scheduler Overview



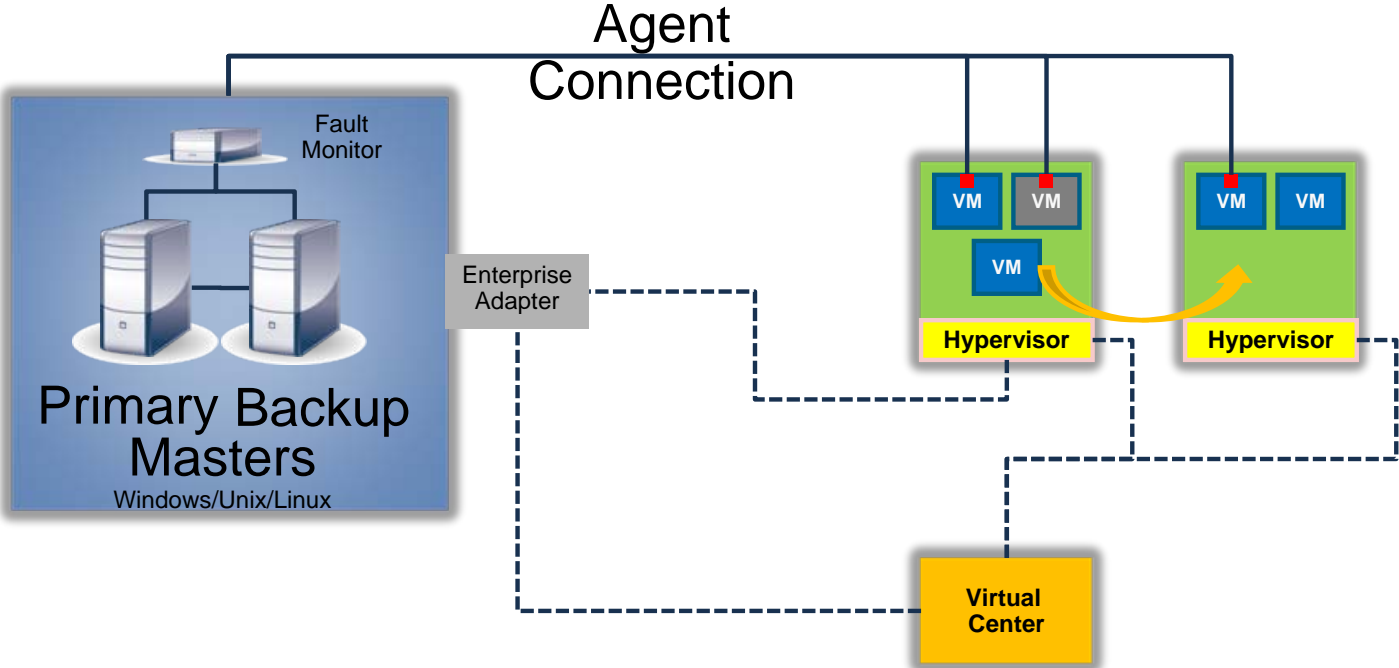
Virtualization Options In The Scheduling World

- Run the scheduling Master in a VM
- Manage Agents in a VM
 - Allow for process step scheduling in a guest OS
- Control the Hypervisor
 - Perform actions on the VM's
- Control the Virtual Center
 - Perform across cross Hypervisors (Vmotion)

Examples of Virtualization In the Scheduling World

- Scheduling of VM power up / down
- Snapshot a VM after a process executes
- Increase resources during resource intensive job execution or based upon a resource event.
- VMotion of a VM from a small resource state to a large resource state (larger host)

Workload Automation Architecture



VMWare Enterprise Adapter Features

- Users and Security
 - VMWare security model is honored
- Connections (ESX or Virtual Center) exposes
 - Machine list (inventory)
 - Event & task history
 - Host Performance
- Enable scheduling of Jobs (full Scheduler functionality)
 - Power
 - Snapshot
 - Configuration

VMWare Enterprise Adapter Features (continued)

- Trigger on VMWare Events
 - Power
 - Performance
- Virtual Center Integration
 - Virtual machine cloning
 - Cold migration of virtual machines
 - Live migration of virtual machines

VMWare Connection Configuration

Add Connection	TIDAL Agent for Windows	Ctrl+Ins
Edit Connection F2	TIDAL Agent for UNIX	Shift+Ctrl+U
Delete Connection Ctrl+Del	TIDAL Agent for z/OS	Shift+Ctrl+Z
Enable	TIDAL Agent for OpenVMS	Shift+Ctrl+O
Disable	TIDAL Agent for MPE/iX	Shift+Ctrl+P
Reconnect	Remote Master	Shift+Ctrl+R
Test		
Find Ctrl+F	Email Adapter	
Find Next F3	Horizon Adapter	
Print Ctrl+P	MSSql Adapter	
New Root Folder...	Oracle Database Adapter	
New Sub Folder...	OracleApps Adapter	
10.10.40.51	OS/400 Adapter	
sapbw40/001/*	PeopleSoft Adapter	
NW2/800/*	SAP Adapter	
sapnw08/800/*	TA Adapter	
sapr3e01/800/*	VMWare Adapter	
	WebService Adapter	
	z/OS Gateway Adapter	

Connection Definition (Edit Mode)

VMWare Adapter

Name: VM - HOU-ESX-01

General | VMWare Connection | Virtual Machines | History | Performance | Options | Outages | Description

Refresh

Virtual Machine Name	State	Time	Notes	Memory
HOU-DEV-VM-02	Powered On	3/23/2008 2:04 AM	Test VM 3	1024
HOU-DEV-VM-03	Powered On	3/23/2008 2:08 AM	Test VM 2	1304
HOU-HPQV-00	Powered On	3/23/2008 2:00 AM	HP OpenView	1044
HOU-INFA-01	Suspended	3/24/2008 8:43 AM	Reconfigured on 03/05/20...	1024
HOU-INFA-02	Powered On	3/23/2008 2:06 AM		1564
HOU-RHEL51-TIR-01	Powered Off			256
HOU-RHEL51-TIR-02	Powered On	3/23/2008 2:09 AM		1996
hou-suse-x64-2cpu	Powered Off			512
RHEL-5	Powered Off			1216

Enabled Use as default for VMWare Jobs

VMWare Adapter History Events and Tasks

Connection Definition (Edit Mode) VMWare Adapter

Name: VM - HOU-ESX-01

General | VMWare Connection | Virtual Machines | History | Performance | Options | Outages | Description

Events Tasks Refresh

Date/Time	User	Event
03/23/08 02:00:51	root	HOU-HPOV-00 on host HOU-ESX-01.tidalsoft.local in ha-datacenter
03/23/08 02:00:51	root	User root@127.0.0.1 logged in
03/23/08 02:00:53	root	HOU-HPOV-00 on HOU-ESX-01.tidalsoft.local in ha-datacenter is p
03/23/08 02:02:51	root	HOU-INFA-01 on host HOU-ESX-01.tidalsoft.local in ha-datacenter i
03/23/08 02:03:09	root	HOU-INFA-01 on HOU-ESX-01.tidalsoft.local in ha-datacenter is po
03/23/08 02:04:21	root	HOU-DEV-VM-02 on host HOU-ESX-01.tidalsoft.local in ha-datacent
03/23/08 02:04:23	root	HOU-DEV-VM-02 on HOU-ESX-01.tidalsoft.local in ha-datacenter is
03/23/08 02:06:22	root	HOU-INFA-02 on host HOU-ESX-01.tidalsoft.local in ha-datacenter i
03/23/08 02:06:23	root	HOU-INFA-02 on HOU-ESX-01.tidalsoft.local in ha-datacenter is po
03/23/08 02:08:22	root	User root@10.10.50.128 logged in
03/23/08 02:08:22	root	HOU-DEV-VM-03 on host HOU-ESX-01.tidalsoft.local in ha-datacent
03/23/08 02:08:39	root	HOU-DEV-VM-03 on HOU-ESX-01.tidalsoft.local in ha-datacenter is
03/23/08 02:08:46	root	User logged event: Remote console on HOU-DEV-VM-02 disconnecte
03/23/08 02:08:53	root	User logged event: Remote console on HOU-HPOV-00 disconnecte

Enabled Use as default for VMWare J

Connection Definition (Edit Mode) VMWare Adapter

Name: VM - HOU-ESX-01

General | VMWare Connection | Virtual Machines | History | Performance | Options | Outages | Description

Events Tasks Refresh

Started	Completed	Task	Entity
03/26/08 03:25:35	03/26/08 03:25:35	haTask-96-vim.VirtualMachine.shutdownGuest-31475	HOU-INFA-02
03/26/08 03:25:39	03/26/08 03:25:42	haTask-32-vim.VirtualMachine.powerOn-31479	HOU-INFA-01
03/26/08 03:26:20	03/26/08 03:26:21	haTask-80-vim.VirtualMachine.createSnapshot-31491	HOU-HPOV-00
03/26/08 12:30:10	03/26/08 12:30:10	haTask--vim.SessionManager.login-29408	

Enabled Use as default for VMWare Jobs

VMWare Adapter Performance

Connection Definition (Edit Mode)

VMWare Adapter

Name VM - HOU-ESX-01

General | VMWare Connection | Virtual Machines | History | Performance | Options | Outages | Description

Wed Mar 26 03:22:20 PDT 2008 Sample Size 1 Interval (Secs) 20 Refresh

Measurement	Instance	Latest Value	Maximum	Minimum
CPU Active (1 min. average)		20.00 Percent	20.00	20.00
CPU Active (1 min. peak)		28.00 Percent	28.00	28.00
CPU Active (15 min. average)		18.00 Percent	18.00	18.00
CPU Active (15 min. peak)		27.00 Percent	27.00	27.00
CPU Active (5 min. average)		18.00 Percent	18.00	18.00
CPU Active (5 min. peak)		28.00 Percent	28.00	28.00
CPU Idle Time	0	18709 Milliseconds	18709	18709
CPU Idle Time	1	18593 Milliseconds	18593	18593
CPU Reserved Capacity		0 MHz	0	0
CPU Running (1 min. average)		15.00 Percent	15.00	15.00
CPU Running (1 min. peak)		21.00 Percent	21.00	21.00
CPU Running (15 min. average)		13.00 Percent	13.00	13.00
CPU Running (15 min. peak)		20.00 Percent	20.00	20.00
CPU Running (5 min. average)		13.00 Percent	13.00	13.00

Enabled Use as default for VMWare Jobs

VMWare Job Definition

The screenshot displays the VMware Job Definition configuration window for a task named 'Suspend HOU-INFA-01'. The task is configured with the following details:

- Job Name:** Suspend HOU-INFA-01
- Job Class:** Owner Schedulers
- Parent Group:** \Tax Calculation and Reporting
- Task:** Suspend
- Options:** Skip if already in expected power state
- Virtual Machine:** HOU-INFA-01
- Variables:** (Dropdown menu)
- Status:** Enabled
- Last Modified:** 3/24/2008 10:39 AM

Three context menus are overlaid on the interface, showing task categories and their sub-items:

- Menu 1 (Top):**
 - Power Tasks
 - Snapshot Tasks
 - Configuration Tasks
- Menu 2 (Middle):**
 - Power Tasks
 - Snapshot Tasks
 - Configuration Tasks
- Menu 3 (Bottom):**
 - Power Tasks
 - Snapshot Tasks
 - Configuration Tasks

The sub-items for these menus are:

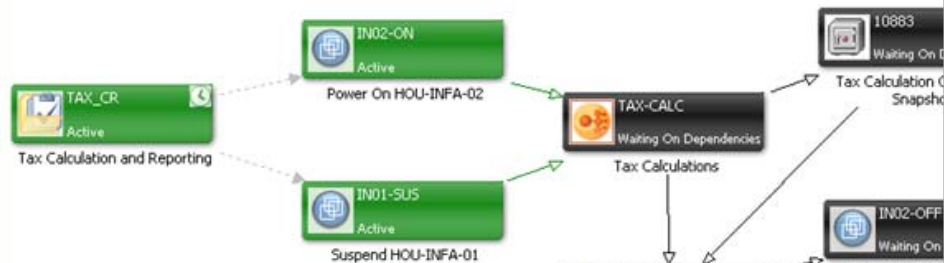
- Menu 1 Sub-items:** Query Power State, Power On, Power Off, Suspend, Reset, Reboot Guest, Shutdown Guest, Standby Guest
- Menu 2 Sub-items:** Reconfigure, Migrate
- Menu 3 Sub-items:** Create Snapshot, Revert To Current, Revert To Snapshot, Rename Snapshot, Remove Snapshot, Remove All Snapshots

VMWare Job Monitoring Details and Output

File View Activities Reports Help rem-devan07-dev 27 wait 2 active n/a overall Tom Sawyer 1 Mar 26 2:21 PM Search

SM COMPANY*
 Console - Job Activity Group View - Tax Calcula...
 Job Activity -- Wednesday, March 26, 2008 Auto Update ON

Tax Calculation and Reporting



Job Details

Job Name: Suspend HOU-INFA-01 (1) Job No.: 65223

Status | Audit Log | Output | Dependencies | Resources | Override | Runbook | Notes | History | VMWare | Run Info

Virtual Machine: HOU-INFA-01

Power State:	poweredOn	Boot Time:	03/26/08 08:31:46
Host:		Suspended:	
Connected:	Yes	Memory:	1024
Tools Status:	Running	Overhead:	175370240
DNS Name/IP Addr:	HOU-INFA-01.tidalsoft.local/10.10.40.115	Max CPU:	4413
Notes:	Reconfigured on 03/05/2008 at 11:22 AM		

Recent Task Information

Key:	haTask-32-vim.VirtualMachine.suspend-34885	Queued Time:	03/26/08 08:47:21
State:	running	Started Time:	03/26/08 08:47:21
Cancelled:	no/no	Completed Time:	

Progress: 26%

Refresh

Job Details

Job Name: Power On HOU-INFA-02 (1) Job No.: 65222

Status | Audit Log | Output | Dependencies | Resources | Override | Runbook | Notes | History | VMWare | Run Info

```

Power On operation for HOU-INFA-02 completed successfully.

Task: haTask-96-vim.VirtualMachine.powerOn-34884
State: success
Queued: 03/26/08 08:47:21
Started: 03/26/08 08:47:21
Completed: 03/26/08 08:47:27

Agent listener found on port 5912 (10.10.40.117)

VMWare tools running.

Completed at 3/26/2008 2:45 PM
  
```

VMWare Events and VMotion

VMWare Event Definition (Create Mode)

Event Name: High CPU on Host HOU-ESX-02

Owner: Tom Sawyer

VMWare Monitor | Schedule | Associated Action(s) | Description | Trigger History

Monitor

VMWare Connection: VC - hou-fs-00 (VMWare)

VMWare Event: Performance Alarm - Host

ESX Host: hou-esx-02.tidalsoft.local

Performance Counter: CPU Usage (Average)

Trigger: Average Greater Than 85 Percent

CPU: CPU usage as a percentage over the collected interval

Check Trigger On Connect

Public Enabled

OK Cancel

VMWare Job Definition

Job Name: Migrate HOU-RHEL51-TIR-01

Job Class: Owner: Schedulers

Parent Group:

VMWare | Schedule | Run | Dependencies | Resources | Job Events | Options | Runbook | Notes | Images

Virtual Machine Management Task

Task: Migrate

Task Details

Virtual Machine: HOU-RHEL51-TIR-01

Target Host:

Target Resource Pool: High-Reserved

Priority: Default

Power State: poweredOn Use VMotion

Variables

Enabled

OK Cancel

VMWare Virtual Machine Reconfiguration

The screenshot shows the 'VMWare Job Definition' dialog box. The 'Job Name' is 'Reconfig HOU-INFA-02 for Informatica'. The 'Job Class' is set to 'Schedulers' and the 'Owner' is 'Schedulers'. The 'Parent Group' is '\Tax Calculation and Reporting'. The 'VMWare' tab is selected, showing a 'Virtual Machine Management Task' with the 'Task' set to 'Reconfigure'. Under 'Task Details', the 'Virtual Machine' is 'HOU-INFA-02', 'Memory (MB)' is '1028', and 'Number of CPU's is '2'. The 'Config File (.vmx)' field is empty. The 'Notes' field contains the text: 'Reconfigured on <SysDate.mm/dd/yyyy> at <SysTime.hh:mm AM/PM> for Informatica process'. There is a 'Variables' button at the bottom of the task details area. The 'Enabled' checkbox is checked at the bottom left of the dialog.

VMWare Job Definition

Job Name: Reconfig HOU-INFA-02 for Informatica

Job Class: [Dropdown] Owner: Schedulers

Parent Group: \Tax Calculation and Reporting

VMWare | Schedule | Run | Dependencies | Resources | Job Events | Options | Runbook | Notes | Images

Virtual Machine Management Task

Task: Reconfigure

Task Details

Virtual Machine: HOU-INFA-02

Memory (MB): 1028

Number of CPU's: 2

Config File (.vmx): [Empty Field]

Notes: Reconfigured on <SysDate.mm/dd/yyyy> at <SysTime.hh:mm AM/PM> for Informatica process

Variables [Dropdown]

Enabled

In Summary

The Tidal VMWare Adapter allows IT organizations to manage virtual environments in line with the batch process schedules that lie at the heart of an Enterprise's business processes.

By providing the ability to manage virtual environments in support of fluctuations in scheduling load, IT organizations are able to increase efficiency, lower costs and achieve business process SLAs on a more consistent basis.



For more information visit:
www.cisco.com/go/vmworld09



