Get Fault Tolerance between Data Centers

Diego Lens
Solutions Architect

interAct
making the Data Center work
Availability?

Replication

No User Interruption

Hot Swappable

Clustering

Fault Tolerant

High Available

making the Data Center work
Availability Definitions (IDC)

AL4: Continuous Availability
“Real-time” 24x7 Operations, No User Interruption

AL3: High Availability
Clustering/failover
“Real-time” 24x7 Operations, No User Interruption

AL2: Recovery
Data Back-up & Data Replication
User interruption.

AL1: Reliability
Hot swappable components, ECC memory
All service stops.

AL0: Unprotected Servers
No redundant system components, no protection for data, application, or OS.
All service stops.

Source: IDC
Virtualization & Availability (v-Available)

What is everRun VM?

- v-Available product
- Tightly integrated with Citrix XenServer Enterprise Edition
- Delivers fault-tolerant high availability in virtual environments

Why use everRun VM?

- Prevent unplanned downtime and data loss
- Automate virtual machine availability
- Simplify availability management
- Overcome complexity and limitations of existing “retro-fit” HA solutions for virtualized workloads
- Extend the benefits of server virtualization to all Windows applications, including mission-critical ones
Marathon everRun VM

Level of Availability
Level of Availability

- Level 1
  - Basic Failover
- Level 2
  - Component-Level Fault Tolerant
- Level 3
  - System-Level Fault Tolerant
Level 1 : Basic Failover

O/S Down and Up

XenServer (Host A)

Xen Hypervisor

DOM 0

(VM)

NIC

DSK HBA

NIC

Xen Hypervisor

DOM 0

VM

NIC

NIC

NIC

A-Link 1 (eth1)

A-Link 2 (eth2)

Production LAN

eth0

eth3

eth0

Storage Repository

VM Disk

DSK HBA

NIC

NIC

NIC

NIC
Level 2 : Component Level
Fault Tolerant

O/S Down and Up

XenServer (Host A)

Xen Server (Host B)

DOM 0

Windows (PVM)

Xen Hypervisor

NIC

PVM NIC

DSK HBA

NIC

eth0

eth1

eth3

Production LAN

Storage Repository

NIC

PVM NIC

DSK HBA

NIC

eth0

eth3

Storage Repository
Level 3: System Level Fault Tolerant

O/S Always Up
## Levels: Overview

### Level 3 – System-Level Fault Tolerance
- Zero downtime – Any failure
- Maintains application state
- Maintains memory state

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<th>Option (Q4 '08)</th>
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### Level 2 – Component-Level Fault Tolerance
- Automated fault management
- Guaranteed recovery
- Geographic protection
- Dynamic upgrades

### Level 1 – Basic Failover
- Best-effort failover
- Linux & Windows guest support
- No secondary resource allocation
- Shared-LUN support

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Marathon everRun VM

Architecture
XenServer Hosts
Citrix XenServer Enterprise Version 4.1 or higher

Virtual Machines
Windows 2003 Server SP2
Standard or Enterprise
32 or 64-bit
XenServer PV drivers installed
• Disk mirroring activities
• AM join protocol
• Peer communications among I/O providers
• Data replication of disk or network data (when required)
• Fault handling
Architecture: Management LAN

- Access Management VM (Domain0)
- Xen Management Functions
- everRun Management Functions
Architecture: Production LAN

making the Data Center work
An Unprotected single VM becomes a Protected double CI
Each Compute Instance (CI) is associated with a second virtual machine called the Availability Manager (AM).
Protected Virtual Machine (PVM)

One VM becomes four, as a single PVM

VM Before Protection
Protected VM
Multiple PVM’s on two hosts

One Server Hosts an Instance of each PVM

Another Server Hosts an Instance of each PVM

Management LAN
Production LAN
everRun VM Hardware Requirements

Must meet requirements for XenServer Enterprise resource pools

- 64-bit x86 server-class system
- CPU: 1.5 GHz minimum, 2 GHz or faster multi-core recommended
  - Intel VT or AMD-V required for support of Windows guests
    - AMD-V to be qualified Q3 ‘08
  - All systems in Enterprise Edition resource pool must have identical CPUs and network configuration
- 4GB-128GB physical memory per host
- Storage
  - Local: SATA, IDE, SCSI, SAS
  - Remote: iSCSI, NFS based NAS, Fibre Channel
  - Local or Fibre Channel boot disk with 16GB of space minimum, 60GB or more recommended
  - Storage for PVMs should be identical on both hosts (separate LUNs)
- Networks
  - 4 NICs (2 of which should be Gbps for Availability Links)
Level 2: Component Fault Tolerant

Server (Host A)

Server (Host B)

Management LAN

Production LAN

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Installation & Configuration
Installation Procedure

• Download software
  • [http://support.marathontechnologies.com](http://support.marathontechnologies.com)

• Receive Authorized License Files

• Start the installation on Dom0 of each XenServer

• Connect to the eAC (everRun Availability Center)
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everRun Availability Center

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Protect a Candidate VM (5 steps)
Step 2: Select Secondary Host
Step 3: Select Level of Availability

Protect a Virtual Machine
Step 3 of 5: Select Level of Availability

- Level 1: Basic Fallback
- Level 2: Component-Level Fault Tolerance
- Level 3: System-Level Fault Tolerance
Step 4: Configure A-Links

Protect a Virtual Machine
Step 4 of 5: Configure Network Availability Link

Link 1
- Source IP: 192.168.3.100
- Destination IP: 192.168.3.200
- Network Mask: 255.255.255.0

Link 2
- Source IP: 192.168.4.100
- Destination IP: 192.168.4.200
- Network Mask: 255.255.255.0

Availability Link addresses have been set according to everRun vms default addressing scheme, which will work for most installations. Adjust these addresses if you have already implemented local tenants that conflict with the selected IP addresses.

Selected VM: VMHost (Resident on trgXenPool7B)
Selected Host: trgXenPool7B
Protect Level: Component-Level Fault Tolerance
Availability Link Configuration: Static IP
Step 5: Protection finished
More Information

- [http://www.marathontechnologies.com](http://www.marathontechnologies.com)
- Ask us for a Demo at the customer
- everRun HA   everRun FT
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