Resource Guide for Windows Server 2008 R2 Early Adopters Program

Version 1.1

1 Introduction to Windows Server 2008 R2

Windows Server 2008 R2 is the next release of the Windows server operating system from Microsoft. It is a feature update of the Server 2008 operating system family. Building on the features and capabilities of the current Windows Server 2008 version, Windows Server 2008 R2 allows you to create solutions that are easier to plan, deploy, and manage than previous versions of Windows Server. Microsoft has made many enhancements in the area of Web Application, Power Management, Virtualization, Remote Connectivity and Dynamic Scalability & Reliability in Windows Server 2008 R2. Another major change is the support x64 exclusively in the Server editions from this release onward.

1.1 New Windows Server 2008 R2 Features

Greater Than 64 Processors support: In the Windows Server 2008 R2 operating system, the 64-bit kernel supports more than 64 logical processors. To scale up to support this expanded number of processors, some applications and Windows kernel-mode components require modification. Windows support for more than 64 logical processors is based on a new concept—the group. A group is a static set of up to 64 logical processors that is treated as a single scheduling entity and Windows Server 2008 R2 supports four groups which mean it can support up to 256 logical processors.

Core Parking: Core Parking is an exciting development that allows Windows Server 2008 R2 to constantly track the relative workloads of every logical core in a server relative to all the others. Cores that aren't being fully utilized can be put into sleep mode until their silicon muscle is required. This capability means a 16-way server with a light workload can turn itself into a 4-way server until workloads suddenly increase and then spin up reserve CPU power in milliseconds.

Power Metering and Budgeting: Beginning with Windows Server 2008 R2, Windows supports the Power Metering and Budgeting (PMB) infrastructure. This infrastructure promotes energy efficiency on computer systems by providing power consumption and management features. Additionally, PMB provides additional options to configure power metering and budgeting. System manufacturers, IT professionals, and end users can use the PMB infrastructure to tune their systems so that they balance power and performance to meet their needs.

Windows PowerShell 2.0: Windows Server 2008 R2 introduces PowerShell 2.0, which significantly enhances the earlier version with the inclusion of more than 240 new pre-built cmdlets as well as a new graphical user interface (GUI) that adds professional-level development features for creating new cmdlets. The new GUI includes colored syntaxing, new production script debugging capabilities, and new testing tools.

User-Mode Scheduling: User-mode scheduling (UMS) introduced in Windows Server 2008 R2 is a light-weight mechanism that applications can use to schedule their own threads. An application can switch between UMS threads in user mode without involving the system scheduler and regain control of the processor if a UMS thread blocks in the kernel. UMS threads differ from fibers in that each UMS thread has its own thread context instead of sharing the thread context of a single thread. The ability to switch between threads in user mode makes UMS more efficient than thread pools for managing large numbers of short-duration work items that require few system calls. UMS is

recommended for applications with high performance requirements that need to efficiently run many threads concurrently on multiprocessor or multicore systems.

NOTE: Please refer to *http://www.microsoft.com/windowsserver2008/en/us/r2.aspx* for a more complete set of new features and in-depth descriptions

1.2 Windows Server 2008 R2 Hyper-V:

Windows Server 2008 R2 Hyper-V is advancement to Microsoft's Windows Server 2008 Hyper-V, a hypervisor based virtualization technology designed for x64 based systems. Similar to the predecessor, it is also available as two different products in Windows Server 2008 R2.

(a) As a role in WS08 X64 R2 on Standard, Enterprise and Data Center Editions. This is available on respective server core editions too.
(b) Microsoft Hyper-V Server 2008 R2 is a separate free to download product, based on WS08 x64 R2 Enterprise core.

Windows Server 2008 R2 Hyper-V provides you with the following enhancements along with the existing features and functionalities in Windows Server 2008 Hyper-V.

Cluster Shared Volumes (CSV): Cluster Shared Volumes is a feature available in Windows Server 2008 R2, which allows multiple nodes in a cluster environment to have concurrent access to one or more LUNs (logical disks) on a shared storage system (Fibre Channel, iSCSI, shared SAS). One of the common uses for cluster shared volumes is in case of Hyper-V where Multiple Virtual Machines can be placed on it for live migration. CSV provides a single consistent file name space. It has the same name and path from every node in the cluster.

Hyper-V™ live migration: Live migration feature with Windows Server 2008 R2 Hyper-V is designed to move running VMs with no impact on VM availability to users from one host to another in a cluster environment. By pre-copying the memory state of the migrating VM to the destination physical host, live migration minimizes the amount of transfer time of the VM. A live migration is deterministic, meaning that the administrator, or script, that initiates the live migration can control which computer is the destination for the live migration. The guest operating system in the migrating VM is unaware that the migration is happening, so no special configuration for the guest operating system is needed.

For step by Step guide to configure the CSV for Live Migration, refer to the link *http://attachments.wetpaintserv.us/u93dyCYKCFLIM7q0wdabYg==1668010*

VHD boot: In Windows Server 2008 R2, a virtual hard disk can be used as the running operating system on designated hardware without any other parent operating system, virtual machine, or hypervisor. So, one can use a virtual hard disk to boot, in place of deploying a host operating system and then deploying a virtual machine in it. Windows Server 2008 R2 OEM Preinstallation Kit tool (OPK), DiskPart tool and the Disk Management Microsoft Management Console can be used to create a VHD files. A Windows Server 2008 R2 image (.wim) file can be deployed to the VHD and then the same .vhd file can be used across multiple systems to boot directly to the operating system deployed in the virtual hard disk (.vhd). The Windows Server 2008 R2 boot manager can be configured to boot directly into the VHD, or just add it as an additional option.

For more details on VHD and step by Step guide to configure VHD, refer to the link *http://attachments.wetpaintserv.us/inOnWSOn0kZiIcbCd2HdBQ==306539*

For the basic requirements for running Windows Server R2 Hyper-V, Refer to the link *http://support.dell.com/support/edocs/software/win2008/WS08_R2/IIG_HyperV/IIG_HypV.pdf*

1.3 System Requirements

Component	Requirement
Processor	• Minimum: 1.4GHz x64 processor • Recommended: 2GHz or faster
Memory	• Minimum: 512MB RAM • Recommended: 2GB RAM or greater • Maximum: 8 GB (Foundation) or 32 GB (Standard) or 2 TB (Enterprise, Datacenter, and Itanium-Based Systems)
Disk Space requirement	Minimum: 32 GB or greater Foundation: 10 GB or greater Note: Computers with more than 16 GB of RAM will require more disk space for paging, hibernation, and dump files
Drive	DVD-ROM drive
Display and Peripherals	• Super VGA (800 x 600) or higher-resolution monitor • Keyboard • Microsoft Mouse or compatible pointing device

NOTE: Actual requirements will vary based on your system configuration and the applications and features you choose to install. Additional available hard-disk space may be required. Please refer to Microsoft's latest hardware requirement for the latest information: *http://www.microsoft.com/windowsserver2008/en/us/system-requirements.aspx*

2 Installation Process

2.1 Clean Installation
A clean installation includes installing Windows Server 2008 R2 into a new disk partition. Depending on the server and storage adapters on the server, a mass storage device driver may be required to ensure the boot device drivers are loaded. See the storage section later in this document for more information on which devices can be loaded with the "in-box" drivers vs. those that require additional drivers. The clean installation starts with an upgrade to the server's latest BIOS and firmware. This should be done before installing Windows Server 2008 R2.

Note: For the Step by Step guide for Clean installation and other types of installation supported by Dell, Refer to the link *http://support.dell.com/support/edocs/software/win2008/WS08_R2/ING/WS08R2In.pdf*

2.2 Supported Upgrade Paths to Windows Server 2008 R2

Please refer to the Table for the supported upgrade paths:

	Windows Server 2008 R2							
	Standard (Core)	Enterprise (Core)	DataCenter (Core)	Web (Core)	Standard	Enterprise	DataCenter	Web
Windows Server 2003 Standard (SP2, R2)	x	x	x	x	x64	x64	x	x
Windows Server 2003 Enterprise (SP2, R2)	x	x	x	x	x	x64	x64	x
Windows Server 2003 Datacenter (SP2, R2)	x	x	x	x	x	x	x64	x
Windows Server 2008 Standard (Core) (RTM, SP2)	x64	x64	x	x	x	x	x	x
Windows Server 2008 Enterprise (Core) (RTM, SP2)	x	x64	x64	x	x	x	x	x
Windows Server 2008 Datacenter (Core) (RTM, SP2)	x	x	x64	x	x	x	x	x
Windows Server 2008 Web (Core) (RTM, SP2)	x	x	x	x64	x	x	x	x
Windows Server 2008 Standard (RTM, SP2)	x	x	x	x	x64	x64	x	x
Windows Server 2008 Enterprise (RTM, SP2)	x	x	x	x	x	x64	x64	x
Windows Server 2008 Datacenter (RTM, SP2)	x	x	x	x	x	x	x64	x
Windows Server 2008 Web (RTM, SP2)	x	x	x	x	x	x	x	x64
Windows Server 2008 R2 Standard (Core)	x64	x64	x	x	x	x	x	x
Windows Server 2008 R2 Enterprise (Core)	x	x64	x64	x	x	x	x	x
Windows Server 2008 R2 Datacenter (Core)	x	x	x64	x	x	x	x	x
Windows Server 2008 R2 Web (Core)	x	x	x	x64	x	x	x	x
Windows Server 2008 R2 Standard	x	x	x	x	x64	x64	x	x
Windows Server 2008 R2 Enterprise	x	x	x	x	x	x64	x64	x
Windows Server 2008 R2 Datacenter	x	x	x	x	x	x	x64	x
Windows Server 2008 R2 Web	x	x	x	x	x	x	x	x64

X = Upgrade is not supported.
x64 = Upgrade supported for x64 version of OS only.

Note: Microsoft also supports the upgrade from Windows Server 2008 Foundation or Windows Server 2008 R2 Foundation to Windows Server 2008 R2 Standard.

3 Supported PowerEdge platforms and Storage controllers

For the list of supported platforms and Storage controller, refer to the
link *http://support.dell.com/support/edocs/software/win2008/WS08_R2/IIG/WS08R2IG.pdf*

NOTE: The latest BIOS, Firmware and Driver versions are publicly available
at *http://support.dell.com/support/topics/global.aspx/support/product_support/en/product_support_central?c=us&clearsystem=true&l=en&product_family=PowerEdge&s=gen*

We STRONGLY recommend that before you install Windows Server 2008 R2, you check the Dell support website for the latest BIOS and firmware revisions and upgrade your system.

Supported Peripherals:
For the complete list of major peripherals supported for Windows Server 2008 R2, please refer to the link
http://www.delltechcenter.com/page/Major+Peripherals+Support+Status

4. OpenManage Support:

The Dell OpenManage™ version 6.1 release is intended to provide limited support on Windows Server 2008 R2. Only some components of this Dell OpenManage version supports Windows Server 2008 R2.
The components supported include (and are limited to) the following:

• Dell OpenManage Server Administrator.
   NOTE: Supported only in legacy mode where the Server Administrator Web Server and Server Instrumentation
            are installed on the same system.
• Dell OpenManage Storage Services.
• Dell Remote Access Controller(DRAC)4 and DRAC 5.
• iDRAC on Dell non-modular systems. Firmware upgrade is required.
• Systems Build Update and Utility (SBUU): Use Windows Server 2008 x64 option for Windows Server 2008 R2 installation.

The following components are not supported with Windows Server 2008 R2:

• Dell IT Assistant.
• Dell Online Diagnostics.
• iDRAC on Dell modular systems.
      NOTE: Windows Server 2008 R2 support will be available in a future firmware update.
• Partner Development Kit (PDK) and Dell Update Package (DUP).

Dell OpenManage version 6.2 will provide full-feature support for Windows Server 2008 R2.

5 Known Issues:

For all the known issues in Windows Server 2008 R2, refer to the Important Information guide at
http://support.dell.com/support/edocs/software/win2008/WS08_R2/IIG/WS08R2IG.pdf

For all the known issues in Hyper-V R2, refer to Hyper-V Important Information Guide at
http://support.dell.com/support/edocs/software/win2008/WS08_R2/IIG_HyperV/IIG_HypV.pdf

For all the known issues in OpenManage 6.1 running on Windows Server 2008 R2, refer to the link
http://attachments.wetpaintserv.us/7cKUmJ8TPmndtXWU1jpscQ%3D%3D27947

More Information:

Refer to the below link to understand more on Dell support for Windows Server 2008 R2
http://www.dell.com/content/topics/global.aspx/sitelets/solutions/main/dell_longhorn?c=us&cs=555&l=en&s=biz&~ck=anavml

Refer to the below Microsoft link for complete details of Windows Server 2008 R2
http://www.microsoft.com/windowsserver2008/en/us/default.aspx

For Microsoft technical library on Windows Server 2008 R2, refer to the link *http://technet.microsoft.com/en-us/library/dd349801(WS.10).aspx*

For understanding the Changes in Functionality from Windows Server 2008 to Windows Server 2008 R2, refer to
http://technet.microsoft.com/en-us/library/dd391932(WS.10).aspx

To know more about WinRe in Windows Server 2008 R2, refer to the link
http://attachments.wetpaintserv.us/J%2BhZHl3an8AKphERcXDxrw%3D%3D180514

7 Appendixes

Definition of Terms Acronym	Description
DIFx	Driver Installation Framework
DTM	Driver Test Manager (New in Windows Server 2008 and above OS to replace HCT)
FVE	Full-Volume Encryption
IOAT	Intel I/O Acceleration Technology (Natively supported in Windows Server 2008 & R2)
IE8	Internet Explorer version 8
IPMI	Intelligent Platform Management Interface
IPv6	Internet Protocol Version 6 (Natively supported in Windows Server 2008 & R2)
LUA	Least User Access (Same as UAC)
MPIO	Multi-Path IO (Natively supported in Windows Server 2008 & R2)
MUI	Multi-User Interface (Localization feature in Windows Server 2008)
OOBE	Out-Of-Box-Experience
OPK	OEM Preinstallation Kit
PSHED	Platform-Specific Hardware Error Driver
PT	Product Test
RC	Release Candidate (This is an OS Milestone)
RMT	Role Management Tool
RSM	Removable Storage Management (Feature in Windows Server 2008)
RSS	Receive-Side Scaling (Natively supported in Windows Server 2008 & R2)
SEL	System Event Log
SLP	System Locked Pre-installation is the technology when implemented by OEMs in media/FI