WinRE in Windows 2008 R2

Introduction

Windows RE is an extensible recovery platform based on Windows Preinstallation Environment (Windows PE). Windows RE is a partial version of the OS and includes a set of tools that you can use to perform system recoveries along with a backup that you created earlier using Windows Server backup. Windows RE also includes a basic image recovery mechanism leveraging Windows Setup, helping OEMs and corporations provide system recovery with minimal effort.

Windows Recovery Environment for Windows Server 2008 R2

In Windows Server 2008 R2, Windows RE is **preloaded** onto every Windows installation by default except for the Server Core installation, enabling all end-user systems to heal themselves in the event of a boot failure regardless of where the computer is manufactured. OEMs and corporations can also customize the default Windows RE to include additional diagnostic, repair, and recovery applications.

Windows 2008 R2 Setup creates separate system and OS partitions when installing on clean disk. The default Windows RE image (Winre.wim) is placed in the OS partition when Install.wim is applied to disk. All required Windows RE configurations (for example, BCD) are set automatically at the end of OOBE.

WinRE in Windows Server 2008 Vs. WinRE in Windows Server 2008 R2

There were a couple of pain-points in using winre in Windows Server 2008.

- WinRE in Windows 2008 required a separate partition of atleast 3 Gb hence limiting disk layout flexibilities.
- In addition to this, you would need a SetAutoFailover.cmd script to be run to instruct the OS to automatically boot into WinRE when a boot failure is detected.

On the contrary, in Windows 2008 R2,

- Windows RE image (Winre.wim) part of Install.wim.

- SetAutoFailover.cmd no longer needed. Windows RE settings are configured via new configuration tool (Reagentc.exe).

Note: There are a couple of other changes like the ***Recovery Control Panel*** that's available only on client editions of Windows.

REAgentC Commands

Windows RE settings are configured via the new configuration tool, Reagentc.exe. REAgentC.exe is a tool used for deploying custom Windows Recovery Environment (Windows RE) as well as for enabling image recovery solutions. REAgentC command can be used on an offline Windows image or on a running Windows operating system. REAgentC uses the following conventions:

REAgentC {option} [argument]

Listed below are some of the command line options used with the REAgentC.exe in Windows Server 2008 R2. There are a few more options used with Reagentc.exe (apart from the ones listed below) which are useful only with the client version of the OS.

Reagentc.exe option	Description
/setreimage	Set the source location of the custom Windows RE image.
/bootkey	Specify the scan code of a custom hardware key to start Windows RE.
/enable	Configure the required BCD and other settings to start Windows RE.
/disable	Remove all Windows RE settings and return the Windows RE image to its staged location.
/boottore	Specify that the next time the system starts up, Windows RE will be started automatically.

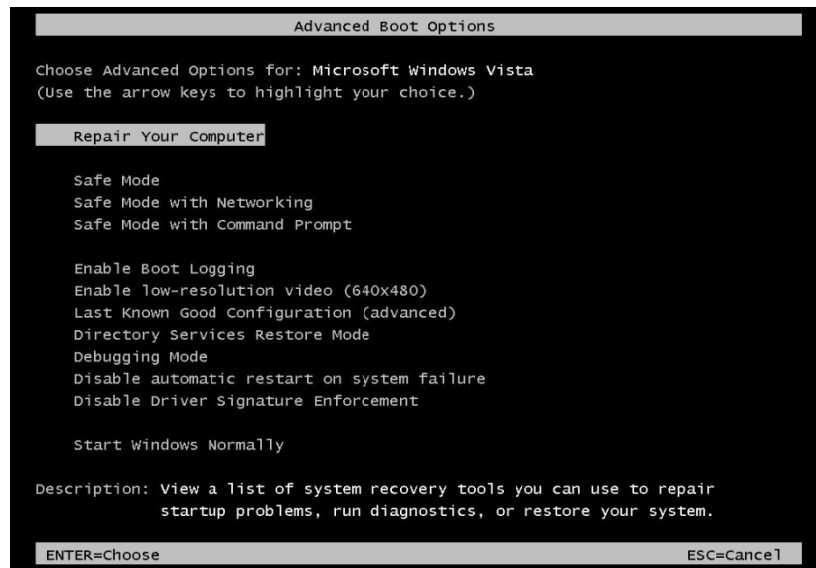| /info	Display the current status of Windows RE

A system running Windows 2008 R2 can automatically fail over into the on-disk Windows RE only if a boot failure is detected. At Startup, the Windows loader sets a status flag to indicate that the boot process has started, and this flag is typically cleared before the Windows logon screen is displayed. If the boot attempt fails, the flag is not cleared. The next time the computer starts; the loader detects the flag and assumes that a boot failure occurred. When this happens, the loader launches Windows RE instead of Windows 7. The detection of boot failure relies on boot completion and not on whether an error occurred in Windows 7. One example of a false positive is when power is lost during the boot process, and Windows RE is launched even though the Windows installation is bootable.

Because the failover mechanism relies on the Windows boot manager and Windows boot loader, some failures will render Windows RE inaccessible. In the following scenarios, the user must use bootable Windows RE media to recover the computer.

- Corrupt disk metadata in the master boot record (MBR), partition table, or boot sector of a WindowsRE partition.
- Missing or corrupt boot manager.
- Missing or corrupt boot configuration data.

Sometimes the boot loader cannot read or write to the boot status flag, in which case Windows will not automatically fail over into Windows RE. However, the user can still manually launch into the on-disk Windows RE through the **F8** menu.

To manually enter Windows Recovery Environment in Windows 2008 R2, use the Windows Setup Disk or restart the system, press **F8** immediately after POST and select ***Repair Your Computer*** from the list of startup options. Alternatively, one can also use the ***reagentc.exe /boottore*** in command prompt to boot into winre on the next reboot.

```
                        Advanced Boot Options

Choose Advanced Options for: Microsoft Windows Vista
(Use the arrow keys to highlight your choice.)

    Repair Your Computer

    Safe Mode
    Safe Mode with Networking
    Safe Mode with Command Prompt

    Enable Boot Logging
    Enable low-resolution video (640x480)
    Last Known Good Configuration (advanced)
    Directory Services Restore Mode
    Debugging Mode
    Disable automatic restart on system failure
    Disable Driver Signature Enforcement

    Start Windows Normally

Description: View a list of system recovery tools you can use to repair
            startup problems, run diagnostics, or restore your system.

ENTER=Choose                                              ESC=Cancel
```
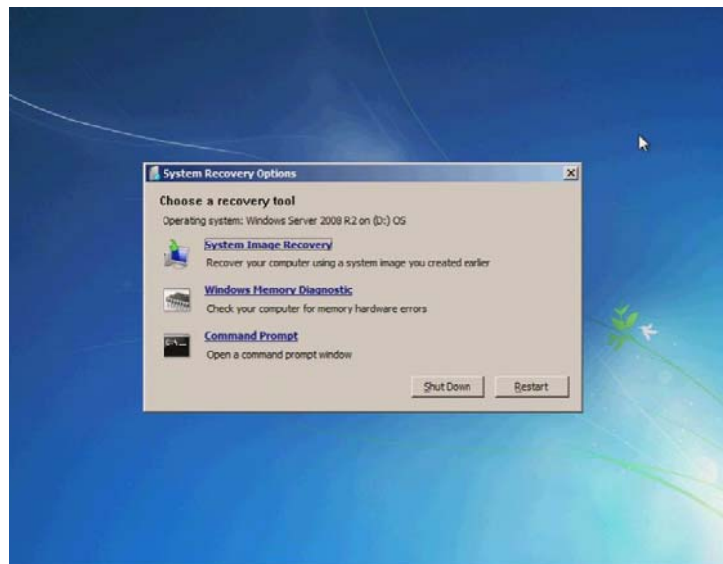
Once the system boots into Windows Recovery Environment, The Systems Recovery Options wizard opens up. Select the keyboard layout and click on *Next.*
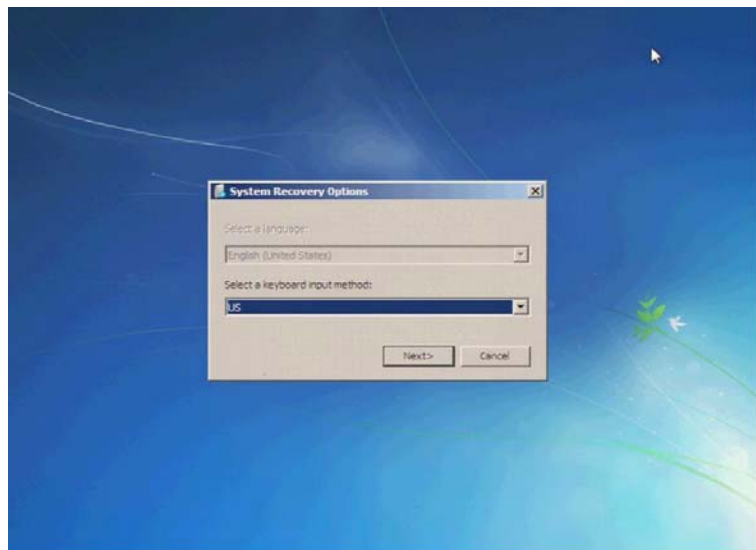
On the next screen, key in the administrator password and click **OK**
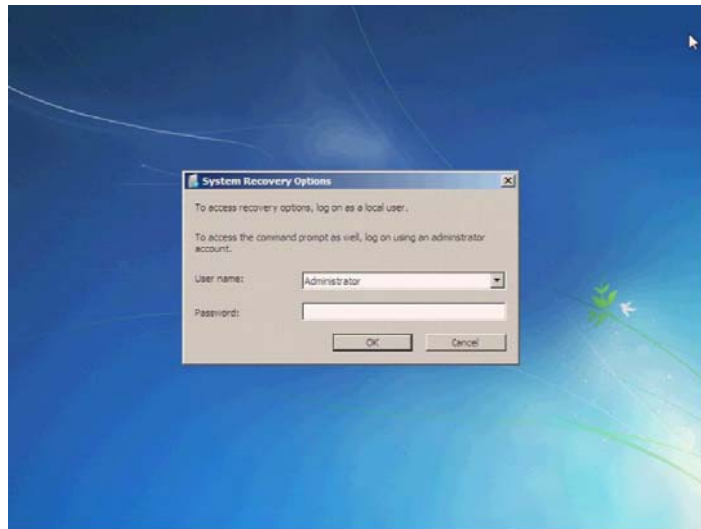
The next screen lists all the Recovery tools available in the Recovery Environment for Windows 2008 R2.

- *System Image Recovery* is the tool used to restore the Operating System to a backup created earlier using Windows Server Backup.
- *Windows Memory Diagnostic* is used to check the system's RAM.
- *Command Prompt* opens a command prompt with admin privileges that provides full access to your file system and volumes.

Note that the **Startup Repair** and **Systems Restore** options are available only in the client OS.