EVIDIAN
A Bull Group Company

SafeKit
A High Availability Software

Cluster Training Virtual Machine

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1. Tools to Build A VMware Training Machine

1.1 What is the VMware Training Machine?

The Training Machine is a 32-bits Windows 7 VMware Virtual Machine (VM) for building a SafeKit cluster on a single server, desktop or laptop for demonstration purposes. The Windows 7 kernel is the same as the Windows 2008 R2 one.

Note: If you want to install SafeKit directly on existing servers, see Annex 3 – On existing servers, download the SafeKit One-Month Trial page 22.

Typically, the SafeKit Training Machine works on a XP/Vista/7 laptop or desktop with a bi-core CPU, 3 GB of memory and VMware Player 3: for more information, see Memory Requirement page 19**.**

But the VMware Training machine can work with VMware ESX: see Annex 1 - Install the Training Machine with VMware ESX page 17.

Applications, SafeKit, failover modules are preconfigured inside the SafeKit VM. After replicating the VM, configuring some hostname and network parameters, you will have an operational SafeKit cluster. You will be able to test SafeKit features with soft or hard failover. And you will be able also to understand integration and to prepare your own application modules for your own critical applications.

1.2 Packages To Download for Building the VMware Training Machine

From the demonstration machine (laptop, desktop), the following packages must be downloaded prior to create the SafeKit VM.

Packages	**What?**
VMware Player 3 VMware-server-3...exe 106 MB	For building and running the SafeKit VM Download and install http://www.vmware.com/products/player No license
Windows 7 Enterprise 90-day Trial (32-bit x86) 7600.16385.090713-1255_x86fre_enterprise_en-us_EVAL_Eval_Enterprise-GRMCENEVAL_EN_DVD.iso 2,3 GB	For building the SafeKit VM Download 1 DVD (1 .ISO file) http://technet.microsoft.com/en-us/evalcenter/ Note: After the 90-day trial, the OS is rebooted each hour (OK for demo)
Utilities for VMware training machine SafeKitTrainingVM.zip 130 MB	1/ SafeKitTrainingVM.zip is included in the reseller kit available at https://support.evidian.com/SafeKitTraining Unzip the folder "SafeKitTrainingVM" which contains Application_Modules.zip, SQLEXPR32.exe, SQLServer2005_SSMSEE.exe, QXplorer2.0.zip, Windows6.1-KB976538-v2-x86.msu, SysinternalsSuite.zip 2/ Inside SafeKitTrainingVM, unzip Application_Modules.zip in Application_Modules\backup + unzip QXplorer2.0.zip in QXplorer2.0\ + unzip SysinternalsSuite.zip in SysinternalsSuite\ 3/ Share the folder "SafeKitTrainingVM" in order to be able later to mount it from the VMware Training Machine
SafeKit safekit_windows_x86_32_7_0_10_x.msi 15 MB	SafeKit package Package and license.txt to put in the shared folder "SafeKitTrainingVM" https://support.evidian.com/safekit in **<Version 7.0>/Platforms/Windows/Current versions/safekit_windows_x86_32_7_0_10_x.msi**

1.3 Create the First VMware Training Machine W7Server1

- Install and start VMware Player 3 (previously downloaded)
- Click on "Create a New Virtual Machine"
- Click on "Installer disc image file (iso):" and Browse to iso file "W7enterprise90-daystrial".iso (previously downloaded) / Next
- Version: Windows 7 Enterprise/**Full name: SafeKitTraining**/Next/Yes (for product key prompt)
- **Virtual machine name: W7Server1**
- **Create a W7Server1\ directory and set Location: < W7Server1\ with Browse>**/Next
- Maximum disk size: 40 GB, Store virtual disk as a single file/Next
- **Customize hardware: Memory:512MB + Floppy/Remove**
- **Add 2 network host-only adapters** with Add/Network Adapter/Next/Host-only+Connect at power on/Finish (the 1st one is NAT)
- OK/Power on this virtual machine after creation/Finish
- Windows 7 is installed automatically including VMware tools (including several automatic reboots) (VMDK disk size after install = 5,4 GB)
- After VMware tools installation, you can resize W7Server1 console as you want
- Default keyboard = US
  To change with the French keyboard:
  Start/Control panel/Clock, Language, and Regions/Change keyboard and other input methods/Change keyboard…/Add/French(France)/Keyboard/check "French/OK
  Default input language French (France) – French
  In the toolbar, click on EN and select FR
- Start/Control Panel/ Clock, Language, and Regions/Region and Language/Administrative tab/Copy settings…/check "Welcome screen and system accounts" and "New user accounts" (will copy the keyboard setting to "Local System" account used by the service "Interactive Services Detection" for windows prompted during demonstration)
- Start/Control Panel/System and Security/Power Options/Require a password on wakeup/check Don't require a password/Save Changes
- By default, the built-in administrator account is disabled. To enable it, first method:
  1. Right click on Start/Computer/Manage
  2. Open the Local Users and Groups manager.
  3. In the left pane, click on the Users folder.
  4. In the middle pane, right click on Administrator and click on Properties.

5. To Enable the Buit-in Administrator Account, uncheck "Account is disabled"
6. Click on OK
7. Right click on "SafeKitTraining" user/Delete/OK
8. Close the Local Users and Groups window.
9. Log off, and you will now see the built-in Administrator account log on icon added

Note: when Computer/Manage does not provide "Local Users and Groups Manager" Windows 7 Home Basic", then Start/Command/Right click/Run as Administrator and type " net user administrator /active:yes" then Log off and Log in as Administrator then Remove "SafeKitTraining" user from Control Panel/Add or remove user accounts

- Start/Computer/Right click/ Show on desktop
- Start/Control Panel/System and Security/Power Options/Choose when to turn off the display/Turn off the display: Never & Put computer to sleep: Never/Save changes
- Start/Control Panel/Network and Internet/View network status and tasks
  Local Area Connection – Properties – (TCP/IP V4) - Obtain an IP address automatically
  Local Area Connection – Properties – (TCP/IP V4) - Use the following IP address
  192.168.4.11, netmask 255.255.255.0
  Local Area Connection 3 – Properties – (TCP/IP V4) - Use the following IP address
  192.168.5.11, netmask 255.255.255.0

  Note: The "Local Area Connection" corresponds to the first VMware network adapter connected to your local network. If you have a DHCP server on your network (automatically the case with VMware Player but *not* with VMware ESX), a dynamic IP address can be set on this interface. If there is no DHCP server on your network, configure an unused static IP address on your network for "Local Area Connection" instead of "Obtain an IP address automatically".
- Open "C:\WINDOWS\system32\drivers\etc\hosts" with Notepad and add the following lines at the end

  # Static IP addresses on 2 private networks
  # Non routable network are 192.168.<net>.*
  # VMware hostonly networks: no advise found for unused <net> => take "4" and "5"
  # VMware hostonly networks advise: static IP goes from 192.168.<net>.2 to 192.168.<net>.127
  192.168.4.11 net1_physicalserver1
  192.168.4.12 net1_physicalserver2
  192.168.5.11 net2_physicalserver1
  192.168.5.12 net2_physicalserver2
- Start/Control Panel/Programs/Turn Windows features on or off/ Check "Microsoft Message Queue (MSMQ) Server" + Ok
- The 90 days trial starts the day you install Windows 7 Enterprise 90-day trial
  You can check Start/Control Panel/System and Security/System/(at the end) Windows activation.
  After 90 days, the OS reboots each hour
- Note: Internet Explorer works on the NAT network if proxy is correctly configured

- Start/Control Panel/System and Security/System/(Computer name section) Change settings/Change/Computer name: W7Server1/OK/Restart now

1.4 Install Applications in W7Server1 from a Shared Folder

Inside the W7Server1 console, map your "SafeKitTrainingVM" shared folder where you have stored packages (see Packages To Download for Building the SafeKit Training Machine). Note that with VMware tools, you can also copy the shared folder in the host and paste it in the guest.

- Start/Computer/Network/Turn on network discovery and file sharing/< name of the "SafeKitTrainingVM" shared folder>
- Windows login and password on your host machine
- Open your "SafeKitTrainingVM" shared folder from W7Server1

Inside the W7Server1 console and from the shared folder:

Hot fix Windows 7 / Windows 2008 R2

- C:\Windows\System32\drivers\ntfs.sys Properties/Details
- Version 6.1.7600.16385 before (and also after update)
- Double click on Windows6.1-KB976538-v2-x86.msu in the shared folder (apply Hot fix http://support.microsoft.com/kb/976538 for SafeKit replication)
- After reboot, version 6.1.7600.20672
  Note: Version 6.1.7601.17514 with SP1 > 6.1.7600.20672 required for SafeKit (hot fix not required after SP1)
- VMDK disc size after = 5,5 GB at this step

Sysinternals Suite

- Copy from the shared folder "SysinternalsSuite\" directory under C:\
- Start/a command line (cmd), cd c:\SysinternalsSuite,
- psexec -s -i 1 c:\sysinternalssuite\psexec
  Be careful, -i 1 defines the session id (you can see it in task manager / process). If youlog off and login several times the session id is incremented and the interactive windows started in SafeKit scripts will not be displayed
- Agree the license twice, one for the Administrator account and one for the local System account
  The return code is not important: it is just for accepting the license.
  "psexec-i 1" is used inside inside SafeKit restart scripts to display GUI (mspaint…) in the session ID 1 instead of the default session ID 0 to avoid "Interactive Services Detection" special Windows

SQL 2005 Express (be careful install as "Administrator" else Security access problems on files)

- Double click on "SQLEXPR32.exe" and install (keep all defaults)
- Double click on "AdventureWorksDB.msi" and install (keep all defaults)
- Double click on "SQLServer2005_SSMSEE.msi" and install (keep all defaults)
- Click on Start/All Programs/Microsoft SQL Server 2005/SQL Server Management Studio Express
- Type in "Server name": W7SERVER1\SQLEXPRESS and click on "Connect" (Windows authentication, no password)
- Remove "Summary" windows
- Select "Databases", right-click "**Attach**" then click on "Add", select in "Data" folder, "**AdventureWorks_Data.mdf**", click on "OK" and click on "OK" at the bottom
- Click on + near Databases, click on + near AdventureWorks, click on + near Tables, select "Person.Contact", right click on "Person.Contact" and select "Open Table" in the menu
- Remove "Properties" window in the right frame, check access to "FirstName" and "LastName" columns used for demonstration
- File/Save-All to save the GUI configuration, File/Exit
- Computer/right-click Manage/ + Services and Applications"/ Services/Standard/double click on SQL Server (SQLEXPRESS)/click on "Stop" + change "Startup type" from "Automatic" to "**Manual**", "Apply" + "OK" (start managed by sqlserverdemo.safe)
- VMDK disc size after = 6,3 GB

QueueExplorer

- Copy from the shared folder "QXplorer2.0\" directory under C:\
- Go to C:\QXplorer2.0\ QXplorer.exe, right click, Properties, and click on "**Unblock**" if set then on "Apply" + "OK"
- Start QXplorer.exe, Tools/Settings, check "Sort Queue" Ascending + check "Auto Refresh Queue", Apply, OK, File/Exit
- Computer/right-click Manage/ + Services and Applications"/ Services/Standard/double click on Message Queuing/click on "Stop" + change "Startup type" from "Automatic" to "**Manual**", "Apply" + "OK" (start managed by msmqdemo.safe)

SafeKit

- Double click in the shared folder on safekit_windows_x86_32_7_0_10…msi (previously downloaded) and install
- When "Would you like to install this device software?" appears, check "**Always trust software from Evidian**" and click on Install
- Check "Click here when this procedure is done" and click on "Next"

- Copy the package safekit_windows_x86_32_7_0_10…msi from the shared folder to C:\safekit (useful for reinstalling during the training), select C:\safekit\ safekit_windows_x86_32_7_0_10…msi, right click, Properties, and click on "**Unblock**" if set then on "Apply" + "OK"

- Copy from the shared folder license.txt inside C:\safekit\conf

- Start a command prompt, go to and type "C:\safekit\safekit level" to check the license

- Copy from the shared folder Application_Modules\backup* in C:\safekit\Application_Modules\backup

- Start/a command line (cmd), cd C:\safekit\Application_Modules\backup and type "installmodules", check installation with c:\safekit\safekit module listid

- On Windows, a special procedure must be applied on all SafeKit servers to call the command at the shutdown of servers. :
  - Start the MMC console with the mmc command line
  - File - Add/Remove Snap-in – Add - "Group Policy Object Editor" – Add – Finish - OK
  - Then, under "Console Root"/"Local Computer Policy"/"Computer Configuration"/"Windows Settings"/"Scripts (Start-up/Shutdown)"/Standard tab, double click on "Shutdown"
  - Click on Add then set for "Script Name:" c:\safekit\safekit and for "Script Parameters:" shutdown
  Note : "Group Policy Object Editor " is available with Windows 7 Professional, Windows 7 Ultimate and Windows 7 Enterprise. For other Windows 7 version, this special procedure cannot be applied but this is not mandatory for running SafeKit.

Configure firewall of W7Server1:

- Start/Control Panel/System and Security/Windows Firewall/Allow a program or feature through Windows Firewall/Click on "Allow another program…"/Browse/ C:\safekit\private\bin**nfsbox.exe**/Open/Add + **check 2 boxes** "**Home/Work (Private)**" and "**Public**"
  Repeat with C:\safekit\private\bin**reintegre.exe**
  Repeat with C:\safekit\private\bin**spread.exe**
  Repeat with C:\safekit**web\bin\httpd.exe**

- Start/Control Panel/System and Security/Windows Firewall/Advanced settings/Inbound Rules/Action/New rule/Custom/Protocol and ports/Protocol type: ICMPv4/Next (at bottom)/…"Allow the connection"/… /Next…/Name=ICMP (allow ping in)

- Start/Control Panel/System and Security/Windows Firewall/Advanced settings/Outbound Rules/Action/New rule/Custom/Protocol and ports/Protocol type: ICMPv4/Next/…"Allow the connection"/… /Next…/Name=ICMP (allow ping out)

Create folders:

- Create 2 folders C:\dirmirrordemo, c:\dirmspaint (for master_module.safe),

- Copy C:\safekit\modules\master_module\web\mirrordemo.txt to C:\dirmirrordemo\mirrordemo.txt and select a view with "Large Icons"

- Copy C:\safekit\modules\master_module\web\mspaint.jpg to C:\dirmspaint\mspaint.jpg and select a view with "Large Icons"
- Create 2 folders C:\WINDOWS_MIRROR1 and C:\WINDOWS_MIRROR2 (for mirror1.safe and mirror2.safe)
- Search from C:\WINDOWS\Web\Wallpaper and copy 3 different ". jpg" files into C:\WINDOWS_MIRROR1 and select a view with "Large Icons"
- Search from C:\WINDOWS\Web\Wallpaper and copy 3 other ". jpg" files into C:\WINDOWS_MIRROR2 and select a view with "Large Icons"
- **Option**: Start/Control Panel/Appearance and Personalization/Adjust screen resolution/Display/Make text and other items larger or smaller/Medium 125 %/Logoff now (to see correctly demonstrations)
- Start / Shutdown
- VMDK disc size: 7 GB

1.5 Create the Second VMware Training Machine W7Server2

1. Make a copy of W7Server1\ and rename it W7Server2\
2. Go to W7Server2\
3. Open the file W7Server1.vmx with an editor (wordpad) and change displayName="W7Server1" to displayName="W7Server2", save and quit
4. Start the VMware console
5. Boot W7Server2 (while W7Server1 is shutdown)
6. Choose "I copied it"
7. Start/Control Panel/Network and Internet/View network status and tasks
   Local Area Connection – Properties – (TCP/IP V4) - Obtain an IP address automatically
   Local Area Connection – Properties – (TCP/IP V4) - Use the following IP address **192.168.4.12**, netmask 255.255.255.0
   Local Area Connection 3 – Properties – (TCP/IP V4) - Use the following IP address **192.168.5.12**, netmask 255.255.255.0

   Note: The "Local Area Connection" corresponds to the first VMware network adapter connected to your local network. If you have a DHCP server on your network (automatically the case with VMware Player but *not* with VMware ESX), a dynamic IP address can be set on this interface. If there is no DHCP server on your network, configure an unused static IP address on your network for "Local Area Connection" instead of "Obtain an IP address automatically".
8. Start/Control Panel/System and Security/System/Change settings/"Computer Name" tab/Change Set for "Computer name:" **W2Server2**, Close, Restart
9. After the boot, start a command prompt, type "ipconfig" and write down the "**IP address of W7Server2**" on the "Local Area Connection" network.
10. **Reboot W7Server1 after W7Server2 reconfiguration**

1.6 Check Access from the Demonstration Machine to W7Server1, W7Server2

From the administration machine where the VMware console is running, start a command prompt

- ping w7server1
  Check it replies (else use “IP address of W7Server1”)
- ping w7ser ver2
  Check it replies ("IP address of W7Server2”)

1.7 Configure farmdemo.safe and apache_farm.safe from Web console

First, find 2 unused IP addresses on your administration network. The administration network is the network where the VMware and SafeKit consoles are running. For instance, if your administration network is “192.168.75.*”, start a command prompt from the administration machine and check,

- ping 192.168.75.20 (modify with an IP of your network)
  Check it does ***NOT*** reply
- ping 192.168.75.30 (modify with an IP of your network)
  Check it does ***NOT*** reply

With the web console (http://w7server1:9000), put the first IP address in farmdemo module and the second one in apache_farm module.

Then, apply configuration for all application modules

2. Test Application Modules of the Training Machine

2.1 List of Tests

For each test, follow the movie and read the instructions.

Movie to implement	**Instructions**
mirrodemoen.htm mspaintdemoen.htm	mirrordemo.safe + mspaint.safe 2 simple mirror clusters with Notepad + Microsoft Paint and real time file replication and failover **Note:** The "Prim"and "Second" actions are special start commands to select the server hosting the up-to-date data. Later, prefer the standard "Start" command to let SafeKit automatically detect (except the first time) which server must become the primary server.
farmdemoen.htm	farmdemo.safe A simple farm cluster demonstration with network load balancing on a virtual IP address and automatic The virtual IP address must be configured before running this demonstration. During the demonstration, connect Internet Explorer to http://W7Server1:9000/safekit/mosaic. And in the returned page, click on the virtual IP address under "Application Module farmdemo".
sqlserverdemoen.htm	sqlserverdemo.safe A mirror cluster with Microsoft SQL Server and real time database replication and failover
applicationmoduledemoen.htm	sqlserverdemo.safe Understand what is an application module? Configuration and internal.
networkcheckersdemoen.htm	sqlserverdemo.safe Understand network checkers to avoid 2 master servers. 1st part of the movie – 1 single heartbeat / no network checker Before running the first part of the movie, remove the following configurations (using comments"**<!--**" "**-->**") in **sqlserverdemo / userconfig.xml**: **<!--** <heartbeat ident="flow"> <server addr="net2_physicalserver1"/> <server addr="net2_physicalserver2"/> </heartbeat> </heart> **-->**

	… **<!--** <flow> <server addr="net2_physicalserver1"/> <server addr="net2_physicalserver2"/> </flow> **-->** 2nd part of the movie – 1 single heartbeat / 1 network checker Before running the 2nd part of the movie, stop the sqlserverdemo module. Then, **uncomment** the following configuration in **sqlserverdemo** / **userconfig.xml**: <!-- Virtual IP Configuration --> **<!—** <vip> <interface_list> <interface check="on"> <real_interface> <virtual_addr addr="192.168.4.50" where="one_side_alias"/> </real_interface> </interface> </interface_list> </vip> **—>** **Note:** Alternatively, you can use a ping checker. 3rd part of the movie – 2 heartbeats Before running the 3rd part of the movie, stop the sqlserverdemo module. Then, remove in **sqlserverdemo** / **userconfig.xml** the network interface checker with <interface check="**off**"> + reconfigure the heartbeat and the flow commented in the 1st part of the movie.
msmqdemoen.htm synchronousdemoen.htm failbackdemoen.htm	msmqdemo.safe A mirror cluster with Microsoft Message Queuing and real time queues replication and automatic failover Understand synchronous replication with NO data loss (contrary to asynchronous replication with data loss) Understand failback and reintegration of replicated files without stopping applications. **Notes:** **-** The movies have been made with QueueExplorer from http://www.cogin.com/mq/ free 14 days trial. The one delivered with SafeKit Training machine is QXplorer2.0 (free and no limit). QXplorer is different in term of GUI but the same scenario can be played. - QXplorer does not resize its windows and requires an adapted screen display (to see the "Refresh Queue" "Send Message" and counter of sent messages at the bottom).
filereplideemoen.ht	mirror1.safe + mirror2.safe

m	2 mirror clusters replicating in the system disk drive C:. Demonstration impossible with shared disk or disk replication solutions. File explorer must be open manually inside C:\WINDOWS_MIRROR1 and C:\WINDOWS_MIRROR2 in W7Server1 and W7Server2 for running these application modules like in the movie.
masterslavedependencydemoen.htm	master_module.safe + slave_mspaint.safe + slave_notepad.safe master module manages shared resources (replicated directories of mspaint and notepad). slave modules manage individual start and stop of mspaint and notepad. Dependencies between slaves and master. File explorer must be open manually inside C:\dirmspaint and C:\dirmirrordemo in W7Server1 and W7Server2 for running these application modules like in the movie.
apachefamdemoen.htm	apachefarm.safe A farm cluster with Apache and network load balancing on a virtual IP address and automatic failover (with 2 servers instead of 3 as in the movie) The virtual IP address must be configured before running this demonstration. During the demonstration, connect Internet Explorer to http://W7Server1:9000/safekit/mosaic. And in the returned page, click on the virtual IP address under "Application Module apache_farm". Contrary to the movie, the process name is not "apache.exe" but "httpd.exe".
virtualIPdemoen.htm	apache_farm.safe A farm cluster with 2 Apache servers and odd/even network load balancing on a virtual IP address and automatic failover Before running this application module, remove in the **apache_farm** / **start_both.cmd** script the special following line: rem Set odd/even load balancing - DO THAT ONLY WITH A CLUSTER OF 2 SERVERS ~~**rem**~~ %SAFEBIN%\vip_services -o %SAFEMODULE% At the end of this test, put back "rem %SAFEBIN%\vip_services -o %SAFEMODULE%" in start_both.cmd, else the cluster will no run correctly with 3 servers.
moduledependencydemoen.htm	apachefarm.safe and sqlserverdemo.safe Dependency between an Apache farm cluster and a Microsoft SQL Server mirror cluster. If Microsoft SQL Server cluster is down, then Apache cluster stops and wait for SQL Server restart. Note that the movie is made with 3 servers in theapache farm but the scenario is the same with only 2 servers. Remove the following comments in **apache_farm** / **userconfig.xml**:

	<!— <module name="sqlserverdemo"> <to addr="192.168.4.50" port="9000" interval="10" timeout="5" /> </module> —> And **uncomment** the following configuration in **sqlserverdemo** / **userconfig.xml**: <!-- Virtual IP Configuration --> <!— <vip> <interface_list> <interface check="on"> <real_interface> <virtual_addr addr="192.168.4.50" where="one_side_alias"/> </real_interface> </interface> </interface_list> </vip> —> At the end, put back the comments (“<!—“ / “-->”) in userconfig.xml else the apache cluster will not start without sqlserverdemo.
No movie for softerrd.safe	Demonstration of process monitoring with softerrd.safe The following processes and actions are set inside userconfig.xml: <errd> <proc name=”**mybin.exe**” atleast=”1” action=”**restart**” class=”**prim**” /> <proc name=”**myotherbin.exe**” atleast=”1” action=”**stop**” class=”**second**” /> <proc name=”**myappli.exe**” atleast=”1” action=”**restart_myappli**” class=”**myappli**”/> </errd> With the SafeKit console, start the softerrd module in PRIM-SECOND on W7Server1 and W7Server2. And, for executing safekit commands, start a command prompt inside both servers, and go to cd c:\safekit 1. In the SafeKit console, “Control” tab, select W7Server1/softerrd log and click on the “i” icon: the log appears. And in the command prompt, kill the process **mybin.exe** with: safekit kill –level=”terminate” –name=”**mybin.exe**” –m softerrd Check in W7Server1/softerrd log that the restart action (configured in userconfig.xml) is working. Stop_prim.cmd following by start_prim.cmd is executed. At the end, **mybin.exe** process is restarted. Check it with task manager and CTRL+ALT+INSER. 2. Same procedure but on the SECONDARY and with **myotherbin.exe** process. Check in W7Server2/softerrd log that the stop action (configured in userconfig.xml) is

	working. Stop_second.cmd is executed during the stop command (as well as the execution of all stop scripts with the force argument in the last step). At the end, restart the softerrd module on W7Server2 to come back to the PRIM-SECOND state. 3. Same procedure on the PRIM server with **myappli.exe**. At the end, **myappli.exe** process is restarted. Check it with task manager and CTRL+ALT+INSER. In the SafeKit console, "Expert Configure" tab, get the softerrd module. And read the script restart_myappli.cmd (the one set in userconfig.xml). You will understand the messages in W7Server1/softerrd log. Note that the incloop counter is incremented in the script. When this counter is superior to maxloop (=3 by default), the module is stopped locally (permanent failure on the local server) and restarted on the SECONDARY. Repeat the kill of myappli.exe twice to check the failover on SECONDARY.
No movie for vhost.safe	Demonstration of virtual hostname with vhost.safe The following **virtualname** is set inside userconfig.xml: <vhost> <virtualhostname name="**virtualname**" envfile="vhostenv.cmd" when="prim"/> </vhost> With the SafeKit console, start the vhost module in PRIM-SECOND on W7Server1 and W7Server2. 1. Inside W7Server1, type hostname in the command prompt automatically started by the vhost module. Check that **virtualname** is returned (and not W7Server1). 2. In the SafeKit console, Expert Configure tab, get the vhost module. And read the script start_prim.cmd to see how the virtual hostname is activated (different for a command prompt and for a service). 3. Start a new command prompt on W7Server1 and W7Server2. And check that hostname returns W7Server1 and W7Server2 (only virtualname is returned to application started in start_prim.cmd) 4. In the SafeKit console, stop the vhost/W7Server1(PRIM) module. Vhost/W7Server2 becomes ALONE. Type hostname in the command prompt automatically started in W7Server2. And check that it returns **virtualname**.

3. Annex 1 - Install the Training Machine with VMware ESX

3.1 Choose the Administration Machine for Running Consoles

The W7Server1 is supposed to be created: see Build the VMware Training Machine W7Server1

With VMware ESX, choose a Windows workstation connected to the administration network "VM network".

Install the VMware Infrastructure Client console on the external Windows machine. For that, connect a browser to the IP address of the VMware ESX server and click on "Download VMware Infrastructure Client" (VMware-viclient.exe).

Install also the free VMware vCenter Converter Standalone: download at http://vmware.com/products/converter/.

3.2 Create 2 Host-only Virtual Switches

1. Start the VMware Infrastructure Client console
2. Click on "Configuration" tab
3. Click inside "Hardware" on "Networking"
4. Click on "Add Networking…"
5. Select "Virtual Machine"
6. Select "Create a virtual switch" and uncheck the box which connects the switch to a physical NIC adapter
7. In "Preview:", a virtual switch is displayed with "No adapters" in "Physical adapters"
8. Click on "Next"
9. In "Network Label:" put "Network host-only 1", click on "Next" and on "Finish"
10. Repeat the same operation and create a second virtual switch named "Network host-only 2"

3.3 Create 2 Virtual Machines: W7Server1 and W7Server2

1. Start the VMware Converter console
2. Click on "Convert Machine"
3. In "Select Source type", choose "VMware Workstation or other VMware virtual machine"
4. Click on "Browse" and select W7Server1.vmx (file downloaded created at step Build the VMware Training Machine)
5. In "Select destination type:", choose "VMware Infrastructure virtual machine"
6. In "Server:", put the IP address of the VMware ESX Server and enter user/password
7. In "Virtual machine name:", set **W7Server1**
8. Select the datastore where to upload the machine
9. In "3. View/Edit Options", click on "Edit" for "Networks"
10. Select for NIC1 "VM Network", for NIC2 "Network host-only 1" and for NIC3 "Network host-only 2"

11. Click on Finish
12. Repeat the same procedure with “Virtual machine name:” set to **W7Server2**
13. At the end of the transfer, open the VMware Infrastructure Client console and check that W7Server1 and W7Server2 appear in the Inventory on the left side

4. Annex 2 – Technical Details of the Training Machine

4.1 Memory Requirement

3 GB is recommended.

Each SafeKit VM requires 512 MB of memory on the host. So, 1 GB is required for running the 2 SafeKit VM on your machine. And a total of 3 GB is required for running in addition the host OS (7, Vista, XP) and the hypervisor (VMware Player 3).

The memory usage is the following:

Windows 7 Enterprise Server OS	370MB
mirrordemo.safe	20 MB
mspaint.safe	20 MB
sqlserverdemo.safe	110 MB
msmqdemo.safe	40 MB
farmdemo.safe	15 MB
apachefarmdemo.safe	15 MB
mirro1.safe + mirror2.safe	40 MB
master_module.safe + slave_mspaint.safe + slave_motepad.safe	50 MB
softerrd.safe	15 MB
vhost.safe	15 MB

4.2 Processor Requirement

A bi-core CPU is recommended.

4.3 Disk Requirement

Minimum of 14 GB free space on your disk. 2 virtual machines, each one uses 7GB of disk.

4.4 Network Requirement

No special physical network requirement.

4.5 VMware Product Requirement

The simplest solution is VMware Player 3 (free). All the movies have been made with VMware Player.

The SafeKit VM is developed with VMware Player 3. If you use a VMware product different from VMware Player 3, you may have to convert the SafeKit VM with VMware vCenter Converter Standalone (free) (http://vmware.com/products/converter/).

4.6 Guest OS

The guest OS of the SafeKit VM is Windows 7 Enterprise 90-days trial (32-bits x86).
Download 1 DVD (1 .ISO file) from http://technet.microsoft.com/en-us/evalcenter/
Note: After the 90-day trial, the OS is rebooted each hour (OK for demo)

4.7 Tested Environments Examples

This demonstration has run successfully on these configurations:

1. Laptop
   2 CPUs, Intel Core 2 Duo CPU T8300 @2,40GHz, 3 GB of memory, Windows Vista Professional 32-bits, tested with VMware Player 3
2. Server
   4 CPUs, 2 bi-core Intel Xeon 5110 @ 1,60Hz, 2GB of memory, VMware ESX Server, 3i, 3.5.0

4.8 Packages inside SafeKitTrainingVM.zip

SQL Server 2005 Express SQLEXPR32.exe, 36,5 MB	SQLExpress services for sqlserverdemo.safe http://www.microsoft.com/downloads/details.aspx?FamilyId=31711d5d-725c-4afa-9d65-e4465cdff1e7&displaylang=en , no license key
SQL Server 2005 Management Studio Express (SSMSE) SQLServer2005_SSMSEE.msi, 43,1 MB	The GUI of SQL Server 2005 for sqlserverdemo.safe http://www.microsoft.com/downloads/details.aspx?displaylang=en&FamilyID=6053c6f8-82c8-479c-b25b-9aca13141c9e, no license key
AdventureWorks for SQL Server 2005 AdventureWorksDB.msi, 28 MB	A database example for SQL 2005 and sqlserverdemo.safe http://www.codeplex.com/SqlServerSamples , no license key
Queue Explorer QXplorer2.0.zip, 591 KB	Explorer for Microsoft Message Queueing and msmqdemo.safe http://sourceforge.net/projects/msmqqxplorer/files/ , no license key
SafeKit Application_Modules Application_Modules.zip, 790KB	Application Modules demonstrations in SafeKitTrainingVM.zip of the reseller kit, no license key
Windows 7 hot fix of "ntfs.sys" x86 32 bits for SafeKit file replication Windows6.1-KB976538-v2-x86.msu=684 KB	http://support.microsoft.com/kb/976538 Note: This hot fix is included in W7 & W2008R2 SP1
Systinternal Suite SysinternalsSuite.zip, 12 MB	Windows utilities – "psexec –i 1 " use inside application modules to display Windows from local system on session id 1 (the 1st login display) http://technet.microsoft.com/en-us/sysinternals/bb842062 , no license key

5. Annex 3 – On existing servers, download the SafeKit One-Month Trial

Alternatively to the SafeKit Training Machine, you can download the SafeKit package and install it on your Windows, Linux, AIX or Solaris servers:

1. Download the package at http://www.evidian.com/safekit/dl-safekit.php (15 MB)

2. Follow the instructions during installation to configure your first mirror of farm module