GENESIS64 – Using GENESIS64 on VMware Virtual Machines

APPLICATION NOTE

July 2011

Description: Guide to setting up and using GENESIS64 applications on VMware virtual machines.
OS Requirement: Windows Server 2003 x64/Vista x64/ Server 2008 x64/Windows 7 x64/ Server 2008 R2 x64
General Requirement: VMware Workstation v5.0 (or later) / VMware Player v3.0 (or later) / VMware ESX / VMware ESXi.

Introduction

Presently, virtualization has taken an important role in main production environments. As formerly divided fields such as production information and field operations become unified, they now grow together, sharing the same hardware. Yet these fields, while sharing the same hardware and system resources, run on independent virtual machines.

ICONICS products can run on VMware-based virtual environments, like VMware Workstation.

VMware's desktop software runs on Microsoft Windows, Linux, and Mac OS X, while VMware's enterprise software, like VMware ESX and VMware ESXi, are bare-metal embedded hypervisors that run directly on server hardware without requiring an additional underlying operating system.

Restrictions

Note that while ICONICS supports installation in virtual environments, cloning the virtual machine with a valid license (software license) represents a violation of the license agreement. You are allowed to transfer the license from one virtual machine to another, but the license should not exist on more than one virtual machine at a time.

System Recommendations

The following settings are only recommendations. They can be customized based on your specific project needs. This application note will only guide you only through the steps that are relevant to an ICONICS product installation.

For more details about more generic System Requirements and VMware settings refer to the following URL:
http://www.vmware.com/support/pubs/.

This application note focuses on VMware Workstation and VMware Player because they are the two VMware platforms that have received the most testing with our software.

Definitions

The terms **host** and **guest** describe physical and virtual machines, respectively.

Host – The physical computer on which you install the VMware software is called the host computer, and its operating system is the host operating system.

Guest – The operating system running inside a virtual machine is called a guest operating system.

Host System Recommendations

Please notice that HW requirements for the host are based on amount of the virtual machines that you want to run on such a system. It means that you need to run the applications on hosted machine plus the base requirements for GENESIS64.

Processor
ICONICS recommends that the host machine's processor has these qualities:

- A 64-bit processor which can handle a load for an appropriate amount of the virtual machines. Please notice that you need to run the applications on hosted machine plus the base requirements for GENESIS64
- 2.26GHz or faster CPU minimum. Compatible processors include the following:
  - Intel – Pentium 4, Pentium M (with PAE), Core, Core 2, Core i3, Core i5, and Core i7 processors
  - AMD – Athlon, Athlon MP, Athlon XP, Athlon 64, Athlon X2, Duron, Opteron, Turion X2, Turion 64, Sempron, Phenom, and Phenom II
- Multiprocessor systems are supported.
- Support for 64bit guest operating systems is available with Intel VT compatible PC with Intel™ Virtualization Technology feature turned on or most AMD64 processors (except the earliest revision C Opteron processors).

Memory
You need enough memory to run the host operating system, plus the memory required for each guest operating system and for applications on the host and guest. VMware recommends to have 2GB or above per guest, but ICONICS recommends at least 4GB for GENESIS64. For more information on memory requirements, see your guest operating system and application documentation.

Virtual Machine Recommendations

Processor
ICONICS recommends that the virtual machine be configured in this way with respect to the processor:

- One virtual processor on a host with one or more logical processors.
- Up to eight virtual processors (eight - way virtual symmetric multiprocessing, or Virtual SMP) on a host with at least two logical processors.

The following are considered to have two logical processors:

- A multiprocessor host with two or more physical CPUs.
- A single - processor host with a multicore CPU.
- A single - processor host with hyper threading enabled.

Memory

The total amount of memory you can assign to all virtual machines running on a single host is limited only by the amount of RAM on the host. The maximum amount of memory for each virtual machine on 32-bit hosts is 8GB and on 64-bit hosts is 32GB. VMware Workstation does not allow powering on virtual machines that are configured to use more than 8GB of memory on 32-bit hosts. Memory management limitations on 32-bit operating systems cause virtual machine memory to overcommit, which severely affects system performance.

NOTE: For more details about GENESIS64 System requirements, see the Readme file from the ICONICS GENESIS64 installation DVD.

Support for 64-Bit Guest Operating Systems

VMware supports virtual machines with 64-bit guest operating systems only on host machines that have one of the supported 64bit processors. When you power on a virtual machine with a 64bit guest operating system, VMware Workstation performs an internal check. If the host CPU is not a supported 64-bit processor, you will not be allowed to power on the virtual machine.

Virtual Machine Settings

Once you have the VMware application installed you can create a new virtual image running an appropriate Windows operating system that supports the ICONICS product you will be installing. The settings below are suggestions and may need to be modified to fit your project needs.

NOTE: For more complete instructions on how to create new virtual image, see the VMware application documentation.

Hardware Tab

- **Memory:** Ensure that you have allocated at least the minimum amount of memory required by your operating system and the software you want to install.
- **USB Controller:** Make sure the USB Controller is present if you will be using an ICONICS USB hardware key. See the USB Hardware Key section below for more details on how to use a hardware key.

Options Tab

- **VMware Tools:** Installing the VMware tools helps VMware better manage the guest operating system.

Connecting a Hardware Key to a Virtual Machine

1. Ensure that the USB Controller is installed in the virtual machine settings.
2. Plug the USB key into the host machine.
3. Connect the USB device to your virtual machine. It may be detected as "Rainbow USB device", "Rainbow SafeNet Sentinel device", or a similar name.

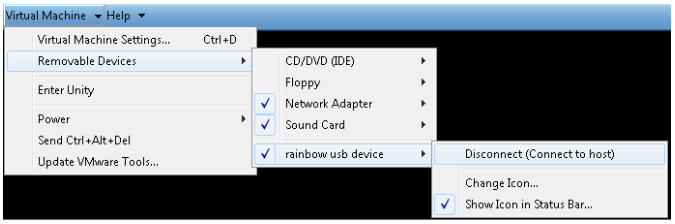

Figure 1 - Connecting the USB device

4. Once the key is connected, restart the ICONICS Licensing Service from the Service Manager (run "services.msc" command from Start) to apply the changes.
5. Start the MonitorWorX Viewer from Start → All Programs → ICONICS → GENESIS64 and verify that MonitorWorX is successfully detecting the hardware key.

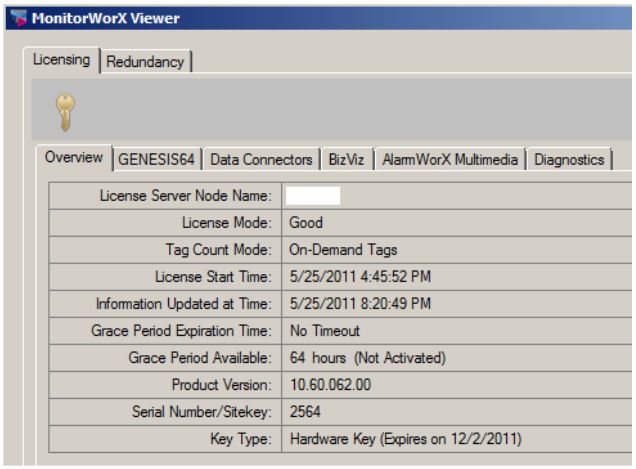

Figure 2 - MonitorWorX detecting a hardware key

ESX/ESXi host machines

If your VM infrastructure is based on ESX or ESXi, these hypervisors do not provide the capability to map a physical USB port to a guest machine.
In this case, 3 options are available to you:

- **Use an ICONICS software license -** software licensing options are still available where a hardware license cannot be used.

- **Use a remote hardware license –** the ESXi guest machines can be configured to retrieve their licenses from a remote, physical machine into hosts the hardware license.

- **Use a network-attached USB device –** AnywhereUSB products are network-attached USB hubs that connect USB peripheral devices to a guest PC over a Local Area Network. The device can be configured on the guest VM and then hardware dongle can then be plugged into this device.

Figure 3 - network-attached USB device

ICONICS tested VMWARE ESXi with following HW:

Manufacturer	Dell Inc.
Model	PowerEdge R610
CPU Cores	8 CPUs x 2.26 Ghz
Process Type	Intel(R) Xeon(R) CPU E5520 @ 2.27Ghz
License	vSphere 4 HyperVisor Licensed for 2 physical CPUs
Processor Sockets	2
Cores per Socket	4
Logical Processors	16
Hyperthreading	Active
Number of NICs	4

NOTE: This server ran up to 4x GENESIS64 VM's each with 4xCPU and 4GB RAM comfortably.

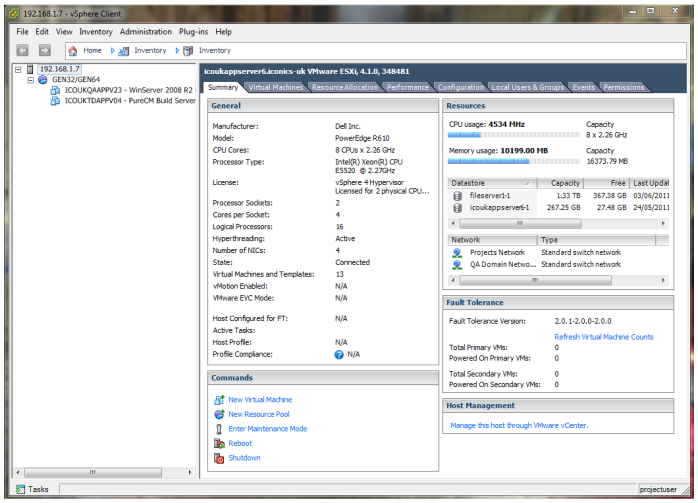

Figure 4 – vSphere Client