ICONICS
Running on Hardware Fault Tolerant Platforms

APPLICATION NOTE

September 2013

Description: Information on running ICONICS on hardware Fault Tolerant Platforms.
OS Requirement: Vista x64/ Windows 7 x64/ Windows 8 x64/ Windows Server 2008 x64/ Windows Server 2008 R2 x64/ Windows Server 2012.
General Requirement: Virtualization Platform knowledge (Marathon, Stratus, VMware ESX, CitriX XenServer, Microsoft Hyper-V).

Introduction

ICONICS software can be deployed on Marathon, Stratus or Server virtualized platforms like VMWare ESX or CitriX XenServer.

ICONICS GENESIS32 and GENESIS64 solutions provide the versatility to run in many different environments. In the case a fault-tolerant environment is desired, ICONICS can provide the necessary configuration information to maintain the High Availability or Fault Tolerant scenario desired.

Running on Marathon Servers

ICONICS has tested our 32-bit and 64-bit products with Marathon's EverRun FT line of servers and also their EverRun MX line of servers. GENESIS32 was tested on both platforms, and GENESIS64 was tested only on MX (as EverRun FT does not support 64-bit operating systems).
For more details about running ICONICS applications on Marathon Server see application note *ICONICS – Running on Marathon Servers*.

Running on Stratus Server

ICONICS has tested the Stratus ftServer platforms with GENESIS32, GENESIS64™ and BizViz™.

ICONICS manufacturing operations automation and business visualization solutions improve productivity, reduce integration time and operating costs, and optimize asset utilization for companies across multiple industries.

In real-time environments, these applications offer significant payback – but they also introduce the risk of unplanned downtime. IT infrastructure failures can result in diminished production, data loss, regulatory non-compliance – even the creation of hazardous conditions. That's why ICONICS, a Stratus partner for more than six years, leverages the near 100% continuous uptime and operational simplicity of the Stratus ftServer platform.

Stratus ® fault-tolerant ftServer ® systems are a certified platform for ICONICS solutions. The ftServer platform is field-proven in the world's toughest computing environments to deliver uptime that exceeds 99.999% – for both the server and operating system. For ICONICS customers, that translates to less than 32 seconds of downtime a year.

Case Study - ICONICS and Stratus monitor the world's longest oil pipeline

The only thing worse than having crude oil spewing from a cracked pipeline in some remote frozen plain, is not knowing there's a disaster in the making.

One ICONICS customer, a large, state-owned Russian oil transportation company, uses leak detection, seismic control, and other data acquisition and control systems to monitor the condition of its 30,000 miles of pipeline. These mission-critical applications provide data in near real time to help ensure that oil produced in Russia successfully reaches its planned destination.

To ensure these applications are online all the time, the oil transportation company selected Stratus ftServer systems. More than 52 systems will be in production in the company's pumping stations when the rollout is completed.

Prosoft (ICONICS distributor) delivered the ICONICS GENESIS32™ software and STR (Stratus' premier Russian distributor) delivered the IT infrastructure that have made this project a success.

For more details about running ICONICS on Stratus Server see this link:
http://www.stratus.com/~/media/Stratus/Files/Library/Collateral/ICONICSsolutions.pdf

Running on VMware ESXi

ICONICS products have been tested on VMware vSphere (ESXi) v5.x in a Cluster scenario. Please notice that you must purchase a VMware vSphere license if you want to take advantage of Fault Tolerance.

VMware Fault Tolerance is a feature that allows a new level of guest redundancy. The feature is enabled on a per-virtual-machine basis. In very general terms, when Fault Tolerance is enabled, a second virtual machine is created to work in tandem with the virtual machine for which you have enabled Fault Tolerance. This virtual machine resides on a different host in the cluster, and runs in virtual lockstep with the primary virtual machine. ICONICS supports this scenario and it can be configured for GENESIS64 and Hyper Historian Redundancy.

Whatever happens on the hardware level for the cloud will be handled by the VMware Cluster which is transparent for the ICONICS software.

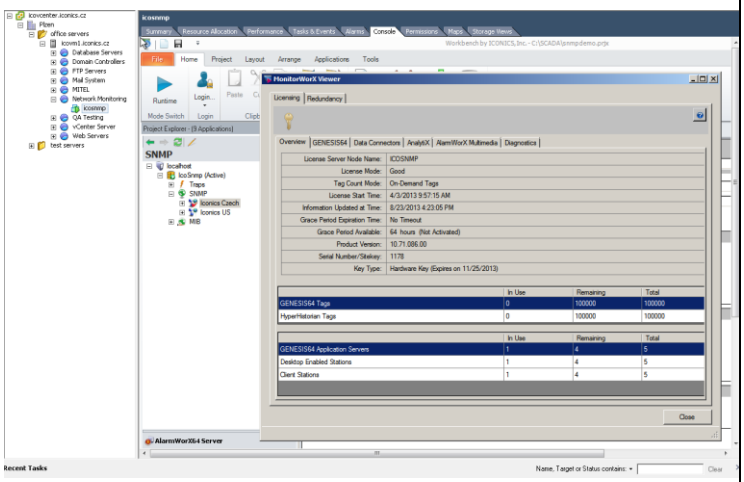

Figure 1 – GENESIS64 running on VMware vSphere 5.x

For more details how to configure Cluster with VMware Fault Tolerance (FT), Distributed Resources Scheduler (DRS), Distributed Power Management (DPM), High Availability (HA) admission control see VMware vSphere documentation.
http://pubs.vmware.com/vsphere-51/index.jsp#com.vmware.vsphere.doc/GUID-1B959D6B-41CA-4E23-A7DB-E9165D5A0E80.html

Running on Citrix XenServer

GENESIS32, GENESIS64, and BizViz has been tested on Citrix XenServer v5.6 (High Availability (HA) disabled) where ICONICS Redundancy was deployed.

ICONICS does not have any limitations when running with HA enabled, because HA will be configured on XenServer level and is transparent to the ICONICS software.

For more details how to configure Xen Server please refer to the XenServer documentation:
http://support.citrix.com/product/xens/

For more details how to configure XenServer with High Availability (HA) see the Quick Start Guide available here or Citrix Xen Server documentation center:
http://www.citrix.com/content/dam/citrix/en_us/documents/products-solutions/citrix-xenserver-high-availability-quick-start-guide.pdf

For more details how to setup ICONICS Redundancy see the application notes entitled *GENESIS64 – Redundancy Setup Options* and *Hyper Historian – Redundancy Setup Options*.

Software Licensing on Fault Tolerant Systems

ICONICS Software Licensing is tied to the hardware on a particular system. A Fault Tolerant or High Availability system may fail over in such a way that, to the licensing software, it appears that the hardware has changed. If this happens, the license will be invalidated.

For this reason, ICONICS recommend using hardware keys on Fault Tolerant or High Availability systems, or one or more remote software licenses being hosted on machines that are locked to a particular set of hardware.

If it is not possible to connect a USB device directly to the system, the simplest workaround is to use a USB Concentrator device such as AnywhereUSB. This is a device that has USB ports on it and connects to the network. One networked machine can connect to the device, and after running the configuration software, any USB devices (including hardware key) that's plugged into the AnywhereUSB will appear on the system as if it is plugged into it directly. However, this does mean that the system does now have a single point of failure, so you would want to configure some secondary license server on another machine.