



## ConsoleWorks<sup>®</sup> for VMware

### ConsoleWorks – Leveraging the VMware Virtual Serial Port

The inclusion of the Virtual Serial Port in VMware vSphere 4.1 provides an important technical capability for enhanced management of virtual environments. The new release of the ConsoleWorks Virtualization Foundation leverages this capability to deliver enterprise-class VM and vCenter compliance and security capabilities as well as further optimizing virtual environment IT operations.

### ConsoleWorks Virtualization Foundation for VMware

Utilizing the vSphere 4.1 Virtual Serial Port capability, the latest release of the ConsoleWorks Virtualization Foundation (for VMware) is delivered with new management enhancements through the ConsoleWorks Virtual Serial Port Concentrator. The ConsoleWorks Virtual Serial Port Concentrator provides the means to capture and aggregate all events and actions that are taken on virtual machines and vCenters in a secure manner that meets enterprise-class security and compliance requirements. In addition, ConsoleWorks can now extend all of the benefits of the ConsoleWorks ITFM Suite to virtual environments. These include: infrastructure security, augmenting compliance at the IT infrastructure level, decreasing IT infrastructure operating costs and increasing the ability to deliver on IT services (Service Level Agreements).

### Security and Compliance

With this release, ConsoleWorks now maintains VM and vCenter console connections in all modes of operation, including during VM migrations. In addition to maintaining the IT infrastructure security model over privileged interfaces (consoles, virtual serial ports), ConsoleWorks is now able to capture all log file data generated by vCenter and ESX hypervisors (which includes VM logs). This provides comprehensive data collection of all events, information and actions (provisioning VMs, moving VMs, configuration, maintenance, repair, etc.) that can support even the most rigorous compliance requirements. It also provides a degree of transparency into virtual environments that directly enables oversight, auditing, and management.

### IT Operations Improvement

An important part of reducing management costs - while maximizing availability and reliability of systems - is the ability to correctly identify, diagnose and remediate issues and problems. This is a critical differentiator of ConsoleWorks, driving productivity enhancements of 400% to 800% for many of our customers. The new release of ConsoleWorks enables all of the IT operations benefits for virtual environments that are already being realized in traditional IT infrastructure environments by our customers.

### Remote (Virtual), Secure Monitoring and Management

ConsoleWorks also provides secure remote monitoring and management so that the virtual and multiple virtual environments can be serviced by administrators anywhere they have an internet connection. In addition, ConsoleWorks enables real-time collaboration so that geographically separated support staff can work together as virtual teams.

## The ConsoleWorks VMware IEM

The Intelligent Event Module for VMware includes over 200 vCenter events already prioritized and defined. Intelligent Event Modules (IEMs) are event reference libraries that contain the proper priority designation and descriptive event definitions for detected events that transform cryptic event codes into human-understandable error definitions – simplifying the diagnosis activity. By automatically prioritizing events and providing an accurate definition with the cryptic event code the “process” that leads to root cause remediation is collapsed down to a fraction of what it would be without ConsoleWorks.

IEMs dramatically improve the ability to streamline and optimize IT Operations by eliminating time-consuming event prioritization and research activities. With IEMs, events captured by ConsoleWorks that are in the IEM “library” are automatically processed, assigned the appropriate priority, and presented with their human-readable definition. This enables administrators, engineers and technicians to use their time for value-add issue or problem resolution rather than priority assessment or event code researching.

By enabling events to be “clickable,” ConsoleWorks enables the correct console for the remediation action to be automatically opened in just one click – completing the “incident management cycle” in the most efficient manner possible.

Finally, IEM technology can be used as a domain knowledge repository. New events can be added by the user so that when these events (or event combinations) occur again they will already be properly prioritized and described. IEMs can also be updated by the end user with recommended remediation actions by event – even to the inclusion of the exact sequence used to correct the problem previously. This is an important enabler of continuous process improvement.

## Business Drivers – Meeting Customer Challenges

The new capabilities that TDi Technologies is now delivering in ConsoleWorks for VMware are driven specifically by use case requirements from our customers. The following customer use cases describe top priority challenges our customers face and how the new capabilities of ConsoleWorks meets these business challenges.

### Use Case #1

This customer has over 500 physical machines and over 5,000 virtual machines. They run these within multiple data centers and have several hundred System Administrators to manage the infrastructure. They are effectively an internal “outsourcer,” providing services to many different business units.

### Use Case #2

This customer has approximately 100 physical machines and 1000 virtual machines. They run these in multiple, geographically dispersed data center locations.

### Business Challenge I (Use Case 1)

The first business challenge they have raised is that in their environment, where one VMware vCenter is managing the VMs across all data centers, a resource loading issue occurs from opening up so many KVM consoles (VM GUI interface).

For this issue, ConsoleWorks takes over the responsibility (and load) of opening these consoles. This removes the load from the Virtual Center and puts it into an environment (ConsoleWorks) that is specifically designed and optimized for this kind of high volume work. The result is that not only is the issue of vCenter resource overrun removed in large-scale deployments, but the work is offloaded to an environment (ConsoleWorks) that can handle that load without extensive resource requirements.

### Business Challenge II (Use Case 1 & 2)

The second business challenge is a security and compliance issue. In this case, several internal “customers” require a systems-generated record of all configuration changes. They want to know who made a change, what change they made, when they made it, and what was actually done. They need to know the details down to the keystroke to meet their compliance requirements. This is definitely a trend in compliance, and TDi Technologies is regularly seeing this on PCI-DSS, NERC-CIP, HIPAA and SOX.

This challenge is a bit more problematic. The data transmitted over a KVM-style interface cannot be captured and logged the way that it can be with a traditional console interface. ConsoleWorks is able to capture all of the data desired by this customer as matter-of-record logs that are fully auditable.

For this customer, the complete requirement is for configuration logs to be maintained for all configuration actions taken and that these logs can be cross-referenced such that audit trails can be established between all configuration points (including physical hosts) for any logical entity (e.g., by VM, by Application, by Physical Host). ConsoleWorks meets this requirement by capturing this data across all configuration points with universal time-stamping to enable production of all desired cross-reference reports.

While this represents the more extreme case of compliance and security practices, TDi Technologies is seeing significant growth in this practice. For example, the recent (March 2010) DISA security practices for the Department of Defense directly includes the practice of capturing these kinds of configuration logs under a paradigm that supports full cross-referencing across the IT infrastructure.

### Business Challenge III (Use Case 1)

The third business challenge is a dependency issue that can cause a VM to fail on start. The dependency this customer has specifically noted stems from obtaining a Logical Unit Number from one of their SANS. If the SANS is unable to process the request, the VM start will fail.

In the case of VMware, the information about the failed start is generated and then sent to one of the eight logs generated by the Hypervisor. The process the customer experiences flows something like this:

- a) Receive support request for failed VM start
- b) Must identify which Hypervisor the VM was attempted to be started on

- c) Must review log files until problem is found
- d) Must diagnosis issue to discover root-cause
- e) Must perform remediation (based on cause)

For this VMware customer, this is a costly process (raises operating costs) that produces low satisfaction for internal customers. In addition, because the Hypervisor log files only retain a limited set of the most current information. As new information comes into the logs, older information is overwritten. Because of this, the information needed to troubleshoot the source of the problem has often been overwritten before IT operations staff can get to it.

With ConsoleWorks, all of the log files are captured (in real-time) and then processed for events including use of the ConsoleWorks VMware IEM for automatic prioritization. In addition, the VMware definitions are automatically associated with each event and the appropriate console for remediation can be opened by simply clicking on the event to be remediated.

For the customer, ConsoleWorks changes their process to something like this:

- a) ConsoleWorks presents priority alarm in real-time
- b) VMware definition is included with alarm (for diagnosis)
- c) Alarm is clicked to open console and perform remediation
- d) Problem is often resolved before support receives request from internal customer

## Technical Summary

ConsoleWorks for VMware is available as a traditional installation package on Windows, Linux, and Solaris. ConsoleWorks for VMware is part of TDi Technologies IT Foundation Management solutions that provide highly optimized, real-time, systems-management for IT infrastructures.

ConsoleWorks for VMware provides the following capabilities:

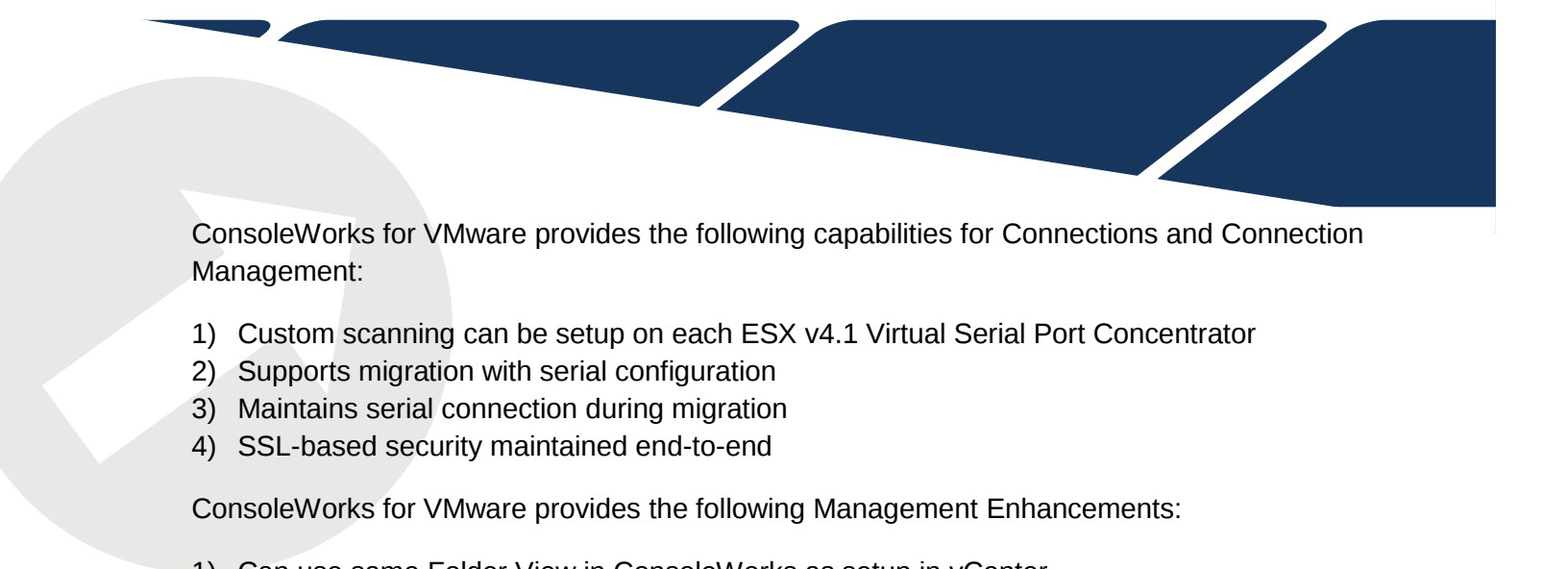
- 1) Supports VCenter, ESX hypervisors and VMs
- 2) Directly tracks VM migrations
- 3) Has the ability to initiate VM migrations

ConsoleWorks for VMware provides the following Information Capture and Management:

- 1) Can collect all logs from the vCenter – or any subset thereof
- 2) Can collect all logs from Physical Hosts – or any subset thereof
- 3) Can collect all logs from ESX hypervisors – or any subset thereof

ConsoleWorks for VMware also provides additional information capture and management including:

- 1) Console data from VCenter, VMs and ESX
- 2) API alarms and events from vCenter and ESX\* (\*depending on set up)
- 3) Property changes (configuration) on VMs



ConsoleWorks for VMware provides the following capabilities for Connections and Connection Management:

- 1) Custom scanning can be setup on each ESX v4.1 Virtual Serial Port Concentrator
- 2) Supports migration with serial configuration
- 3) Maintains serial connection during migration
- 4) SSL-based security maintained end-to-end

ConsoleWorks for VMware provides the following Management Enhancements:

- 1) Can use same Folder View in ConsoleWorks as setup in vCenter
- 2) Includes Host (hypervisor) View (VMs by Host)
- 3) Includes Flat View to view all VMs

## Benefits Summary

- 1) Always-On connection to logs, events, alarms, and virtual machines
- 2) Maintains logs of anything you want to monitor, keeps those logs indefinitely if desired
- 3) Access through web interface or command line, authenticated and authorized access to consoles
- 4) Offload some of the work you do in vCenter, such as powering on/off or migrating machines
- 5) Consistent management of virtual and physical machines, support for multiple virtualization technologies
- 6) IEMs to easily scan for the most common issues on Logs, Hosts, and Guests
- 7) Management of virtual sprawl by identifying which VMs are actually being used – and VMs that are not being used (housekeeping)
- 8) Optimization of virtual environment through identification of excessive VM movement (thrashing)
- 9) Reduction of heat (physical machines, environment) through enabling sprawl cleanup and detection of thrashing conditions for remediation

## Learn More

To learn more about ConsoleWorks for VMware and the ConsoleWorks ITFM Suite please visit our website at: [www.TDiTechnologies.com](http://www.TDiTechnologies.com) or contact us by phone at: 972.881.1553.

TDi Technologies is a VMware Technology Alliance Partner.

ConsoleWorks ITFM Suite  
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