



What is Foundation Management for Virtualization?

Virtualization in IT (the use of virtual machines—VM) introduces a new layer into the Foundation Management model. With virtualization, the IT Architecture moves from a three layer model to a four layer model. Virtual machines effectively become a new layer that resides between the Component layer and the Systems layer.

While virtualization offers better IT utilization, increased flexibility, increased efficiency and reduced cost of operations it also imposes significant challenges to security, compliance, incident management and service reliability. The additional complexity of virtual environments poses significant new challenges to addressing the Insider Threat, meeting the intent of compliance regulation, resolving incidents and retaining service levels.

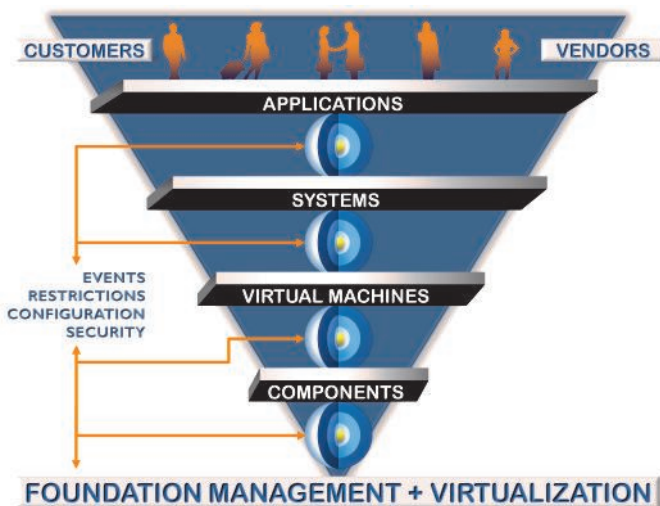
Virtual Challenges

Virtualization introduces the additional complexities of:

1. Multiple OS's (by VM) per hardware unit
2. Multiple applications per hardware unit
3. Automated movement of VMs across physical hosts

The first two characteristics present the challenge of maintaining foundation-level security, compliance and management over an infrastructure that is more complex than traditional (non-virtual) infrastructure.

To meet these challenges foundation management extends its security, compliance and management approach to each virtual machine's console, operating system, and applications.



Automated Movement

Automated movement of VMs across hardware units presents much greater issues. Because security and compliance can only be fully met by the bottom-up approach of Foundation Management, the movement of VMs requires that the security and forensic logging behind VMs remain in place with continuity. Foundation Management addresses this by including VMs in the overall management practice when they move (even frequently) from one physical host to another. This includes security over privileged interfaces on both VMs, clusters (or pools) and hardware hosts.

Foundation Management includes securing privileged interfaces on both VMs and hardware hosts.

FOUNDATION MANAGEMENT FOR VIRTUAL MACHINES

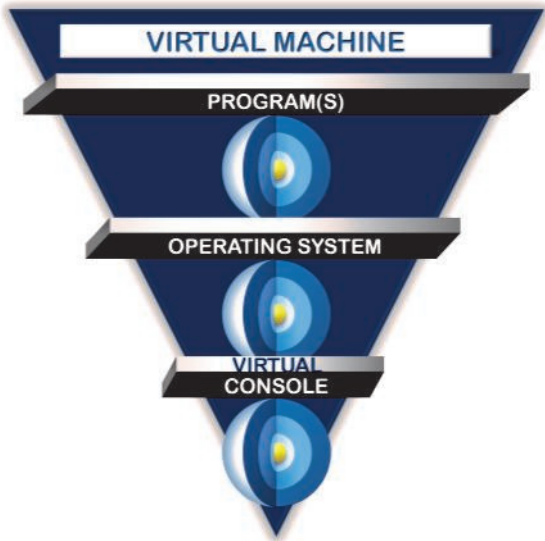
What Problems does it Solve?

Foundation Management seamlessly incorporates virtualization technologies, including hypervisors and virtual machines, into the Foundation

Management approach to address the challenge of the Insider Threat, successfully meet the intent and interpretation of compliance regulations, improve the efficiency of IT operations and increase the ability of IT services to deliver against Service Level Agreements and other Key Performance Indicators.

By extending the Foundation Management model to virtualization technologies the Virtualization Foundation:

- Secures privileged interfaces across both physical and virtual technologies
- Produces forensic evidence logs of events and action that retain continuity even when VMs “move” across physical hosts
- Extends all of the Foundation Management benefits to virtual machines and hypervisors as an integrated system



Virtual Component Architecture

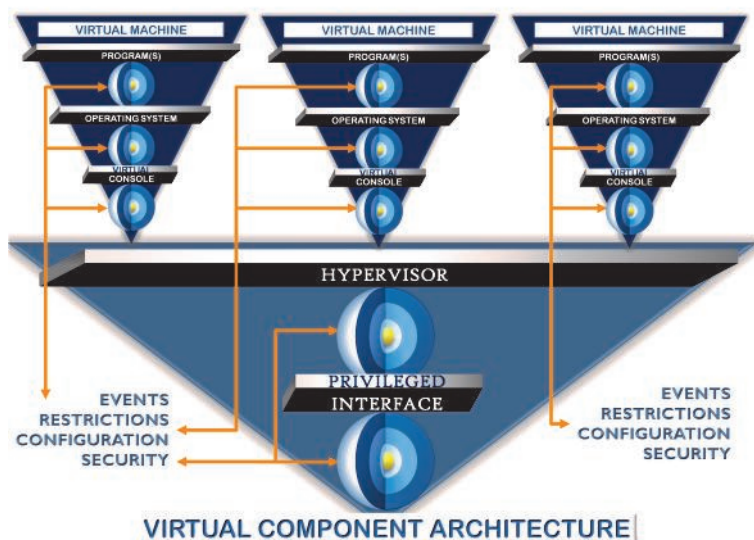
With virtualization technologies, the traditional component architecture of a physical computing device is altered as follows:

- The Operating System is replaced by a Hypervisor
- The Program(s) are replaced by one or more Virtual Machines

However, each Virtual Machine represents an instance of component architecture having:

- A console (privileged interface)
- An operating system
- One or more programs

Foundation Management secures, monitors, manages, and logs at the physical host and at each and every Virtual Machine. In addition, Foundation Management retains continuity of the audit trail behind VMs, even when the move across physical hosts.



Cluster or Pool Management

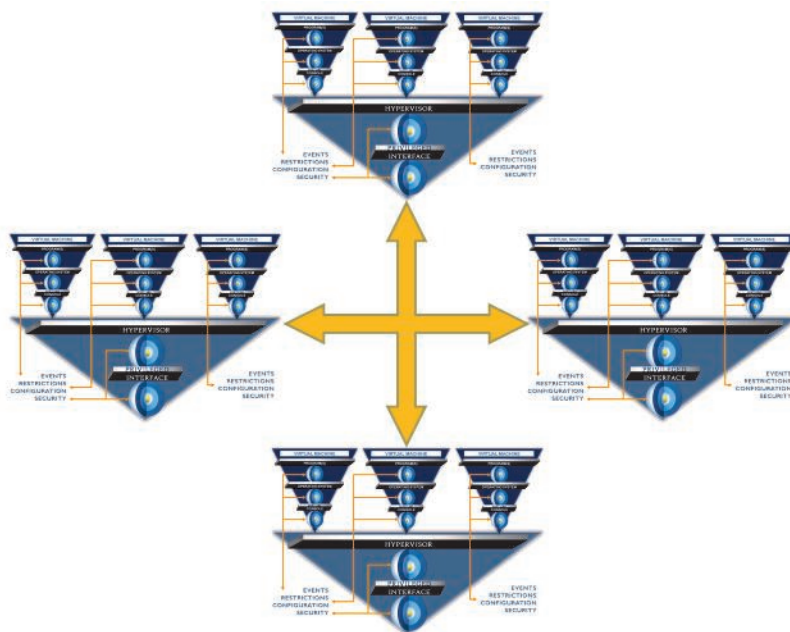
Virtual machines are assigned to a given cluster or pool. Within this cluster or pool, they can move across physical hosts based on host load, prioritization, and to accommodate maintenance (i.e. host availability).

Movement of Virtual Machines is typically performed as an automated function of the virtual environment either by a cluster manager, virtual control center or as a pool management function built into the Virtual Machines themselves.

Regardless of how clusters or pools are instituted, the ability to monitor, manage and record the events (and actions) taken on console interfaces is of critical importance.

It is essential to maintaining the overall health of the virtual environment, security that environment against the Insider Threat and establishing traceability of events and actions for Virtual Machines.

Further, traceability requires that events and actions for both Virtual Machines and their physical hosts be captured as a matter-of-record for each and every Virtual Machine. Otherwise the organization has no means to validate what actually happened on each Virtual Machine or what physical host events/actions are relevant to a given Virtual machines.



VIRTUAL MACHINE CLUSTER OR POOL

Foundation Management Addresses the Challenge

Foundation Management, through its bottom-up approach, meets this challenge by:

- Capturing events and actions on all Virtual Machines
- Capturing events and actions on all VM physical hosts
- Correlating VM and physical host logs for VM lifecycle auditing.
- Securing VM privileged interfaces (consoles) no matter where they are or how often they move
- Providing matter-of-record data capture to support compliance requirements

FOUNDATION MANAGEMENT FOR VIRTUAL MACHINES

How do I Act on This?

The Virtualization Foundation from TDi Technologies® extends all of the benefits of Foundation Management to virtualization technologies. Where virtualization is employed, Foundation Management addresses the Insider Threat, meeting the intent and interpretation of compliance regulations, improving IT operations efficiency and retaining delivery against Service Level Agreements and other Key Performance Indicators.

The next step is to talk with us, so that we can get to know your situation and help you determine the best steps to take in order to leverage the capabilities of the Virtualization Foundation for your organization.

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You can also read more on Foundation Management and TDi Technologies® on the web at www.TDiTechnologies.com and review additional information on the IT Services Foundation on the web at www.TDiTechnologies.com/virtualization-foundation.

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