

Managing Xen

DMTF Standards and CIM Provider Work

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Goals

- DMTF goals:
 - Leverage existing modeling when creating virtualization model.
- Novell goals:
 - Be able to use unmodified providers within a VM. Providers within a guest VM do not know/care that they are running in a virtualized environment. This is necessary to be able to support physical-to-virtual migration tools.

Status of the Model

- Life cycle is stabilizing, but still evolving. This is the most reasonable area to write code against without worrying about having to completely rewrite later.
 - Life cycle is required to create / suspend / resume / shutdown VMs.
- Capabilities profile has not changed for several months. Seems to be complete enough to begin implementation.
 - Capabilities provide client management application the information required to create valid allocation requests (e.g., valid ways to partition the hardware).

Level of Participation

- Modeling
 - IBM, Symantec, Microsoft, VMware, HP, ...
- Implementation
 - Novell (DMTF), IBM, others?

General Design of Novell Provider

- Written to OpenWBEM's C++ interface.
- Object-oriented design (e.g., ComputerSystem is both a CIM class and C++ class).
- Talks directly to xend via SXP, not via xm command, for better error reporting and robustness.
- ConcreteJob is supported where possible, to not block client's thread.

Status of Novell Provider

- 26 classes / associations implemented (some fully; some partially).
- Possible to enumerate the classes and associations (e.g., query running VMs).
- Possible to create and shutdown VMs as per lifecycle model.

Work to do in Novell Provider

- Can't yet create ResourceAllocationSettingData to instantiate a new VM, but can load recorded instances (e.g., from config file).
- Can't yet pause, suspend to disk, resume, migrate, ...
- Need to subclass some CIM classes (e.g., CIM_ConcreteJob --> XenProv_ConcreteJob)
- Needs much testing.

OpenWBEM vs Pegasus

- Novell is committed to OpenWBEM for SLES 10.
- All of our providers are written to OpenWBEM.
- OpenWBEM and Pegasus can share providers if they are written to CMPI interface.
- OpenWBEM currently supports CMPI version 1.x.
- OpenWBEM has plans to support CMPI 2.0 in the very near future.

Model Issues

- No concept of migration in model.
- Unclear how to "interface" Xen provider and guest OS's providers:
 - Where is the dividing line between Xen provider and VM's provider?
 - DMTF goal is to "leverage existing modeling".
 - Novell's more concrete goal is to use existing non-VM-aware providers in VMs.
 - > Therefore: We currently have a LogicalIdentity association between ComputerSystem instances

Model Issues

- Model is unclear about virtual resources beyond memory and CPU.
 - Lacks specializations of ResourceAllocationSettingData for the various virtual resources.
 - Lacks profile documentation for NetworkAdapterSettingData.
- No lifecycle indications defined (e.g., no indications for VM shutting down, crashing, etc)

Things Desired from Xen Community

- Standardize way for dom0 kernel to get IP address(es) of domU kernels.
 - Needed for Xen provider to refer to DomU providers. SUSE kernel has code (by Gerd) to support this.

Other Work Items

- Possible related work to be done by open source community
 - Need client, written to DMTF model, to test/validate provider implementation(s)

Novell Xen Technical Preview (XTP)

- Novell is hosting a technical preview of Xen related technologies
 - 3.0 Hypervisor
 - > x86, x86-64
 - > Intel VT & AMD Pacifica
 - SL 10.1 Dom0
 - Variety of Kernels Paravirtualized for Xen
 - > SLES 9 SP3, SL 10.0, SL 10.1
 - CIM Providers
- XTP Website
 - <http://forge.novell.com/modules/xfmod/project/?xenpreview>

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