Removable media support

- Need support to insert/remove media
  - Necessary for paravirtual, but also desirable for full virtual now that the qemu console has been gutted due to security issues. (#159907, 252254, 256568)
  - Many operating systems have add on products requiring post install access to media (CD, DVD, etc.)
    > Current support is too complex for your typical user
  - Possibly implement as an xm command
    > Need control via API as well
APIC emulation

• Windows IO performance is extremely slow when APIC is enabled “apic=1”
• Users are constantly playing with settings for ACPI and APIC to get guests to boot in different configurations
• Need Improved APIC support
  – "apic=1" required for some Windows (64 bit and SMP) but again results in poor IO performance
  – May need to find other solutions (software/hardware) to avoid the complex emulation overhead we have today
Legacy OS Support

- Complete real-mode emulation for fully virtualized guests
- Enable support for legacy OS
Graphics Card Issues

- VESA frame buffer is unsupported
- Accelerated Graphics
  - XGL doesn't work under Xen
- Certain graphics cards have problems under Xen
Mouse and Pointer Issues

• Tracking issues
  – Neither PV nor FV Linux track well (#247398)
  – Windows pointers track fine
Networking

• Needs to be easier to configure / more robust
  – Possibly just a distro issue but we could benefit from better xentools/linux integration

• Networking does not work for Windows Vista
  – Just a bug but, but needs to be tracked down. (#260876)

• PV Drivers for FV guests
  – Call to action is to ensure guest specific PV driver issues are not ignored since good IO performance in HVM guests is currently conditional upon support for PV drivers
    > Experiencing problems booting 32-bit guests (with PV drivers) in 64-bit environment
    > Experiencing problems running PV Drivers on 64-bit non-Linux guests
Power Management

• Support power management in hypervisor
  - ACPI sleep states
  - CPU Frequency Scaling (259985)
  - Feature parity with KVM. (#259985, #200482)
  - Suspend to disk or RAM (163626)

• Especially important for desktop virtualization
Migration Issues

• Authentication
  – Early support in the XenAPI in xen-unstable, but it would be nice to have the authentication mechanism be pluggable.

• Improve Security
  – Encrypt data sent over the wire

• Transactional protocol
  – Protocol needs transactional semantics. If any errors occur, VM should still be running on original machine. (#173821, 180536, 196171, 239782)
    – Needs to ensure that the migration can succeed before it begins
    – Needs to ensure that it did succeed before shutting down VM on original server (239782, 180536, 173821, etc.)
Scheduler

• Improve Credit scheduler
  – Often needlessly moves VMs between physical CPUs. (#262582)
  – Need smarter CPU-VM affinity optimizations
  – Default behaviour for credit scheduler could be more efficient
Performance Issues

- Take performance seriously
  - Need more testing by everyone
  - More effort to ensure code submissions are not only technically correct but do not degrade performance
- Increase IO performance of network bridge
  - 10% performance degradation in the bridge alone
Community and Upstreaming

• Get Xen PV support accepted into upstream Linux!
  - Significantly reduce to work distros have to make Xen technology available to public
  - Enterprise distros stick with a kernel version for the life of the product.
    > Back porting is extremely painful

• Strengthen community support
  - Hypervisor based virtualization
    > Workload isolation
    > Performance isolation
    > Container security via TPM/hardware support
  - Dom0 tools
  - Management issues
Unpublished Work of Novell, Inc. All Rights Reserved.

This work is an unpublished work and contains confidential, proprietary, and trade secret information of Novell, Inc. Access to this work is restricted to Novell employees who have a need to know to perform tasks within the scope of their assignments. No part of this work may be practiced, performed, copied, distributed, revised, modified, translated, abridged, condensed, expanded, collected, or adapted without the prior written consent of Novell, Inc. Any use or exploitation of this work without authorization could subject the perpetrator to criminal and civil liability.

General Disclaimer

This document is not to be construed as a promise by any participating company to develop, deliver, or market a product. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. Novell, Inc. makes no representations or warranties with respect to the contents of this document, and specifically disclaims any express or implied warranties of merchantability or fitness for any particular purpose. The development, release, and timing of features or functionality described for Novell products remains at the sole discretion of Novell. Further, Novell, Inc. reserves the right to revise this document and to make changes to its content, at any time, without obligation to notify any person or entity of such revisions or changes. All Novell marks referenced in this presentation are trademarks or registered trademarks of Novell, Inc. in the United States and other countries. All third-party trademarks are the property of their respective owners.