Ovirt guest agent

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Agenda

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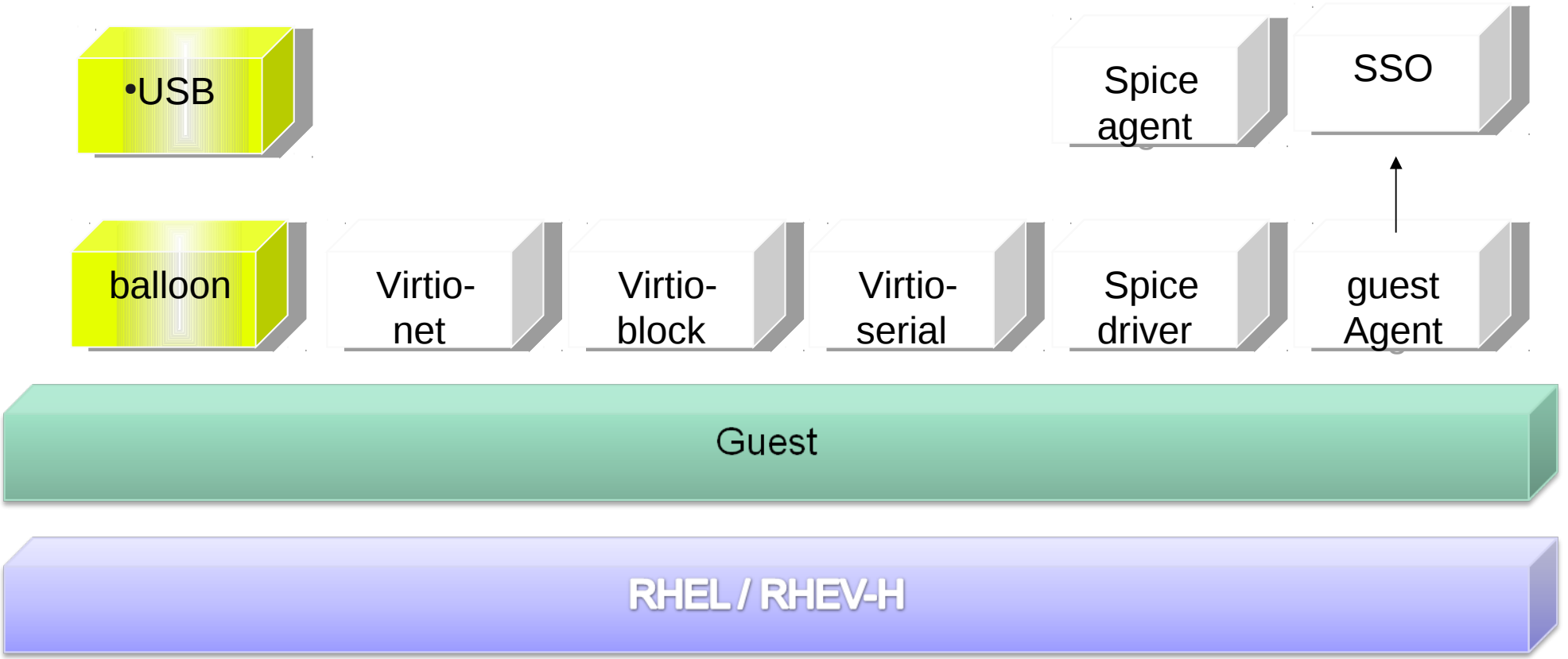
- A word about guest tools
- Why guest agent?
- Matahari, virt-agent, ovirt-guest-agent
- Ovirt-guest-agent - overview
- VDSM <-> ovirt-guest-agent protocol
- Automatic login / SSO
- Current OSS status
- Roadmap
- Resources

Guest tools on RHEVM



Why guest agent

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- Understand what is happening on the the guest OS
  - Supply run time information (mem, users, cpu, networking...)
  - Report internal guest events that the management system would like to be aware of (User shut the guest down, user logged in ..)
- Perform various management operation
  - Quiesce,
  - Shutdown
  - ...

Ovirt-guest-agent vs virt-agent / Matahari ?

- Matahari：
  - A generic purpose framework aimed for system management & monitoring.
  - Supports D-BUS & QMF (AMQP)
  - It has a specific role in the cloud
  - Still work in progress, arch over virtio-serial is evolving
- Virt-agent (qemu-ga):
  - Qemu specific – it was aimed for specific qemu needs (quiesce)
  - Communicates directly with qemu
  - Includes already various API calls – so far linux only
- Ovirt-guest-agent:
  - Exists for a long time (~5 years) – considered stable
  - Started as rhevm specific but evolved a lot since then
  - Currently the only fully functional guest agent available for ovirt

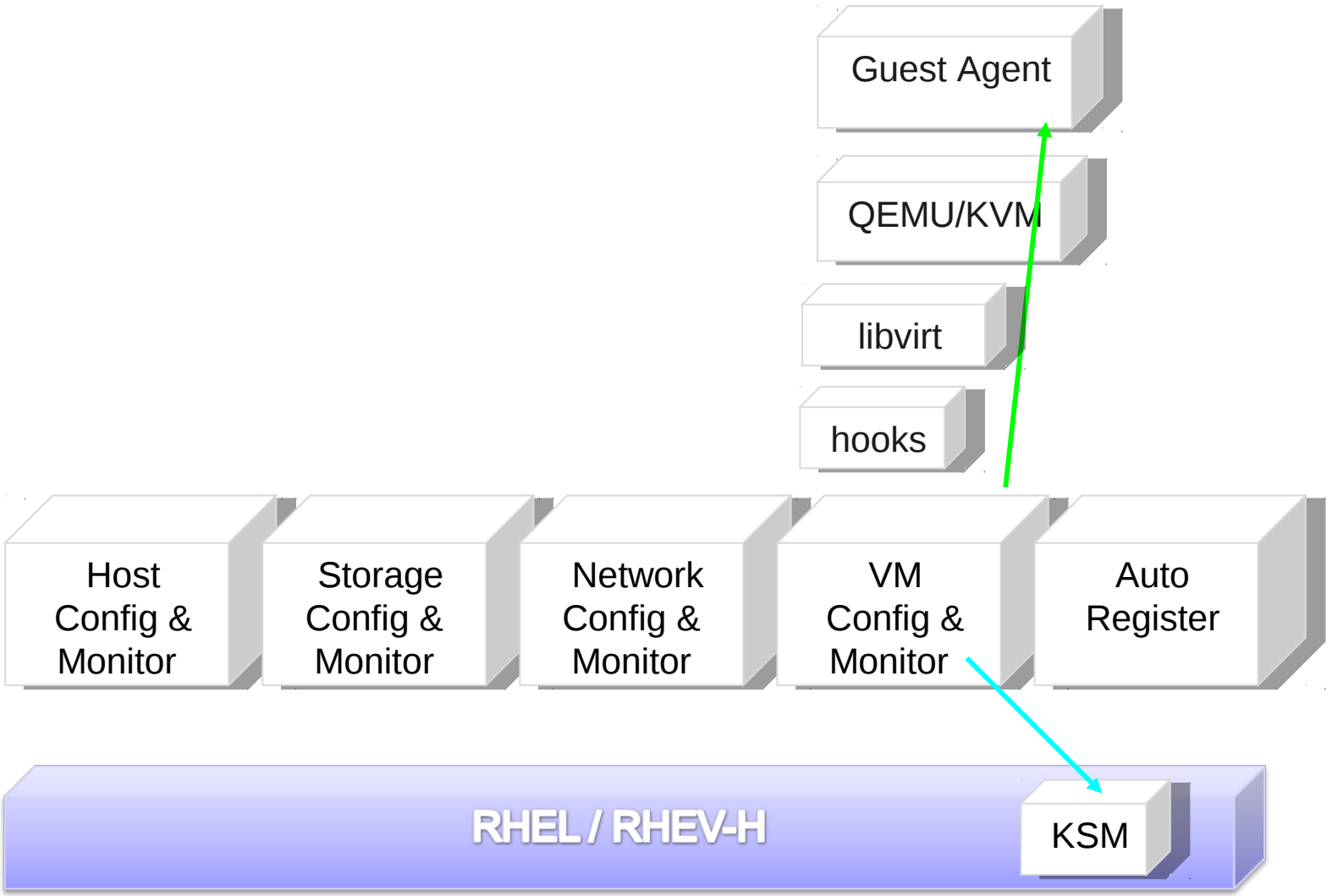
Ovirt-guest-agent

- Written in python
- Communicates with VDSM over a virtio-serial device
- Provides:
  - Information / Stats
  - Events
  - Execution of certain commands within the guest
- Supports various guest OS flavors
  - Windows XP (32)
  - Windows 7 (32/64)
  - Windows 2003 (32/64/R2)
  - Windows 2008 (32/64/R2)
  - RHEL 5.X
  - RHEL 6.X
  - Fedora 15

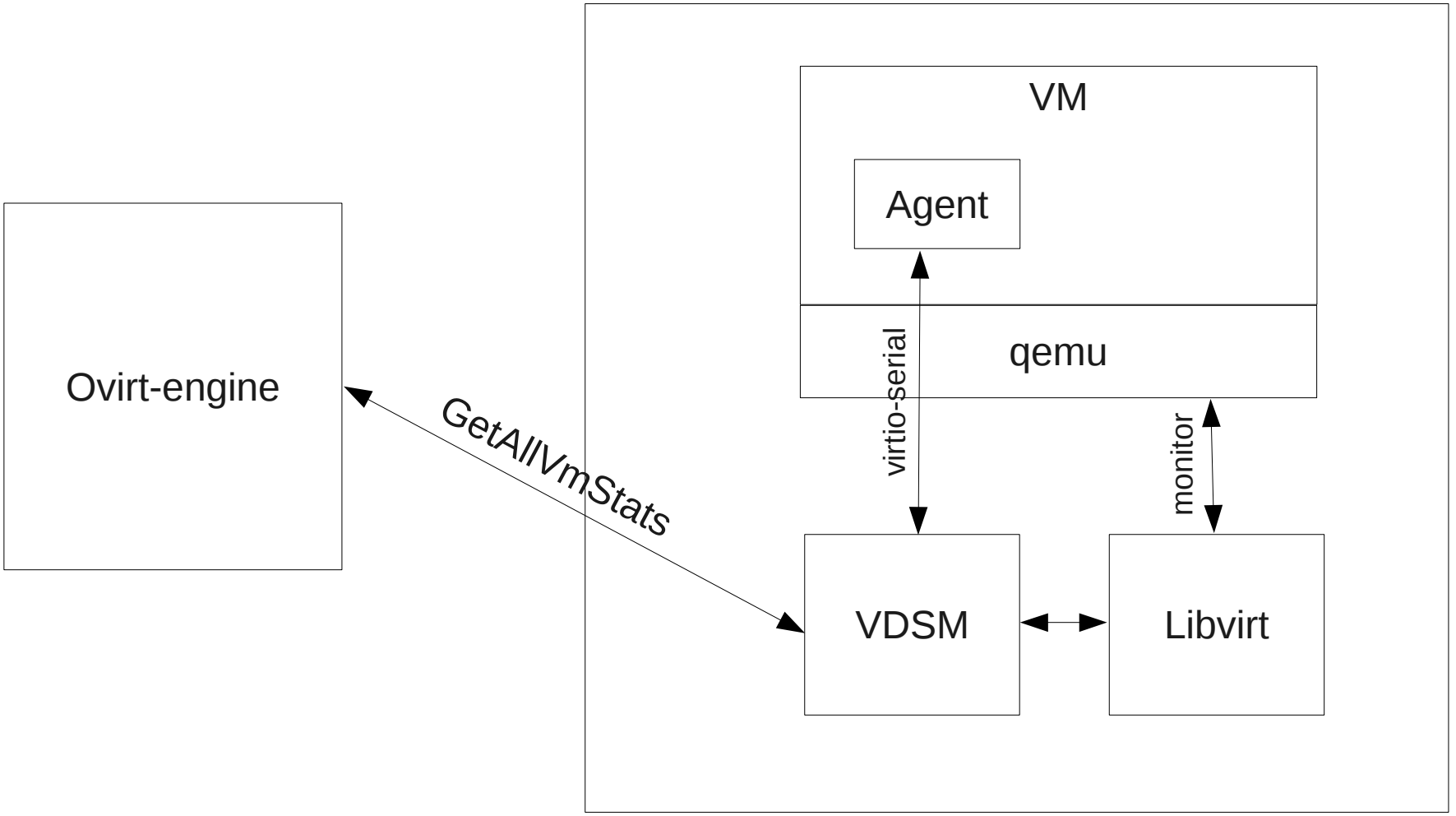
Ovirt-guest-agent (2)

virto-serial

KVM monito



Ovirt-guest-agent (3)



VDSM <-> ovirt-guest-agent protocol

- Communicates over virtio-serial device
- Every VM started up has

```
<controller type='virtio-serial' index='0' ports='16'/>
 <channel type='unix'>
        <target type='virtio' name='com.redhat.rhevm.vdsm'/>
        <source mode='bind' path='....'/>
</channel>
```

- Ovirt-guest-agent must use the same name

device = /dev/virtio-ports/com.redhat.rhevm.vdsm in ovirt-guest-agent.conf for linux

device = \\.\Global\com.redhat.rhevm.vdsm in ovi in ovirt-guest-agent.ini for windows

- The protocol is stateless
- Using JSON as a message structure

VDSM <-> ovirt-guest-agent protocol (2)

- Information
  - Machine name - Show the virtual machine's host name.
  - Operating system version - Show the operating system's version. Linux: this value is the kernel version. Windows: it is the Windows version name (e.g. Windows XP or Windows 7).
  - IP(v4) addresses - List of all the virtual machine's IP addresses. Only IPv4 addresses are reported.
  - Installed applications - List installed applications. Linux: application list is set using the configuration file. Windows: installed applications list is based on value read from registry.
  - Available RAM - The amount of unused physical memory. This value probably include memory like cache, or else the memory usage will always be (or near) 100% usage.
  - Logged in users - List of all logged-in users.
  - Active user - The user which currently is using the virtual machine's "physical hardware", this is more of a legacy report, The ovirt-engine uses a different logic for it nowdays

Recently added

- VM Disk utilization
- Internal guest network mapping (MAC, name, ipv4, ipv6)

VDSM <-> ovirt-guest-agent protocol (3)

- Notifications / Events
  - Power Up - Send when agent start its execution.
  - Power Down - unused
  - Heartbeat - Message is send every few second to notify that the agent is running. The notification includes the guest's available RAM.
  - User Info - Active user was changed.
  - Session Lock - Desktop was locked (Windows).
  - Session Unlock - Desktop was unlocked (Windows).
  - Session Logoff - A user was logged off (Windows).
  - Session Logon - A user was logged on (Windows).
  - Agent Uninstalled - Agent was removed from system – indication for VDSM to clear its in mem cache

VDSM <-> ovirt-guest-agent protocol (4)

- Actions (functions VDSM can execute whithin the guest)
  - Lock - Request locking the user's desktop.
  - Login - Perform automatic login in user's behalf.
    - Different implementation for Linux & Windows
  - Logoff - Log off the active user (currently not used by ovirt-engine)
  - Shutdown - Shut down the virtual machine.

VDSM <-> ovirt-guest-agent protocol (5)

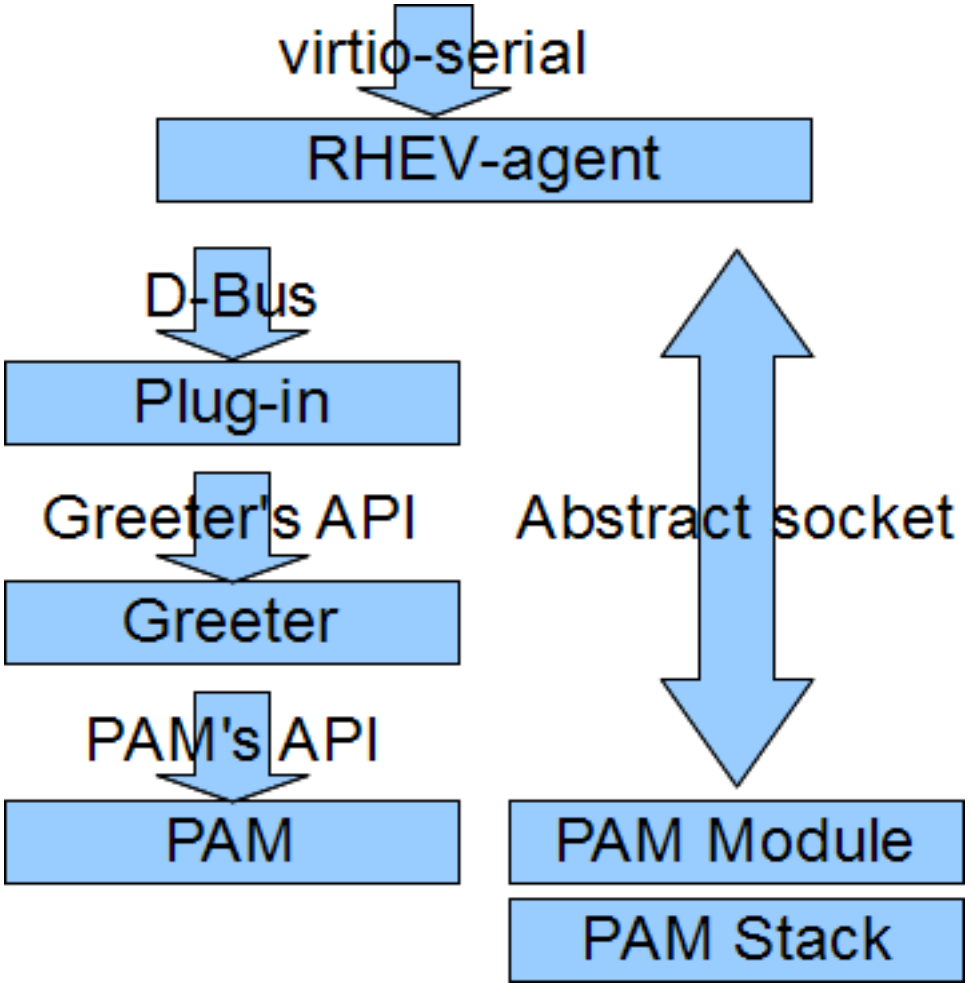
- Examples
- {"__name__": "heartbeat", "free-ram": "1621"}
- {"__name__": "host-name", "name": "S-WIN7-64-SVR"}
- {"__name__": "os-version", "version": "Win 7"}
- {"__name__": "applications", "applications": ["RHEV-Tools 3.0.26", "RHEV-Network64 3.0.6", "RHEV-Spice-Agent64 3.0.3", "RHEV-USB 3.0.5", "RHEV-Spice64 3.0.4", "RHEV-Agent64 3.0.10", "RHEV-Serial64 3.0.5", "RHEV-Block64 3.0.8"]}

Ovirt-guest-agent & SSO (Linux)

- The automatic login on linux is based on three components
  - The RHEV-Agent which handle the user's credentials and work flow
  - A greeter's plug-in which allow interaction with the desktop manager.
  - A PAM module which handle the PAM's conversation.

  Currently there are two greeter's plug-ins. One for GNOME desktop manager (GDM) and one for the KDE desktop manager (KDM).
- The flow:
  - The greeter's plug-in is waiting for a signal on the D-BUS interface.
  - The RHEV-Agnet receive the user's credentials from the VDSM though the virtio-serial device.
  - A "User Authenticated" signal with a a one-time token is emitted by the agent. The agent also opens an abstract server socket which is used to send the user's credentials to the PAM module.
  - The plug-in starts the PAM conversation.
  - The PAM module start the conversation with a query for the token (to the plug-in).
  - The PAM module connect to the agent's abstract server socket and send the token.
  - The agent verifies the token match. And sends user's credentials to the PAM module, otherwise the connection is closed.
  - The PAM module set the down the PAM stack

ovirt-guest-agent & SSO (Linux)



Ovirt-guest-agent & SSO (Windows)

- The automatic login on Windows is based on two components:
  - The ovirt-guest-agent which handle the user's credentials and workflow.
  - A Window's component interaction with the Winlogon system.
    - for Windows XP - the component is implemented as a GINA DLL.
    - for WIn7 -The Gina interface was changed on Windows Vista with the new Credential Providers model.

    Both above component will be included in the ovirt-guest-agent git repo
- The flow:
  - The Windows component create a named pipe and is waiting for an incoming connection.
  - The RHEV-Agnet receive the user's credentials from the VDSM though the virtio-serial device.
  - The agent send the user's credentials though the named pipe.
  - Using the user's credentials received from the named pipe, a login is performed on user's behalf.

•Current OSS status

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- Git repository at:
- Contains:
  - Ovirt-guest-agent (win & linux)
  - Gdm-plugin-ovirtcred (does not compile on F15 will be soon)
  - Kdm-plugin-ovirtcred
  - Pam-ovirt-cred
  - Gina for win XP (patch sent)
  - Credentioal provider for windows 7 (will be added till the end of the week)
  - Most of the work/discussions will be on vdsm lists, some will happen on the engine's lists (as needed)

•Roadmap

- Guest Agent
  - Basically features are added according to ovirt-angine's need for new features
  - Kerberos authentication (may be done through spice)
  - May evolve as a matahari plugin.
- Guest Tools
  - Creating upstream packages for guest win drivers (are there any?)
  - Decide & Create upstream about the guest tools delivery mechanism
    - Installers
    - How do the drivers get to the Vms
    - Any guest tools the community pushes

Resources

- Gerrit Wiki
  - http://www.ovirt.org/wiki/Working_with_oVirt_Gerrit
- Git
  - For unregistered user

    git clone git://gerrit.ovirt.org/ovirt-guest-agent
  - For registered user

    git clone gerrit.ovirt.org:ovirt-guest-agent
- Ovirt-guest-agent wiki
  - http://www.ovirt.org/wiki/Category:Ovirt_guest_agent

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THANK YOU !

http://www.ovirt.org