SCO Virtualization

Presentation to Customers

SCO

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Virtualization – An Overview

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Virtualization – An Overview

Many resources available for the basics:

- Internet search on *what is virtualization?* brings up 10 million hits
- All major players for server virtualization have provided extensive overviews. (VMware, Microsoft, Citrix and serveral others)
- There are many vendor sites as well as independend web sites with basic information about the technology
- SCO-specific and general virtualization information on the new SCO web page at: ***http://www.sco.com/products/unix/virtualization***

Heterogeneous IT environments – Virtualization Know How

- **Many SCO customers are already familiar with virtualization (VMware® or other virtualization platforms)**
- **Most experience however with non SCO virtual machines**
- **Many already looked into or even using SCO virtual machines**

Do you still need an overview?

Virtualization – An Overview

The good news is:

- If you ever used a computer, you are already familiar with virtualization as computers "***virtual memory***".

The concept is well known in IT

- It all started a few decades ago (mainframes supported the concept) and made it onto standard servers about 10 years ago

Virtualization means several things

- There are many different types of virtualization in the IT, including server virtualization, desktop virtualization, application virtualization, storage virtualization, network virtualization

We are talking about *server virtualization* only:

Very high level: It allows multiple operating systems to run side-by-side as peers on the same hardware server.

Virtualization – An Overview

- An operating system and all applications on top of it run in a so-called "***virtual machine***".

- Software – a "virtualization layer" (from VMware or Microsoft or others) runs directly on top of the physical hardware (often called ***hypervisor***).

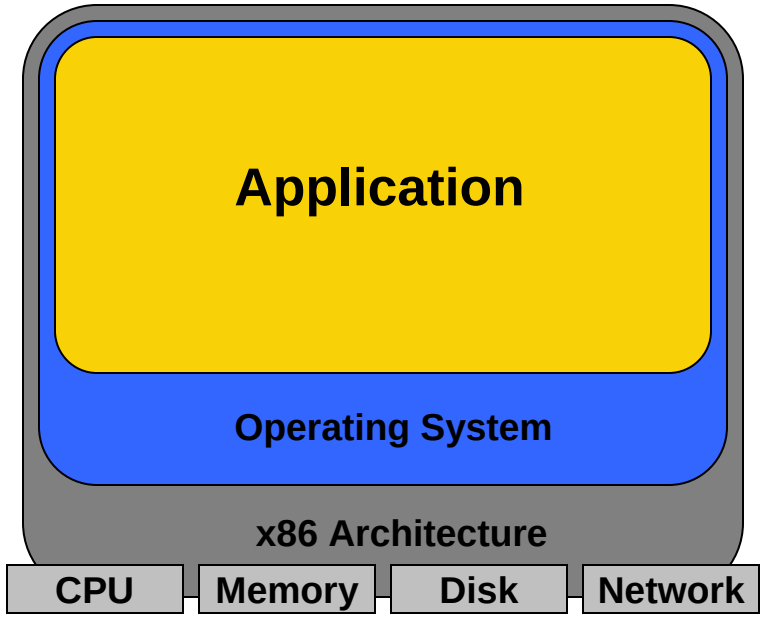
- This layer hides the actual physical hardware from the hardware it presents to the virtual machine or guest operating system
  - Example: the actual physical disk controller in the server can be a Qlogic controller while the hypervisor is ***presenting it*** to the virtual machine(s) as an LSI controller.

- Many "virtual machines" can run simultaneously on such a virtual server at one time

Virtualization – An Overview

- Single operating system per machine
- Single application per machine
- Hardware components connected directly to operating system
  - **CPU**
  - **Memory**
  - **Disk**
  - **Network Card**

Traditional x86 Server Architecture

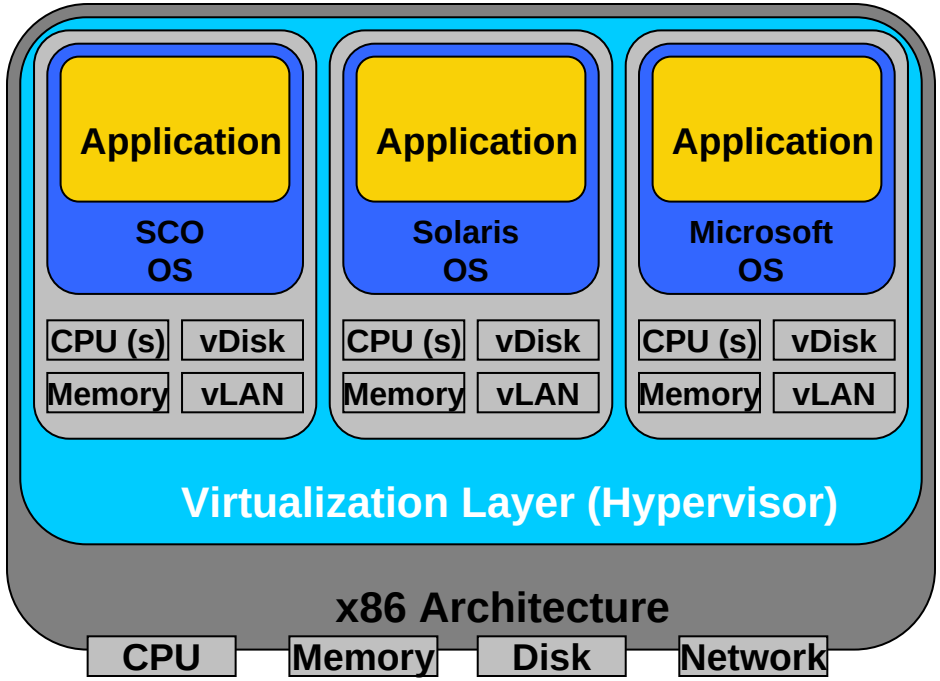


1 Physical Server, 1 Application

Virtualization – An Overview

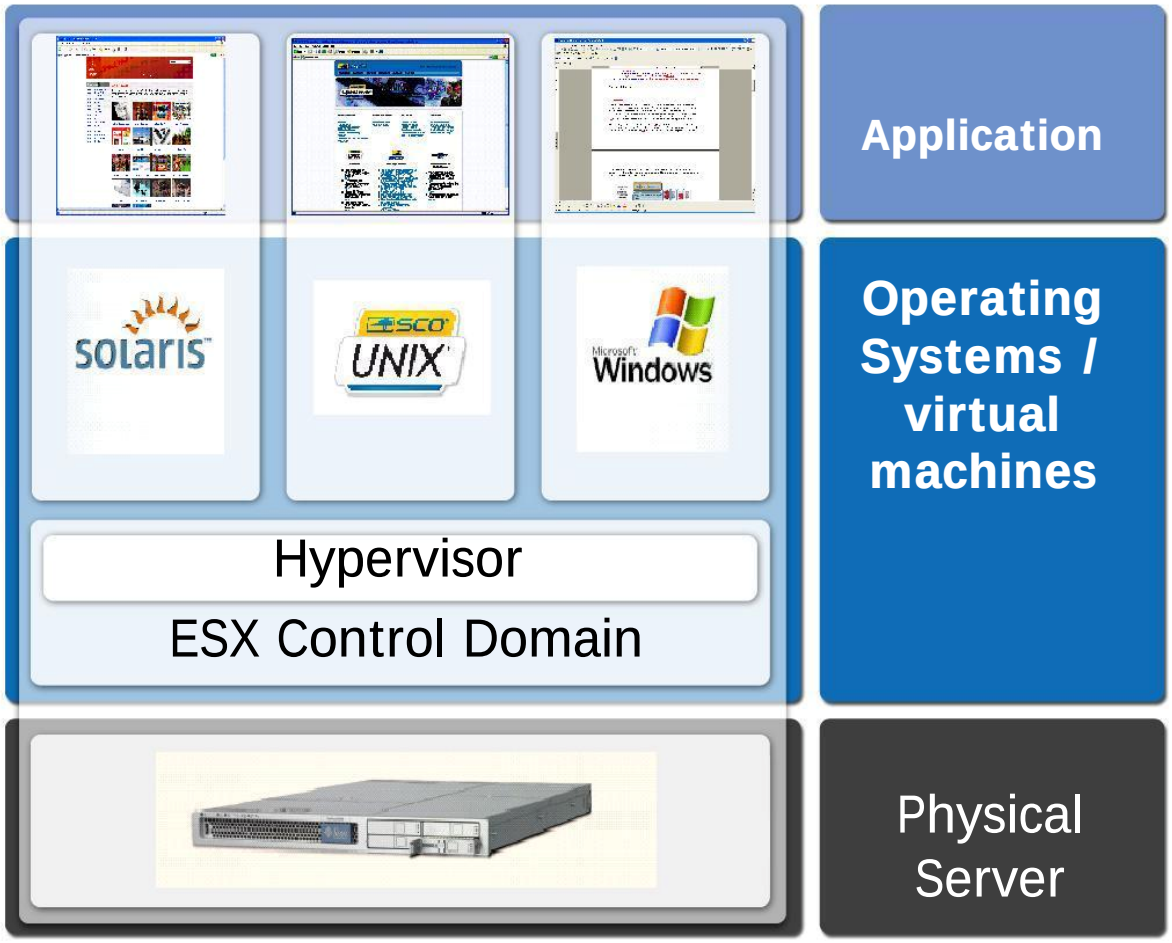
- Addition of a virtualization layer, called "hypervisor"
- Several servers can be deployed as Virtual Machines (VM) on each physical box
- Each VM has its own operating system and application
- Can run multiple, different operating systems on the same machine
- If one VM fails, other VMs are unaffected

Virtualized Architecture



3 Virtual machines on 1 Physical Server

Virtualization – An Overview



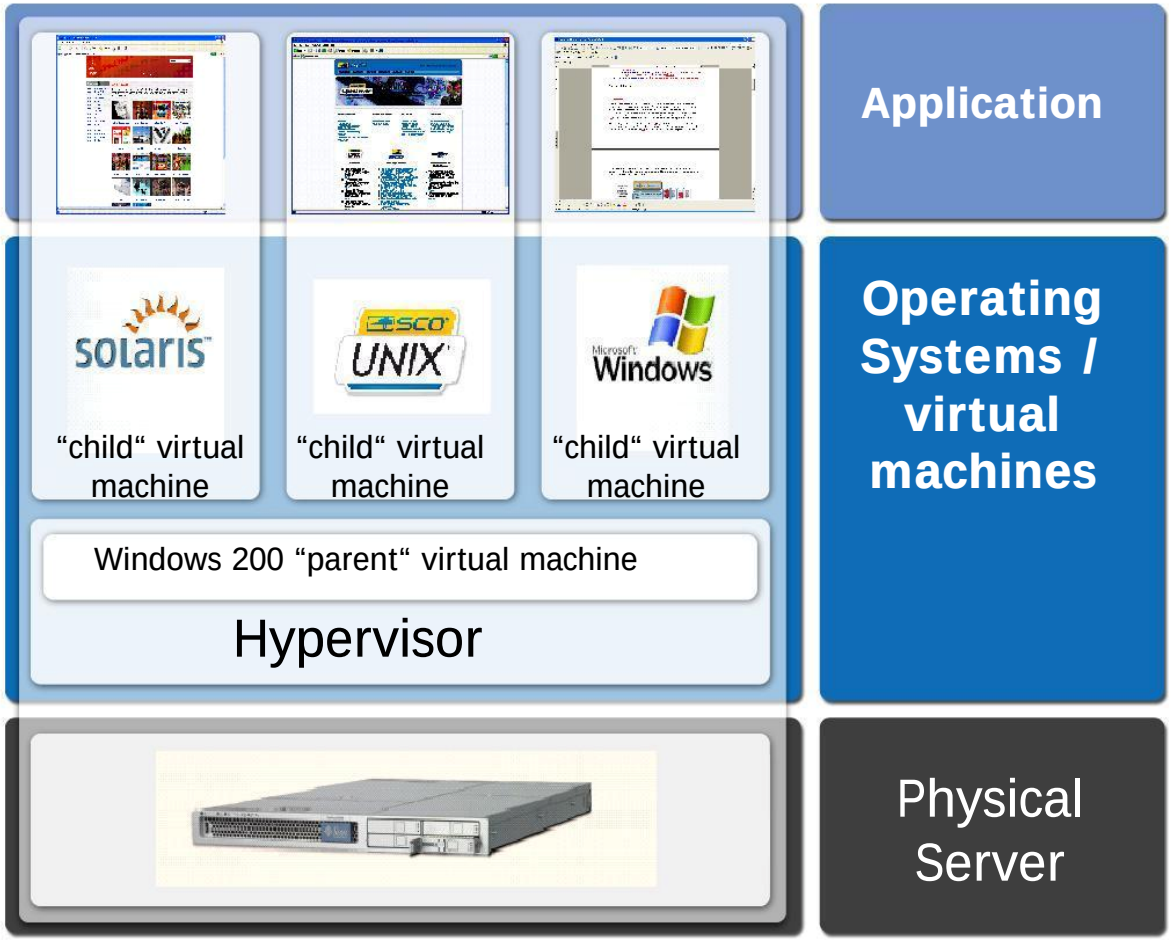
VMware ESX

VMware ESX 3.5

VMware ESXi (embedded hypervisor)

Note: **There is a video available on the SCO virtualization web page that gives an overview about the different VMware products.**

Virtualization – An Overview



Microsoft Hyper-V

Windows Server 2008 R2 or

Microsoft Hyper-V Server 2008 (simplified standalone product)

Major Players

There are a number of virtualization vendors as well as *technologies* and products

- **VMware** is currently the market leader by far. VMware is the only company on this list who is ONLY a virtualization vendor. (both Desktop and Server)
- ***Xen Hypervisor*** – was originally a technology only (OpenSource project) and is the technical foundation for many solutions on the market. (e.g. Oracle VM, Sun xVM and even MS HyperV. It is part of many Linux distributions)
- **Xensource** was a commercial company building business around the Xen Hypervisor technology , has been aquired by **Citrix** (now sells as XenServer, XenApp,…)
- ***KVM*** – technology used in Linux distribution
- **MS HyperV** ships as part of MS Server 2008 and as Hyper-V Server 2008
- **Oracle VM** (based on Xen technology)
- **Sun xVM** (based on Xen technology)
- OEMs like **Intel** and **AMD** who provide support for virtual environments in the hardware

Key Benefit: Server Consolidation

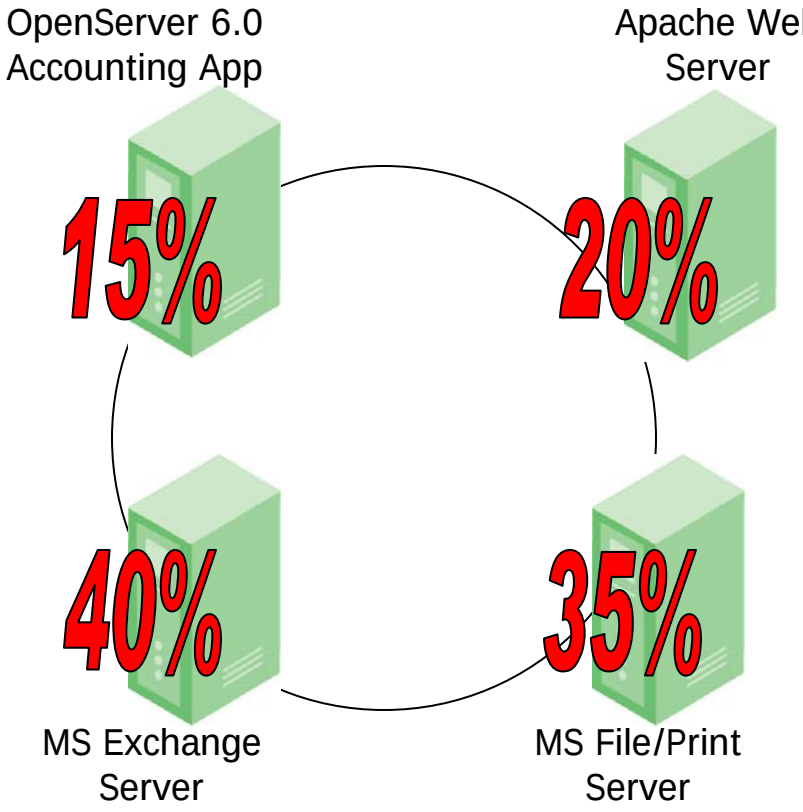
- Typical server scenario in the data center as well as SMB without virtualization:
  - A typical server today is 85%-95% idle
  - In order to avoid different business applications on one server, each typically runs on a dedicated server
  - New servers are much more powerful than the older servers have been

Solution: *Server consolidation*

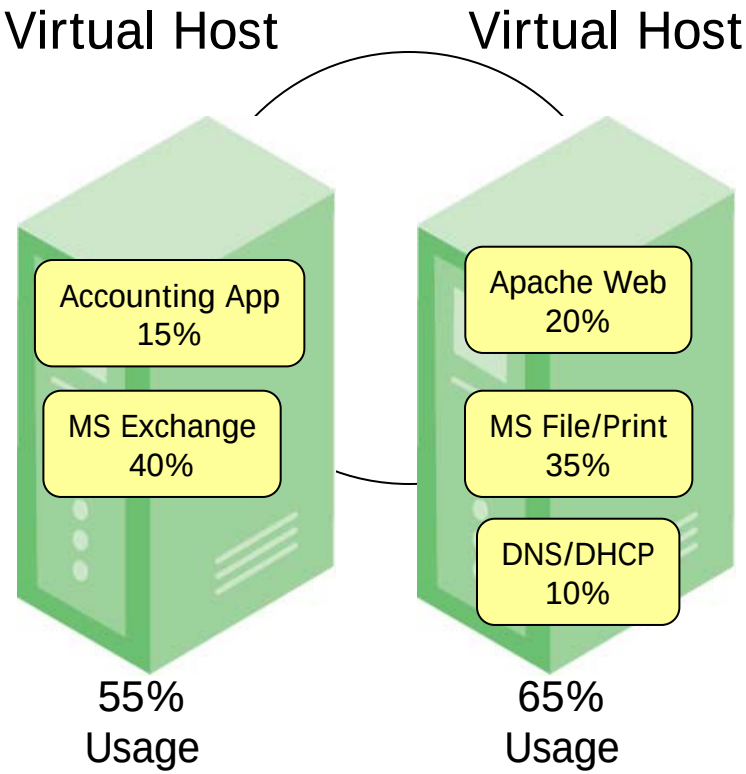
- Instead of upgrading all (underutilized) servers with new servers (even more underutilized), the solution is to run several virtual machines on ONE or a few new virtualized server(s)
  - Saves electrical power and space (GreenIT)
  - Less servers to manage

Server Consolidation Example

Traditional Environment



Virtual Environment



Virtualization – Benefits continued

Business Continuity and Disaster Recovery

- Supports Backup and disaster recovery strategies (a VM is a set of files that can be easily copied, saved, …)
- VMs can move on the fly from one server to another (planned maintenance …)
- New hardware can be installed or old one being replaced without interruption

Testing and Development

- Software migration – new software available in a new VM for testing – easy to deploy later on

Cost Savings

- Tools exist to migrate your current physical server over to a VM – ease of migration
- The physical hardware is supported by the Hypervisor – the guest OS only needs to support the virtual hardware – less driver / certification issues
- Hypervisors now come free with the OEM server – choice of running VM or native

Opportunities and Challenges

- Virtualization is one of the fastest growing IT markets
- Virtualization is **THE** major foundation for another hot topic: *cloud computing*
- Analysts indicate that about 20% of all servers will run virtualized by 2010. That leaves 80 % who will NOT.
- Virtualization brings a lot of benefits but also adds complexity and requires investment and new management software solutions
- Some solutions will not run (easily) on virtualized servers due to specifics of the hardware requirements of some solutions. (direct access to serial devices etc.)
- Hypervisors come for free now and ship with the hardware, the business is in the management tools, backup software, storage concepts, disaster recovery components etc.

Additional Information from SCO

- SCO has gathered some useful resources on the topic of Virtualization at: http://www.sco.com/products/unix/virtualization
- Videos and presentations cover topics like:
  - What is a virtual machine and what are the benefits of VMs?
  - Why is Virtualization becoming so popular?
  - What are the major products from e.g. VMware?
  - How do you install the SCOV appliance?
  - Additional technical sessions around the SCOV products will be available on this page over time
- FAQs with the most common questions and answers covering licensing questions and many other topics

Additional Virtualization Information

- Vendor pages about virtualization include but are not limited to:
  - Microsoft:
    - http://www.microsoft.com/virtualization/default.mspx
  - VMware:
    - http://www.vmware.com/technology/virtualization.html
  - Oracle:
    - http://www.oracle.com/virtualization/index.html
- Other internet resources, including:
  - Short videos on youtube like these from
    - Infoworld: http://www.youtube.com/watch?v=p11lJOnALS4
    - VmWare: http://www.youtube.com/watch?v=MnNX13yBzAU
  - White papers from analysts and magazines, like:
    - http://www.gartnerinsight.com
    - http://whitepapers.businessweek.com

The Vision for SCO Virtualization

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What SCO Provides

- SCO will provide versions of its UNIX products OpenServer 5, OpenServer 6 and UnixWare 7 that are optimized to run on a virtual host as Guest OSs. (as virtual machines)
  - Specifically, the planned products will be OpenServer 5.0.7V, OpenServer 6V and UnixWare 7.1.4V – referenced as the “V“ versions.

- SCO is partnering with both VMware and Microsoft to support its V products on both platforms. OpenServer 507V will be delivered first, followed by the others.

What SCO Provides

- SCO V versions will include the operating system itself, the latest patches and VM-specific enhancements such as:
  - Improved virtual NIC adapter driver
  - Enhanced virtual SCSI adapter driver
  - Improved memory management
  - Time syncronization
  - Improved mouse driver
  - Enhanced video driver for virtual video card
  - Capabilities to gracefully shutdown the VM

SCO V - A Virtual Appliance

- The “V“ products will initially be provided in the form of a so called “***virtual appliance***“.
  - A template-like image that can be “imported“ into a running Virtual Host solution
  - Preinstalled and configured with SCO OS, patches, OS modifications and the tools to support the OS on the virtual server, and some configuration programs
  - The appliances will be available for download from the web or on CD / DVD media

Note: **There is a video available on the SCO virtualization web page that gives an overview about the basic steps to import a SCO V appliance.**

SCO V Benefits

The SCO V appliances will provide the following benefits to SCO customers who want to run SCO UNIX on VMware or MS HyperV:

- SCO V product is officially supported by SCO
- SCO V products are optimized for the virtual host.
- VMware tools are bundled with the product and pre-installed
- SCO will provide updates
- Ease and speed of installation of the appliance
- Ease and speed of configuration by providing a bundled configuration / interview program that starts up on first reboot
- Extendability to include partners solutions (SCO can help to build customer specific appliances)
- Generic virtualization benefits including hardware support

SCO V Benefits

- SCO UNIX servers are running in the small business market as well as in the data center to provide business critical services.
  - SCO servers are a natural part of the ongoing trend to consolidate and virtualize servers. With SCO V, SCO customers benefit from all the generic virtualization benefits like server consolidation, enhanced business continuity, better testing and deployment.
  - As such, it's vital to those customers who plan to use virtualization, that SCO UNIX now supports this environment !
- In addition, the concept of the hypervisor who manages the physical hardware can be an advantage for SCO customers
- Existing, legacy applications can be migrated over to a virtualized server with less dependency on current hardware support or application updates
- An easy migration path for OpenServer 5.0.x customers including binary compatibility on OS level and new support for running in a virtual environment

Why is it ESPECIALLY Interesting to SCO Customers?

- Can run SCO solution on a virtual server – better than before and supported – and as such does not leave behind SCO systems during migration to a virtual environment (no legacy IT islands)
- SCO solutions can be installed on a wider range of servers using SCO V, since the underlying hypervisor layer now drives the physical hardware (”embedded virtualization“ support of current OEM server hardware, less hardware certification limitations)
- SCO customers have less pressure to migrate their existing (legacy) SCO installations to somewhere else – the sidestep onto a virtualized server reduces costs for porting and migration
- SCO OpenServer based solutions can continue to run on 5.0.7V – highest level of compatibility for existing older OpenServer 5.0.x systems without hardware or software certification issues

What You Don‘t Get From SCO

- SCO is not offering a hypervisor but will support SCO UNIX on the major virtual platforms VMware and Hyper-V

- SCO is not providing management tools above and beyond the tools required on the SCO UNIX level – the management of the virtual machines, backup, live migration etc. is part of the virtual platform provider

Selling SCO V – OpenServer 5.0.7V

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SCO V Licensing

- SCO V versions will be based on current releases only (5.0.7, 6.0, 7.1.4)
  - There might be special Professional Services projects to bring the specific V advantages over to a limited number of older releases.
- The SCO V product includes an 7-day evaluation license.
- Registration of SCO V products is mandatory

SCO V Licensing

- Each SCO V product requires you to accept the new SCO EULA prior to installation. It covers the right to use SCO V on a virtual platform under an activated right to use / subscription license.
- SCO V licenses are subscription licenses of either 12 or 36 months
- SCO V subscription licenses must be renewed to continue to use the SCO V product
- During your licensed usage period you have access to all provided SCO V related updates and fixes

SCO V licensing – OpenServer 5.0.7V

- In order to use the OpenServer 5.0.7V product you need to have
  - a 5.0.7 Enterprise Edition License (Fresh, Upgrade or Trade-In)
  - a SCO V right to use license (subscription license)
  - For ease of use, SCO provides a bundled SCO V license that include both licenses in a single key.
- If you do not have a license for the current OS, you need to purchase a upgrade, trade-in or full new license, depending on what version you are currently using
- If you have a valid Enterprise license for a current OS that you now want to replace with this OS running on a virtual server, you only need a SCO V right to use license in addition to your existing license. (Cross Grade)

OpenServer 5.0.7V – model numbers

Media Kits	Media	Model Number
June 2009 Release 5.0.7V English Compact Kit	CD-ROM	CA200-UX09-5.0.7V
OpenServer 5.0.7V For VMware Licenses	**License Pack**	**Web License**
OpenServer 5.0.7V Enterprise One Year License	LA261-UX51-5.0.7V	LA261-UX51W-5.0.7V
OpenServer 5.0.7V Enterprise Three Year License	LA261-UX53-5.0.7V	LA261-UX53W-5.0.7V
OpenServer 5.0.7V Enterprise One Year Cross Grade from OSR5.0.7	LX261-UX51-5.0.7V	LX261-UX51W-5.0.7V
OpenServer 5.0.7V Enterprise Three Year Cross Grade from OSR5.0.7	LX261-UX53-5.0.7V	LX261-UX53-5.0.7V

OpenServer 5.0.7V – model numbers

OpenServer 5.0.7V For VMware Renewal Licenses	License Pack	Web License
One Year Renewal License	LA275-UX01-5.0.7V	LA275-UX01W-5.0.7V
Three Year Renewal License	LA275-UX03-5.0.7V	LA275-UX03W-5.0.7V

OpenServer 5.0.7V With OSR507 Upgrade License	License Pack	Web License
OpenServer 5.0.7 Enterprise Upgrade from OpenServer 5.0.6 Enterprise plus One Year Cross Grade to OpenServer 5.0.7V Enterprise	LX262-UX01-5.0.7V	LX262-UX01W-5.0.7V
OpenServer 5.0.7 Enterprise Upgrade from OpenServer 5.0.6 Enterprise plus Three Year Cross Grade to OpenServer 5.0.7V Enterprise	LX262-UX03-5.0.7V	LX262-UX03W-5.0.7V

OpenServer 5.0.7V With OSR507 Trade-In License	License Pack	Web License
OpenServer 5.0.7 Enterprise Trade-In from - OpenServer 5.0.5 and earlier Enterprise plus One Year Cross Grade to OpenServer 5.0.7V Enterprise	LX262-XX01-5.0.7V	LX262-XX01W-5.0.7V
OpenServer 5.0.7 Enterprise Trade-In from OpenServer 5.0.5 and earlier Enterprise plus Three Year Cross Grade to OpenServer 5.0.7V Enterprise	LX262-XX03-5.0.7V	LX262-XX03W-5.0.7V

What license to buy - Examples

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SCO V – license scenarios

Scenario 1

- OpenServer 5.0.7 Enterprise Edition
- OpenServer 5.0.7 Enterprise to OpenServer 5.0.7V Enterprise Cross-grade

Scenario 2

- OpenServer 5.0.7 Enterprise Edition Trade-In
  - From pre OpenServer 5.0.6, or OpenServer 5.0.7 Desktop or Host To OpenServer 5.0.7 Enterprise
- OpenServer 5.0.7 Enterprise to OpenServer 5.0.7V Enterprise Cross-grade

Scenario 3

- OpenServer 5.0.6 Enterprise Edition
- OpenServer 5.0.6 Enterprise to OpenServer 5.0.7 Enterprise Upgrade
- OpenServer 5.0.7 Enterprise to OpenServer 5.0.7V Enterprise Cross-grade

Fresh new 5.0.7V Enterprise license

Scenario: Deploying OpenServer 5.0.7V with no existing OpenServer 5 license

- You purchase: **LA261-UX51W-5.0.7V** (OpenServer 5.0.7V 1 Year license) and eventually a media kit (CA200-UX09-5.0.7V) or download the appliance
- You get: a fresh OpenServer 5.0.7V license that has 12 months of Right to use enabled
- You need to register / activate this license
- You need to purchase / enter a renewal license after 12 months. (**LA275-UX01W-5.0.7V**)

Cross Grade from 5.0.7 Enterprise

Scenario: Deploying OpenServer 5.0.7V with an existing OpenServer 5.0.7 Enterprise license

- You purchase: **LX261-UX51W-5.0.7V** (OpenServer 5.0.7V 1 Year Cross Grade license) and eventually a media kit (CA200-UX09-5.0.7V) or download the appliance
- You get: a OpenServer 5.0.7V Cross Grade license license that has 12 months of Right to use enabled
- You need to enter both the existing OpenServer 5.0.7 license and the new Cross Grade license during first reboot of the 5.0.7V appliance
- You need to register / activate this license
- You need to purchase / enter a renewal license after 12 months. (**LA275-UX01W-5.0.7V**)

Upgrade from 5.0.6 Enterprise

Scenario: Deploying OpenServer 5.0.7V with an existing OpenServer 5.0.6 Enterprise license

- You purchase: **LX262-UX01W-5.0.7V** (OpenServer 5.0.7V 1 Year Upgrade plus Cross Grade license) and eventually a media kit (CA200-UX09-5.0.7V) or download the appliance
- You get: a OpenServer 5.0.7 Upgrade license and a Cross Grade license that has 12 months of Right to use enabled
- You need to enter the new OpenServer 5.0.7 Upgrade license , the existing OpenServer 5.0.6 license and the new Cross Grade license during first reboot of the 5.0.7V appliance
- You need to register / activate this license
- You need to purchase / enter a renewal license after 12 months. (**LA275-UX01W-5.0.7V**)

Trade-In from 5.0.5 and older Enterprise

Scenario: Deploying OpenServer 5.0.7V with an existing OpenServer 5.0.5 or earlier (5.0.4 - 5.0.0) Enterprise license

- You purchase: **LX262-XX01W-5.0.7V** (OpenServer 5.0.7V 1 Year Trade In plus Cross Grade license) and eventually a media kit (CA200-UX09-5.0.7V) or download the appliance
- You get: a OpenServer 5.0.7 Trade In license and a Cross Grade to 507V license that has 12 months of Right to use enabled
- You need to enter the new OpenServer 5.0.7 Trade In license and the new Cross Grade license during first reboot of the 5.0.7V appliance
- You need to register / activate this license
- You need to purchase / enter a renewal license after 12 months. (**LA275-UX01W-5.0.7V**)

Trade-In from 5.0.x non-Enterprise

Scenario: Deploying OpenServer 5.0.7V with an existing OpenServer 5.0.5 or earlier Host or Desktop license

- <u>You purchase:</u>
  - a valid license to trade-in your Host or Desktop to 5.0.7 Host or Desktop (like before)
  - You purchase a InterEdition Trade-In license from Desktop 5.0.7 or Host 5.0.7 to Enterprise 5.0.7 (like before)
  - You purchase **LX261-UX51W-5.0.7V** (OpenServer 5.0.7V 1 Year Cross Grade license)
- You need to enter the OpenServer 5.0.7 Inter Edition Trade In license and the new Cross Grade license during first reboot of the 5.0.7V appliance
- You need to register / activate this license
- You need to purchase / enter a renewal license after 12 months. (**LA275-UX01W-5.0.7V**)

Trade-In from 5.0.7 non-Enterprise

Scenario: Deploying OpenServer 5.0.7V with an existing OpenServer 5.0.7 Host or Desktop license

- <u>You purchase:</u>
  - You purchase a InterEdition Trade-In license from Desktop 5.0.7 or Host 5.0.7 to Enterprise 5.0.7 (like before)
  - You purchase **LX261-UX51W-5.0.7V** (OpenServer 5.0.7V 1 Year Cross Grade license)
- You need to enter the OpenServer 5.0.7 Inter Edition Trade-In license and the new Cross Grade license during first reboot of the 5.0.7V appliance
- You need to register / activate this license
- You need to purchase / enter a renewal license after 12 months. (**LA275-UX01W-5.0.7V**)

SCO V – What's in it for a Reseller

- SCOV requires a customer on 5.0.x to purchase an upgrade / trade-in license to the current release (5.0.7 Enterprise) – Upgrade Business!
- SCO V requires an annual right-to-use license
- SCO V product will be sold via the channel at contracted discounts
- Activated right to use license qualifies for updates and fixes
- Annual or 36 month usage period allows for regular sales contact to the customer
- SCO V solves an issue for some customers to get SCO installed on uncertified servers – less problems since the hypervisor drives the physical hardware
- SCO OpenServer 5.0.7V will allow for ease of upgrading from 5.0.x to 5.0.7V – highest level of binary compatibility. Even a physical to virtual migration can be done with SCO Professional Services

SCO V – Customer Value

- SCO Openserver 5.0.7 is binary compatible to your old OpenServer 5.0.x platform – ease of upgrading from 5.0.x to 5.0.7V
- In addition to new features provided as part of OpenServer 5.0.7, it now also supports running SCO OpenServer on a virtual host
- In addition to the SCO support on the virtual host, it also provides enhanced performance and usebility on the virtual platform
- Part of the annual right to use license you get access to all updates and fixes
- It removes the pressure to migrate to something else from your SCO server based solution - extend the life of your business critical SCO solution and save money
- Allows for new SCO installations to integrate nicely into a virtual platform
- Allows to use a wider range of physical servers since the underlying hypervisor layer drives the hardware – less driver issues
- Supports the generic concepts and benefits of virtualization like server consolidation, green it and related cost savings, better disaster solutions for your SCO server solution etc.
- Is a safe step to bridge the gap between now and any other upcoming future OS offerings from SCO

5.0.7V vs 5.0.7 on VMware – value add

Customers might already use or plan to use OpenServer 5.0.x on VMware.
What is the benefit of updating to 5.0.7V ?

- VMware tools are bundled with 507V - They are not available to customers running Vanilla 507 on ESX.
- 507v is officially supported by SCO on Vmware - OpenServer 5.0.7 on ESX and ESXi are not.
- SCO will provide maintenance and updates specifically for running 507V on Vmware - We have no plans to do this for 5.0.7.
- Ease and speed of installation - The delivery of 507V as an appliance means its easier and quicker to install than native 507 on the same system.
- Ease and speed of configuration - The delivery of 507V as an appliance means its easier and quicker to configure than 507.
- The appliance model used by 507V is extendable to allow partners to build an solutions appliance around 507V
- 507V fixes a number of issues SCO has found in testing and certifying the 507 product on VMware.
- VMware does not support the SCO Operating System running on Vmware - They only support the installation of it. They have no backend support agreement with SCO and have no way to report bugs or raise escalations relating to 507's interaction with VMware.
- To get installation support from VMware you will need to pay for a support agreement.

SCO V – Roadmap (tentative)

- 09/2009: ***OpenServer 5.0.7V*** with Support for VMware ESX 3.5, VMware Workstation and ESXi
- Support for vSphere (ESX4)
- 507V Addon for OpenServer 5.0.7
- OpenServer 5.0.7V with Support for Microsoft Hyper-V
- UnixWare 7.1.4V with Support for VMware
- OpenServer 6 with Support for VMware

SCO V – More Information

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SCO V – How to Engage with SCO

- Contact your SCO representative
- Send an email to virtualinfo@sco.com
- Visit our web page http://www.sco.com/products/unix/virtualization/
- Watch our virtualization videos at http://www.sco.com/products/unix/virtualization/video_index.html

Thank You

SCO