

# Sun Expert Exchange

## “Fast Track to Solaris 10: Solaris Containers”

Thursday, February 17, 2005

[Sreejesh \(Q\)](#): Where can we get a demonstration of S10 Containers?

[David Comay \(A\)](#): The easiest way to get a demonstration of Solaris Containers is to download Solaris 10 from <http://www.sun.com/software/solaris/get.jsp> As an alternative, there is a Flash demo that shows Containers and other S10 functionality available from [http://www.sun.com/software/media/flash/tour\\_sol10/index.html](http://www.sun.com/software/media/flash/tour_sol10/index.html)

[Win \(Q\)](#): Is Solaris 10 compatible with Oracle 8i or 9i?

[Larry Wake \(A\)](#): Check with Oracle for the definitive answer, but I believe they support Oracle 9i on SPARC systems, and Oracle 10g on SPARC and x86 systems.

[Joseph \(Q\)](#): I am an Implementation Engineer. I implement HP Openview Mostly on Solaris Sparc Machines. Can I implement HP Openview on Solaris 10 with Intel Plattorm?

[Adam Leventhal \(A\)](#): I'm not sure what platforms HP supports – you should contact HP to find that out.

[deepug \(Q\)](#): Does Solaris 10 Support Intel Itanium CPU's

[Chris Ratcliffe \(A\)](#): No, Solaris 10 is not currently supported on Intel Itanium processors.

[Rakeshsaini \(Q\)](#): Is sun ray thin client supported on S10

[A:](#) Sun Ray Server 3.0 will be supported on Solaris 10. Currently Solaris 10 is being tested to be a certified platform on both SPARC and x86 platforms. Keep an eye on [sun.com/sunray](http://sun.com/sunray) for news that it has been certified and supportable.

[omprakash \(Q\)](#): can linux programs run on solaris 10

[Larry Wake \(A\)](#): Two answers to that: in general, it should be possible to take source code and compile and run it on solaris; also, we're developing technologies that will allow you to run linux binaries on Solaris running on x86 hardware.

[sureshk \(Q\)](#): In terms of Performance How do you rate the S10 comparing Ultra Sparc IV and AMD Opteron 64 ?

[Adam Leventhal \(A\)](#): The performance numbers on amd64 are just amazing. USIV processors might be better on some workloads and you can get many more USIV processors in a box than amd64 processors, but on a pure processor to processor basis amd64 is going to be faster in many instances.

[zauyah \(Q\)](#): Whats the advantages of Solaris 10?

[Smita Thakur \(A\)](#): Check out: <http://www.sun.com/software/solaris/top10.jsp>

[Sreejesh \(Q\)](#): does the ZFS beta available for download ?

[Chris Ratcliffe \(A\)](#): ZFS will be available for evaluation via Software Express for Solaris during the first half of this year. It will be commercially in an update of Solaris 10.

[jgordo \(Q\)](#): can i use Solaris Containers on top of N1 Grid?

[samktan \(A\)](#): You can use N1 Grid Engine in the global or sub-zones zone to manage jobs in that zone. Each zone must have an installation of the scheduler and an unique queue.

[Kurushev \(Q\)](#): How can i get solaris 10? Other then web site

[Larry Wake \(A\)](#): Downloads and media kits are the two ways to get Solaris, <http://sun.com/solaris> is the starting point for both.

[Subra \(Q\)](#): What are th hey differences that Solaris 10 is offering in the concept of Zones over Window's Virtual Server or VMWare?

[David Comay \(A\)](#): Please see the answers to similar questions and also visit the Zones BigAdmin site at <http://www.sun.com/bigadmin/content/zones/>

[gopal \(Q\)](#): Can we migrate from ufs or vxfs to ZFS , if yes is there an utility?

[Smita Thakur \(A\)](#): For Veritas to ZFS right now, it is dump and restore; migration tools are on the roadmap but will not be available when ZFS first ships. Eventually ZFS will be the bootable file system in Solaris.

[Bobby \(Q\)](#): Now, I uses Solaris 9 and have no plan to upgrade. Please tell me the reason for upgrading to Solaris 10 ?

[samktan \(A\)](#): Solaris 10 provide many new enchancements in the areas of performance, security and platform support. Networking performance and scability has been dramatically improved, security features from Trusted Solaris has been integrated and platform support has been extensively extended to include x86 platforms such as AMD64 processors.

[graeme \(Q\)](#): Can a container be at a different patch level to the global zone? If not, is this a future enhancement?

[David Comay \(A\)](#): At the current time, containers need to be at the same patch level for \*OS patches\*. However, different patch levels are supported for middleware and layered software such as Java Enterprise System. We may relax the restriction in the future concerning the OS patches although we don't have a date yet on when this restriction might go away.

[Ramesh \(Q\)](#): Is solaris 10 also available to be ordered on a cd?

[Larry Wake \(A\)](#): It's orderable, and shipments for both CDs and DVDs should begin within the next 3 weeks.

[igordo \(Q\)](#): On what hardware is Solaris Containers supported?

[Adam Leventhal \(A\)](#): Containers will work anywhere Solaris 10 runs. That includes UltraSPARC, x86 and amd64 machines from Sun as well as amd64 and x86 machines listed here: <http://www.sun.com/bigadmin/hcl/>

[omprakash \(Q\)](#): what is N1 grid containers

[Chris Ratcliffe \(A\)](#): Solaris Containers (formerly called N1 Grid Containers) is a feature in Solaris 10 that enables you to isolate software applications and services using flexible, software-defined boundaries. This gives businesses the ability to define and meet service levels by dynamically controlling application and resource priorities. Each application can be given a private environment, virtually eliminating error propagation, unauthorized access, and unintentional intrusions. Companies will see improved resource utilization and reduced downtime, leading to lower solution costs.

[root7 \(Q\)](#): So where can I download the software for solaris 10 x 86 ? And how fast is it ?

[Larry Wake \(A\)](#): Easiest place to go is <http://sun.com/solaris> and click on the "get the software" link. If the question is download speed as opposed to OS speed, it's gotten much faster since the first deluge of downloads in the first week. (If you still find download times to be slow, let us know!)

[weeyeh \(Q\)](#): Are there any tools to log resource usage across time for different zones on the same system?

[samktan \(A\)](#): The standard system monitoring tools like kstat, netstat, iostat all work in the global and sub-zones. You can also use dtrace for more detailed monitoring and debugging.

[gauravbansal1 \(Q\)](#): what are best simulators for Solaris 10 OS on a windows / Linux platform so that I do not have to sacrifice the efficiency of my machine ?

[Adam Leventhal \(A\)](#): VMware works pretty well, but none of the virtualization technologies can get close to native performance.

[Rakeshsaini \(Q\)](#): When Can we have the ZFS evaluated as it is not there in 03/05 CD's

[Smita Thakur \(A\)](#): Early access in the first half of 2005 and GA in the second half of 2005. Stay tuned for more info.

[sirisak \(Q\)](#): Please provide the list of free database can be run on Solaris 10 X86.

[Larry Wake \(A\)](#): We don't have such a list compiled. MySQL definitely runs, as it's included in the distribution; check with your favorite free database project's website to see if they support Solaris, and if they don't, make sure they know you're interested. You can also check to see what freeware is included with Solaris on our page: <http://sun.com/solaris/freeware/> ; you can also check popular external freeware sites such as <http://blastwave.org/> and <http://sunfreeware.com/> .

[crispinh \(Q\)](#): Would you consider containers to be a security separation mechanism? (i.e. do the containers provide IPC/network separation?)

[David Comay \(A\)](#): Yes, containers have a separate IPC and network namespace. Processes inside a zone can use all of the Solaris IPC mechanisms to communicate with each other but not with processes in other zones. Between zones, processes can communicate over the network using the standard set of network protocols like TCP/IP and sockets.

[Mike \(Q\)](#): How about Secure Shell in solaris 10?

[Adam Leventhal \(A\)](#): It's there. It works. We're using a pretty recent version of OpenSSH.

[james \(Q\)](#): Is ZFS (beta or whatever) available for download ?

[Smita Thakur \(A\)](#): Early access in the first half of 2005 and GA in the second half of 2005.

[Win \(Q\)](#): Is it true that if we use ZFS, we do not have to use Veritas File System?

[Adam Leventhal \(A\)](#): Yes. ZFS is a complete replacement for existing file system/volume manager storage solutions. It's also going to be faster and easier to manage.

[Micheal Lee \(Q\)](#): Are there any programs or memberships through which i can gain benefits for solaris 10?

[James Egleton \(A\)](#): Sure, the main programs you should join are the Sun Developer Network. ([developer.sun.com](http://developer.sun.com)) If you are a commercial developer, that is, you are developing commercial software for the Solaris platform you should also become an iForce Partner at <http://iforce.sun.com/apply>. Within this program there is the 10 moves ahead program that offers a range of benefits including free training. There is also the chance to be given a free server to those software developers who commit to having their product ported to Solaris 10 x86 by March 31.

[4 \(Q\)](#): what exactly self healing means in solaris 10

[Smita Thakur \(A\)](#): Self healing in Solaris 10 refers to the ability of the software to not only diagnose but rectify underlying errors/faults with minimal human intervention.

[SinKuend600 \(Q\)](#): How does backup work in each Solaris Containers ?

[David Comay \(A\)](#): The suggested procedure is to backup a zone's file systems from the global zone. However, traditional archivers such as tar(1), cpio(1), etc can also be used from within a zone to backup its contents.

[Win \(Q\)](#): Will ZFS feature help to come up the system quickly like Veritas File System when the system halt or self reboot?  
[Adam Leventhal \(A\)](#): Yes. With ZFS, we'll eliminate the need to fsck (FS check) when your machine reboots unexpectedly. This is because we maintain an always consistent on-disk format.

[Sriram \(Q\)](#): What languages(i18n) Solaris 10 Support?  
[Larry Wake \(A\)](#): We support 39 languages and 162 locales. See the "International Language Environments Guide" in the Solaris 10 documentation on <http://docs.sun.com/> for details.

[igor do \(Q\)](#): Some patch need to be installed on single user mode. What would be the implications if these type of patches be installed on multi-user mode? Is this also true with Solaris 10?  
[samktan \(A\)](#): In Solaris 9 and 10, you can use the PatchPro utility to automate the download and install of patches, even single-user mode patches, that can be applied but will only take effect after reboot. You can find a free copy of PatchPro at [sunsolve.sun.com](http://sunsolve.sun.com).

[Subra \(Q\)](#): Whats the performance enhancements of using zones in Solaris 10 as compared to other OS such as Microsoft's Virtual Server or VMWare?  
[David Comay \(A\)](#): Since zones do not implement a hardware virtualization layer, which almost always means an emulation step, applications inside a zone run at native or near-native performance compared to the Solaris system as a whole. In addition to that performance benefit, they're also easier to manage since there is a single OS to manage.

[dillurym \(Q\)](#): will ZFS be able to run of linux x86 or only solaris?  
[Adam Leventhal \(A\)](#): ZFS will just work on Solaris on all the architectures we support – amd64, x86, and SPARC.

[Sreejesh \(Q\)](#): Is there any difference between S9 jumpstart and S10 Jumpstart installation methods?  
[samktan \(A\)](#): Solaris 10 jumpstart supports all the features of Solaris 9 jumpstart and includes support for additional options to simply the process of installation and configuration in a data centre. For more information, please refer to <http://docs.sun.com/app/docs/coll/1236.1>

[KrisParris \(Q\)](#): Smita T; You mentioned users do not need to use veritas volume manager if they are using ZFS? Does ZFS has the capability of creating RAID features.. I couldn't find any information on this on Sun's website... Please give me the details..  
[Smita Thakur \(A\)](#): Yes ZFS has an in-built volume manager. ZFS will provide mirroring as well as RAID 5 like redundancy.

[319 \(Q\)](#): Hi, does the Solaris 10 container technology has any relationship with the previous N1 Grid Container? Does it mean we should consolidate our application to run on bigger machines?  
[Larry Wake \(A\)](#): "N1 Grid Containers" was a name briefly used during the development phase of what is now called "Solaris Containers." Solaris Containers can definitely be used to consolidate many applications on large machines.

[hdany \(Q\)](#): Can each container has its own system configuration settings and services ?  
[Adam Leventhal \(A\)](#): Yes. The root user in the container has control over the configuration and services in that zone. Note that none of those changes affect the global zone or any other local zones/containers.

[Sarita \(Q\)](#): How is the integration between NIS+ and other LDAP servers taken care  
[David Comay \(A\)](#): Solaris 10 servers can be configured to handle both NIS and NIS+ client requests. Please visit [docs.sun.com](http://docs.sun.com) for more information.

[Subra \(Q\)](#): What are the key differences between Solaris Zones and VMWare or Windows Virtual Server?  
[samktan \(A\)](#): VMware and Windows Virtual Server requires a new install of the operating system inside each environment, thus you have to purchase and support many more operating systems. Solaris Zones uses the base operating system thus simplifying support and patching to just one environment. You also only need to pay for one license only.

[Q](#): Is Sun's planned Open Source Db available for Sol 10 ?  
[Larry Wake \(A\)](#): It's hard to say how a "planned" technology can be said to be available on any OS :-).

[MFEC \(Q\)](#): How solaris 10 is different from old version?  
[Smita Thakur \(A\)](#): Yes. Solaris 10 is the most advanced UNIX operating system ever. Check out the following site for more info: <http://www.sun.com/software/solaris/top10.jsp>

[A. K. M. Golam Mahbub \(Q\)](#): hi, Do you think that someone new in unix platform (Q) can start from solaris 10 without knowing previous solaris OE's version ?  
[samktan \(A\)](#): Yes Solaris 10 is no harder to learn than any other operating system, there is no need to have to start from Solaris 8 and work your way up. On the other hand if you are familiar with Solaris 8 or 9 you will find that 90% of what you know can still be put to good use.

[Dutta \(Q\)](#): What is the performance degradation of Solaris 10 running on native SPARC vs Intel/AMD platforms?  
[Adam Leventhal \(A\)](#): There's no degradation per-se – Solaris 10 runs as fast as we could make it run on SPARC, x86 and amd64. There's certainly no performance hit on x86 and amd64, in fact you'll find that they run much faster than SPARC in most cases.

[GregN \(Q\)](#): Are there any OS patching improvements within solaris 10 to reduce or eliminate outages. Is Live update supported within solaris 10

[David Comay \(A\)](#): Live Upgrade is supported in Solaris 10. Patching has been made faster both for individual patches as well as rolling out a patch on to a system with containers installed.

[deepug \(Q\)](#): When will benchmarks on ZFS be available

[Smita Thakur \(A\)](#): Yes they will be available. Stay tuned for more on that.

[ArthitLogic \(Q\)](#): Hi all...I need to know about WAN jumpstart , How can I do provide it .

[Adam Leventhal \(A\)](#): Please see the Solaris documentation at <http://docs.sun.com/app/docs/doc/817-5504/6mkv4nh4g> for more on using Jumpstart over a WAN.

[graeme \(Q\)](#): Is the LOM Zone aware?

[Adam Leventhal \(A\)](#): No - it's really just for connecting to the global zone.

[wslim22 \(Q\)](#): Does Solaris 10 support IPV6?

[samktan \(A\)](#): Every version of Solaris 8, 9 and 10 includes support for IPV6.

[sirisak \(Q\)](#): Can ZFS online grow or shrink size?

[Adam Leventhal \(A\)](#): Yes. All of ZFS's administration can be done completely online including growing and shrinking of storage pools.

[Sreejesh \(Q\)](#): why should i move from Solaris 9 to Solaris 10 ?

[samktan \(A\)](#): Solaris 10 provide many new enhancements in the areas of performance, security and platform support. Networking performance and scalability has been dramatically improved, security features from Trusted Solaris has been integrated and platform support has been extensively extended to include x86 platforms such as AMD64 processors.

[gopal \(Q\)](#): where can i find more info about the HCL / zoning etc

[Smita Thakur \(A\)](#): Check out: <http://www.sun.com/bigadmin/hcl/> <http://www.sun.com/bigadmin/content/zones/>

[Kevin \(Q\)](#): Are there any major company has deployed Solaris 10? if yes, what new features has applied?

[Larry Wake \(A\)](#): Companies such as Federal Express and Archipelago have already publicly talked about their success with Solaris 10; in addition, many Wall Street customers have already deployed Solaris 10. Features such as resiliency and performance have been cited - as well as containers, of course. DTrace has been especially well-received on Wall Street.

[root7 \(Q\)](#): I have an issued about open source solaris 10 licensing is there any payment for the software? Are solaris able to support VPN software ?

[Adam Leventhal \(A\)](#): Solaris 10 is free of cost for everyone, and we'll be releasing the source under the OSI-approved CDDL license in the next couple of months. Solaris support IPSec for VPN.

[KrisParris \(Q\)](#): James E;; Can you please explain what is dynamic instrumentation of the kernel ? (Refer to your answer to Dtrace).. Also, how this will effect the applicaiton layer?

[James Eagleton \(A\)](#): Basically it is a way to give a 'read out' of what the kernel is doing while your app is running - real time - hence Dynamic. Most performance issues and software failures are analysed using a 'post-mortem' method. That is, reproduce the problem and then debug. This often takes a lot of time and can mean you need extra test systems. With DTrace you can turn on 1000's of probes that show what the kernel is doing. Also, if you have the source, you can instrument your applications as well. Then in run-time, you can see not only where your app might be slow, but you can see directly where it makes system calls via the kernel, and how this might be affecting overall performance. Dtrace causes no overhead when it is not enabled. When it is enabled, the performance hit is directly related to the number of probes that you have enabled.

[geofft \(Q\)](#): Where would you use a container over processor sets

[David Comay \(A\)](#): These are actually complementary technologies. Zones provide name space isolation while Solaris 10's resource management functionality (which includes processor sets) provide the resource isolation. Together, this provides a complete containment facility for applications. For a good overview, please visit <http://www.sun.com/bigadmin/content/zones/> for various papers and a link to our Zones/Resource Management documentation which explains how to use containers and resource pools (which include processor sets).

[sunny \(Q\)](#): how can i start with Solaris 10 as a green hand

[Larry Wake \(A\)](#): Sun offers web-based training on Solaris 10, see <http://sun.com/training/catalog/courses/WS-9000-S10.xml> . Generally speaking, familiarity with a \*IX type OS such as Solaris and Linux helps.

[root7 \(Q\)](#): is there any license need to be bought for solaris 10 ? I have 3 engineer from malaysia kept asking for legal licensing matter...

[samktan \(A\)](#): Solaris 10 is licensed for free use without support and only for security patches. If you require committed dedicated support and other patches I suggest that you purchase a support contract. You can find the details of the license at <http://www.sun.com/software/solaris/licensing/policies.xml>.

[solarheat \(Q\)](#): Is there any recommended filesystem set up for a machine to run containers?

[Adam Leventhal \(A\)](#): Pretty much any file system configuration is fine in the global zone. We recommend that you then export those file systems into the local zones/containers rather than exporting the raw devices.

[Ben \(Q\)](#): Can ZFS be run on the boot drive? i.e. can root be ZFS?

[Smita Thakur \(A\)](#): Yes ZFS will be bootable. Look for it in a Solaris 10 update.

[Win \(Q\)](#): What is the hardware requirement (hardware spec) in order to install Solaris 10?

[Larry Wake \(A\)](#): See the Solaris website – specifically, <http://sun.com/solaris/specs.jsp>. Among other things, it has a link to the Hardware Compatibility List; for SPARC systems, you can see the Sun Hardware Platform Guide, part of the Solaris 10 documentation on <http://docs.sun.com>.

[Udomsak \(Q\)](#): How to install or remove package on global and non-global zone in same time?

[Adam Leventhal \(A\)](#): By default packages you install or remove in the global zone are also installed or removed from the non-global – local – zones.

[ArthitLogic \(Q\)](#): Does Solaris 10 X86 support 64Bit in V40z (AMD64) if not How long to support it

[samktan \(A\)](#): Yes Solaris 10 includes 64-bit support for the AMD Athlon 64 and Opteron processors.

[dyap \(Q\)](#): Hi are there any differences in the way the containers will work in an x86 platform as compared to a SPARC platform?

[Smita Thakur \(A\)](#): No difference at all.

[rohan \(Q\)](#): Do you now recommend to run all services on a box within a container, and effectively have the base OS as purely a management type layer? Is there any reason you would not run applications within containers?

[David Comay \(A\)](#): Yes, this is a common configuration. Harden the global zone, running as few non-system services as possible there while running other services inside containers.

[Sreejesh \(Q\)](#): Will Sun Support Suncluster on X86 Solaris 10? - if yes what are the contact points

[Smita Thakur \(A\)](#): Expect this support later this year. Contact your sales rep for more info.

[deepuq \(Q\)](#): How does Solaris 10 containers differ from Partitions. Can I allocate for example 1.5 CPU's to a container

[sc \(A\)](#): I'm assuming that you mean IBM LPARS. One key difference is that Solaris Containers runs on top of a single OS instance whereas each LPAR requires a separate OS instance. Further, containers requires very little overheads.

[Kurushev \(Q\)](#): What is the difference between Linux and solaris open source? What is the advantage?

[Adam Leventhal \(A\)](#): The biggest difference is the content. Solaris 10 is a much more mature and sophisticated operating system with advanced features like Containers, DTrace, Least Privilege, etc. DTrace also makes it much easier to understand the large code base to find problems and understand the system. Another big difference is the license – if you make changes to Linux, you're obligated to release those changes; for OpenSolaris you must release modifications you've made to `_files_`, but you can keep other changes private. This is great news for people working on embedded systems, for example. One advantage of Linux is that OpenSolaris isn't available yet – only DTrace has been released. OpenSolaris will be available in a few months.

[Cvetan \(Q\)](#): Are solaris containers compatible with Gridware and/or Cluster?

[David Comay \(A\)](#): Work is still underway to making these products work transparently with Solaris Containers. For Clustering, this should be appearing in an upcoming release.

[KrisParris \(Q\)](#): Does ZFS support Archiving? Do we still need to use SAM-FS/QFS for archiving?

[Smita Thakur \(A\)](#): You should use SAM-FS for archiving.

[mathewthomas \(Q\)](#): Is it safe to use Solaris 10 on production m/c? Currently are there many users?

[Larry Wake \(A\)](#): Absolutely. This is a full production release, just as any earlier release was. We currently have over 500,000 systems registered to use Solaris 10 – not bad for a release that's been out for less than 3 weeks.

[petemc \(Q\)](#): What about patch management across zones? Is it a manual process or is there an easy way?

[David Comay \(A\)](#): OS patching has been simplified - briefly, one just needs to do their patch management from the "global zone" - when patches are added there, they are automatically applied to the installed zones on the system. Patches only need to be applied from within the zone for software that was installed there.

[Ramesh \(Q\)](#): What are N1 grid containers?

[Smita Thakur \(A\)](#): Solaris Containers (formerly N1 Grid Containers) is an impressive solution for your server consolidation challenges. The Solaris Containers isolate software applications and services using flexible, software-defined boundaries. This gives businesses the ability to define and meet service levels by dynamically controlling application and resource priorities. Each application can be given a private environment, virtually eliminating error propagation, unauthorized access, and unintentional intrusions. Companies will see improved resource utilization and reduced downtime, leading to lower solution costs.

[A. K. M. Golam Mahbub \(Q\)](#): Does Solaris 10 support Sun Ray software?

[samktan \(A\)](#): Sun Ray Server 3.0 will support Solaris 10.

[Leigh \(Q\)](#): Do vendor such as sybase, BEA, Oracle an SAP support running inside containers ?

[Larry Wake \(A\)](#): We're working with the ISVs on this – I recommend checking with them directly, since at the very least that allows them to gauge the amount of interest in doing so.

[Cvetan \(Q\)](#): Does Sun Cluster support Sun workstations .. ie machines which possess only one NIC?

[samktan \(A\)](#): No, Sun Cluster requires two NIC, one for the service traffic and one for the interconnect. Even if you added a second NIC to the workstation, the workstation hardware it not engineered for high availability features such as redundant power supplies and hot plug of devices.

[sreejeshtp \(Q\)](#): What is ZFS?

[Smita Thakur \(A\)](#): ZFS is the new file system in Solaris 10. This technology is currently not shipping: EA is in the first half of 2005 and GA in the second half of 2005. For more info on ZFS go to: <http://www.sun.com/software/solaris/ds/zfs.jsp>

[Win \(Q\)](#): is there any way to request Solaris 10 CD for evaluation?

[Larry Wake \(A\)](#): Right now, Solaris 10 is available for download. CDs and DVDs are orderable, and should begin shipping within the next 3 weeks. Since licensing is free, there's no need for separate evaluation media.

[sreejeshtp \(Q\)](#): Can you give a brief on Solaris 10 Containers?

[Adam Leventhal \(A\)](#): Take a look at the Containers home page: <http://www.sun.com/bigadmin/content/zones/>. At the bottom of this page, you can also take a look at the "get your quite papers now!" link. But very briefly, Containers are a way of doing fault and security isolation as well as server consolidation.

[Lalit \(Q\)](#): what is SPARC

[samktan \(A\)](#): SPARC is the open standard developed by the SPARC Consortium to develop a Scalable Performance ARChitecture. You can find more information about SPARC at <http://www.sparc.org/>.

[SnowyMaslov \(Q\)](#): What limitations do containers have that are different from a base Solaris 10 installation?

[David Comay \(A\)](#): Briefly, access to certain devices (such as /dev/kmem or /dev/ip) is prohibited since they can be used to circumvent system security (in the case of /dev/ip, for example, raw IP packets could be generated). In addition, certain privileged operations which affect the system as a whole, such as performing dynamic reconfiguration or changing the global clock, can only be performed within the "global zone". In general, most applications will run without modification.

[deepug \(Q\)](#): Can Solaris 10 support applications running on Solaris 9. Are there any issues with this. What will be the time frame you think the Software ISV's will take to port their application on 10

[Larry Wake \(A\)](#): Not only will applications developed on earlier Solaris releases run on forward releases, we offer a guarantee that this is so – something unique in the industry. As such, there is no need for ISVs to port their applications. Because of this, we have already seen a significant number of vendors already support their applications on Solaris 10, even though we're now only 2 weeks into its release.

[Neeraj \(Q\)](#): What is so special about Solaris10 containers?

[James Eagleton \(A\)](#): Containers is a breakthrough approach to system virtualization with multiple software partitions per single instance of the OS, making consolidation simple, safe and secure. Containers dynamically adjust resources to business goals within and across the container. With little management overhead (less than 1%), it offers over 8,000 containers per system. With Containers, applications are isolated from each other and from system faults. Using Instant Restart, Containers "reboot" in just seconds. Containers simplifies and accelerates consolidation. It also significantly reduces system, admin and maintenance overhead. Unlike other approaches such as VMWare, no seperate software is required, therefore not adding additional cost. Additionally the performance overhead is close to zero. Whereas some other approaches install virtual OS rcreating significant overhead.

[low \(Q\)](#): In troubleshooting I/O bottleneck issues, how is DTrace compared to Oracle's StatPack tools?

[Adam Leventhal \(A\)](#): While I'm not very familiar with the statpack tool, DTrace is a general framework that can be used to look at I/O bottlenecks, but can also be used to correlate many other disparate data streams. But speaking in terms just of I/O it can let you determine the cause of I/O down to the application, user, project, file, device or container. The key with DTrace is its flexibility – rather than presenting a static view, you can try out many different hypotheses to determine the root cause of your problem.

[himanshu27 \(Q\)](#): With Solrais 9 system crashes quite frequently. How does Solaris 10 counter this problem?

[Smita Thakur \(A\)](#): Solaris 10 capabilities such as Predictive Self Healing (identifies and fixes problems before you're aware of them) and our Solaris ZFS (zettabyte file system) (delivers "19 9s" worth of automatic data integrity) help your system always stay on. If you want to restart for maintenance purposes, Solaris 10 boots 65 percent faster than Solaris 9. Start treating availability as a given, not a problem.

[Kurushev \(Q\)](#): Like apple, there is any special PC model for Solaris?

[samktan \(A\)](#): Solaris 10 supports a wide range of PC hardware, the full list can be found at <http://www.sun.com/bigadmin/hcl/>

[Sreejesh \(Q\)](#): Does Solaris 10 Still support RBAC - or new Security system ?

[samktan \(A\)](#): yes, Solaris 10 continues to support RBAC and will also include enhanced security features derived from Trusted Solaris.

[Sreejesh \(Q\)](#): Where can we get more information about Containers, Grid, Zones etc.

[Smita Thakur \(A\)](#): Go to: <http://www.sun.com/software/solaris/inside.jsp> <http://www.sun.com/bigadmin/content/zones/> [http://www.sun.com/bigadmin/features/articles/solaris\\_zones.html](http://www.sun.com/bigadmin/features/articles/solaris_zones.html) <http://www.sun.com/software/gridware/>

[Dutta \(Q\)](#): How much is the performance degradation of Solaris 10 running on native SPARC vs Intel?

[Larry Wake \(A\)](#): Solaris 10 runs natively on both SPARC and x86/x64 systems; there is no performance degradation associated with either.

[suresh \(Q\)](#): Does the S10 Containers implement any features to reduce the timing for failover and failback in Multipathing in a Cluster environment...in S9 its bit late.

[David Comay \(A\)](#): This work is currently under development but yes, containers will be used to start up applications during failover and failback.

[suresh \(Q\)](#): Does S10 support IP-Multipathing

[Adam Leventhal \(A\)](#): Yes.

[tan \(Q\)](#): Can you please elaborate on how patches are applied in a Solaris 10 system with multiple zones? Are they only ever applied to the global zone, or are there patches that would be applied on a per-zone basis (perhaps for bug fixes required only for a specific application hosted in that zone for example)?

[A:](#) Patches are only applied to the global zone and they will apply to the global zone and all sub-zones. Application requirements are based on a certain patch lever \*or higher\* so the implication is just to keep the global zone at the highest required level between all sub-zones.

[apicha \(Q\)](#): Can you compare vxfs (veritas) vs zfs on Sol 10 ? I got many questions from my customer.

[Adam Leventhal \(A\)](#): vxfs comes from the 20 year evolution of file systems and volume managers. It's a technology which has fundamentally changed very little; it's difficult to administer and its performance is hindered by architectural warts. ZFS is a completely new, from-scratch storage architecture which obviates the need for separate file systems and volume managers. The performance is amazing and administration is simple.

[Sophos \(Q\)](#): What is the current timeframe for the module to run Linux binaries natively ? Chris Ratcliffe previously presented that Linux binary performance should be better on Solaris 10 x86 than on a Linux OS - could you expand on this ?

[Larry Wake \(A\)](#): We're getting ready to roll out the first technology preview of Linux binary support; this will be a limited rollout, with a second technology preview planned for later this year. We've seen some applications run faster, but are not positioning this as an expectation for every application.

[geofft \(Q\)](#): Following on from containers being able to use their own naming service, I assume this applies to DNS as well

[David Comay \(A\)](#): Yes, every container can use any of the Sun supported naming services such as NIS, NIS+, LDAP and DNS and each can have its own domain name assigned to it.

[gopal \(Q\)](#): will Soltice Disk Suite still supported on solaris 10

[samktan \(A\)](#): yes SVM is still available on Solaris 10 and will continue to be supported.

[dillurym \(Q\)](#): with zfs, how is performance maintained with the additional overhead of data integrity checking? Is the performance comparable to ufs or vxfs?

[Smita Thakur \(A\)](#): Performance is very important for ZFS. You may know that with Solaris 9, UFS with logging was significantly faster than VxFS 3.5. A benchmark paper is published on this. Now with ZFS Sun is ready to launch its next generation file system and once again, performance will be a key attribute. Currently we do not have the numbers. Please stay tuned for information on ZFS performance numbers .

[EdwardMurphyAus \(Q\)](#): how easy is it to shutdown a container and move it from one system to another if the 2 systems are identical (e.g. 2 x e4500 systems)

[Adam Leventhal \(A\)](#): Currently we don't allow for migration of a zone from one machine to another (regardless of configuration), but support for that is coming soon.

[geofft \(Q\)](#): What work has been done with network vendors (such as cisco) on appropriate configuration of the networking switches to operate correctly with Solaris 10 containers.

[David Comay \(A\)](#): Solaris Containers are a software partitioning mechanism and as such, hardware details such as network switch interoperability only need to be performed in what's known as the "global zone". Once these settings have been done in the global zone, all containers on the system can take advantage of the hardware in question (this also includes features such as IP Multipathing, etc).

[Selva \(Q\)](#): I am planning to use Virtual PC for my solaris environment Will Sun provide any support for this?

[Larry Wake \(A\)](#): Virtual PC is not a Sun product, so just as with any 3rd-party product, the support would have to come from the vendor.

[Rakeshsaini \(Q\)](#): Is ZFS priced , I could not see the ZFS in the 03/05 release of S10

[Adam Leventhal \(A\)](#): ZFS is not yet available in Solaris 10 (it will be in beta in the first half of this year, and available at the end of the year), but when it, it will be free. \$0.00. Not only that, but it will be included in OpenSolaris.

[KrisParris \(Q\)](#): Since Solaris 10 has N1 containers, Do I need N1 provisioning software for provisioning in Solaris 10 infrastructure? Details please..

[Larry Wake \(A\)](#): "N1 containers" was a name used for a brief time for what is now known as just "Solaris Containers." There's no dependency on N1 technology.

[KrisParris \(Q\)](#): Whats the difference between Solaris 10 on Space and Solaris 10 on x86?

[Smita Thakur \(A\)](#): Feature by feature, it is just the same.

[graeme \(Q\)](#): Will containers allow patching of a specific environment, without affecting other environments? By patching I mean OS patches etc. Obviously this would allow patches to be tested in a secure environment if it does.

[David Comay \(A\)](#): This is definitely possible if the patches are non-OS patches, for example, for layered products. For OS patches at the current time, all containers on a particular system will be kept at the same patch level automatically.

[geofft \(Q\)](#): Can containers therefore run with a different TZ variable or will the container defer to the global zone for date/time

[Adam Leventhal \(A\)](#): By default they do the same thing as the global zone, but you can configure local zones to have their own time zone.

[suresh \(Q\)](#): what are the main hardwares included in the predictive healing facility in S10

[Smita Thakur \(A\)](#): Please check back on March 17 for the Expert Exchange on Predictive Self Healing.

[Ramesh \(Q\)](#): Will Solaris 10 come with inbuilt interoperability with microsoft?

[Larry Wake \(A\)](#): This is a very broad category, but among other things, Solaris 10 comes with some tools such as Samba allowing for network interoperability, as well as applications such as StarOffice, making it possible to read, edit and write documents in Microsoft formats.

[low \(Q\)](#): Can hardware devices be shared between zones, eg. network adapters, ext. tape devices?

[samktan \(A\)](#): Certain hardware can be shared such as network adapters via virtual IP. Other hardware cannot be shared such as serial ports. Tape drives can be shared but can only be accessed by one zone (or rather one process) at a time.

[sreejeshpt \(Q\)](#): What is Dynamic Trace ? Can you explain the uses of the same feature ?

[Adam Leventhal \(A\)](#): DTrace – or Dynamic Tracing – gives you concise answers to arbitrary questions about system behavior. It's an amazingly useful tool for understanding performance both for individual applications or the system in general. For more information, check out the DTrace home page: <http://www.sun.com/bigadmin/content/dtrace/>

[rohan \(Q\)](#): When patching the base Solaris OS of a machine, are you required to suspend/stop all containers for this (especially kernel patches), or will you be able to 'hot patch' the machine and reboot later.

[David Comay \(A\)](#): It depends to a large degree on the type of patch. For many patches, running zones will not be affected and will be patched automatically. In the case of the KU which typically requires the system to be in a single users state, the containers themselves will also need to be shutdown while the system is patched. Note though that applying a OS patch only needs to be performed from the "global zone" and all containers on the system are patched.

[jillRowling \(Q\)](#): Our CAD systems use flexlm which restricts software based on the hardware MAC address. How will this work with Containers?

[samktan \(A\)](#): The hardware MAC address is tied to the NIC that is made available to the specific zone. I believe that flexlm is tied to the host ID which is the same across all zones. In theory flexlm will work with any zone since the host ID will be the same as the global zone.

[himanshu27 \(Q\)](#): Hi All, What are the primary advantages of nw release over solaris 9?

[Smita Thakur \(A\)](#): Check out the following sites for detailed info on the NEW features of Solaris 10:  
<http://www.sun.com/software/solaris/top10.jsp> <http://www.sun.com/software/solaris/inside.jsp>  
<http://www.sun.com/software/solaris/move.jsp>

[Kurushev \(Q\)](#): How to remove Solaris from the system having two os like windows and solaris? If any one of the partition is formatted then the system doesn't load the other one, because the loader also deleted. there any solution in solaris 10?

[Larry Wake \(A\)](#): Today, the master boot record needs to be updated using utilities such as windows restore. This will be an area that will improve significantly in a Solaris 10 update, as the install technology on x86 systems is enhanced.

[MichaelW \(Q\)](#): Hi, Not sure if this question got lost.. What is the difference between Solaris Containers and pre-existing technology such as FreeBSD Jails ?

[David Comay \(A\)](#): Please see some of the answers to previous questions concerning Containers and Jails. In particular, please see

the USENIX papers available from <http://www.sun.com/bigadmin/content/zones/> which describe some of the differences between these technologies.

[mvalerio \(Q\)](#): We're porting all our RFID software applications to Solaris. would you have any recommendations on how to speed up its development and porting. Our applications are mostly web based. We are also a "virgin" in Solaris.

[James Eagleton \(A\)](#): Depending on how your applications are written there are a few options. If your apps are Java-based then you options are simple. Solaris 10 supports most commercial based Java application servrs such as Sun java System Application Server, BEA and Apache. If you apps are written in C or C++, then you should look at the Sun Studio 10 compilers (<http://www.sun.com/software/products/studio/index.xml>) Sun Studio 10 builds/compiles 32 and 64 bit apps for Solaris on SPARC and x86 and x64 (e.g. AMD Opteron). One great thing for development is to be able to run seperate Solaris 10 containers for different development tasks or test environments. If you have a team of developers then it is easy to assign a container to each developer who can test and debug within the container and not impact the rest of the team. Also check out DTrace, which will enable to find any performance bottlenecks in your apps ans the way your app makes various system calls.

[dyap \(Q\)](#): Hi All, my client has a wide array of products from different vendors, both Sun and non-Sun. If they are looking to upgrading the existing OS from Solaris 8 to use Solaris 10, would compatibility issues be a major concern?

[samktan \(A\)](#): To ensure backward compatibility there is a tool from Sun at [http://www.sun.com/software/solaris/programs/binary\\_guarantee.xml](http://www.sun.com/software/solaris/programs/binary_guarantee.xml) that will assess the compatibility of your applications with Solaris 10. For hardware compatibility you can refer to <http://www.sun.com/bigadmin/hcl/>

[DongwonGeong \(Q\)](#): Are there any differences in functions and special features between x86 Solaris 10 and SPARC Solaris 10?

[Adam Leventhal \(A\)](#): Nope. Solaris comes from one source base -- the bare minimum of code is architecture specific -- so virtually all features are available on both SPARC, x86, and amd64.

[319 \(Q\)](#): We have been recently moving to use Solaris Volume Manager, and notice that it does not have the deport/import feature we like as Veritas VM, is there any major improvement on the SVM with Solaris 10?

[Smita Thakur \(A\)](#): Import/Export feature is now supported in SVM. SVM also supports Oracle 9iRAC in a Sun Cluster environment. This latter capability provides customers with the cluster volume manager functionality.

[huangji \(Q\)](#): Hi, What types of SPARC are supported by Solaris 10?

[Larry Wake \(A\)](#): See the Solaris 10 Sun Hardware Platform Guide on <http://docs.sun.com/> for details; roughly speaking, all UltraSPARC-based systems other than those based on the original UltraSPARC-I processor are supported, plus support for SPARC64 systems.

[Lalit \(Q\)](#): How Solaris 10 is different from Oracle and Sql server

[samktan \(A\)](#): Solaris 10 is an operating system for SPARC and x86/AMD64 platforms, Oracle is a database server that runs on Solaris and several other operating system, SQL Server is a database server that only runs on Microsoft Windows.

[Mal \(Q\)](#): Do I run one copy of Solaris containers but can run a number of isolated applications on the one instance of Solaris?

[Adam Leventhal \(A\)](#): There's always just one instance of Solaris running on your machine. There can be many different isolated containers. In those containers you can run whatever applications you like.

[MichaelW \(Q\)](#): What are the differences between FreeBSD jails and Solaris Containers/Zones ?

[David Comay \(A\)](#): Zones/Containers and Jails are in many ways similar. Zones offers a similar isolating mechanism that Jails pioneered although it is more tightly integrated with other Solaris features such as the resource management facility, resource pools, DTrace and the Solaris packaging and patching support.

[hdany \(Q\)](#): Does Solaris-10 support dynamic I/O system configuration, and dedicated I/O subsystem for a specific container ?

[Larry Wake \(A\)](#): Some degree of I/O management can be performed from the global zone on behalf of containers, although there is more work to be done in this area.

[kamols \(Q\)](#): What URL have display driver aolaris 10 for VMWare x86?

[samktan \(A\)](#): VMware 4.0 does not directly support Solaris 9 or 10 so you need to use the XFree86 drivers to get the maximum possible resolution with VMware 4. In the next version of VMware 5.0 there is support for Solaris 9 and 10 as a guest OS and VMware 5 will provide the drivers for Solaris. You can get the Xfree86 drivers for Solaris at [www.sun.com/download](http://www.sun.com/download)

[geofft \(Q\)](#): What is the overhead on the kernel when using ZFS

[Adam Leventhal \(A\)](#): There's no intrinsic overhead per-se just from using ZFS. In terms of performance, ZFS is going to blow other file systems away. We haven't any numbers yet -- ZFS isn't quite done yet -- but stay tuned. ZFS should be available in Solaris 10 update 2.

[suhaimi \(Q\)](#): Any major difference features for Solaris 10 (Sun SPARC and Fujitsu, Sun's x86 server and other barnd x86) ?

[Larry Wake \(A\)](#): Solaris is Solaris. The only differences you should see with Solaris running on different hardware are the features specific to that hardware.

[Ramesh \(Q\)](#): Is Solaris 10 more inclined towards gui than 9 or 8

[samktan \(A\)](#): Solaris 10 contains CDE and Gnome. The preferred system administration interface is Solaris Management Console

and it has been enhanced and extended in Solaris 10. There is an additional administration package included as part of the Solaris 10 package called Webmin that provide a web-based administration interface.

[nelcanz \(Q\)](#): Im just a newbies here, at present ive got win2003 adv. Svr and redhat AS...what do you have in solaris 10 which is most of an advantage.??

[Adam Leventhal \(A\)](#): The subject of this discussion – Solaris containers – is one feature which really distinguishes Solaris 10 from Windows or Linux. With Containers you can very readily consolidate many services onto a single machine. DTrace is another feature which distinguishes Solaris from other operating systems. In terms of performance analysis – especially on a system-wide level – nothing in any other operating system approaches the capabilities of DTrace.

[EdwardMurphyAus \(Q\)](#): Given the fact that there are library dependencies etc when running a container, is there any overhead running an application in a container compared to the native system?

[David Comay \(A\)](#): There is typically no overhead to running an application in a container since containers/zones are implemented via an extremely lightweight OS layer. Basically the same privilege checks used by the system for every system call access are used with containers. Since containers run with fewer privileges, there are no additional checks that take place in either the library or in the kernel path.

[Buscons \(Q\)](#): I am particularly interested in the aspects of the Sol 10 enhancements that influence security and simplicity of use.

[Larry Wake \(A\)](#): Please see <http://sun.com/solaris> for a more thorough rundown, but some security features: include containers themselves, which provides isolation of applications from each other and from the global administrative space of the OS; Secure Execution, providing digitally signed verification of utilities, libraries and kernel modules; process rights management, the replacement of the traditional "root" access model with a fine-grained set of assignable privileges; IP Filter; file integrity verification (BART); a cryptographic framework for development and admin of security-aware apps; a reduced networking install profile – all this in addition to a lengthy list of existing features. Probably the most significant ease-of-use "feature" would be the Java Desktop System integration, which includes many powerful and useful components.

[sreejeshtp \(Q\)](#): What is DTrace ?

[James Eagleton \(A\)](#): Dynamic Tracing (DTrace) is a powerful tool for analyzing and diagnosing elusive bottlenecks in real-time. DTrace is non-invasive, designed for use on production systems and has little system overhead. It provides dynamic instrumentation of the kernel and every line in every application on production systems. DTrace eliminates the need to induce failures to debug the system with postmortem tools and eliminates the need to re-create the problem on test systems. Root causes of intermittent problems can be found in minutes or hours, not days or weeks. In tests at Sun customer sites, the use of DTrace has resulted in application performance improvements of up to 30x.

[igordo \(Q\)](#): If i consolidate my servers onto one server running Solaris Containers, how do i make it fault tolerant?

[samktan \(A\)](#): The question will depend on the level of availability that you require. If you need 99.999% uptime, then it is recommended that you use Sun Cluster between two containers on two different servers. If you have a lower requirement for availability then the new Predictive Self-healing technology would be a good solution.

[low \(Q\)](#): Hi, can I say the with this Sol10 containers concept, isolation of most hardware failures and hot fixing them without bring all the zones down is possible?

[Adam Leventhal \(A\)](#): That's mostly correct. Containers give you isolation from hardware faults between zones, and correcting many such failures can be done without rebooting the machine or causing any interruption in the zones' service

[patrick \(Q\)](#): Is there any way to install Oracle 10g on solaris 10 x86 machine?

[Smita Thakur \(A\)](#): Yes you can install Oracle 10g on Solaris x86 machine.

[suhaimi \(Q\)](#): Can Solaris 10 container within a system cluster each other ?Any time frame for Sun Cluster support Solaris 10 ?

[David Comay \(A\)](#): Sun Cluster support for Solaris 10 will be available in the next release. Support for containers will be in a follow-on release of Sun Cluster.

[igordo \(Q\)](#): What applications are currently certified to run on Solaris Containers?

[David Comay \(A\)](#): Application certification is currently underway. Note that most applications will likely work as-is in a container unless they expect to access certain devices directly (like /dev/kmem) or they require certain privileged operations which affect the system as a whole (such as changing the global time of day).

[Sriram \(Q\)](#): Can you brief on Solaris Clusters support?

[Adam Leventhal \(A\)](#): Sun Cluster doesn't currently support Solaris 10, but it will in its next release.

[Udomsak \(Q\)](#): I am install Solaris 10 x86 on Vmware, but i have problem about sound.

[samktan \(A\)](#): VMware provides emulation of Sound Blaster hardware but you must enable the sound drivers in Solaris using third-party drivers. There is a beta version of VMware 5.0 that provides direct support for Solaris 9 and Solaris 10 in a guest OS. In Solaris 10, we include audio drivers for certain hardware, please check the Solaris 10 HCL at [www.sun.com/solaris](http://www.sun.com/solaris) for more information.

[geofft \(Q\)](#): Adam, I take it from your reply re moving containers, that Sun Cluster is not yet fully functional with containers ??

[Adam Leventhal \(A\)](#): There are two issues. Solaris containers don't currently support migration between different boxes – we're working on it now and it will be in a update soon. Sun Cluster isn't currently working with Solaris 10, but its next release will.

[gopal \(Q\)](#): How will the ZFS compete with Veritas vxfs filesystem  
[Smita Thakur \(A\)](#): ZFS is the next generation file system; way ahead of Veritas File System. With ZFS customers will not need Veritas File System & Volume Manager. Check out the following sites for detailed info on ZFS:  
<http://www.sun.com/software/solaris/ds/zfs.jsp> And <http://www.sun.com/software/solaris/inside.jsp>

[wltee \(Q\)](#): What are the available options to apply security patches to Solaris 10?  
[samktan \(A\)](#): Security patches are available from [sunsolve.sun.com](http://sunsolve.sun.com) and they are applied using the regular patchinstall commands. The patches must be applied to the global zone, not subzones.

[reitech \(Q\)](#): In what way it competes with Linux, let's say, RedHat server?  
[Larry Wake \(A\)](#): There is no equivalent container technology built into Red Hat. User Mode Linux could be added in, but is really more like a VMWare type of solution: as one example it requires multiple OS instances to be installed, which has significant performance and administrative implications, as well as not having the same sort of system-wide observability you'd have with Solaris 10 and containers.

[hdany \(Q\)](#): Does it support dynamic configuration to have a dedicated CPUs attached to a container for guaranteed performance?  
[David Comay \(A\)](#): Yes, containers can be assigned to a dedicated pool of resources to guarantee a level of service. The Dynamic Resource Pool mechanism can automatically add/remove CPUs for use by the container depending on whether configured workload objectives are being met. Resources can also be assigned or removed manually.

[Kurushev \(Q\)](#): What is the name of the Solaris 10 Open source language?  
[Adam Leventhal \(A\)](#): Solaris is written primarily in C with some assembly (as little as is needed) along with a bit of C++, java, perl and some other languages sprinkled in.

[sandgroper \(Q\)](#): Can serial ports be shared when using containers?  
[samktan \(A\)](#): hardware like serial ports cannot be simultaneously access by more than one zone but you can move them dynamically between zones

[paulc \(Q\)](#): do we get to see containers in open solaris?  
[Adam Leventhal \(A\)](#): OpenSolaris will be everything that is Solaris with the small exception of some code that we don't own the rights to (this is mostly stuff like drivers). In particular, OpenSolaris will include all of our "secret sauce": DTrace, Containers, ZFS, etc.

[petemc \(Q\)](#): I'm currently running Bind in a chroot'd environment on solaris 9. I'm looking at migrating to solaris 10 and using containers. How easy is the migration?  
[samktan \(A\)](#): Yes you can run BIND inside a zone. In the zone you would not require the chroot'ed environment since the zone itself would be chrooted. The process is very easy after you have created the zone.

[Sophos \(Q\)](#): Do Solaris 10 Containers provide unique IP and port access for each instance?  
[David Comay \(A\)](#): Yes, each container can be assigned one or more unique IPv4 and/or IPv6 addresses. Applications (like web servers) which bind/listen to the wildcard IP address/port automatically receive traffic or connections destined to only those addresses assigned to the zone/container.

[Sreejesh \(Q\)](#): Is there a support planned for Solaris 10 on x86 platform  
[Smita Thakur \(A\)](#): Yes it is exactly the same support as Solaris SPARC.

[suresh \(Q\)](#): Does Solaris 10 containers support only LDAP and is it customised over LDAP  
[Adam Leventhal \(A\)](#): Containers support LDAP and other naming services; each container can have its own naming service.

[SnowyMaslov \(Q\)](#): How does Containers compare to the partitioning that we are using to seeing on SunFire machines? Is this a software equivalent? What are the important differences between these two products?  
[David Comay \(A\)](#): Yes, it can be thought of as a software domain facility. The most important difference is that Containers/Zones works on all platforms that run Solaris 10 including x86/x64, Opteron, EMT64, and SPARC platforms. It also provides a greater degree of flexibility in allocating resources - for example, a zone or container can be assigned a fractional amount of a CPU where SunFire domains will usually enforce a unit of granularity like a system board. Please see <http://www.sun.com/bigadmin/content/zones/> for more information.

[Ben \(Q\)](#): Are containers contained in the latest X86 release of Solaris?  
[Adam Leventhal \(A\)](#): Yes! Solaris 10 x86 and SPARC are identical in terms of the feature set. Accordingly, containers are available on x86.

[mick \(Q\)](#): Could you outline the main differences between containers, zones and domains?  
[Larry Wake \(A\)](#): Zones are one part of the containers implementation; containers can be thought of as the combination of Zones, dynamic resource pools and resource management. Dynamic system domains are a hardware-based partitioning technology. Domains and containers can be used separately or in tandem. Among other things, containers have the virtue of extremely fine-grained resource allocation, as well as the ability to be used on any system Solaris 10 runs on. Domains are specific to certain Sun

enterprise class systems, and provide complete hardware isolation as well as the ability to run discrete OS instances. Both containers and domains provide flexible partitioning with little or no resource overhead.

[suresh \(Q\)](#): hi..I am suresh from Trivandrum in India My questions are: what is the advantage of the new file system in Solaris 10 over the UFS How much hardware compatibility will be provided by the Solaris 10 over 9 in x86 platform

[Smita Thakur \(A\)](#): Check out the following sites for info on ZFS: <http://www.sun.com/software/solaris/ds/zfs.jsp> And <http://www.sun.com/software/solaris/inside.jsp> All platforms previously supported by Solaris 9 are now supported by Solaris 10. It will grow exponentially from here. Check out this site for more info: <http://www.sun.com/bigadmin/hcl/>

[MikeS \(Q\)](#): I guess I'll go first - Hi, we're an ISV how develops enterprise monitoring solutions under Solaris. In 8/9 we encountered a kernel blocking issue which caused syscalls like open(), statfs() and a few others to hang if a storage device suffers from a hardware fault. Have any changes to the OS been made to allieviate these kinds of issues?

[David Comay \(A\)](#): Not directly - what has been made available in Solaris 10 is the new Predictive Self-Healing functionality which provides a framework for handling faults in both hardware and software. In future Solaris updates, more and more hardware will participate in this facility allowing the system to automatically handle issues like the one you described (currently, S10 handles many CPU and memory issues on UltraSPARC automatically)

[o\\_\\_\\_\\_\\_q \(Q\)](#): Can you briefly explain how DTrace works with Solaris containers. Eg. if we were to run a linux app in a container, how do we find performance gains using DTrace?

[Adam Leventhal \(A\)](#): DTrace can only be run from the global zone, but from the global zone, DTrace can observe processes in the local zones. While support for linux apps isn't there yet, when it is, you will be able to observe the behavior of the linux application to find performance bottle-necks.

[solarheat \(Q\)](#): If I have created 2 zones and hotplug a removable storage device on USB port. Which zone will see it. Or should it be allocated to specific zone through the global zone?

[Adam Leventhal \(A\)](#): By default only the global zone will see it, but the administrator in the global zone can then assign it to any of the local zones. While that mode is supported, it's not recommended – we suggest you use lofs to export file systems rather than raw devices.

[Sreejesh \(Q\)](#): As a Directory service What is the future of NIS or NIS+ when compared to LDAP

[Larry Wake \(A\)](#): Our strategic direction is LDAP, although LDAP services, NIS and NIS+ are all included and supported in Solaris 10. See <http://sun.com/solaris/faqs/nisplus.xml> for more information; although it talks about Solaris 9 the information applies to forward releases as well.

[JillRowling \(Q\)](#): Apart from the common OS (Solaris 10 Containers), What are the other main differences between Containers and VMWare?

[David Comay \(A\)](#): See the previous answer concerning VMWare. Briefly, Containers is a software partitioning mechanism which is lightweight and does not impose a performance penalty when running applications. It also makes consolidating easier since OS patching and upgrading needs to take place at only one place rather than many, separate OS instances.

[Ben \(Q\)](#): Hi All - Will it be possible to move a container from one host to another in the future? i.e. tie into SunCluster to provide a fault tolerant Virtual Machine?

[Adam Leventhal \(A\)](#): That's not currently supported, but we're working on making that type of migration and clustering possible.

[graeme \(Q\)](#): Hello all, is it correct that fair share scheduling is not used in containers?

[Adam Leventhal \(A\)](#): No. All of Solaris's resource management facilities – including the fair share scheduling class – are available for use in containers.

[reitech \(Q\)](#): What infrastructure would Solaris 10 Containers fit to? Are there any live examples?

[David Comay \(A\)](#): Suitable infrastructures range from consolidating enterprise workloads (like databases) on to a multi-processor machine to smaller servers at the edge which might run services like web servers or MySQL databases. Internally at Sun, we are consolidating many of our own IT services into containers.

[Lambchop \(Q\)](#): How do the Solaris containers function differently to Linux Xen virtual machines, VMWare, and others?

[Adam Leventhal \(A\)](#): See David's answer above to a similar question.

[Salman \(Q\)](#): Whats new in Solaris 10. We have some very good features in Win2003 Adv Srv from Microsoft so why should i go for Solaris 10?

[Smita Thakur \(A\)](#): Here are the reasons why you would want to move to Solaris 10: - Relentless Availability Solaris 10 capabilities such as Predictive Self Healing (identifies and fixes problems before you're aware of them) and our Solaris ZFS (zettabyte file system) (delivers "19 9s" worth of automatic data integrity) help your system always stay on. If you want to restart for maintenance purposes, Solaris 10 boots 65 percent faster than Solaris 9. Start treating availability as a given, not a problem. - Extreme Performance Solaris 10 takes the performance momentum from Solaris 9 to the next level by completely rewriting our TCP/IP stack and adding special optimizations for multithreaded processors and x86 architectures. We didn't forget about your applications. We added DTrace, a comprehensive real-time system diagnostic engine built to run on your production systems. DTrace gives you performance and operating data on everything that goes on in your computer and allows you to pinpoint exactly where the bottlenecks are. - Optimal Utilization In today's business climate, everyone in IT knows that they need to get more from what's already in the data center. With Solaris Containers you maximize utilization by running more independent applications on

the same hardware. The Solaris Containers software enables you to give each application its own private environment. Need to reboot a container for whatever reason? Do so in seconds. - Unparalleled Security Solaris 10 brings our Process Rights Management model from our award-winning Trusted Solaris release out to the mainstream. We've also enhanced our cryptographic framework to give administrators more power over what protection will be used in what environments. Solaris 10 raises the bar on what an operating system should be doing to protect you from others--and to protect you from yourself. - Platform Choice Sometimes "one-size-fits-all" is the best choice. We've carefully optimized Solaris 10 on every supported platform to ensure that you get the most out of your hardware. We've strengthened our 32-bit support for Xeon Processor MP, and added 64-bit support for AMD Opteron processors, and ensured optimal performance for our new UltraSPARC IV processors lineup. So design your data center around big iron, small iron, or both--and run Solaris 10 everywhere to get the best performance for the least complexity. - Interoperable We've made Solaris 10 the most interoperable operating system platform ever. Linux applications will run on Solaris 10--natively. No emulation, no complication, no performance hit. Perhaps you want to recompile your x86 application to run on some bigger UltraSPARC iron -- no problem. We base our work on open standards to make transitions easy--and a lot less expensive than the last transition you went through. - Guaranteed Application Compatibility Solaris 10 seems like a completely new operating system and in many ways it is. However, in one important way, it's the same operating system you've been running for years. We guarantee that your currently running Solaris application will run on Solaris 10 without failure. If not, we fix Solaris. Maybe a guarantee like this is something new to you, but not to long-time Solaris customers who like to upgrade and relax--not upgrade and start debugging. - More Than Just an Operating System Solaris 10 has so many compelling features that it's easy to overlook other important Sun offerings that can round out your enterprise solution. Sun Studio developer tools have the features and optimizations you need to get the most out of your application development efforts. Sun Cluster products give you additional high-availability and manageability options to suit your data center architecture. There's much, much more for you to choose from: identity management, desktops, collaboration, portal, etc.--all ready to quickly and easily integrate with the leading UNIX operating system available today: Solaris!

[hdany \(Q\)](#): How does Solaris 10 isolate the faults occur in one container

[Adam Leventhal \(A\)](#): Yes. Whenever possible. Containers are completely isolated so a software error in one can't effect any other. In terms of hardware failures, if there's an uncorrectable memory error -- for example -- on a user address associated with a particular zone, only that zone is affected. The response to that error may be restarting a service or rebooting the zone. Since there's still a single kernel image, uncorrectable errors on kernel addresses will still affect all zones.

[igordo \(Q\)](#): I am planning to simulate Solaris OS on Vmware ([www.vmware.com](http://www.vmware.com)). Its limitation is that it can only run on x86 platforms. Is Solaris Containers some sort of a virtual machine software?

[David Comay \(A\)](#): Solaris Containers provide a way of isolating a workload in a "partition" such that it will not affect other workload or processes on the same system. Rather than virtualizing a machine architecture the way VMware does, containers or zones is a much lighterweight mechanism that provides isolating and consolidation with no or little performance overhead. Please see the USENIX papers at <http://www.sun.com/bigadmin/content/zones/> for more information.

[Pavel\\_20050217\\_a \(Q\)](#): I have OS Windows XP. Is it possible to work with Solaris 10 OS along with WinXP OS? Such that WinXP OS is on one drive and Solaris 10 OS should be on another drive. What are the advantages of Solaris 10 OS over WinXP OS?

[Larry Wake \(A\)](#): Yes, it is possible to install Solaris and Windows on the same x86 system -- I've got Solaris, Windows, and Linux on my laptop. A blow-by-blow comparison of Solaris and other OSes is a bit out of scope of today's talk; I'd refer you to <http://sun.com/solaris/> for more information.