

# Sun Expert Exchange

## Fast Track to Solaris 10 Adoption: Dynamic Tracing

### Thursday, April 21 2005

**Mahesh (Q):** Can i get some information on Certification centers in INDIA

**Sam Tan (A):** Please go to <http://in.sun.com/education> for your answer.

**incricricket (Q):** Does Sun provide free on-line training on Solaris 10 for Solaris certified Administrators ?

**Sam Tan (A):** You can get information on Sun training from ([http://www.sun.com/training/catalog/operating\\_systems/delivery.xml#wlc](http://www.sun.com/training/catalog/operating_systems/delivery.xml#wlc)) which includes web-based training.

**Gauravb (Q):** How and from where can I obtain a copy of genuine solaris 10 server OS

**Smita Thakur (A):** You can download Solaris 10 for free from the following site: <http://www.sun.com/software/solaris/get.jsp#0>

**Anil (Q):** What is utility in solaris 10 for raid configuration like solaris disk suite we are using in solaris 8?

**Michael Shapiro (A):** DiskSuite still exists in Solaris 10, but it is integrated into the base operating system (for free) and was renamed Solaris Volume Manager. You can use it in the same way you do today. You'll also be able to take advantage of ZFS to do software RAID when it is released later this year.

**incricricket (Q):** What are major issues we should take care while planning for an upgrade to Solaris 10 from Solaris 8 or 9 ?

**Angel Camacho (A):** As with any other Solaris version you should care for the applications running on your system, also please check the filesystem usage and tuning parameters....

**Win (Q):** In Redhat Enterprise 4, there is a new feature call virtualization and it seems the same as Zone in Solaris 10. Are they the same?

**David Comay (A):** I'm afraid that I'm not certain which virtualization feature you're referring to with respect to ES4. There are virtualization technologies like Xen which allow completely different OSs to be hosted on a system but at the cost of maintained separate OS environments including installation, patching, etc. In addition, solutions like Xen typically have at least some performance hit for applications running "on top" of the hosted environment (in some cases, the performance hit can be significant). Zones are a much lighter weight solution which provides a greater sharing of resources between the environment where the kernel "lives" (in Solaris, this is the global zone) and the other containers or zones on the system (these are the non-global zones). As a result, Zones are implemented via a very thin OS layer which means that applications suffer no performance impact when run inside a container. For more information including further comparisons, please see the USENIX papers at the Zones BigAdmin site <http://www.sun.com/bigadmin/content/zones/>

**KrishnaKishore (Q):** Well, Smitha, how come solaris os 10 free, where all the vendors changer much money for other os like Windows2000 and 2003..? is it for some period or for life time..?

**Smita Thakur (A):** Sun's strategy differs from its competitors. Solaris can be downloaded for free. However, customers need to buy support for Solaris. Sun's new subscription-based Solaris Service Plans give customers a flexible, cost-efficient choice of Premium, Standard, or Basic levels of support. For details check out: <http://www.sun.com/service/solaris10/index.html>

**pannags (Q):** Since you have an extensive set of tools in Dtrace. Is a separate training program planned?

**Adam Leventhal (A):** Yes. SunU has a DTrace training course.

**mahen (Q):** I have iplanet webservers4.x and Netscape Directory server 4.x running in environment , is it possible can I migrate it to Solaris 10 ? . I dont want to upgrade my Web/LDAP .. any suggestion

**Angel Camacho (A):** you can use liveupgrade to upgrade your operating environment, then just a reboot will bring it from the version you are running into Solaris 10, with the software you are running it right now, just please check <http://docs.sun.com/> for any hints for your upgrade.

**Gauravb (Q):** what is the support need for developers migrating from Linux and windows platform to solaris

**Sam Tan (A):** There is a tool (<http://developers.sun.com/prodtech/solaris/downloads/lincat/>) that describes and assists users migrating from Linux to Solaris.

**saket (Q):** How's Solaris Different from Linux or Windows

**Adam Leventhal (A):** That's a very complicated question. Solaris is an enterprise OS with features designed for the future needs of users. Check out stuff like DTrace and Predictive Self-Healing – there's nothing that comes close to those technologies in Linux or Windows. The upcoming ZFS will similarly change the way you handle storage. There are some situations where other operating systems might be better suited (e.g. if your app only runs there), but Solaris is a great general purpose OS that's fast, reliable, and observable.

**screenName128 (Q):** Can Dtrace be use as a simulation tool to evaluate a web application at different conditions?

**Michael Shapiro (A):** You can certainly use DTrace to observe the behavior or performance of your application while feeding it sample input.

chihung (Q): apart from Brandon Gregg, where else can i find scripts on tcp network stuff.

Michael Shapiro (A): Our other examples are in /usr/demo/dtrace. If there isn't one to your liking, ask for it on [sun.com/bigadmin/content/dtrace/](http://sun.com/bigadmin/content/dtrace/)

Solaris10 (Q): I am SCNA and Certified instructor from Solaris 7 to Solaris 10. I want to promote Solaris and Sun products . How I can get online support?

Sam Tan (A): You can get online support from either [sunsolve.sun.com](http://sunsolve.sun.com) or [www.sun.com/bigadmin](http://www.sun.com/bigadmin). Both these resources contain large amounts of information that is useful every user of Solaris.

saini (Q): Do we have web based training on S10

Angel Camacho (A): there are a number of options to get trained on Solaris 10, one of them is web based, please go to <http://www.sun.com/supporttraining/> for more information

prabir (Q): can DTrace be utilized in remote server management?

Michael Shapiro (A): DTrace is a great tool to use when remotely administering systems. If you have a misbehaving box, just remote log in and use it. You can also create DTrace scripts on each system that communicate back to a management system by using the system() action to use DTrace to trigger other commands like snmptrap or pipe the output to a web page, etc.

mahen (Q): Recently Sun Came with BETA solaris10 certification - and it was real tough exam I ever had may be I was lazy to read more. But is that BETA exam is acceptable and recognized ?. Advantage ? And is Real Solaris 10 Exams will be that big ?

Sam Tan (A): Usually the BETA exam is for a closed audience by invitation only. Typically it is not recognized a the "real" exam.

jedz (Q): can dtrace eliminate system panics?

Michael Shapiro (A): No, but DTrace does help us debug the operating system more effectively, which we hope will help improve the quality of Solaris.

jy (Q): Which database is best on solaris 10

Angel Camacho (A): Each database has it's own advantage over the other, so it depends on your workload, budget and administration background.

pannags (Q): Is this the last chat in the series? I missed out on the first 2 'cause I was not around?

Holly Sharp (A): This is the last chat in this series. We are sorry you missed the earlier events. We will be doing more chats in the future, so please stay tuned!

Patilanil (Q): what is a minimum hardware requirement for solaris 10?

Michael Shapiro (A): You must have an UltraSPARC system with 128MB RAM or more or an x86 system that is found on the hardware compatibility list at [sun.com/bigadmin/hcl/](http://sun.com/bigadmin/hcl/).

Patilanil (Q): Can i use solaris 8 server to jumpstart installation for solaris 10?

Angel Camacho (A): yes, no problem

jjbacallan (Q): Will there be an update on the software anytime soon?

Videhi Mallela (A): We offer update releases of Solaris 3-4 times a year, and this will be true for Solaris 10 as well. More information on the Solaris lifecycle is available here: <http://www.sun.com/software/solaris/lifecycle.xml>

Win (Q): Can Solaris 10 be installed in Sun Sparc station 20?

Angel Camacho (A): It runs, but it's not supported.

chocoajay (Q): Is Solaris 10 uses the Page File system.If yes,then why u told that having only 128 MB of ram,we can only install Solaris 10 not other software

Michael Shapiro (A): The minimum system RAM configuration is determined by the amount of memory needed to run the Solaris install utility.

SreejithSD (Q): Is there no license for Solaris 10,only we have to pay as per support plan we have to choose,right

Smita Thakur (A): That is correct. Sun's new subscription-based Solaris Service Plans give you a flexible, cost-efficient choice of Premium, Standard, or Basic levels of support. For details check out: <http://www.sun.com/service/solaris10/index.html>

chihung (Q): where i can find more detailed dtrace script in tcp networking 'cos i want to find out the network utilization per application

Adam Leventhal (A): Brandon Gregg has some great scripts you might want to check out: <http://users.tpg.com.au/adsln4yb/dtrace.html>

chihung (Q): is there any activity to have a setoolkit equivalent implemented in dtrace

Michael Shapiro (A): The SE toolkit included two types of features, utilities for examining and observing the system, which are mostly obviated and/or improved by DTrace, and then the VirtualAdrian tool for system management. So DTrace supersedes most of the toolkit, but we don't yet have any updates to VirtualAdrian, which is orthogonal to DTrace.

KrishnaKishore (Q): I am new to solaris, how do i change the Date and timings...? any commands to change.

Sam Tan (A): you can change the date settings using the date command, you can type 'date -h' to get a full list of options. to change the timezone edit the file /etc/TIMEZONE.

arya484 (Q): i am willing to go for Solaris certification ? please explain me for further instance in detail?

Videhi Mallela (A): Great! We have several courses available. Please look at <http://www.sun.com/training/catalog/solaris10.html> for a complete listing.

Edward (Q): if any Solaris 10 based development software,.database like (Visual basic,oracle,sql )

Sam Tan (A): You can use the Sun Java Studio to develop application in C, C++, Fortran and Java. If you only need Java, you can also use the free Netbeans ([www.netbeans.org](http://www.netbeans.org)). If you just want a free compiler, you can use gcc, which is included on a separate CD with the Solaris media kit. mysql is also included.

Yogendra (Q): What is Best Hardware To Install Sun Solaris 10 On x86/AMD-based processors?

Smita Thakur (A): We believe Sun's AMD processor based systems are the best. However you may want to check out: <http://www.sun.com/bigadmin/hcl/>

chihung (Q): any examples on implementing provider

Michael Shapiro (A): In general we provide the providers, but if you are interested in how they are implemented you can look at the source code, found at [opensolaris.org](http://opensolaris.org). You can also use the Statically-Defined Application Tracing feature to define your own probes in C and C++ programs.

mahen (Q): as we know Solaris 10 is - Open sourced , do you think it will change Customers mind set for Linux ?

Angel Camacho (A): It is already, from our 1,000,000 registered licenses more than 50% are running on non-sun hardware, that means that we are gaining customers from Linux and Microsoft.

saini (Q): Do sun have plans to improve the OS installation methods ( jumpstat) We are using Opsware for OS provisioning so some enhancements on the same line

Videhi Mallela (A): We are always looking at ways to improve Solaris installation, and we have products coming for this space. Information will be available on [www.sun.com](http://www.sun.com) when available.

jedz (Q): Will there be any issues if i am planning to migrate my applications/data from solaris 8 to solaris 10?

Sam Tan (A): Sun has a Guarantee Program for users that want to migrate from earlier versions of Solaris to the latest versions. [http://www.sun.com/software/solaris/programs/binary\\_guarantee.xml](http://www.sun.com/software/solaris/programs/binary_guarantee.xml)

prabir (Q): can Dtrace be incorporated in Solaris 9?

Adam Leventhal (A): Nope. DTrace is going to be in Solaris 10 and later -- there won't be a back port. But with all the cool stuff in S10 and binary compatibility there are few reasons not to upgrade.

Win (Q): Is there any additional advantages using Solaris 10 compares to Redhat Enterprise 4?

Angel Camacho (A): Other than saving money? Other than Dtrace? Predictive Self healing and Solaris Containers? well there is the stability story and security that Linux can not match to ours....

SreejithSD (Q): Tell me about the new Licensing model of solaris 10

Smita Thakur (A): Solaris 10 is free. You can download Solaris 10 software from: <http://www.sun.com/software/solaris/get.jsp#0> Sun's new subscription-based Solaris Service Plans give you a flexible, cost-efficient choice of Premium, Standard, or Basic levels of support. For details check out: <http://www.sun.com/service/solaris10/index.html>

ashrafkhalid (Q): when can we expect ZFS file system integrated with Solaris 10 Software package?

Michael Shapiro (A): ZFS is in Beta now and will be available during this calendar year.

Geofft (Q): Will we see Solaris 8 and 9 support within a container ?

David Comay (A): Since Solaris 10 is backwards compatible with previous releases, programs generated for Solaris 8 and 9 will in almost all cases run on Solaris 10 unmodified. This is true whether run in the global zone or within a container. Is there some particular Solaris 8 or 9 software product that you're concerned will not run on Solaris 10?

chocoajay (Q): Is solaris 10 support the virtual memory?

Michael Shapiro (A): Yes, the Solaris kernel uses virtual memory to protect process address spaces.

thanksbd (Q): does dtrace can trace which makes the OS to malfunction

Adam Leventhal (A): Yes! We use DTrace very often in Solaris Kernel Development to track down problems both in the kernel and in user-land applications.

sky (Q): How does DTrace work with Relational DB Tuning tools ?

Adam Leventhal (A): DTrace can be a great tool to use to dive further from the output given by those tuning tools.

chocoajay (Q): Is SUN ever release a SDK For Sparc platform so that we can develop the software

Videhi Mallela (A): Information on SDKs can be found here <http://iforce.sun.com>

SreejithSD (Q): what about the new security features of Solaris 10

Michael Shapiro (A): The three major new security features are Process Rights Management, which lets you assign fine-grained privileges to processes, Zones, which lets you create secure isolated virtual OS environments for applications, and the Solaris Encryption Framework, which lets applications transparently take advantage of optimized and/or hardware-accelerated versions of cryptographic functions. You can find more information about all of these in the Solaris 10 documentation.

Patilanil (Q): What is advantage of solaris 10?

Angel Camacho (A): The main advantage is that helps you to save costs, in terms of technology, is that we are years ahead of our competitors.

kukee12 (Q): Are there any built in scripts to troubleshoot common issues in solaris 10??

Adam Leventhal (A): There are all the examples in the answer book which can be found in /usr/demo/dtrace. Also search on google for the many scripts users have created.

jedz (Q): Is dtrace the same as glance in hpux?

Adam Leventhal (A): Glance may have a very very small subset of the functionality of DTrace, but DTrace is really the first and only one of its kind: a systemic analysis tool letting you trace in the kernel and user-land that's safe for use in production environments.

Anil (Q): What is advantage of solaris 10?

Videhi Mallela (A): There are a number of advantages to Solaris 10. Features like DTrace provide a deep level of observability into applications and the OS, Predictive Self-Healing delivers greatly improved availability, Solaris Containers for increased system utilization, and significant security enhancements. You can learn more about these features and others here: [www.sun.com/solaris](http://www.sun.com/solaris)

rsriram (Q): Are there API's to program for DTrace to make all the features of DTrace available through Front End GUI

Michael Shapiro (A): Not at present, but we're working on a Java API to connect to DTrace that we believe will make it very easy to write GUI front-ends for DTrace. Expect to see more information about this later this year.

Win (Q): Need to know more about security features in Solaris 10. Where can I get all these detail information?

Angel Camacho (A): <http://www.sun.com/security> There you can find all the information you need

rsriram (Q): Can we trace the workstations communicating to the Solaris server box and find if they are genuine?

Adam Leventhal (A): You can certainly use DTrace to observe interactions between different machines, but there may be better methods for authentication.

ravindra (Q): Where do I find more information on multilingual support in solaris?

Sam Tan (A): You can get more information from <http://docs.sun.com/app/docs/coll/767.3>

KrishnaKishore (Q): Can I get free solaris OS to install and learn

Smita Thakur (A): Go to the following site to download Solaris 10 software: <http://www.sun.com/software/solaris/get.jsp#0>

kukee12 (Q): Then what about wireless networking?? are there any special JAVA or different apps supporting?? Where can the relevant information be found

Angel Camacho (A): We are working to improve our mobility solutions, as for java, J2ME is the choice for running in cellphones and other highly mobile devices.

itsme (Q): What is the container concept in this new solaris 10

David Comay (A): Solaris Containers (also called Zones) allows one to run applications in a secure, isolated environment where those applications/users cannot affect other applications/users on the system. One example might be running a web server (which might require root privileges) in one container while running the database backend in another. Each container can be "managed" by a different individual or team in the same way different systems are managed today. For lots of details on Solaris Containers/Zones, please see the BigAdmin site <http://www.sun.com/bigadmin/content/zones/>

suntone (Q): Any ideas for GUI for Dtrace

Adam Leventhal (A): Many! We're working on a Java API for DTrace to make this easier. What isn't very interesting is a simple picture on top of the DTrace script and output -- a IDE for example. More interesting would be something that lets you view data in a different way to see patterns or to navigate through many different DTrace experiments quickly.

atxo (Q): How well can we use Dynamic Tracing in order to facilitate better system admin. Upto how much % will it enhance performance

Michael Shapiro (A): DTrace will revolutionize your ability to performance tune and understand your system. We've seen many win where performance has improved over 100% or more. What DTrace gives you is the ability to rapidly get concise answers to questions about the system that you want to ask that you could never answer before. What is the average i/o latency for the five most commonly written files on my system? Anything you can imagine like that becomes easy to ask and answer.

**arya484 (Q):** do we have patches in Solaris like in windows? and where can we get drivers and other installing features of it?  
**Sam Tan (A):** Yes, there are patches for Solaris, you can find them at [sunsolve.sun.com](http://sunsolve.sun.com).

**ravindra (Q):** Multilingual support answer is not understandable can please tell us url...its not printed in any of answers...  
**Sam Tan (A):** Sorry, here is the URL for multilingual support <http://docs.sun.com/app/docs/doc/817-2521>

**Edward (Q):** Solaris supported multi language (indian languages)  
**Sam Tan (A):** yes, you can find more information at <http://docs.sun.com/app/docs/doc/817-2521/6mi67tj4q?a=view>.

**zahid (Q):** Does Solaris 10 take advantage of Intel's HT technology, upto what extent  
**Angel Camacho (A):** is the other way around, the only way that you can get the best performance possible from the Intel HT is using Solaris 10, no other OS has the capabilities that Solaris has in terms of multithreading and use of new technology.

**Geofft (Q):** Do you see Dtrace as a future replacement for other Vendor performance reporting tools, eg UniCentre, Tivoli  
**Adam Leventhal (A):** DTrace may replace them in some ways, but may also complement their features. Those reporting and monitoring tools may start using DTrace as their way of gathering data – as the backend.

**Patilanil (Q):** Solaris Supported multi Indian language means Hindi Gugarati,Tamil like this language?  
**Sam Tan (A):** Yes, we support all of these. You can find the full list at <http://docs.sun.com/app/docs/doc/817-2521/6mi67tj4q?a=view>.

**Ranko (Q):** I know it's not DTrace related, but any of you guys knows what is the status of Sybase ASE availability on Solaris 10? And when is SC going to be available?  
**Videhi Mallela (A):** A list of of third party applications available on Solaris 10 can be found here:  
[www.iforce.sun.com/partners/10moves/solutions.html](http://www.iforce.sun.com/partners/10moves/solutions.html)

**mani (Q):** do you have any pre-written script for dtrace (for beginners)?, or the command line itself is easy to emulate truss or sar ?  
**Michael Shapiro (A):** Yes: there are nearly a hundred examples in `/usr/demo/dtrace` and these are described in the Solaris Dynamic Tracing Guide.

**ptao (Q):** i am researching on whether to have one massive SUN Server with multiple processors versus to use multiple servers with single cpu. If i use zoning on one massive SUN box option. What is the impact to the rest of the system if let say one of the CPU failed? Will this affect other zones? do i have to shutdown the whole box to replace the faulty CPU?  
**David Comay (A):** The answer is actually the same whether zones are being used or not. If a CPU fails, the Predictive Self Healing facility in Solaris will take that particular CPU out of service. If that CPU was "assigned" to a zone through the use of Resource Pools, then it will be taken out of service and the zone will use the remaining CPUs in the pool the zone is bound to. On systems that support Dynamic Reconfiguration (like members of the SunFire family), replacing a CPU can be done without having to shutdown the box or ever reboot it or any of the zones hosted on it. More details on resource pools can be found at <http://docs.sun.com/db/doc/817-1592> More details on Predictive Self Healing can be found at <http://www.sun.com/bigadmin/content/selfheal/>

**Joe (Q):** Is it true that only security updates are available for the free version of Solaris 10?  
**Angel Camacho (A):** not at all, there is no multiple versions of Solaris, all is just one, we changed our licensing model, and now Solaris is free for everybody, with all the features and updates that you need.

**chocoajay (Q):** can DTrace will be used in Grid environment  
**Adam Leventhal (A):** DTrace doesn't yet support any sort of distributed debugging, but it can be used with Solaris Containers (Zones) to examine the behavior of the virtual Solaris instances.

**edwin (Q):** what is the difference between the DTrace in solaris 10 and Solaris 9  
**Smita Thakur (A):** DTrace is a feature of Solaris 10 ONLY. It is not supported in Solaris 9.

**chocoajay (Q):** is there a C API so that DTrace could be incorporated into application for automatic performance monitoring  
**Adam Leventhal (A):** Currently there's no public C API, but we're working on publishing it and we're working on a Java API for DTrace. If you really want to start using the interfaces today (and remember, if they're not public we can change them and break you), you can check out the libdtrace source code on [opensolaris.org](http://opensolaris.org)

**arya484 (Q):** why Solaris is best then other operating systems and what is dynamic tracing?  
**Angel Camacho (A):** Solaris is the Best Unix simply because we never stop investing in R&D, even during troubled times, that allows us to put a very good team of the best engineers, while other companies stopped investing in their future, we didn't. For your other question, look at question #2.

**SreejithSD (Q):** What about Open Solaris  
**Smita Thakur (A):** Please check out the site: [www.opensolaris.org](http://www.opensolaris.org)

**arya484 (Q):** i have mac system at home which gives regular problems why so? like crc error, some time kernel problem , i use Solaris 8 on my sys.

**Sam Tan (A):** Solaris 8 isn't supported on an Apple Mac system. If you are running via an emulator, like Virtual PC, then you should upgrade to the latest version of Virtual PC 5 and use Solaris 9 or 10. Solaris 8 is not stable on Virtual PC prior to 5 because the MMU emulation on Virtual PC is not stable.

**edwin (Q):** will open source solaris be as powerful than Linux and can both operating system run together using multi boot

**Adam Leventhal (A):** OpenSolaris will have almost everything in Solaris (just a few drivers and stuff that we can't open source). Will it be more powerful than Linux? I guess that depends on what you're doing, but I think that features like DTrace, FMA, and Zones make Solaris and OpenSolaris much more powerful in many respects. They will be able to dual boot side by side, yes.

**Mahesh (Q):** Solaris10 supports for latest X86 models?

**Michael Shapiro (A):** Yes. Our hardware compatibility list (HCL) has the complete list. See <http://sun.com/bigadmin/hcl/>.

**arya484 (Q):** solaris10 os is a fast track and a mindbogling os.does there is any hardware difference e which specially supports Solaris?

**Smita Thakur (A):** Solaris 10 runs on multiple platforms such as: - Sun UltraSPARC 64-bit and Fujitsu SPARC64 platforms - Sun and third party x64 platforms (AMD Opteron-based and Intel EM64T-based systems) - Sun and third party 32-bit x86 platforms

**SreejeshVarier (Q):** Does DTrace has a GUI Front end ?

**Videhi Mallela (A):** no, there is no GUI front end available today for DTrace.

**patrick (Q):** Can a novice user use Dtrace facility or it is subjected to experienced professionals only?

**Michael Shapiro (A):** Novices can definitely use DTrace. The Solaris Dynamic Tracing Guide is filled with examples for you, and their source code is found in `/usr/demo/dtrace` so you can get started and look at some real examples. You can also use the new Solaris 10 tools `plockstat(1M)` and `intrstat(1M)`, which use DTrace behind the scenes, but have a pre-built user interface.

**dickdunbar (Q):** Adam: A pointer to those cool scripts? Are they externally available? If internal, can you make them available to business partners (Siebel)? gnuplot is exactly what I was thinking of.

**Adam Leventhal (A):** There's one example in the Solaris Dynamic Tracing Guide that I just found:

<http://docs.sun.com/app/docs/doc/817-6223/6mlkidlla?q=dtrace&a=view> Take a look on Google and on my and Bryan's blog: [blogs.sun.com/{ahl,bmc}](http://blogs.sun.com/{ahl,bmc})

**Rowling (Q):** I once sped up a slow PHP/apache/mysql application using about a few hours of code "eyeballing". Do you think DTrace would have taken less time to isolate the fault, which was due to poor variable usage in the PHP code?

**David Comay (A):** Definitely. DTrace lets you ask questions based on a hypothesis you might have and then provides an answer which can be used to form an updated hypothesis. Using DTrace allows one to drill down to determine not only what program is doing but a set of programs (such as those in a multi-tier application set like PHP/Apache/MySQL). Traditional tools like `truss(1)` worked well with a single process but DTrace can be used across the whole system or a set of (cooperating) processes.

**kukee12 (Q):** Well continuing about certifications I am Solaris 8 certified and want to pursue in security ??? But how to upgrade to Solaris 10???

**Videhi Mallela (A):** Solaris 10 courses are available. More information is available here:

<http://www.sun.com/training/catalog/solaris10.html>

**DongWonGeong (Q):** Does Solaris 10 support serial ata hard drives?

**Angel Camacho (A):** yes, you can check the compatibility list at <http://www.bigadmin.com/>

**edwin (Q):** how long does it takes one person to complete mastering solaris ?

**Michael Shapiro (A):** Solaris: a minute to learn, a lifetime to master.

**dickdunbar (Q):** Quick explanation of how tracing instructions works? I saw several intriguing references, but haven't found out how that works. Example D script pointer?

**Adam Leventhal (A):** You might want to take a look at this blog post:

[http://blogs.sun.com/roller/page/ahl/20050301#pid\\_provider\\_exposed](http://blogs.sun.com/roller/page/ahl/20050301#pid_provider_exposed)

**Win (Q):** In JVM, there is utility to create dump file when application is abnormal and can find out the cause of application hang after analyzing the dump file. Can Dtrace have this type of utilization, too?

**Michael Shapiro (A):** DTrace provides the `stop()` and `raise()` actions that can be used to stop a user process as if by `pstop(1)` or send it a signal. So if you can write a D script that triggers on the specified condition, you can raise a SIGABRT and force the application to dump a core file. Or you can use `stop()` and then attach a standard debugger such as `gdb` or `dbx` to inspect the process as well.

**atxo (Q):** Will Solaris 10 have any problems in coexisting with Red Hat Enterprise release 4 launched recently

**Angel Camacho (A):** Nope, I have both Operating Systems running in my lab, and in one system with dual boot!

ravindra (Q): does GCC support is present in SUN Solaris 10, which all compilers does it support?? can gcc be easily ported on to ss 10 platform?

Videhi Mallela (A): gcc is available in Solaris 10.

ptao (Q): do you have a list of probes that one should monitor on a daily basis ? Also ,when the server is restarted, does it reset all the values of these probes ?

Adam Leventhal (A): These probes really aren't intended to be monitored per se, but you can certainly construct your own custom monitoring tools based on DTrace. When you restart the machine, your DTrace invocation will be gone, but there are ways of tracing during boot; take a look at the Solaris Dynamic Tracing Guide <http://www.sun.com/bigadmin/content/dtrace/>

Joe (Q): I recently downloaded Solaris 10 3/05. Solaris was released in beginning of February. Is 3/05 a newer version than the one available in February?

Smita Thakur (A): It is exactly the same.

daemon (Q): are there some place where can I see self Healing working in live, or can I cause a problem for analyze self healing in a health machine? (sorry my english)

Michael Shapiro (A): There are screenshots of an example in the whitepaper you can download from [sun.com/msg/](http://sun.com/msg/). We don't yet have a demo kit you can run yet, but if you come to the Enterprise Briefing Center in Menlo Park we'll be happy to demo it for you. We are working on a demo kit you can run yourself and hope to have it available later this year.

dickdunbar (Q): Follow on to the "report" question ... does the D language have the capability to call other applications? Generate PNG or Chart or JPG? Pointer to a D script that does that would be valuable.

Adam Leventhal (A): Sure! You can use the system() DTrace action to invoke another program to do whatever crazy PNG generation you like. In fact, we have some cool scripts that output information for gnuplot and graphviz.

Joe (Q): How well does Solaris work with Athlon 64 compared to Opteron?

Angel Camacho (A): Great, no problem so far!

kukee12 (Q): Why has Solaris 10 certifications not yet in the market??When will they be??

Videhi Mallela (A): Are there any specific certifications you are interested in? Some certifications such as security certifications can take up to a year or more.

arya484 (Q): can normal person use the solaris10 for entertainment and homely desktop ? or it has any different version to support?

Michael Shapiro (A): Solaris 10 is entertaining and fun for use at home. Or at least it is at my house. Solaris 10 includes the new Java Desktop Environment (based upon Gnome) so it makes an excellent laptop or home desktop.

Erik (Q): Is Sun Solaris 10 compatible with Fedora core 4 regarding to network filesystem (NFS)?

Sam Tan (A): Yes, Solaris supports both NFS v3 and v4, Fedora core uses NFS v3, so you can share files. However, Solaris supports ACLs for UFS, which may or may not be available for Fedora depending on what file system you installed the Fedora core with.

mjd (Q): Dtrace sounds like a great tool for the application developer as well as the sysadmin. Are there any special features for application developers included.

Adam Leventhal (A): There are some features which are especially well suited for developers. In particular, some of the destructive actions are great for developers but not be well suited for use by sysadmins in production. Check out the Solaris Dynamic Tracing Guide (<http://www.sun.com/bigadmin/content/dtrace/>)

Sundar (Q): I can able to log the tracing like profiling?

Angel Camacho (A): yes, you can redirect the output and log it for future references.

lawrence (Q): How do we know what are the options available for dtrace script syntax and how to use them effectively for debugging?

Michael Shapiro (A): Everything related to DTrace is documented in the Dynamic Tracing Guide, which is a book you can access on-line at [docs.sun.com](http://docs.sun.com) under Solaris 10 Software Developer Documentation.

chocoajay (Q): can we have a multiboot pc with Solaris 9 and 10

Sam Tan (A): yes you can have two partitions, one with Solaris 9 and one with Solaris 10.

jarel (Q): I read about an API Java implementation for work with D TRACE. Is that possible? what kind of interaction will exist between DTRACE and Java?

Adam Leventhal (A): First, we're working a Java API for DTrace and that should be available in an early Solaris 10 update. In terms of tracing Java, there have been some recent exciting advances. At the simplest you have the jstack() action which lets you see where you are in a Java program at any given probe point. For more interesting information, check out my recent blog post: [http://blogs.sun.com/roller/page/ahl/20050418#dtracing\\_java](http://blogs.sun.com/roller/page/ahl/20050418#dtracing_java)

suntone (Q): How can I learn Dtrace programing

Angel Camacho (A): You only need some previous experience with a language like C, or a scripting language like awk or perl, then just learn the dtrace language from <http://docs.sun.com/> and you are set!

**gigi (Q):** can Solaris 10 Intel version be installed together with windows os system on different partitions?

**Sam Tan (A):** yes solaris 10 and windows and Linux can all co-exist on the same machine, subject to you having enough disk space.

**dickdunbar (Q):** Can you describe how I would introduce dtrace probe points into my application?

**Michael Shapiro (A):** If you want to instrument behavior such as function calls and system calls, no modifications are required: these instrumentation capabilities are built into DTrace. If you want to add application-specific semantic probe points, we have a documented facility for doing so in C and C++ applications. Go to docs.sun.com and view the Dynamic Tracing Guide and read the chapter entitled Statically Defined Tracing for User Applications, which will show you how to modify your source code and Makefiles to add your own customized probe locations.

**BSG (Q):** is upgrading to solaris easy and any advise? Any hiccups?

**Sam Tan (A):** Yes upgrading to Solaris is very easy, just boot from the Solaris 10 media and follow the on-screen easy-to-follow instructions. If you have non-Sun software or applications, you will need to refer to that software documentation for instructions for how to migrate to Solaris 10, if necessary.

**Win (Q):** Can DTrace pin point which application utilize the most CPU or Mem utilization?

**Angel Camacho (A):** you bet!

**BSG (Q):** Is Solaris 11 coming soon and what new feature it got for a better administration?

**Angel Camacho (A):** you can take a peek at <http://www.sun.com/softwareexpress> and download the latest engineering build, there is plenty of information in that site.

**edwin (Q):** how to get started moving onto the Solaris 10 OS platform today

**Smita Thakur (A):** Go to the following site to download Solaris 10 software: <http://www.sun.com/software/solaris/get.jsp#0>

**dickdunbar (Q):** I saw the blog entry describing how DTrace was used to diagnose startup problems, but no detail on how that was done. Whitepaper on that technique coming?

**Adam Leventhal (A):** I suggest you get in touch with the author of the blog and ask for more details. There probably isn't going to be a whitepaper specifically on that subject, but take a look at the Solaris Dynamic Tracing Guide for how to invoke DTrace during boot (<http://www.sun.com/bigadmin/content/dtrace/>).

**pohyg (Q):** Do Solaris have multi OS booting tools like lilo or grub?

**Videhi Mallela (A):** grub will be available in an update release of Solaris 10.

**mdhar (Q):** Will dtrace help me fine tune my real time applications better? How does it help if I want my realtime application to fire accurately without jitters.

**Michael Shapiro (A):** One major use of DTrace for real-time is to debug latency bubbles and actually measure what your jitter is. For example, you can construct a D program that watches for a latency that exceeds your expectations or requirements by capturing a timestamp or virtual timestamp at the start of some activity or function, and another at the end. You could then trace data needed to debug only if the measured latency exceeds your requirements. So this allows you to ask very precise questions about your application and get a very concise answer.

**Solaris10 (Q):** Though the Solaris 10 is now open source but still we did not get a lot of drivers for x86 platform. How we can get it?

**Sam Tan (A):** There are many more drivers available in Solaris 10 for x86 platforms. If you are encountering problems running Solaris 10 x86 on your machine, you can refer to <http://www.sun.com/bigadmin/hcl/> to get more information.

**klc (Q):** Can DTRACE do performance reporting? Any recommended tools to use?

**David Comay (A):** It definitely can. DTrace can generate reports of all sorts of system activity, from the kernel to specific programs (including those written in Java). DTrace has a number of reporting facilities built in it (for example, histograms) but its output can also be imported into other tools as well (pick your favorite open-source graphing tool here) DTrace itself is used by a number of tools to generate their reports including lockstat(1M) and (new to Solaris 10) plockstat(1M).

**incsun (Q):** How reliable is the data from Dtrace ? How does it work ?

**Adam Leventhal (A):** Great question. With a framework that allows for arbitrary context tracing, there's always the possibility of dropping data, but whenever that happens DTrace tells you that. When data drops occur, they can render your data invalid, by they're rare, can be avoided and will never happen silently – you always know when your experiment may have dropped data. The way it works is quite a bit more involved. You can take a look at the code on [opensolaris.org](http://opensolaris.org) and you might want to read our USENIX paper and the blogs from team DTrace (<http://blogs.sun.com/{ahl,bmc,mws}>).

**ptao (Q):** If i run Oracle , what's the benefits of using DTrace to monitor Oracle performance ?

**Angel Camacho (A):** That Dtrace is a superior technology to monitor processes related to any application inside your system, the benefits will not come only to Oracle, but to all the processes running against the database manager.

**Tim (Q):** Can you start DTrace on a running application or does the app have to be re-started to enable tracing?

**Smita Thakur (A):** You can use DTrace on a running application. The app does not need to be re-started.

**Loriegerl (Q):** What is the difference between DTrace and SRS Connect?

**Sam Tan (A):** DTrace is a tool and technology that is part of Solaris 10. SRS Net.Connect is a service that is offered by Sun that enables remote monitoring of Sun systems including hardware, storage and software.

**dickdunbar (Q):** Dtrace was the first open solaris component. It's not clear to me that it would be useful without the rest of Solaris. Was anyone able to build ... or do something useful with that source?

**Michael Shapiro (A):** We have Beta customers who have been testing the full build of OpenSolaris. The full source code will be available Q2 this year: watch opensolaris.org for more information, and soon you'll be able to download and build the whole thing.

**BSG (Q):** Is dtrace resource intensive?

**Angel Camacho (A):** Dtrace is based on the observability of about 30,000 probe points, when dtrace is not running, there is no performance issues, as for how much performance you loose while using Solaris 10, depends on how many probe points you use. Look at the documentation inside <http://docs.sun.com/>

**raz (Q):** Is the dtrace component liable to be released as OSS under Sun's recent announcement of releasing elements of Solaris as open source?

**Smita Thakur (A):** Yes it is already released. Go to opensolaris.org

**Loriegerl (Q):** Does DTrace have capability of generating report?

**Adam Leventhal (A):** DTrace can output whatever data you want from whatever probes you care to enable.

**Win (Q):** How well Dtrace can be used in the Solaris with Oracle database installed?

**Sam Tan (A):** dtrace will operate will all applications, be it oracle or sap or peoplesoft. the question of "how well" it can be used depends on how skilled you are in your understanding of how oracle works. dtrace can give you an in-depth view of oracle internals, but you need to know how to interpret the results.

**tancc (Q):** Can Dtrace automatically points out bottleneck areas?

**Videhi Mallela (A):** no, DTrace does not work automatically. You have to enable it, and you have run your queries. DTrace will answer your arbitrary questions so you are not limited to what you can query.

**ninja128 (Q):** Does the users other than the root have the information available similar to the root when using Dtrace?

**Adam Leventhal (A):** The system administrator can give DTrace privileges to any user or set of users, but by default only the root user can use DTrace.

**Anil (Q):** What is different between solaris 9 and solaris 10

**Angel Camacho (A):** There are only like 600 new features in Solaris 10 that were not available in Solaris 9, just to start dtrace, Predictive Self Healing, Solaris Containers, a long list of etceteras.

**Win (Q):** Does Dtrace utility detect hardware failure, too?

**Michael Shapiro (A):** DTrace doesn't detect hardware failures, but we do have new Predictive Self-Healing features in Solaris 10 that do. See <http://sun.com/msg/> for more information. But you can use DTrace to watch the predictive self-healing software respond to hardware failures :)

**chocoajay (Q):** how much cpu or memory,dtrace required while debugging kernel or system calls

**Adam Leventhal (A):** The resources consumed by DTrace can vary depending on exactly what you're asking, what probes you have enabled and what you have them doing. Enabling a few, rarely called probes will induce relatively little impact to the system. Enabling a ton of probes or some super-hot probes can impact the system more considerably, but the key point is that when you're not using DTrace there is ZERO impact to the system.

**freesomuch (Q):** where can i get Solaris 10 as a student?

**Smita Thakur (A):** Go to the following site to download Solaris 10 software: <http://www.sun.com/software/solaris/get.jsp#0>

**pohyg (Q):** is there are dtrace how to?

**Angel Camacho (A):** go to <http://docs.sun.com/> and look for the Solaris 10 documentation or search by dtrace, you'll find the full manual, with examples.

**Daniel (Q):** Can you run Dtrace on a program within a Solaris 10 zone or only from the global zone ?

**Michael Shapiro (A):** At present, you can only run DTrace from the global zone, but you can apply it to processes running in any of the local zones. DTrace makes available the 'zonename' variable, so you can add /zonename == "my-zone-name"/ to any clause and use that as a predicate to observe only activity in that particular zone.

**Anil (Q):** What is advantage of solaris 10?

**Videhi Mallela (A):** Solaris 10 has a number of new features which are advantageous for customers. Features like DTrace, which provides a deep level of observability, Predictive Self Healing which delivers improved availability and makes the life of a system

administrator easier, Solaris Containers for increased system utilization, and greatly enhanced security. These are just some of the innovative new features in Solaris 10. please look at [www.sun.com/solaris](http://www.sun.com/solaris) for more information.

**Sundar (Q):** Which kind of feature provided by DTrace for web developers?

**David Comay (A):** DTrace can be used by web developers in a number of ways. For one, the network traffic being sent or received can be characterized using the tool. In addition, the web server itself can be dynamically traced (for example, characterize the time spent by the web server in `listen(3SOCKET)` by peer). And any web services can also be dynamically traced including those written in languages like C but also Java.

**James (Q):** just as truss would print system call arguments, does dtrace allow me to print out function call arguments ?

**Sam Tan (A):** yes dtrace will print out system call arguments, and it will do it with much lesser impact than truss since you can be specific about the exact function and situation in which you want to print these arguments. truss will print everything out and you have to 'grep' for what you want, which is a bit more of a brute force approach.

**mhkneo (Q):** What are differences between using DTrace and other traditional monitoring and probing tools like truss and prstat etc?

**Adam Leventhal (A):** While DTrace can act as a superset of the functionality provided by the tools you mentioned, it also lets you go much deeper. One of the best places to start playing around with DTrace is to apply those tools you're used to – like `truss(1)` or `prstat(1)` – and then take advantage of DTrace to ask the next question that occurs to you. But in terms of differences, those tools provide a `_static_` view of the data they gather. DTrace lets you customize what you trace and create whatever output you want with whatever data you can gather.

**Lawrence (Q):** Does dtrace works on Solaris x86 platform

**Smita Thakur (A):** Yes. DTrace works in the same manner on both SPARC and x86 platforms.

**SymonAked (Q):** Will Sun Professional services be able to help utilize dtrace to analyze application performance?

**Sam Tan (A):** Yes, Sun PS, and anyone that knows dtrace, can use it to do analysis of system performance. dtrace is easy enough that most people can pick up what they need fairly quickly. The amount of performance increase will depend also on how well the application was written and how much it can scale.

**sentosa (Q):** Can Dtrace be ported to other operating systems?

**Michael Shapiro (A):** DTrace is part of OpenSolaris, so its source code can be used in any way that is compatible with the CDDL, Sun's open license. See <http://opensolaris.org> for more information.

**Ranko (Q):** Are there any plans of backporting DTrace to Solaris 9?

**Smita Thakur (A):** DTrace will not be backported to Solaris 9.

**yup (Q):** the url <http://sun.com/bigadmin/selfheal/> for self heal does not contains anything !!

**Michael Shapiro (A):** My mistake: [sun.com/bigadmin/content/selfheal/](http://sun.com/bigadmin/content/selfheal/). And also download the whitepaper at [sun.com/msg/](http://sun.com/msg/)

**dickdunbar (Q):** Who won the dtrace contest? I never saw the results.

**Smita Thakur (A):** Stay tuned...we will have the results on our website in a few days.

**GeoffHargreaves (Q):** Is it possible for dtrace to adversely effect a system or app or is it a purely read-only style tool ?

**David Comay (A):** DTrace can be used to activate a large number of probes on the system (for example, my desktop has ~35000 probes available). If a great many probes are active, then system performance might be impacted but it's purely a function of the number of probes activated and how often they fire. There are some destructive actions (for example, cause a crash dump to be taken) but they require explicit action on the part of the administrator. And remember, using DTrace requires a number of privileges that a typical user does not have so using it requires one to `su(1M)` or use RBAC.

**pohyg (Q):** Is there are DTRACE How to?

**Adam Leventhal (A):** There's the DTrace answer book, the Solaris Dynamic Tracing Guide available here <http://www.sun.com/bigadmin/content/dtrace/>.

**Solaris10 (Q):** I could not attend last two session due to my internet service problem. How I can get those question and answer as text or pdf?

**Holly Sharp (A):** You will receive follow-up email communications that will give you access to the transcripts. You can also access archived information on <https://www.sun.com/expertexchange>. When you get to that site, click on the Archive tab and there will be the different past events. Thanks for asking.

**mjd (Q):** if i have a problem with an application that is consuming large cpu researching how can dtrace give me real time feedback

**Michael Shapiro (A):** If you've already identified the application in question and you know that the problem is that it's consuming too much CPU, the next question is probably why (or at least where is it spending its time). You can use the DTrace profile provider to do this. To perform dynamic profiling, enable a profile probe at an appropriate sampling rate (use `dtrace -l -P profile` to list them), and use a predicate for the specified PID or application name. You can then use an action such as `@[ustack()] = count()`, which would aggregate by unique user stack trace and count the common stack traces, and start to get a clearer idea of where

the application is spending its time. This will then lead to more questions about the application, and you can use other providers like pid and syscall to hone in on the application's behavior.

**dickdunbar (Q):** Is there a single script that will characterize a running system, and suggest areas to probe further?

**Adam Leventhal (A):** There isn't a `_single_` script that will vector you off to the right place to continue your investigation, but there are many places to start from. Some of the traditional observability tools are great places to start. For example, start with `mpstat(1)` or `iostat(1)` – each column has a corresponding DTrace probe – and dive deeper: what application is causing the I/O or where am I when I incur all these cross-calls? Searching on the web for DTrace scripts is another good place to start.

**yup (Q):** How can I get solaris 10 on CD/DVD

**Smita Thakur (A):** Check out: <http://www.sun.com/software/solaris/get.jsp#0>

**jasmine (Q):** Is Dtrace CPU or Memory hungry? Is there any performance issue as the number of probe point increases?

**Videhi Mallela (A):** DTrace is off by default, and there is no performance impact while it is off. As the number of probe points increases there will be an impact on performance. However, DTrace sessions typically last for a short time, on the order of minutes or a few hours.

**rsriram (Q):** Is there a remote debugger available for tracing?

**Adam Leventhal (A):** Nope. At present you actually need to be on the box to use DTrace. That said, we're working on various APIs that will allow for 3rd party interfaces which will provide remote use of DTrace. Is there something in particular you want to do remotely?

**mattk (Q):** can DTrace be run by anyone or just root? Are there any security implications if it can be run by anyone?

**Adam Leventhal (A):** By default only root can run it, but you can configure your system so that other users or all users can use parts of DTrace or the whole shebang. Solaris 10 introduced something called Process Rights Management which breaks up that binary notion of root so you can give out privileges to users or sets of users. DTrace has a couple of privileges associated with it – check out the Solaris Dynamic Tracing Guide for the details (<http://www.sun.com/bigadmin/content/dtrace/>).

**klc (Q):** What is so good about DTRACE?

**Smita Thakur (A):** DTrace is a comprehensive dynamic tracing framework for troubleshooting systemic problems in real time. With DTrace, administrators, integrators, and developers can tune applications for performance and troubleshoot production systems—all with little or no performance impact. DTrace is the ideal tool for gaining visibility into kernel and application activity, giving you operational insights and performance gains you can't achieve with any other operating system. DTrace will quickly become a strategic tool in your quest to develop better performing, higher-quality applications, as well as saving significant time and money when debugging complex problems. For more information check out: <http://www.sun.com/2004-0518/feature/index.html>

**chocoajay (Q):** If one person try to delete something then is Dtrace will overcome this type of problems or not?

**Angel Camacho (A):** Dtrace is an observability tool, there is no risk that you may delete something using Dtrace, you can only observe what happens inside your system.

**yup (Q):** can some one explain how self healing works

**Michael Shapiro (A):** The Predictive Self-Healing features in Solaris provide automated diagnosis, recovery, fault isolation, and messaging for software and hardware failures. A technical whitepaper can be found at <http://sun.com/msg/> to give you an overview, and you can learn more at <http://sun.com/bigadmin/selfheal/>

**Robert H (Q):** Is there a collection of example DTrace scripts available for common tasks to help people learn to use DTrace as part of their day to day work?

**Videhi Mallela (A):** certainly there is. please look at the dtrace section of the bigadmin web site: [www.sun.com/bigadmin/content/dtrace/](http://www.sun.com/bigadmin/content/dtrace/). you can find scripts there.

**jarel (Q):** How can i use DTRACE?

**Adam Leventhal (A):** The best way to start with DTrace is to take a look at the Solaris Dynamic Tracing Guide (available here <http://www.sun.com/bigadmin/content/dtrace/>) and to look around through various blog posts. More specifically, you use DTrace by running the `/usr/sbin/dtrace` command or one of the other DTrace-related commands (e.g. `lockstat(1M)`, `plckstat(1M)`, `intrstat(1M)`).

**sentosa (Q):** Does Dtrace require any programming knowledge?

**Michael Shapiro (A):** You ask questions of DTrace by writing simple scripts, so in that sense a small amount of programming knowledge is required. But if you can write a 5-line awk, Perl, shell, or Python script or you can write 5 lines of C or Java, you can learn to use DTrace in a very small amount of time. The Dynamic Tracing Guide is filled with examples, and more than 50 usable examples are found in `/usr/demo/dtrace/` on your Solaris 10 system. So you can use many of these right away without having to do any programming yourself.

**DongWonGeong (Q):** What is d trace in brief?

**David Comay (A):** DTrace is a dynamic tracing facility introduced into Solaris 10. It provides a comprehensive way for programmers, sysadmins or service folks to ask arbitrary questions about the system behavior and get answers to help them track

down issues concerning performance, program (mis)behavior and lets them get the most out of their systems. More details can be found at the BigAdmin site <http://www.sun.com/bigadmin/content/dtrace/>

**jarel (Q):** how can i use dtrace to monitor the performance on of my application?

**Videhi Mallela (A):** with dtrace you can see where your application is spending time during execution. this information will help you to determine if the time is more or less than expected and you can then make adjustments.

**freesomuch (Q):** where can i get Solaris 10 as a student?

**Smita Thakur (A):** Go to the following site to download Solaris 10 software: <http://www.sun.com/software/solaris/get.jsp#0>

**matts (Q):** We are looking to port an Informix-based application from Solaris 8 to Solaris 10. Can you advise how DTRACE could be used to help workout performance issues?

**Adam Leventhal (A):** DTrace gives you unprecedented observability into your application's behavior. Working with customers and with our own code at Sun, we've found that just being able to look at applications through the DTrace lens has let us find problems that we never would have found with other tools. If you're trying to figure out where to begin, start with your usual observability tools – truss, iostat, mpstat, prstat – and now use DTrace to dive deeper: `_why_` are we getting those system calls, `_what_` is inducing that I/O activity, etc.

**Solaris10 (Q):** What is dtrace ? Tell us the best description.

**Angel Camacho (A):** Allow me to use an analogy, Dtrace is to Software as the Microscope is to Biology.... now said that it is one of the technologies built into Solaris 10, that allows you to observe inside of your system looking for possible bottle necks and fixes for your code/fine tuning.

**FerdieA (Q):** What sort of impact on the system will DTRACE have, if I'm trying to debug a long-running session/script in production?

**Michael Shapiro (A):** DTrace is controlled by writing programs in our control language, D. So you can ask any question you like, and the performance impact of DTrace is proportional to the type of question that you ask. From a practical perspective, this means that if you enable every probe in the system, you can have a large performance impact, and if you ask a precise question you can have no noticeable impact at all. The Dynamic Tracing Guide has a chapter on optimizing your DTrace queries, but the best guide is simply to test out your script, observe the impact, and then utilize those queries in production that you feel are appropriate. Remember that once you stop using DTrace, all of the instrumentation is dynamically disabled and your system goes back to having no performance overhead at all as soon as your experiment ends.