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## Managed Services

**How to make it work for your company p.3**

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# Managed Services

## How to make it work for your company

A managed service provider (MSP) provides delivery and management of network-based services, applications, and equipment to enterprises or other service providers. MSPs can be hosting companies or access providers that offer services that can include fully outsourced network management arrangements, including advanced features like IP telephony, messaging and call center, virtual private networks (VPNs), managed firewalls, and monitoring/reporting of network servers. Most of these services can be performed from outside a company's internal network with a special emphasis placed on integration and certification of Internet security for applications and content. MSPs serve as outsourcing agents for companies, especially other service providers like ISPs, that don't have the resources to constantly upgrade or maintain faster and faster computer networks.

In addition to such basic communication services like leased line wide area network (WAN) and frame relay service, an MSP can manage and integrate a range of activities associated with enterprise networks. The

range of outsourcing services includes basic transport and access, managed premises, web hosting, VPN, unified messaging, video networking, or other more sophisticated services. The market for managed services is forecasted to grow about 20 percent annually, according to The Yankee Group, due largely to the need for enterprises to be more flexible and timely in getting to market and communicating with customers.

### Why outsourcing makes sense

#### Predictable costs

A major concern of IT directors and managers is to budget accurately and to manage resources within their budgets. Changing user needs, and the central role played by IT in the functioning of the organization often mean significant unplanned demands are made on IT time and resources. By outsourcing parts of their function makes coping with these demands easier.

#### Business Failure Protection

Technical infrastructure is coming under increasing scrutiny as companies move towards a 24x7 service. The transformation

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has dramatically increased the importance of systems availability. Any downtime can seriously cripple business operations and increase costs enormously. Lack of systems availability can also mean significant lost revenues and even a weakened market position. MSPs can provide services to ensure high system availability and enhanced recovery solutions for their clients to meet these challenging needs.

### The Managed Service Model

The Managed Service model is one of selective outsourcing, where a preferred partner manages certain applications and services driven by the customer's desire to mitigate risk and realize increased reward. This approach has enjoyed something of a renaissance recently, and is being increasingly viewed as a rather sound, pro-active method of fulfilling enterprise requirements, often within

demanding timelines.

A Managed Service model provides a noninvasive approach to outsourcing, providing skills and competencies, with support tailored to client's requirements and the flexibility to implement and manage key projects without the disadvantages of full blown outsourced contracts. When this is distilled further to specialist managed application solutions providers, this affords the best of both worlds - control and

flexibility of your information systems without either the pain or cost of running them yourself or the traditional constraints of outsourcing. There is an emerging trend to offer a cost-effective service with access to specialist software and support without the commitment to running it in-house, but retaining control and flexibility. This is the classic economies of scale model that offers 'more for less'.

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## Evaluating Managed Network Providers

Implemented correctly, managed services can mean the simplicity of having one provider, one network, one point of contact and one level of expected quality. The enterprise must have confidence in the managed service provider it chooses to design, deploy and/or manage its networks.

There are a number of key components to consider when evaluating managed service providers:

- Be assured that the provider has the ability to combine state-of-the-art technical expertise with national and global reach. Joining forces with a provider with a single

network infrastructure for local-to-global-to-local connectivity in many locations worldwide means critical traffic only has to travel one network to its final destination. It also means there is only one party accountable for end-to-end throughput and one dedicated account team. National and global reach also means that a service provider can help the enterprise grow technologically and physically. Today, a company that starts around the corner can end up conducting business around the world.

- Choose a service provider that is constantly upgrading its network technologies and continually training its engineers and sales force. These factors

lead to a higher return on investment.

- The service provider should be able to provide a dedicated project team that is constantly considering the enterprise's future, both from a technical and business development standpoint.
- The service provider should be flexible and leverage its past experience to deliver a best-of-breed solution for a secure and reliable shared or private managed network. A flexible provider will be able to address all networking requirements.

### Specialist Support and Skills

Due to staff attrition and market conditions, maintaining an up-to-date, optimum team of skilled professionals is becoming an expensive task. MSPs constantly add to their experience and expertise by working with many clients facing similar challenges. MSPs can represent the most efficient source of obtaining immediate access to comprehensive technical expertise covering all platforms and operating environments. By relying on MSPs' pool of expertise, clients can avoid the significant costs associated with chasing technology and bridging internal skills shortages.

### Allowing focus on new systems development

The load imposed on the IT department in operational activities looking after existing systems means that there is little time and resource to develop new systems required to support the business. By having daily operational functions run the MSP clients can focus on their own core operation; freeing crucial resources to concentrate on areas of IT that add strategic value to their business such as process automation, CRM systems, supplier integration or client interface development. With internal IT resources re-

focused in this way, clients are better able to fulfill the needs of their own customers – delivering improved, market oriented products and services and responding more rapidly to changing market demands.

### Working with your MSP

Qualified service delivery, measurable benefits and a 'can do' approach are essential ingredients in your vendor evaluation process. Such partners will fully understand your current position and will help you realize your vision by becoming a credible team to effect change. One contract or SLA does not fit all, so a flexible partner that focuses on a client-led, rather than technology-led, approach, will help you realize your goals.

Adopting a Managed Service partner isn't, however, the answer to all your prayers. As a highly effective extension to your own organization, your partner will require senior management buy-in and commitment to ensure both organizations are aligned and expectations matched. If there is a cultural mismatch, then the union is doomed from the outset. It is essential that you have decided how tactical or strategic such outsourcing projects are, and that the teams are fully conversant and on-message for the duration from implementation through the

full lifecycle of project delivery.

If you are to consider the undoubted benefits a Managed Service can deliver, then you must appreciate and understand the term 'partnership'. You will be planning on working with your partner for quite some time - as a minimum, at least three years, but more typically five years or more - and this is often after a six- to 12-month implementation phase.

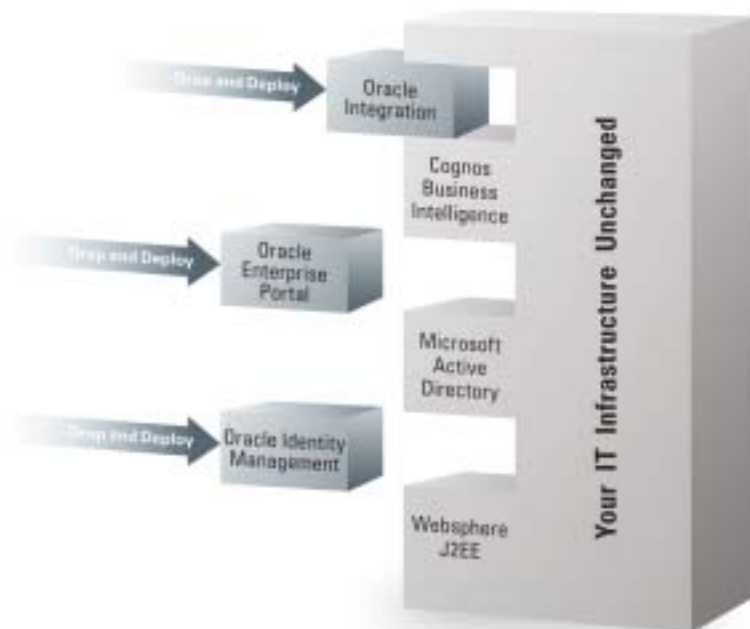
### Flexibility and Change

No business stands still. Both business requirements and available technical solutions can change remarkably over just a few years. Therefore, companies need the flexibility to make changes or develop their systems as these factors change. Flexibility, scalability and ongoing enhancements in service delivery are therefore critical factors in selecting an outsourcing partner. The MSP should be able to remain synchronized with their client's business aims. Throughout the course of a contract, both the MSP and the client should be able to identify incremental enhancements as part of their general management processes. By embracing change and, moreover, by adopting it as a standard operating procedure, MSPs and their clients can form long term partnerships.

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# Oracle and Network Appliance

## Why it makes sense for your company



Oracle and Network Appliance enable you to consolidate data and storage from hundreds or thousands of servers using simple but powerful tools that help you manage storage efficiently in a mixed networking environment. NetApp and Oracle share a common vision of reducing complexity to provide a better return on investment (ROI) and a lower total cost of ownership (TCO). Joint testing, integration, and validation enable full interoperability to ensure complete, easily managed IT solutions. World-class service and support organizations work together to ensure accurate needs assessment and fast and easy deployment.

Oracle enables the grid with Oracle Database 10g, and NetApp with its flexible storage architecture. You can add storage incrementally, when you need it, with zero

database or business application downtime, making NetApp storage ideally suited to Oracle Databases deployed in enterprise grid environments.

Protocol-agnostic NetApp storage makes it easy to consolidate databases. NetApp is the only company to offer a truly unified storage infrastructure that allows you to connect to a database server using NFS mounts, leverage existing IP infrastructure through iSCSI, or utilize Fibre Channel connectivity through an existing SAN.

Oracle information stored on NetApp can be quickly replicated to one or many locations using SnapMirror®. You can implement disaster recovery plans quickly and effectively without added administration costs.

Oracle and Network Appliance are also mutual customers. Through knowledge

gained from the mutual customer relationship, NetApp storage solutions deliver the performance, flexibility, scalability, and manageability that Oracle applications and databases need to operate at maximum efficiency.

### Lower TCO of NetApp solutions

A March 2006 study of enterprise database storage environments by the global strategy consultancy Mercer Management Consulting revealed that NetApp solutions yielded significant cost savings in database environments compared to EMC CLARiiON™ and Symmetrix™ and HP EVA™. Here are a few key findings from the study:

- **The total cost of a NetApp Fibre Channel SAN solution is 36%-42% lower than EMC CLARiiON and HP EVA** than a comparable solution for the same size database. The savings are even higher when compared to an EMC Symmetrix™. This comparison is based on typical storage configurations and storage management policies.
- **Software functionality is the key driver of the NetApp total cost advantage.** IT decision makers suggest that features in the latest NetApp operating system, Data ONTAP® 7G, have further increased the NetApp total cost advantage.
- **NetApp allows for more efficient disk utilization.** Based on the study data, typical NetApp environments require 52% less primary disk capacity than typical EMC or HP environments and 20% less data protection disk capacity for the same sized database.
- **NetApp environments experience lower management costs.** Study participants suggested that NetApp environments were easier and less time consuming to manage than HP or EMC.

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"We've got literally thousands of servers and hundreds of terabytes of NetApp storage. The Austin Data Center is the single largest NetApp installation on the planet."

**Mitchell MCGovern**

Vice President, Global Data Center Operations, Oracle

"Experts from the Oracle-NetApp Center of Excellence worked together to help us deliver the highest levels of customer service, while the combination of NetApp unified storage with Oracle® Databases and applications satisfied our primary needs concerning rapid deployment and performance."

**Khaled Imbaby**

Data Center Manager, Xceed

**NetApp software allows for faster recovery in the event of application errors.** NetApp environments reported a 2x or greater speed to restore compared to EMC or HP environments.

**10 Reasons to Adopt NetApp for Oracle database**

Oracle on NetApp is a proven solution. Thousands of Oracle users have migrated their legacy storage systems to NetApp storage. Here are ten reasons why it makes sense to adopt NetApp solutions for Oracle database -

**Seamless Integration**

**1) Seamlessly support your entire Oracle installation with a single integrated storage platform.**

The joint testing, integration, and validation that Oracle and NetApp undertake ensure full interoperability of Oracle on NetApp deployments.

**2) Consolidate multiple Oracle Database instances.**

NetApp storage works with Oracle running on all UNIX®, Windows®, and Linux® servers; supports Fibre Channel, iSCSI, and NFS attachment methods; and works with all versions of Oracle, making it easy to consolidate all your database instances.

**Performance and Reliability**

**3) Achieve mission-critical performance at a competitive cost without sacrificing**

**availability or reliability.**

An independent research study has shown that NetApp offers a 70% lower total cost of ownership than competitive storage solutions in database environments.

**4) Streamline your backup and recovery of mission-critical data.**

Snapshot™ technology enables the backup of an entire Oracle Database quickly, efficiently, and with no service disruptions. You can easily restore even large Oracle Databases within minutes rather than hours.

**5) Experience exceptional availability of your Oracle Applications with NetApp storage.**

This is the result of the inherent reliability of NetApp storage platforms with integrated RAID-DP™ technology combined with NetApp market-leading Snapshot technology, which ensures fast, reliable backups and restores, and SnapMirror® technology for simple, cost-effective disaster recovery.

**Flexibility**

**6) Easily meet your changing business needs.**

The NetApp family of primary and secondary storage systems, NetCache® appliances, Data ONTAP™ and SnapSuite™ data management products, tight integration with Oracle, and partnerships with leading

storage management software companies equal easy integration to your existing infrastructure and a simplified storage platform that enables your IT infrastructure to respond easily to the changing needs of your business.

**7) Increase your asset utilization while you streamline your operations.**

Unique to NetApp, a single storage operating system, Data ONTAP, runs across the FAS series of primary storage systems and the NearStore® family of secondary storage systems. So regardless of your need for SAN or NAS, primary or secondary storage, Ethernet or Fibre Channel for your storage network, NetApp delivers a networked storage platform that manages simply and consistently to streamline your operations while providing a flexible pool of storage for your Oracle Databases that maximizes your storage utilization.

**8) Reduce development, QA, and deployment cycles.**

By combining the power of Snapshot and SnapRestore®, you can quickly stage, test, develop, and deploy your Oracle Databases and application software.

**Superior Service and Support**

**9) Rest easy knowing that your Oracle data is supported 24x7x365 around the world by skilled NetApp employees and Oracle employees.**

NetApp and Oracle share a joint service agreement that provides a single point of contact and collaborative support infrastructure to help better service their enterprise customers.

**10) Accelerate your Oracle deployment.**

Oracle Consulting and NetApp jointly deliver predefined accelerator services, including HA, performance, backup, and consolidation. These consulting services help you better and more efficiently deploy and manage your Oracle technology running in a NetApp storage infrastructure.

*Source: Network Appliance*

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**It's your data center.**



**Find out why:**

[www.netapp.com/partners/oracle/](http://www.netapp.com/partners/oracle/)

**NetApp simplifies your data center.**

Managing complexity in your data center is never as simple as shutting a drawer. Network Appliance partners with Oracle to deliver a comprehensive platform that greatly improves data management capabilities for Oracle administrators. With NetApp, you can back up and recover in seconds instead of hours. Provisioning instances are easy and nondisruptive. To help speed development and maximize storage utilization, allocation is quick and painless—you can even grow or shrink your database storage on the fly. Effortless, near-instantaneous cloning takes the pain out of testing. Though we can't organize your drawer, no one makes working with Oracle® database and applications easier than NetApp.

Join the thousands who've left their legacy environments behind.  
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## Leading Law Firm Kaufman and Canoles Presents a Winning Case for Complete Disaster Recovery with Overland's REO/NEO Data Protection Appliances

One of the top five corporate law firms in Virginia, Kaufman and Canoles offers services from offices in Chesapeake, Newport News, Virginia Beach, Norfolk, Williamsburg, Hampton and Richmond.

According to James McKane, information systems manager for the firm, Kaufman and Canoles embraces leading-edge technologies to better serve its clients. "We deployed a Voice over Internet Protocol (VoIP) phone system years ago," he says. "This gave us a headstart in leveraging the benefits of unified messaging."

### The Challenges

An unforeseen byproduct of the VoIP system was the need to store and protect the additional data. While storage capacity grew by about 25% annually, sudden storage surges created a ripple effect. The IT team was concerned that

some remote nightly backups weren't being performed properly.

### The Solution

After evaluating tape-based offerings from Sony, HP and Overland Storage, McKane decided Overland's NEO 2000 provided the best overall value. "We could accelerate backup and archive operations to enable daily full backups with ease," he says.

The next focus was on consolidating firm-wide backups. NEO's stability and reliability and Overland's responsiveness led them to the REO. The decision was easy, especially with REO's configuration flexibility and cost. In 2005, the firm purchased a REO 4000 with 4 TBs and a REO 9000 with 12 TBs to serve as its disaster recovery foundation. These were attached to the firm's Fibre Channel SAN with Double-Take software to replicate all remote data real-time to

REO 4000 through the day, before backing up both the replication store and all corporate data to REO 9000. The NEO 2000 tape library is used for long-term safekeeping.

### The Benefits

The REO/NEO disk-to-disk-to-tape combination has performed flawlessly since installation. REO 4000 has been configured as disk volumes, whereas REO 9000 is used as a virtual tape library (VTL) to speed backups and restore operations. "I was amazed when I saw our backup window shrink from eight hours to two hours," says McKane. "With REO and NEO, we have all the functionality to ensure our data is safe no matter what happens. If I had to do it again, I would choose Overland to deliver data protection I can count on." *Source: Overland Storage*

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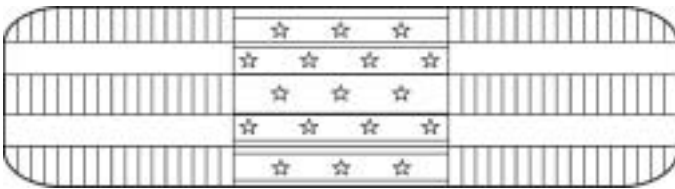
Simply Protected

# Patently Applied

By **Dr. Dean Chopin**, MCDBA, MCSE, MCSA, CCNA

**N**ecessity is the mother of invention. She's just not sure who the father is . . .

On March 7, 2006, the U.S. Patent and Trademark Office (USPTO) issued a patent to inventor Craig Anduss of San Antonio, Texas for an "ornamental design for a wound dressing" aka the "American flag bandage" (U.S. Patent No. D516730) – here it is:



And you thought your ideas were too loony to earn a patent?

Mr. Anduss' creation offers patriotic proof that we have not yet reached the point where there is nothing new to invent, as predicted by Commissioner of the Patent Office Henry L. Ellsworth in his 1843 report to the U.S. Congress:

"The advancement of the arts, from year to year, taxes our credulity and seems to presage the arrival of that period when human improvement must end."

It's not unusual for my industrious readers – brain trust that you are - to have moments of epiphany, conjuring up kernels of thought, or kernels of operating systems for that matter. Ideas that could lead to the birth of a new product. What you do with that seed of a thought is the key. True brilliance is a combination of the ability to fashion an idea, and the capacity to capitalize upon it.

Beware, though, that second only to the ingeniousness of those among us who create is the craftiness of those who would steal. The inventor must be vigilant against fraud, as the unscrupulous abound in the field of invention, and they will not hesitate to take

advantage of a naive newcomer. Given that truth, as early as a mere decade into American history it became necessary to devise a means to protect inventors from having their wares stolen.

The answer? Patents – a way to register being first in creating something new. The founders of our fledgling republic recognized and met this need, as evidenced by the fact

that the collection of patent data maintained at the Patent and Trademark Depository Library (PTDL) contains patent memorabilia, and issues of the Official

Gazette for U.S. patents, going all the way back to 1790.

By 1802, Congress empowered the U.S. Department of State to create the post of "Superintendent of Patents," establishing an idea czar, if you will, to protect the inventors of the wave of new products emerging at the dawn of the industrial age.

Here in a nutshell is how the USPTO defines a patent:

"A patent for an invention is the grant of a property right to the inventor, issued by the United States Patent and Trademark Office. Generally, the term of a new patent is 20 years from the date on which the application for the patent was filed in the United States . . .

The right conferred by the patent grant is, in the language of the statute and of the grant itself, "the right to exclude others from making, using, offering for sale, or selling" the invention in the United States or "importing" the invention into the United States. What is granted is not the right to make, use, offer for sale, sell or import, but the right to exclude others from making, using, offering for sale, selling or importing the invention.

There are three types of patents:

- 1) Utility patents may be granted to anyone who invents or discovers any new and useful process, machine, article of manufacture, or composition of matter, or any new and useful improvement thereof;
- 2) Design patents may be granted to anyone who invents a new, original, and ornamental design for an article of manufacture; and
- 3) Plant patents may be granted to anyone who invents or discovers and asexually reproduces any distinct and new variety of plant."

Even if the subject matter sought to be patented is not exactly shown by the prior art, and involves one or more differences over the most nearly similar thing already known, a patent may still be refused if the differences would be obvious. The subject matter sought to be patented must be sufficiently different from what has been used or described before that it may be said to be non-obvious to a person having ordinary skill in the area of technology related to the invention. For example, the substitution of one color for another, or changes in size, are ordinarily not patentable."

Utility patents cover many products, including software code written by engineers. Here, the descriptions of the inventions broaden the boundaries of geekspeak. Two of my newest favorites are the "System and method for searching and recommending objects from a categorically organized information repository" issued to Google Inc. on April 18, 2006 (U.S. Patent No. 7,031,961) and the "Interface and system for providing persistent contextual relevance for commerce activities in a networked environment" issued to Google on August 8, 2006 (U.S. Patent No. 7,089,237). Apparently, just saying "search engine" just won't cut it any more.

Design patents cover unique designs which may rapidly become ubiquitous – like the iPod. Incredibly, Apple doesn't hold a patent for the iPod. Creative Technology Ltd. of Singapore is now the holder, via assignment

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from the original inventors, of the main set of patents for a “media player” (U.S. Patent Nos. D517,088, D518,064, and D520,515). Those patents trump Apple’s ability to protect the iPod and, in fact, Creative Technology is taking a bite out of Apple in a lawsuit over the iPod. The lesson here: get your patents first, then go to production.

In terms of time, expect the application process, including the publishing of your idea in the Official Gazette, to take anywhere from two to four years. For example, the Creative Technology media player patent applications were filed in 2004, and were issued in 2006.

Plant patents are equally big business. A USPTO search for the word “hybrid” and any type of plant reveals that many varieties of plants considered to be public domain are now “owned” by corporations.

The concept of novelty lies at the heart of patentability. The idea must be “non-obvious.” Otherwise, people would have patented things like walking, or breathing! The spirit of ingenuity driving us to explore and discover is a subject many notables have pondered.

Why patent your invention? Money! If a process wasn’t profitable, major companies wouldn’t place such a high priority on it. For years now, HP, IBM and Microsoft have competitively applied for patents at a fast clip of 3,000 per year *each*.

What do they do with those patents? License the use of the ideas to other companies. Royalties from patent licensing are a key revenue source in modern business. Remember, what is at stake here is “the right to *exclude* others from making” your invention. Your permission is required for others to utilize your patent, and is typically granted only in exchange for payment of an up-front sum plus an ongoing royalty stream.

For a quick understanding of licensing, see: <http://www.ibm.com/ibm/licensing/>

Thomas Edison understood the connection between commerce and creativity, stating:

“Anything that won’t sell, I don’t want to invent. Its sale is proof of utility, and utility is success.”

The idea business is booming. At present, more than 350,000 patent applications are filed annually. An application is the only way to find out whether your idea can pass muster. The USPTO will not answer questions about the patentability of an invention without you filing an application.

The cost of applying for a patent is high, so it is wise to conduct a preliminary search – or to have a patent attorney do so for you, before proceeding with the actual application. Due to the sheer complexity of comparing thousands of prior patents with your idea, most inventors accept the inevitable and hire a patent law firm to navigate these Byzantine waters.

You can, however, conduct a patent search at any USPTO Patent Search Room, located in libraries throughout the United States, or online at <http://www.uspto.gov/patft/index.html>.

Only registered patent attorneys with the requisite engineering or scientific credentials, and who have passed the patent law exam, are entitled to practice before the USPTO. Registered agents can also assist with patent applications. Of the more than 1,000,000 attorneys currently practicing in America, only 25,000 are registered patent attorneys, so be safe and stick with the professionals. Legal fees of more than \$20,000 are not unusual, which explains why most inventors end up selling their ideas to corporations, which then handle the application process.

You can search for a patent attorney at <http://des.uspto.gov/OEDCI/>

If you have an idea, and want to take the first step toward exploring its patentability, you can start at the USPTO website for independent inventors: [independentinventor@uspto.gov](mailto:independentinventor@uspto.gov). In addition, you can obtain threshold information about patents by calling the USPTO Inventors Assistance Center (IAC) at: 1-800-PTO-9199.

Application fees can be found at: <http://www.uspto.gov/web/offices/ac/qs/ope/fees.htm>

Your patent, once obtained, is generally enforceable for 20 years. Internationally, there is also an intellectual property (IP)

protection method called a “utility model” used in many countries that provides protection under less stringent standards than a patent for six to ten years.

Outside of the U.S., protection of intellectual property has historically been abysmal. That changed to some extent in 1994, with the signing of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs), an international treaty enforced under the auspices of the World Trade Organization (WTO) which regulates protections within WTO member countries.

To find out how patents are handled around the world, surf to: <http://www.wipo.int/about-ip/en/ipworldwide/>

For information on patents issued in Europe, go to the European Patent Office website at: <http://gb.espacenet.com/>

To research patents issued in the Far East, go to the Japan Patent Office website at: <http://www.ipdl.ncipi.go.jp/>

What does all this mean to the home-based inventor, hovering over their prototype at the kitchen table? Think smart, but think fast. Never disclose your idea to any of the “invention assistance” companies waiting to grab up both your cash and your idea.

My advice to you hearty readers is this – create, create, create. And when you’re feeling down, after making the 1,000<sup>th</sup> revision to your latest grand invention, remember the 1950s “Mechanical Jumping Stick” invented by R.J. Mays of Tacoma, Washington (U.S. Patent No. 2,510,509) - and draw comfort from the fact that even his vision eventually became a reality in the form of a powerized pogo - the Hop Rod.



*Dr. Dean Chopin is a networks solutions architect consulting at Fortune 500 companies. Previously, a Professor of IT, Dr. Chopin has also served as an executive at Aztech and Logical Solutions. He earned his undergraduate and graduate degrees at Pepperdine University.*

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Note: "Never breaks" indicates that when a server goes down, your system keeps on running.

# Service Oriented Infrastructure

## How to build an IT infrastructure to support SOA

**S**ervice Oriented Architecture (SOA) is about loosely coupled systems, message-based communication, and business process orchestration. As an abstract architectural model, it acts as an interface between the business and the technology layers.

Web services are the preferred implementation technology for SOA. With SOA, an application is decomposed into numerous distinct components or modules

for user interactions, business processes, and business services.

SOA dramatically increases application development productivity, but translating this productivity into profits requires efficient application management. Managing applications efficiently in an SOA environment is a complex task because SOA presents so many variables that affect application performance.

One of these variables is the load placed on

a component by the applications that share it. A financial component, for example, might present a much greater load at the end of a business quarter than at the beginning.

A lack of adequate system resources at the hardware, network, operating system, or storage level can reduce the component's performance, resulting in slower overall SOA application performance.

In a large network, such as a one-thousand-server environment running hundreds or thousands of components, administrators cannot even prioritize which components are the most important at any given moment.

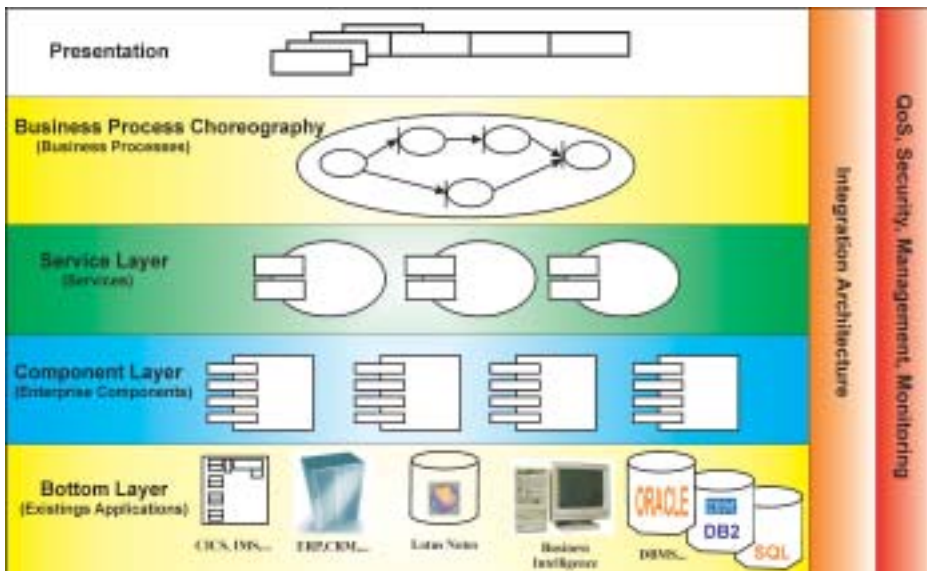
With multiple SLA requirements on many of the composite service offerings, managing those components to assure that each has

### Network requirements for supporting SOA

SOA relies on four technology concepts that will require network re-engineering:

SOA Technology Concept	Network Requirements
<b>Dynamic service discovery</b> - This concept facilitates incremental scalability of services, decouples service requestors from service providers, provides for dynamic updates of services, facilitates the search for services by requestors, and allows dynamic selection of a service provider vs. fixed allocation of a provider to a requestor.	Minimization of network latency and the proper provisioning of QoS become critical issues for successful network operation within an SOA.
<b>Web services</b> - are built on platform-independent protocols like SOAP, XML, UDDI, WSDL and so on. These protocols deliver dynamic discovery and access, interface independence and interoperability to SOA.	To optimize these new features within an SOA network requires implementing XML-based routing, acceleration and security networking components that might not exist in the current network architecture.
<b>Virtualization</b> - Application, services and infrastructure resource locality independence require virtualization technology for all applications, servers, storage and networks within the SOA.	To implement virtualization properly, the network also must be upgraded to contain the proper caching devices to facilitate optimal throughput for each services request/response.
<b>Meta-directories</b> - for dynamic discovery of a data, services, application or infrastructure resource. The meta-directory concept enables access independence of directory platform, structure or location by any requestor to any services, application or resource based upon desired search criteria.	Again, minimization of network latency and the proper provisioning of QoS become critical issues for successful network operation within an SOA.
<b>Services bus</b> - This is a virtual software-based publish/subscribe event bus that is logically partitioned to allow multiple uses. The bus is the logical communications highway for XML-based messaging for all services requestors and providers; services, application and resource dynamic discovery; meta-directory search; transaction transport; workflow scheduling and management.	The amount of administrative traffic across the bus within an SOA is significant. The obvious need for higher throughput and faster speed transport requires a rethinking of network utilization, topology and capacity.

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the exact amount of resources it requires is nearly impossible.

Without the ability to manage SOA applications efficiently, administrators turn to over-provisioning to meet SLAs. Over-provisioning resources to maintain performance under peak loads is an expensive proposition, but many administrators believe that it is less expensive than allowing vital business applications to fall out of compliance with SLAs.

As a result, system utilization inside large corporate data centers rarely exceeds 10 per cent, leaving a vast sea of resources sitting idle.

### How Services Oriented Infrastructure (SOI) can help

A new infrastructure model is required that will deliver to these new business expectations. Many IT organizations have come to the realization that to do this they must deploy a shared, virtualized SOI model.

Wherever possible they are basing this upon a standard operating environment where infrastructure resources are dynamically provisioned. This model will yield immediate measurable benefits, free funding for new IT initiatives, and at the same time provide the infrastructure foundation for supporting an SOA.

### Two layers can be used to describe the SOI model:

**Hardware resources** – Network, Storage, Servers

**Infrastructure services** – Security, Storage Services, Compute Services, Virtualization, Directory, Fault Monitoring

To increase use and efficiency, the hardware resources need to be pooled and made dynamically available. Infrastructure services help with the provisioning, monitoring, scaling, and secure operation of hardware resources.

These services are implemented in a federated model that allows policy to be managed centrally but enforced in a decentralized fashion throughout the network. Most companies are taking a phased approach to implementing an SOI. These phases can include resource standardization, centralization, consolidation, virtualization, and automation.

Although SOA and SOI can be pursued as independent strategies, there are clear benefits to combining them. Applications get responsive and aligned with business requirement and secondly, and there is a lower TCO for infrastructure, application development and integration.

# BEAR Bytes

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### Headquarters:

BEAR Data Systems, Inc.  
1281 Fifth Avenue  
Belmont, CA 94002  
Main : (650) 591-4700  
Fax : (650) 591-4702  
Phone : 1-800-718-BEAR

### Regional offices:

#### San Francisco

BEAR Data Systems, Inc.  
425 Washington Street  
Suite #150  
San Francisco, CA 94111  
Phone : (415) 788-1504  
Fax : (415) 788-1511

#### Bakersfield

BEAR Data Systems, Inc.  
2005 Eye Street, Suite #9  
Bakersfield, CA 93301  
Main : (800) 718-BEAR  
Fax : (661) 859-1018

#### San Diego

BEAR Data Systems, Inc.  
6540 Lusk Blvd., Suite C166  
San Diego, CA 92121  
Main : (858) 824-2920  
Fax : (858) 824-2921

#### Philadelphia

BEAR Data Systems, Inc.  
784 R South 6th Street  
Philadelphia, PA 19147  
Phone : 650-591-4728  
Fax : 501-643-9921

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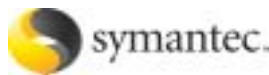
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