



SUN GRID™ : DELIVERING UTILITY COMPUTING

Speaker

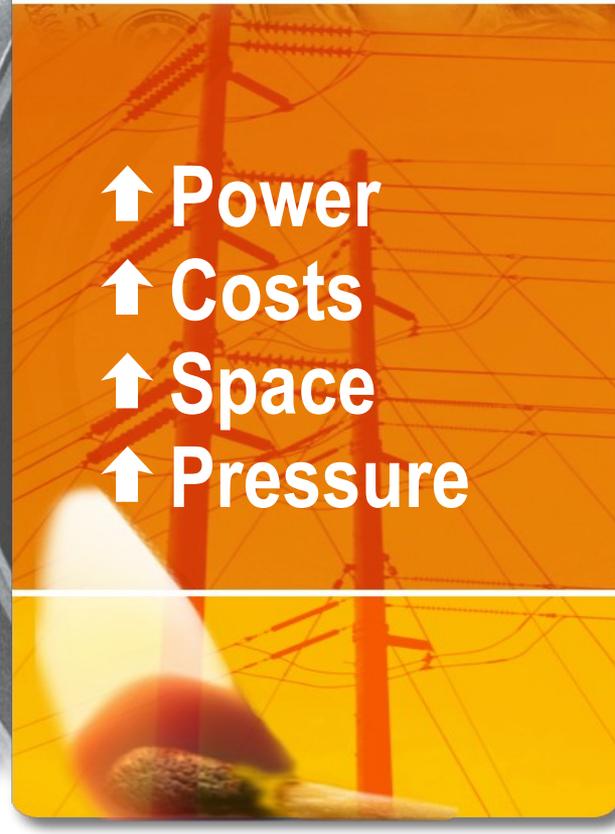
title

date

Sun Microsystems, Inc.

CIO Challenges

Demand and Capacity are Colliding



...and your
data center is
right in the middle!

Sun's Big Bets

Energy Matters

Space Matters

Network Services Will Dominate

Innovation Still Matters

Volume Always Wins



The Face of Utility Computing

Easy Access to Compute Resource to Anyone on the Network

Welcome to Sun Grid



POWER UP YOUR BUSINESS WITH

SUN GRID COMPUTE UTILITY

Access the secure compute power you need, when you need it, easily through the Internet for just \$1/CPU-hr. Register today »

Use the Sun Grid
in three easy steps.
View the demo »

3 GET
Your Results

Sun Grid Resources

- » About Sun Grid
- » Sun Grid Developer Community
- » Utility Computing

Sun Grid Launch

- » View Executive Video
- » View Customer Testimonials
- » Read About the Benefits of Sun Grid



Free Test Drive! Our sample app reads any web page and converts it to a spoken-word MP3 file. Download the file, and publish your own podcast! No registration required! » Try It

Enter the Grid »

- » Register for a Sun Grid Account
- » Forgot User Name or Password?

Sun Grid: Worlds Only Compute Utility

Easy, Secure, Affordable, Powerful



- Reliable
- Scalable
- Multi-source
- Multi-tenancy
- Predictable pricing
- Metered pricing
- Standard Infrastructure

Technical Complexity Managed by Sun and Hidden from View
Provides Simple Plug-and-Play Experience for End Users

What Can Customers Do Today?

Expedite success running compute intensive batch jobs

Monte Carlo Analysis

Digital Movie Rendering

Oil Well Exploration

Quantum Chromodynamics

Econometrics

Very Large Scale Integration (VLSI) Design

Molecular Drug Testing

Offload Peak Traffic Flow

Radiation Cancer Therapy

Stellar Evolution

Dow-Jones Forecasting

CAE Military Simulation Modeling

The Synthetic Environment

Digitalization & Network Modeling

Simulation Training

Customer Choice

Buy the System, Consume the Utility, or Both

Buy it:
Sun's Hardware & Software



Consume it:
Sun's Utility Portfolio

Public Sun Grid

Commercial Sun Grid

Variable Cost
Infrastructure

Common Technology and IP
Common Architecture and Design
Common Building Blocks

A Comprehensive Utility Offering

“Variable Cost Infrastructure”
Customized, Modular

“Commercial Utility”

Standard Offering,
Semi-Customized

“Public Utility”

Standard Offering,
Instant Deployment

Typical Customer	Large Enterprise and System Integrators	Medium to Large Enterprise	Anyone On the Network
Access	Customer or SI Hosted	Dedicated	Portal
Availability	Longer Term Contract	Short Notice	On-Demand
Scheduling	Dedicated or Time Based Reservation	Time-Based Reservations	No Reservation
Pricing	Negotiated	Negotiated \$/cpu-hr	Predictable and all-inclusive \$1/cpu-hr
Business Terms	Capacity Provisioning Contract	Service Level Contract	Standard Contract
Technology	Menu of Options	Solaris 10 x64 or Redhat Linux	Solaris 10 x64
Storage	Menu of Options	Customer Defined	10 GB Standard



Public Sun Grid Compute Utility

Simple, Known, and Predictable

- No surprises
- No hidden fees
- No access fees
- No minimum number of hours
- No minimum number of CPUs
- Metered pricing: you only pay for what you consume
- Compute power becomes operational expense



Affordable Pricing

Provides Optimal Flexibility

Reduced Risk through Low Barriers to Enter and Exit

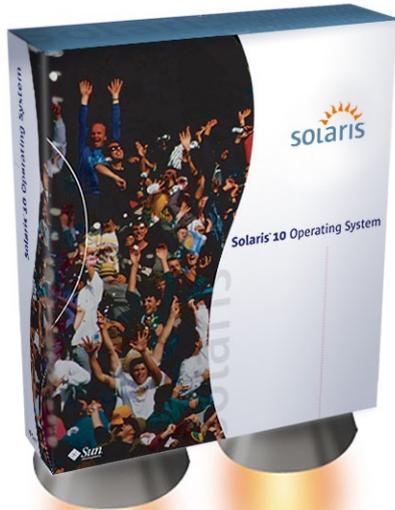
- No reservation required
- No long term contract required
- Simple click-through license
- Available without expensive investment in IT infrastructure
- Turn it up, turn it down, or turn it off as your demand changes
- Proven scalability that grows as your demand requires
- Enables better utilization of resources



Available When and How You Need it

Security Is Paramount

Built-in Security on Multiple Levels



Industry Standard Architecture

Sun AMD Opteron x64 server,
Sun Grid Engine software, and Solaris 10 OS



Sun Grid Customer: Applied Biosystems (Applera Corporation)

Life-Saving Products to Market in Record Time

Servicing the Life Science Industry and Research Community



Business Priorities:

- Develop genotyping assays as quickly as possible, in response to newly released data
- Access required compute resources securely and cost-effectively

Benefits Realized through Sun Grid:

- Sped time to market by reducing computing time from three months to six days
- Eliminated the need to invest in additional hardware, saving the company several hundred thousand dollars
- Simplified data management and delivery of results

“Genetic discoveries are going to become more and more important in terms of finding cures and finding the genetics of a disease, so our goal is to make sure that our researchers and customers have access to the tools they need to accelerate the science.

Sun Grid helped us achieve this goal.”

- Francisco de la Vega,
Scientific Fellow and Senior Director
Applied Biosystems, Inc.

Accelerating Market Delivery of Life-Saving Drugs

Sun Grid Customer: CD02

Software Vendor Gains Competitive Advantage

Pricing and Risk Technology to Small Financial Services Firms



Business Priorities:

- Achieve faster delivery of pricing and risk analysis computations for competitive advantage
- Ensure convenient, affordable and secure customer access to grid compute resource
- Grow business without financial constraints imposed by development of an IT infrastructure

Benefits Realized through Sun Grid:

- Computation time shortened from hours to minutes
- Able to scale business without making financially prohibitive investments in IT
- Sun Grid multi-layer security provides safe computing environment for customer data

“For us, using the Sun Grid is now core to our business.

We view our product as software as a service that we offer on the grid.

By being able to grow our business incrementally on the Sun Grid as our customers build up their businesses, we have a completely scalable business model without the constraints of having to invest hundreds of thousands of dollars to create our own IT infrastructure.”

- Gary Kendall, Director, CD02

Expanded target market tenfold due to affordable computing power

Sun Grid Customer: Virtual Computer Corporation

Service Provider Fuels its Future with Sun Grid

Tailored Solutions for Energy, Space, and Life Sciences Industries



Business Priorities:

- Scale infrastructure quickly
- Meet customer demands for high- performance computing power
- Meet customer deadlines
- Avoid large capital outlays

Benefits Realized through Sun Grid:

- Flexibility to meet cyclical business demands instantly through on-demand compute resources
- Saved up to \$3 million by avoiding build-out of additional infrastructure
- Met customers' project timelines
- Faster time to market – by 60 days

“By using the Sun Grid Compute Utility, we were able to save up to \$3 million and ramp up to production much more quickly than if we did it on our own.

The Sun Grid has also been instrumental in helping us meet customer expectations and increase sales.

Sun has proved to be a solid technology partner and has beaten the pants off the competition with an affordably priced and technically superior solution.”

- Edward Hawes, CEO,
Virtual Compute Corporation

Has consumed 2 million CPU hours; plans to consume 3-6 million CPU hours by end of 2006

Sun Grid Customer: Callidus Software

Powering On-Demand Software Service

Enterprise Incentive Management (EIM) Software for Global Companies

Business Priorities:

- Expand market by launching on-demand service
- Minimize capital and operational expenditures for infrastructure
- Keep internal IT and operations overhead focused on core business
- Scale services to match customer demand



Benefits Realized through Sun Grid:

- Able to deliver on-demand service at low cost
- Millions of transactions in tight time windows
- Matched computing expenditures to revenues for efficient cash flow management
- Scales easily to meet customers' business needs
- Minimized IT overhead and TCO
- 25%-40% reduction in deployment costs in target markets with 300-2,000 payees

“The Sun Grid Compute Utility enables us to roll out a new on-demand service that provides our incentive enterprise management customers with unmatched scalability, security, and business agility.”

- Shanker Trivedi
Vice President and Chief Marketing Officer
Callidus Software

Sun Grid enabled Callidus to provide its customers with a uniquely scalable, secure and agile service – the first solution of its kind in the EIM marketplace.

What it Means to the CIO

Helping Business Thrive, Compete, and Win

CIO Priorities ...	Sun Grid Helps Deliver ...
Cost Containment	Predictable, pay as you go pricing model
Manage Data Explosion	Scalable utility service that grows with your business needs
Manage Power, Cooling, Space Constraints	That's Sun's problem – not yours
Improve Infrastructure Flexibility	Turn it on when you need it, turn it off when you're done
Improve Business Processes	Open and standards-based infrastructure
Improve Security and Compliance	Built-in security, runs on Solaris™ 10 OS

Our Innovation Fuels Your Business

Sun's R&D Investments are Paying Off for Customers

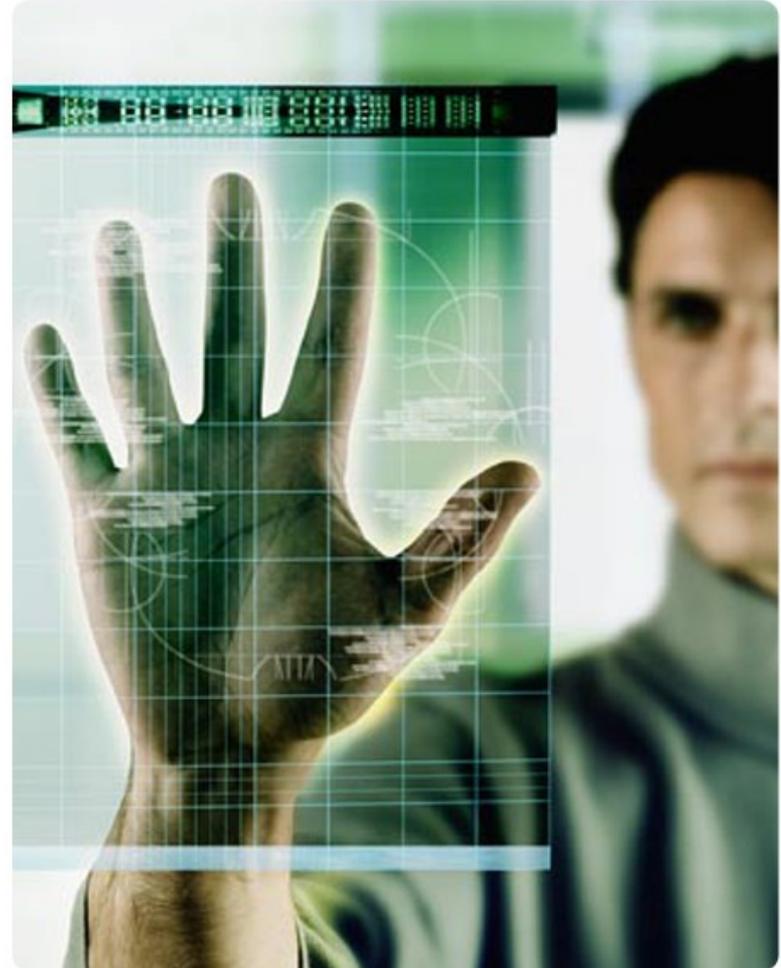
- Rich product product portfolio of software and hardware
- Powered by Sun IP
- All Sun IP included optimized for Sun Grid
- Solaris 10 OS provides security and scalability
- Award winning Identity and Access management



Sun Grid Benefits: Access

Unprecedented Access to Compute Power on the Network

- Easy access to enormous compute power
- Levels the playing field – now also available to “the little guys”
- Reduce time to results – run jobs on more CPUs for shorter time
- Speed time to market
- Accomplish jobs you wouldn't have otherwise
- Datacenter power, cooling, space and complexity hassles managed by Sun
- All without the need to invest in expensive IT infrastructure



Sun Grid Benefits: Extra Capacity

Improved Utilization of Resources

- Sun Grid can be tapped for compute power to handle peak capacity
- Flexible capacity facilitates better utilization of existing IT infrastructure
- Frees up budget for strategic business initiatives and IT investments
- Bottom line impact; expedite results when it counts
- Enables enterprises to react quickly to emerging business opportunities and needs

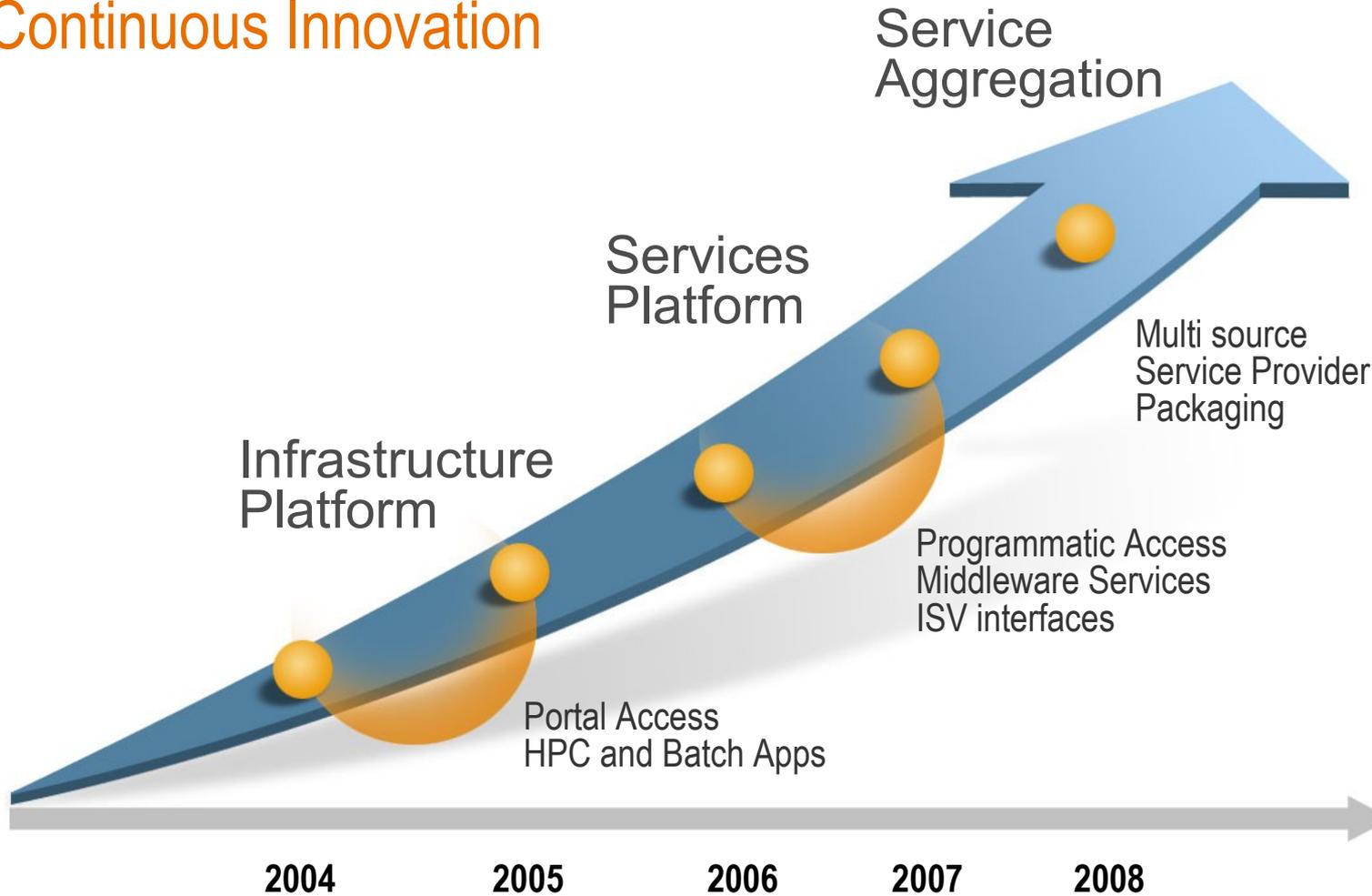


“70-80% of processing power often sits idle”

- Insight : Grid Computing A Vertical Market Perspective 2005-201

The Evolution of Public Sun Grid Utility

Continuous Innovation



Continuous Innovation

What Analysts and Industry Press Are Saying...

"Scott McNealy, Sun's Chief Executive Officer, has been waiting for the analyst community to apologize for the extremely hard time we gave him and his company over the past few years ... **And if Sun's utility computing strategy really takes off (like we think it will), we'll be one of the first analyst firms to draft an apology letter.**"

- Joe Clabby, Clabby

Analytics

"It is being adopted,"
"It's small, but **think of the potential. It's huge.**"

- David Tapper,

IDC

"You are able to plug in and receive your computer needs as a service, **a lot like an electric utility.**"

- Neil MacDonald, Gartner

"God smiles on Sun and delivers grid computing miracle"

"There's something rather egalitarian about the whole idea. Plenty of businesses have large jobs that could benefit from a huge clusters of systems, but **they're not about to spend millions and millions on the servers, cooling, and admins needed to run such a beast** for one or two specific workloads. **Now, they can send these occasional jobs off to Sun.** It's a bit like supercomputing for the masses."

"The juicier part of Sun's plans revolved around the idea that any company could pop onto a web site, enter a credit card number and then access as many CPUs as they needed."

- Ashlee Vance, The Register

"With the Sun Grid offering, Sun is taking a leadership position in the emerging utility computing market - an IT market that has a sustainable growth opportunity. The Sun Grid really is 'Infrastructure as a Service'."

- Vernon Turner, IDC

"In truth, **Sun's new offering is more like what customers think of as utility computing** - (accessing raw compute power and data-center resources) rather than grid (where customers access unused CPU cycles in a connected, distributed environment for compute-heavy functions)."
"Sun deserves kudos for taking risks. The Sun Grid Utility offering **builds on Sun's heritage in network computing** while **presenting a bold vision** for how customers will access and manage IT resources in the future."

- John Madden, Summit Strategies

Summary

Providing the Compute Recipe for Success

Affordable



Simple and
Predictable Price:
\$1/CPU-hr

Metered Pricing
ZERO Commitment
Required

Flexible



Own or Consume
Grows with Your
Business

Use it on Your Terms
Turn It Up, Down, or
Off as Needed

Secure

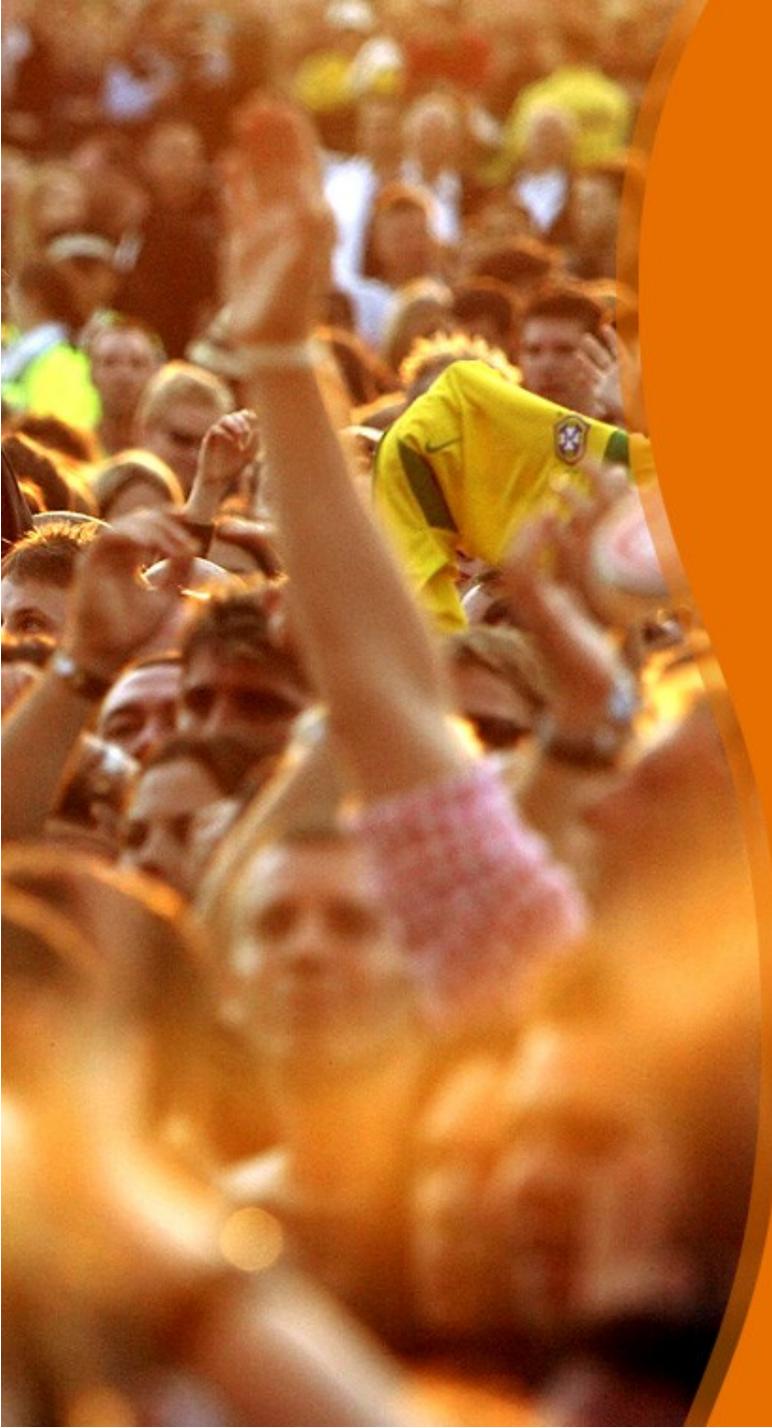


Built-In Security on
Multiple Levels
Runs on Solaris 10
OS

Call to Action

Risk Free Trial

- Request a Sun Grid account today at Network.com
- Identify compute tasks suitable for utility computing
- Upload, run, get results



**SUN GRID™ :
DELIVERING UTILITY
COMPUTING**

Additional Slides:

Product Slides

What Is Variable Cost Infrastructure Utility?

Customized Utility for the Enterprise

- Pay-for-use solutions
 - > Sun Systems, Storage, Software and Services
 - > Sun Usage Metering and Billing
 - > Multi-year contract commitment
 - Monthly service billing
 - Assets provided by service
- Provides modularized deployment model
 - > Provisioning SLA's
 - > Management SLA's
- Infrastructure located at customer premises or at hosting partner

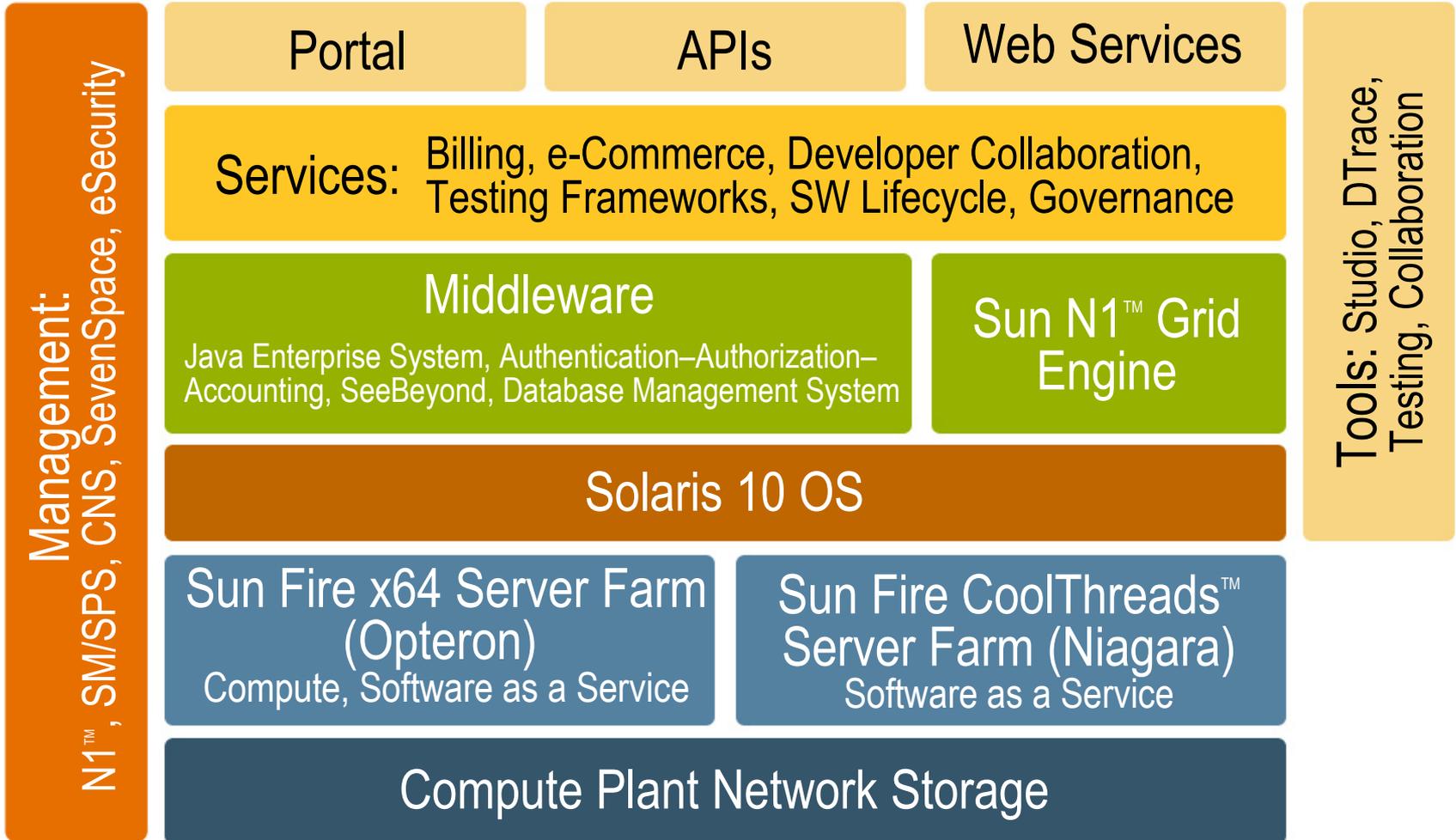


Sun Grid Storage Utility

- Partnership with InTechnology PLC, UK
- Sun Grid Storage Remote Backup and Restore
 - > Provides customers with secure, automated off-site backups with user initiated on-line restores
 - > Customers are charged only for consumption (\$/GB) on data backed up
- Sun Grid Storage Remote File Vault
 - > Provides secure network access to store long term archive data
- Services are currently only available in the UK

Sun's Unique Competitive Advantage

All Sun IP Included is Optimized for Sun Grid Utility



Changing Landscape of IT

Increased Opportunity for All

Large capital investments in data centers

High cost of infrastructure management and IT expertise

Business integration pains

IT limitations inhibit business agility

SMBs have limited access to world-class enterprise applications

Startups require large VC investments

Not affordable for education, non-profits, or third-world countries



Pay only for compute power consumed

Invest in core business operations and value add services

Business process improvement

Fast-moving enterprise able to quickly react its to customer needs

Increased opportunity for SMBs to compete and grow

Reduced initial investment needs; faster time from idea to implementation

Removing barriers to entry; bridging the digital divide

Additional Slides:

VCI Customer Examples

ACS

End-to-end business process outsourcing and information technology solutions



- Unique, fixed-rate billing contract that ensures unit rates will not fluctuate, no matter how much actual usage fluctuates
- Risk-free, fixed contract also includes an automatic technology refresh program, which continues to provide customers current technology at no extra cost
- Fine-grain detail provided by billing reports gives customers greater visibility into IT operations, their costs, and relationship to business activities they support
- Customers seeking 7-year outsourcing deals (ITO) who desire:
 - Pay-as-you-go model for IT resources
 - Technology upgrade without additional costs (product refresh)
 - Low-risk financial model
 - End-to-end, outsourced solutions for IT and business processes

AT&T's Managed Utility Computing Pay-Per-Use



- Offering makes computing resources and infrastructure management available to customers, like ESRI, when needed
- Uses Sun hardware, software, and services for high performance, compute-intensive requirements
 - > Especially attractive to customers whose businesses experience unpredictable demands
- Focus is on providing value-added managed hosting services
 - > Ability for their customers to pay as they go and to scale their IT resources as their businesses grow

It's capabilities like this — offered with industry leaders like Sun — that help us enable our customers to easily and affordably manage their applications and better serve their end users.

Mike Jenner, Vice President
AT&T Hosting and Application Management Services

AT&T and Sun Solution— Supporting Dynamic Business Requirements

- ESRI, world leader in geographic information systems (GIS) technology, deploys AT&T's utility computing service
 - > Full range of Sun Fire™ servers and Solaris™ operating system at AT&T's Internet Data Centers (IDCs)

AT&T's managed utility computing capability enables us to confidently and efficiently outsource these systems for our customers and quickly scale to meet growing demands.

Mike Tait, Director
ESRI Internet Solutions

- Supports dynamic requirements of some of ESRI's newest Web-based mapping applications using ArcWeb ServicesSM, including proprietary customer and partner data and apps
- Monitors and measures usage of systems and performance in support of deployments

EDS

Outsourcing, Web-hosting and systems integration partner



- Platform-independent server solutions
- Infrastructure integration for Internet, business-to-business, business-to-consumer, and legacy-based systems
- Flexible service options to meet complex application needs
- Comprehensive security services to manage risks and threats in today's economy
- World-class systems management and operation
- Pioneering systems design, implementation and testing
- Innovative IT transformation services to take customers beyond “on-demand”

Contact: Gregory.Robins@Sun.com x47276

Additional Slides:

Developers

Sun Grid Developer Community

An Active and Growing Community

- Easy and secure Internet access to a powerful compute resource.
- Execution environment for load testing across a large number of systems.
- Promotes collaborative development, design, and testing.
- Access to technical experts and resources



<http://developer.network.com>

Additional Slides:

User Interface, User Experience

Create and Submit Job

Welcome: rohit valia
Account balance (CPU-Hours): 11
Storage used (%): 0
[Buy Additional CPU-Hours](#)

Sun Grid Compute Utility


Sun Microsystems, Inc.

Resources
Jobs
Runs
My Account
Reference

Jobs

	Name	Executable	Parameters	Description	Owner
<input checked="" type="checkbox"/>	Sample Job - Hostname	/bin/hostname		Get the name of the execution host	Sun Grid
<input type="checkbox"/>	Sample Job - SPhot	sphot/N1GE-run-script.ksh		run a 2d monte carlo simulation with MPI	Sun Grid
<input type="checkbox"/>	Sample Job - Hello World	helloworld/helloworld.ksh		make a movie using POV-ray 3.6	Sun Grid

Create
View Details
Edit
Delete
Run Now

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Job Submitted

Job Running

i Created Run 'Sample Job - Hello World_8194' for Job 'Sample Job - Hello World.'
Now submitted to SunGrid as 'rvalia-20060025014004-6'.

Job Name: Sample Job - Hello World
Job Description: make a movie using POV-ray 3.6
Run Status: Pending

[Close](#)

Job Pending Execution

REFRESH LOG OUT HELP

Welcome: rohit valia

Sun Grid Compute Utility

Account balance (CPU-Hours): 9
Storage used (%): 0
[Buy Additional CPU-Hours](#)



Sun Microsystems, Inc.

Resources Jobs Runs My Account Reference

Runs

<input checked="" type="checkbox"/>	<input type="checkbox"/>	Number	Job Name	Status	CPU-Hrs Used	CPU-Hrs Billed	Started When	Finished When	Output size
<input type="checkbox"/>	<input type="checkbox"/>	141	Sample Job - Hello World	Succeeded	1.782	2	2005-10-21 22:09:49.0	2005-10-21 22:12:49.0	12875568
<input type="checkbox"/>	<input type="checkbox"/>	143	Sample Job - SPhot	Succeeded	0.047	1	2005-10-21 22:09:50.0	2005-10-21 22:09:50.0	15797
<input type="checkbox"/>	<input type="checkbox"/>	5157	Sample Job - Hello World	Succeeded	1.774	2	2005-11-11 21:03:08.0	2005-11-11 21:04:35.0	12877436
<input type="checkbox"/>	<input type="checkbox"/>	5163	Sample Job - Hello World	Succeeded	1.771	2	2005-11-11 21:18:20.0	2005-11-11 21:18:20.0	12877615
<input type="checkbox"/>	<input type="checkbox"/>	5172	Sample Job - Hello World	Succeeded	1.769	2	2005-11-11 21:38:26.0	2005-11-11 21:39:09.0	12877362
<input type="checkbox"/>	<input type="checkbox"/>	8194	Sample Job - Hello World	Pending	0	0			

Cancel View Details Delete Download Output UpdateStatus

Total Runs Output Size (MB): 41.791

Account Storage limit (MB): 10240

Job Running

[REFRESH](#) |
 [LOG OUT](#) |
 [HELP](#)

Welcome: rohit valia

Sun Grid Compute Utility

Account balance (CPU-Hours): 9
Storage used (%): 0
[Buy Additional CPU-Hours](#)

Sun Microsystems, Inc.

Resources
Jobs
Runs
My Account
Reference

Runs

<input checked="" type="checkbox"/>	<input type="checkbox"/>	Number	Job Name	Status	CPU-Hrs Used	CPU-Hrs Billed	Started When	Finished When	Output size
<input type="checkbox"/>	<input type="checkbox"/>	141	Sample Job - Hello World	Succeeded	1.782	2	2005-10-21 22:09:49.0	2005-10-21 22:12:49.0	12875568
<input type="checkbox"/>	<input type="checkbox"/>	143	Sample Job - SPhot	Succeeded	0.047	1	2005-10-21 22:09:50.0	2005-10-21 22:09:50.0	15797
<input type="checkbox"/>	<input type="checkbox"/>	5157	Sample Job - Hello World	Succeeded	1.774	2	2005-11-11 21:03:08.0	2005-11-11 21:04:35.0	12877436
<input type="checkbox"/>	<input type="checkbox"/>	5163	Sample Job - Hello World	Succeeded	1.771	2	2005-11-11 21:18:20.0	2005-11-11 21:18:20.0	12877615
<input type="checkbox"/>	<input type="checkbox"/>	5172	Sample Job - Hello World	Succeeded	1.769	2	2005-11-11 21:38:26.0	2005-11-11 21:39:09.0	12877362
<input type="checkbox"/>	<input type="checkbox"/>	8194	Sample Job - Hello World	Running	1.711	0	2006-01-25 01:42:40.0		0

Cancel
View Details
Delete
Download Output
UpdateStatus

Total Runs Output Size (MB): 41.791

Account Storage limit (MB): 10240

Job Completed

Welcome: rohit valia

Sun Grid Compute Utility

Account balance (CPU-Hours): 9
Storage used (%): 0
[Buy Additional CPU-Hours](#)



[REFRESH](#)
[LOG OUT](#)
[HELP](#)

Resources
Jobs
Runs
My Account
Reference

Runs

<input checked="" type="checkbox"/>	<input type="checkbox"/>	Number	Job Name	Status	CPU-Hrs Used	CPU-Hrs Billed	Started When	Finished When	Output size
<input type="checkbox"/>	<input type="checkbox"/>	141	Sample Job - Hello World	Succeeded	1.782	2	2005-10-21 22:09:49.0	2005-10-21 22:12:49.0	12875568
<input type="checkbox"/>	<input type="checkbox"/>	143	Sample Job - SPhot	Succeeded	0.047	1	2005-10-21 22:09:50.0	2005-10-21 22:09:50.0	15797
<input type="checkbox"/>	<input type="checkbox"/>	5157	Sample Job - Hello World	Succeeded	1.774	2	2005-11-11 21:03:08.0	2005-11-11 21:04:35.0	12877436
<input type="checkbox"/>	<input type="checkbox"/>	5163	Sample Job - Hello World	Succeeded	1.771	2	2005-11-11 21:18:20.0	2005-11-11 21:18:20.0	12877615
<input type="checkbox"/>	<input type="checkbox"/>	5172	Sample Job - Hello World	Succeeded	1.769	2	2005-11-11 21:38:26.0	2005-11-11 21:39:09.0	12877362
<input type="checkbox"/>	<input type="checkbox"/>	8194	Sample Job - Hello World	Succeeded	1.788	2	2006-01-25 01:42:40.0	2006-01-25 01:44:20.0	12881147

Cancel
View Details
Delete
Download Output
UpdateStatus

Total Runs Output Size (MB): 52.239

Account Storage limit (MB): 10240

Download Results

Get Run Results

Job Run: Sample Job - Hello World_1242
Output size: 12880844
Output CheckSum: 179f1c47dfc5590b036e382ae2e74920

Download Now

Close Window