



Grid Computing

# Grid Technologies & Business Benefits

Gillian Arnold  
IBM Regional Grid Sales Executive








# Grid Motivators

- Conferring competitive advantage
- Managing unpredictability in workloads
- Enhancing the customer experience
- Speeding research
- Accelerating development of animated features
- Reduced IT and Development Costs

## Hidden Value

- Increased System & Staff Productivity
- Improved Resiliency
- Simplified Scalability
- Optimised IT Assets
- Global Collaboration

# Grid Focus Areas & Value Propositions

Business Analytics Grid	Engineering & Design Grid	Research & Development Grid	Government Development Grid	Enterprise Optimization Grid
<p>Enable faster and more comprehensive business planning and analysis through the sharing of data and computing power</p> 	<p>Share data and computing power, for computing intensive engineering and scientific applications, to accelerate product design</p> 	<p>Accelerate and enhance the R&amp;D process by enabling the sharing of data and computing power seamlessly for research intensive applications</p> 	<p>Create large-scale IT infrastructures to drive economic development and/or enable new government services</p> 	<p>Optimize computing and data assets to improve utilization, efficiency and business continuity</p> 

- |  |   |  |  |   |
|--|---|--|--|---|
| <ul style="list-style-type: none"> <li>• Better Decision Making</li> </ul> | <ul style="list-style-type: none"> <li>• Improved Product Design</li> </ul> | <ul style="list-style-type: none"> <li>• Improved Collaboration</li> </ul> | <ul style="list-style-type: none"> <li>• Better Decision Making</li> </ul>         | <ul style="list-style-type: none"> <li>• Improved:</li> </ul>                                       |
| <ul style="list-style-type: none"> <li>• Time to Solution</li> </ul>       | <ul style="list-style-type: none"> <li>• Time to Solution</li> </ul>        | <ul style="list-style-type: none"> <li>• Time to Solution</li> </ul>       | <ul style="list-style-type: none"> <li>• Improve Collaboration</li> </ul>          | <ul style="list-style-type: none"> <li>• Resiliency</li> <li>• Productivity</li> </ul>              |
| <ul style="list-style-type: none"> <li>• Reduced Costs</li> </ul>          | <ul style="list-style-type: none"> <li>• Reduced Costs</li> </ul>           | <ul style="list-style-type: none"> <li>• Reduced Costs</li> </ul>          | <ul style="list-style-type: none"> <li>• Stimulate Economic Development</li> </ul> | <ul style="list-style-type: none"> <li>• Reduced:</li> <li>• Costs</li> <li>• Complexity</li> </ul> |

# Charles Schwab

## Business Analytics

### Challenge

- Respond and adapt to changing business climate, evolving customer needs and new opportunities
- Create an adaptive, flexible services-oriented architecture to enable new business applications without impacting existing systems or customer experiences
- Maximize the use of existing resources and reduce costs

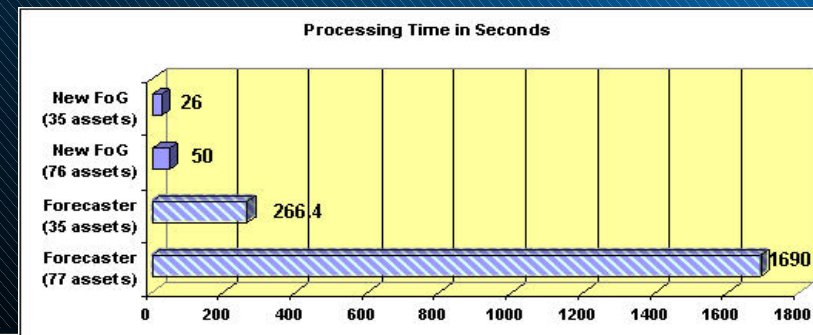
### Solution

- **IBM Server Allocation for WAS**
- **IBM Content Management System**
- **IBM eServer BladeCenter™ servers**
- **Linux Red Hat v8.0**

## Charles Schwab

### Benefits:

- Shorten time to market
- Minimize impact on existing applications
- Maintain consistent user experiences
- Leverage investment and skills
- Enable new business application to new users
- Reusable A/D framework and basic infrastructure
- Reduced operational costs
- Drastic restitution time improvements



# Butterfly.net

## Enterprise Optimization

### Challenge

- Scalable, resilient infrastructure for running massive multiplayer games

### Solution

- IBM @server
- Globus Toolkit
- IBM WebSphere Application Server
- DB2 Universal Database
- IBM e-business Hosting Services

*“We chose IBM for its carrier-independent colocation facilities, its unparalleled support for Linux, and its thorough knowledge and experience in grid computing”*

David Levine, Chairman and CEO, Butterfly.net



### *Technology Benefits:*

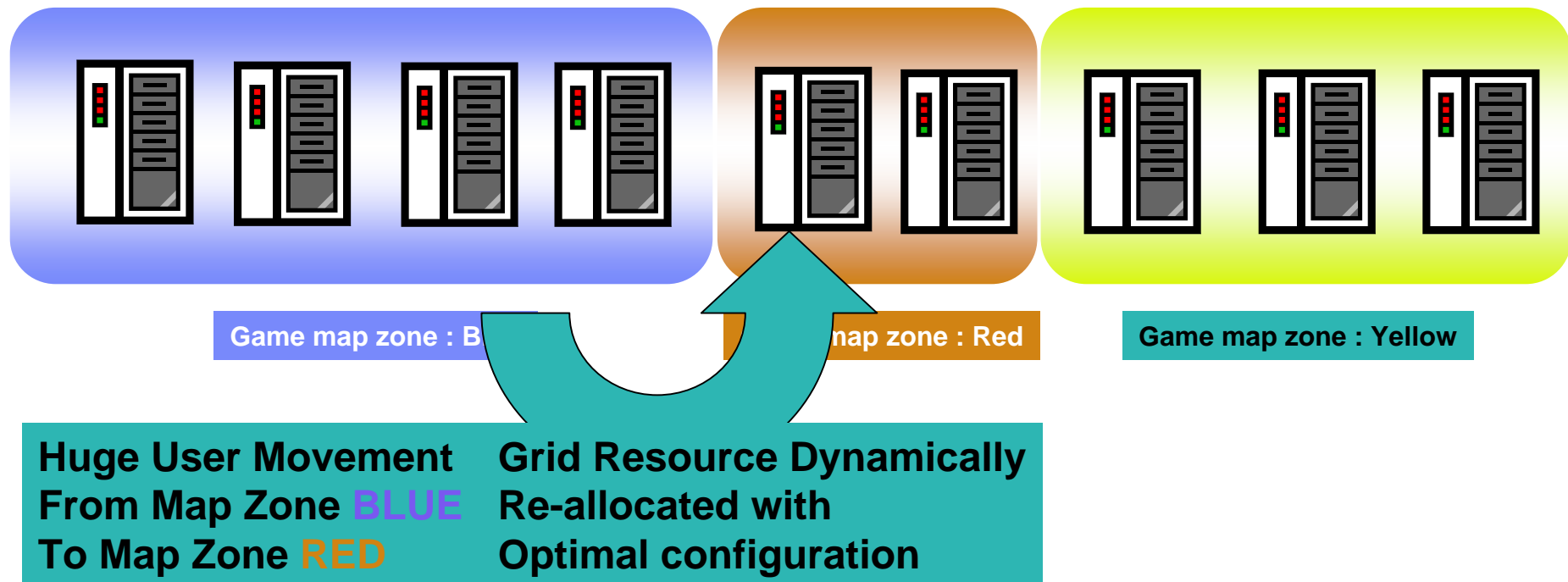
- Improved end-user experience supporting over one million simultaneous sessions

### *Business Benefits:*

- Developers avoid huge upfront costs
- Announced with Sony Computer Entertainment
- The Butterfly Grid for PlayStation2 unveiled at Games Developers' Conference in March 2003

# Butterfly.net

- Game servers load balance the game **DYNAMICALLY**
- Servers allocate resources **AUTOMATICALLY**
- Servers partition the game for **OPTIMAL PERFORMANCE**



# Butterfly.net

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# Spherion

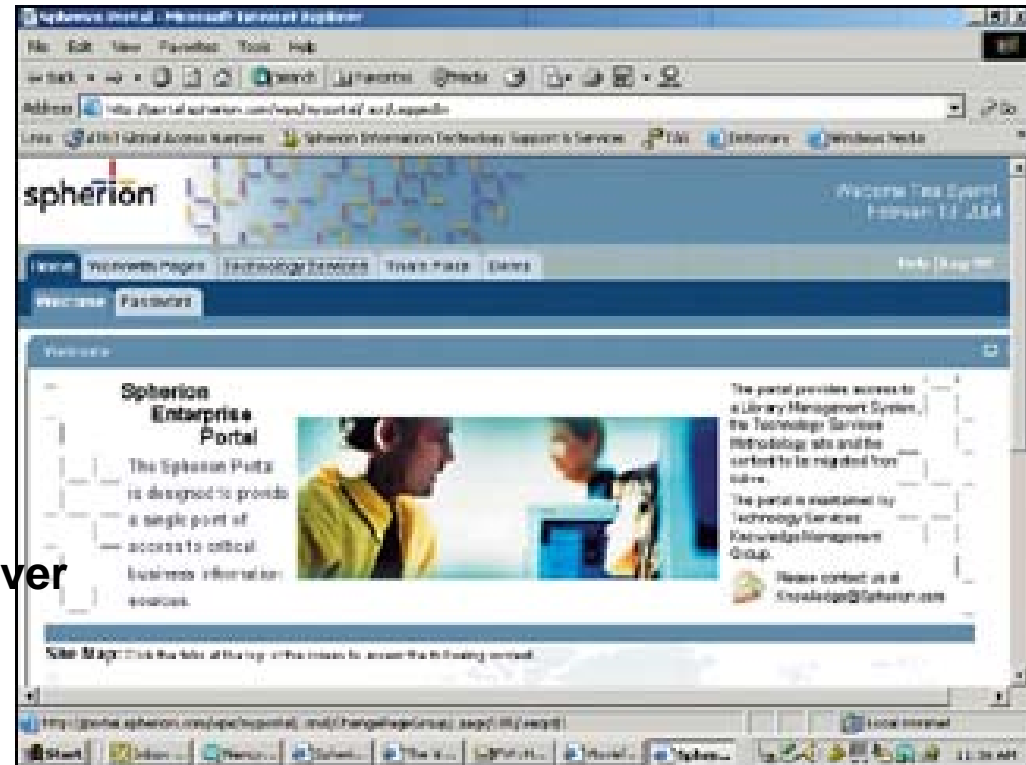
## Enterprise Optimization - Data

### Challenge

Spherion's rapid growth had resulted in fragmented business processes that were preventing the company from responding rapidly to new sales opportunities, hampering its ability to compete effectively in the staffing market

### Solution

- **IE@server**
- **IBM WebSphere Application Server**
- **DB2 Universal Database**
- **DB2 II /Content Manager**



*"By delivering business information in realtime, we can help employees make faster and more informed decisions. That level of responsiveness frees employees to focus on their core competencies and translates into huge productivity gains."*

Tina Eyerly, Director, Knowledge Management, Spherion

*Using IBM technology, Spherion has not only increased employee productivity by providing online access to enterprise resources, it has also improved corporate decision-making.*

# IBM

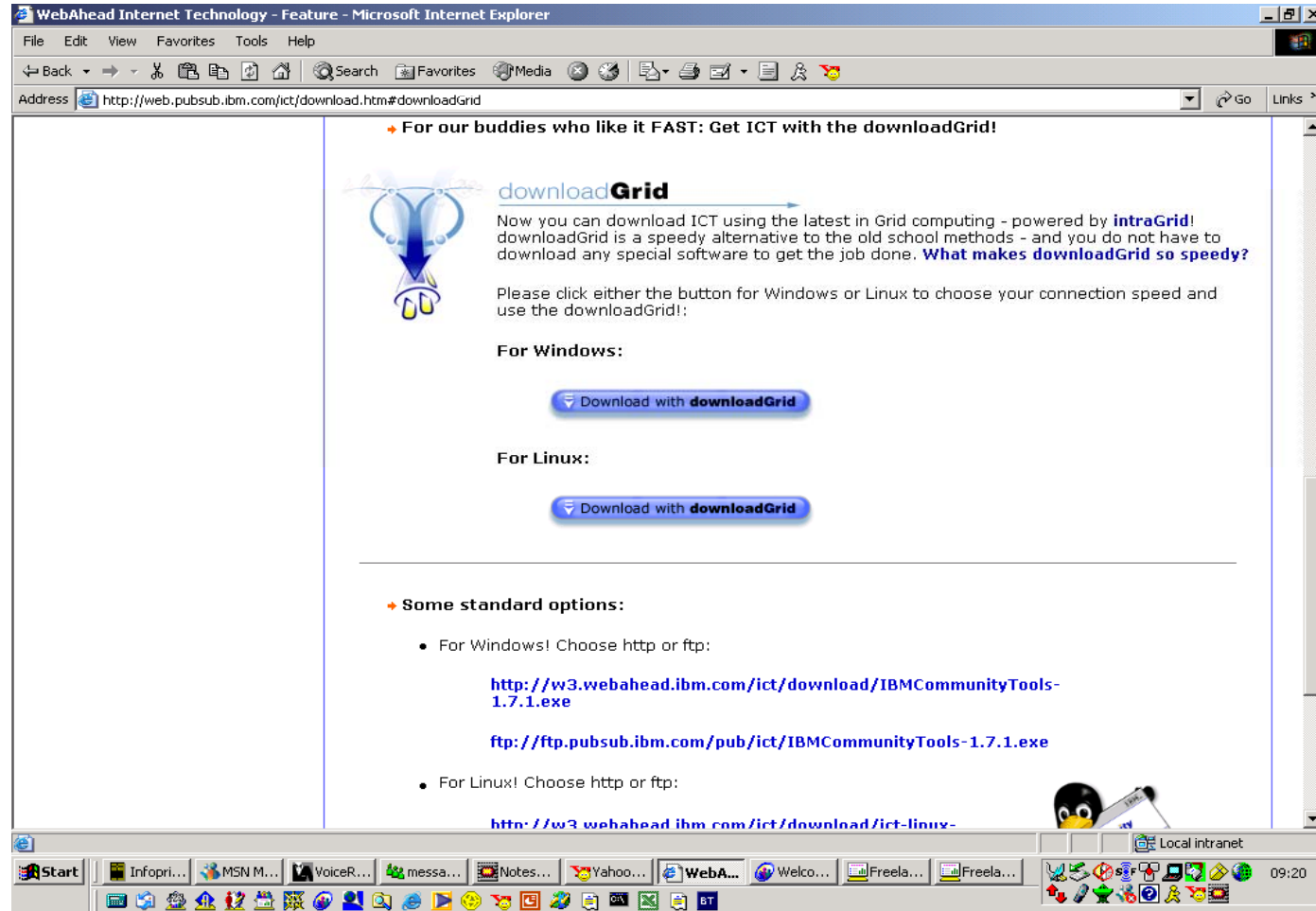
Innovation

## Challenge

Improve speed of  
Software download  
whilst spreading  
network load

## Solution

### ■ DownloadGrid




WebAhead Internet Technology - Feature - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address <http://web.pubsub.ibm.com/ict/download.htm#downloadGrid>

For our buddies who like it FAST: Get ICT with the downloadGrid!



### downloadGrid

Now you can download ICT using the latest in Grid computing - powered by **intraGrid!** downloadGrid is a speedy alternative to the old school methods - and you do not have to download any special software to get the job done. **What makes downloadGrid so speedy?**

Please click either the button for Windows or Linux to choose your connection speed and use the downloadGrid!

**For Windows:**

[Download with downloadGrid](#)

**For Linux:**

[Download with downloadGrid](#)

Some standard options:

- For Windows! Choose http or ftp:  
<http://w3.webahead.ibm.com/ict/download/IBMCommunityTools-1.7.1.exe>  
<ftp://ftp.pubsub.ibm.com/pub/ict/IBMCommunityTools-1.7.1.exe>
- For Linux! Choose http or ftp:  
<http://w3.webahead.ibm.com/ict/download/ict-linux->

Local intranet 09:20

# IBM DownloadGrid

Innovation

downloadGrid - Microsoft Internet Explorer

Downloaded: ibmcommunitytools-1.7.1.exe  
Total File Size: 42.458 MB Time: 0:00:23  
Status: Downloading...

Location	Transfer Rate	File Chunk
UK_HURSLEY	459 kB/s	<div style="width: 45%;"></div>
NETHERLANDS_UITHOORN	558 kB/s	<div style="width: 30%;"></div>
SWITZERLAND_ZURICH	111 kB/s	<div style="width: 10%;"></div>
US_BURLINGAME	147 kB/s	<div style="width: 15%;"></div>
US_YORKTOWN	82 kB/s	<div style="width: 8%;"></div>

Complete: 52 % Global Rate: 1374 KB/s

Open Cancel ?

downloadGrid powered by IntraGrid

# Grid Adoption Steps – IBM Roadmap to Value

Grid Value and Capability

Transaction Management

WebSphere.

Billing and Metering

Tivoli.

Workload Management

@server Tivoli.

Automated Provisioning

@server Tivoli.

Information Virtualization

@server  
TotalStorage™

DB2. Tivoli. IAVA

Scheduling

WebSphere. Tivoli. DEVICES UNITED GridXpert

Web Services + OGSi

@server WebSphere.



## IBM Commitment & Focus

### Commitment

- Open standards
- R&D and investments in grid and related technologies
- Industry-leading partners
- Multiplatform experience and expertise
- Worldwide grid strategy, design, implementation and integration services

### Focus

- Industry-specific offerings
- Product development roadmaps
- Building an ecosystem
- Implementing grids for commercial and public organizations
- Integrated solutions: Software, Services, Hardware and Partners

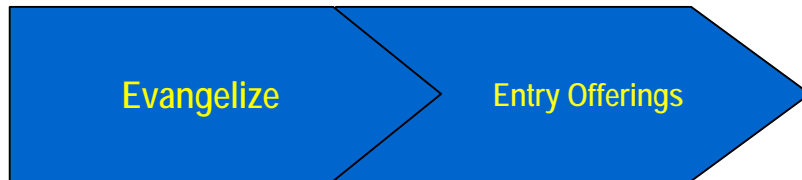
***Largest number of Grid customer implementations in both commercial and public sectors***

# Contact Details

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  - Tel: 0208 844 6534

# Backup Foils

# IBM approach to Grid projects



- Grid Application assessment
- IGS Offering “one to one”
- Technical Consulting
- Technically Viable Grid Project

- Grid Innovation Workshop
- IGS Offering “many to many”
- Mindset building
- Selection of a Grid Project

- Grid Value@Work
- IGS BCS Offering “one to many”
- IBM Research ROI Tool
- Financially proven project

Grid Project Execution



# Royal Dutch Shell

## Challenge

Improve accuracy and speed of summarization and scientific modeling applications

## Solution

- IBM @server
- Linux
- Globus Toolkit

***"Grid computing is important to Shell because it offers the potential to create a truly unlimited resource, with a uniform interface to a variety of services. This is a significant opportunity for Shell to engage its independent companies in closer cooperation."*** J.N. Buur, Principal Research

Physicist, Shell International Exploration and Production B.V.



### Technology Benefits:

- More robust, scalable IT infrastructure that adjusts as volumes fluctuate
- Open standards permit easy integration of existing software

### Business Benefits:

- Cut processing time of seismic data, while improving the quality of the output
- Focus employees on key scientific, not IT problems

# CERN: European Organization for Nuclear Research

## Challenge:

### Large Hadron Collider (LHC) project:

- Creating a massive data management system
- Single file namespace managing petabytes of data

### European DataGrid project:

- Developing and testing technology infrastructure
- Eleven (11) European countries involved
- Project divided into 12 “Work Packages”
- Applications being tested include: High Energy Physics

## Solution:

- IBM storage virtualization solution (StorageTank)



# European Aeronautic Defense and Space Company

Engineering & Design

## Challenge

EADS wanted to build an “on demand computing” model for the simulation tools used by their engineers to shorten analysis completion time and provide a single image of computer resources.

## Solution

Shorten the product design cycle with a Grid Computing platform based on:

- IBM @server
- Linux
- Globus Toolkit
- GridXpert technology



### Technology Benefits:

- More robust, scalable IT infrastructure that adjusts as requests fluctuate
- Open standards permit easy integration of existing software

### Business Benefits:

- Cut analysis and simulation time, while improving the quality of the output
- Improve the productivity of the Design Office

# IBM

## Engineering & Design

### Challenge

- Microprocessor Design
- Benchmarking & Testing
- Server Design

### Solution

- **IntraGrid**
- **IBM @server**
- **Linux & zVM**
- **Globus Toolkit**
- **IBM Global Services**



#### **Microprocessor Design Grid**

- Chip simulation driving 80% resource utilization
- Lower error rates in microprocessor designs
- Reduced development cycle, improved ROI and design engineer productivity

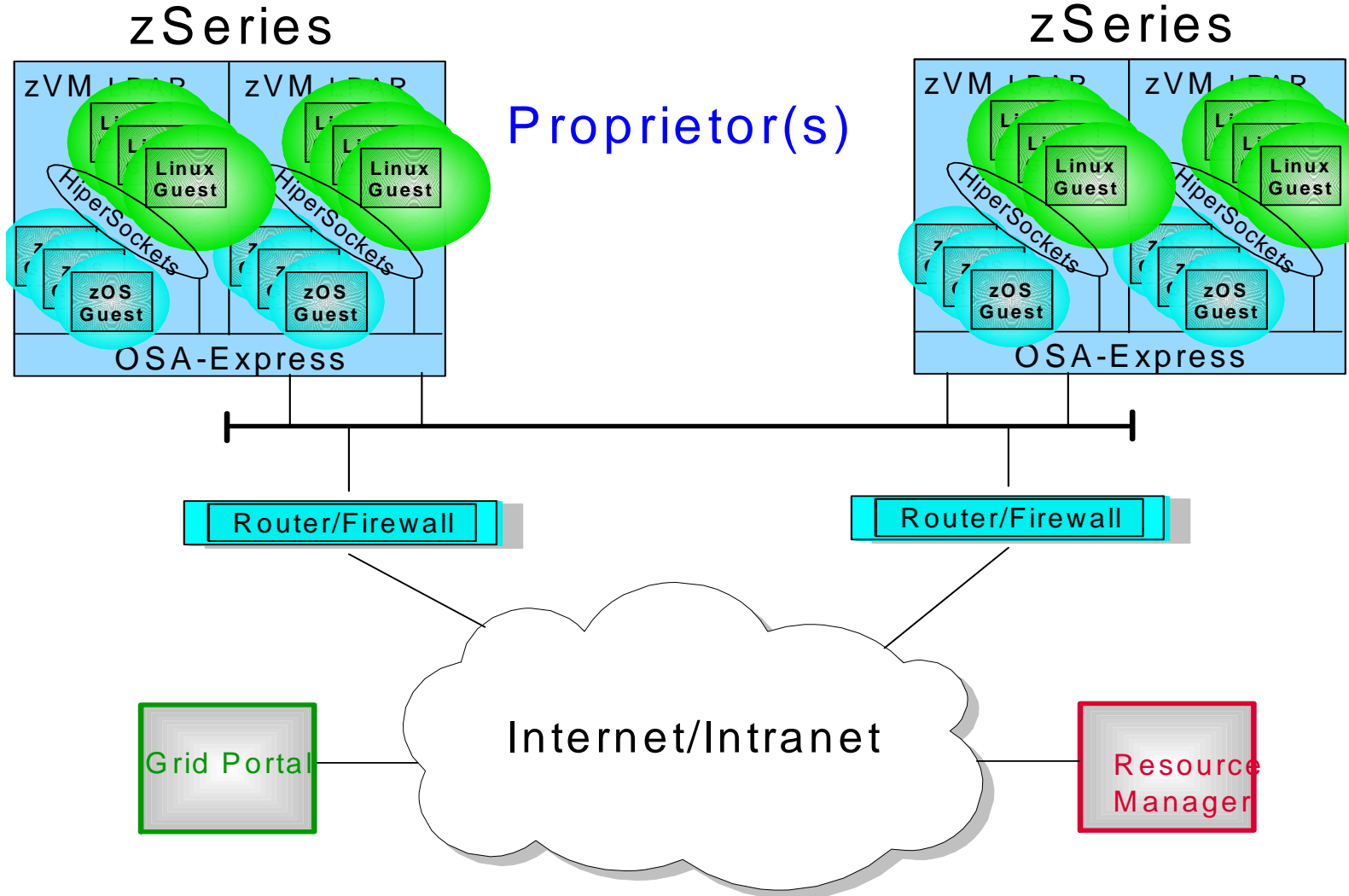
#### **Benchmarking/Testing Grid**

- Allows for larger scaling tests at lower costs by pooling all the servers across multiple sites

#### **zSeries Design Grid**

- Production environment is adjusted to average workload, lowering fixed cost
- Increased computing power for HW simulations
- 40% increase in productivity of hardware engineers

# S/390 intraGrid Architecture



# Charles Schwab Architecture

