Sun Cloud Introduction

Sungwoo Kim
Sun Microsystems, Inc.

Topics

- Cloud Computing and Sun's Vision

- Sun's Cloud Strategy

Sun's Vision Since 1984

THE NETWORK is the Computer

Everyone is Talking About Clouds

Software as a Service

Platform as a Service

Storage as a Service

Grid Computing

Database as a Service

Virtualization

Utility Computing

Application Hosting

Infrastructure as a Service

Driving Efficiency and Lowering Costs

Economics

Pay As-You-Go

Op-ex vs. Cap-ex

SLA

Virtualization

Developer Centric

Rapid, Self Provisioning

Faster Deployment

API-Driven

Flexibility

Elastic

On-Demand

Multi-Tenant

Changing IT Relationships

Developers

Why won't IT support this?

Why can't I use the versions I want?

Why can't I get better availability?

How can I pay only for what
I need?

How quickly can I get more servers?

Deployers

Why do we have so many versions of every package?

Where can I cut costs?

How can I do finer grain provisioning?

Where do we enforce security, regulation and audit?

Cloud Computing's Defining Concepts

Self-Service Provisioning + Pay-per-use

Virtualization + Multi-tenancy

Layers of Services
(IaaS, PaaS, SaaS)

Public vs Private Clouds

Application Domains
(Web, HPC, Finance, Health)

BUT clouds can also be quite different

We see...

Many clouds catering to different needs

Emerging Market Opportunity

Many Clouds

Public and Private

Open and Compatible

Powered by Sun

Sun's Strategy

Develop the core technologies for Sun's Open Cloud Platform

Build and test new Services through a Sun Cloud

Partner with service providers and enterprises to build their own clouds

Develop open standards and drive developer adoption

Build communities and marketplaces

Sun Open Cloud Platform

**Clouds are the next platform battle
Need a platform which is bigger than any
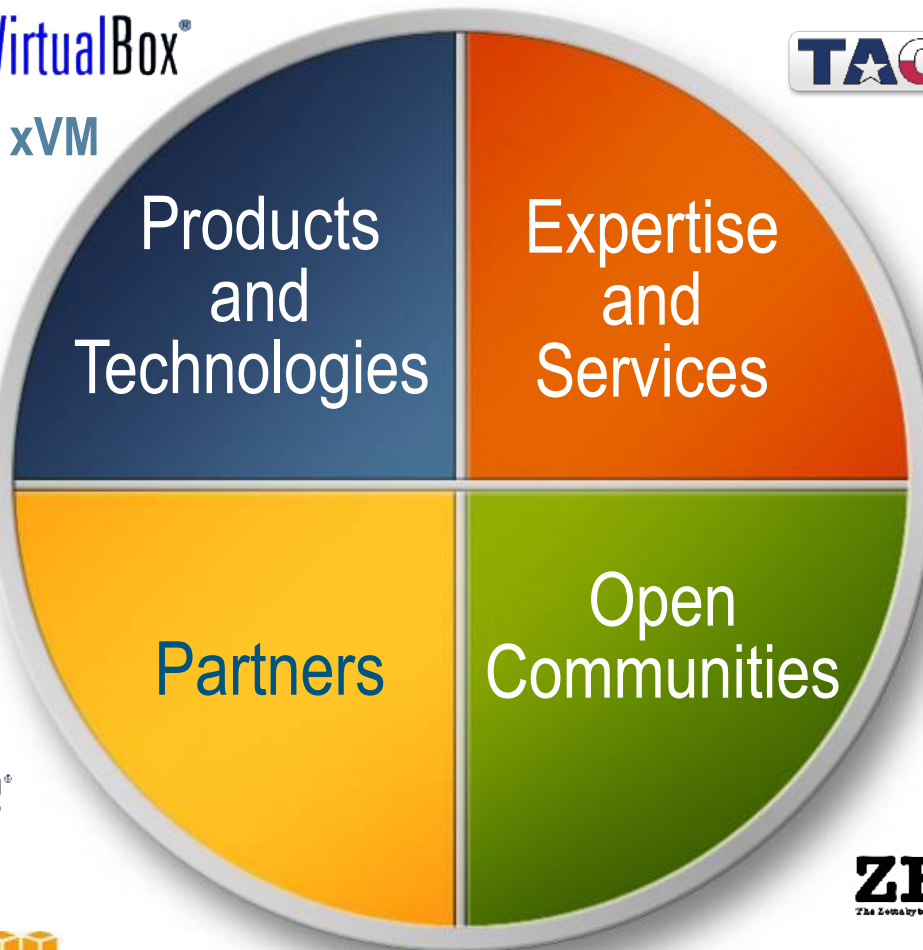single cloud instance**

Driving the Sun Open Cloud Platform

VirtualBox®

Sun xVM

Q-layer

MySQL

zmanda
Open Source Backup

RIGHT SCALE®

TickApps

amazon
web services™

Products
and
Technologies

Expertise
and
Services

Partners

Open
Communities

TACC

glassfish.dev.java.net

Java

OpenOffice.org

ZFS
The Zettabyte File System

Eucalyptus

NetBeans

lustre®

The Sun Cloud

Sun's Cloud built using the Sun Open Cloud Platform

Sun Cloud Architecture Overview

User Apps and Services

Internet Accessible APIs and UIs

Customer Web Site

Compute Service

Storage Service

Virtual Datacenter Management Console

Application Catalog, Forums, Docs

Accounting, Billing and Metering

Virtualized Datacenter Management Layer

Servers

Storage

Network

Partner and Build

Sun Cloud Storage Service

What It is

- On-demand, API-based access to storage on the network

Features

- Ability to store and retrieve data as objects or files
- REST API with open, AWS S3-like semantics for object storage
- WebDAV for file storage
- Fast and inexpensive cloning of objects and files
- High availability
- Detailed metering of storage used, I/O requests, bandwidth, etc.

Customer Benefit

- Scalable, highly available storage without big hardware investments

Sun Cloud Compute Service

What It Is

- On-demand, scalable computing infrastructure accessed via APIs or unique Virtual Datacenter (VDC) UI model

Features

- On-demand provisioning of virtual machines of industry-standard operating systems including Linux, Windows and OpenSolaris
- Control and management with **open APIs**, AWS EC2-like API or Virtual Datacenter UI
- Creation of custom VMIs and access to pre-configured VMIs in the cloud
- Support for persistent and non-persistent virtual machines

Customer Benefit

- Affordable access to highly scalable computing infrastructure
- Always available

Sun Virtual Data Center Computing
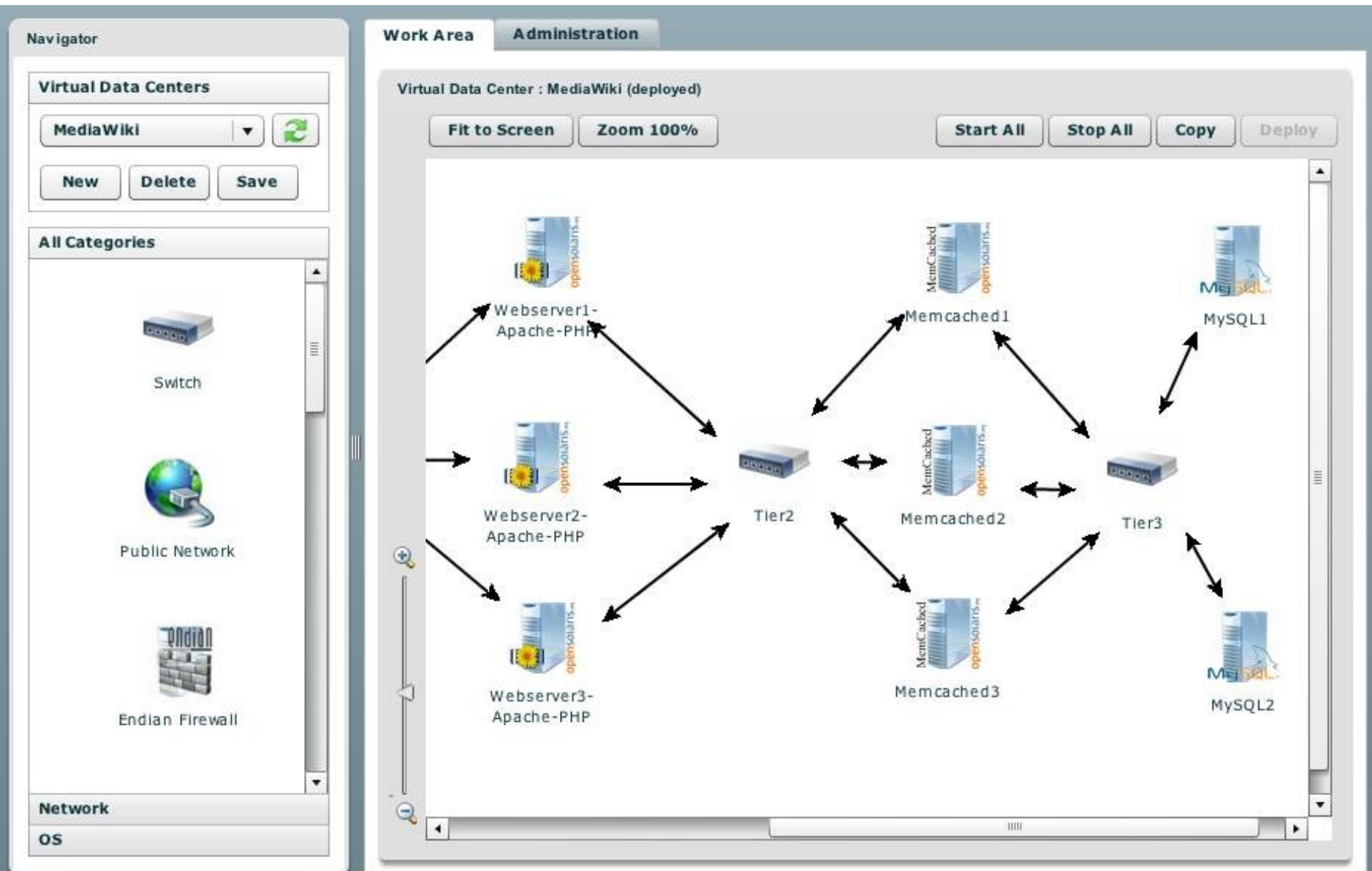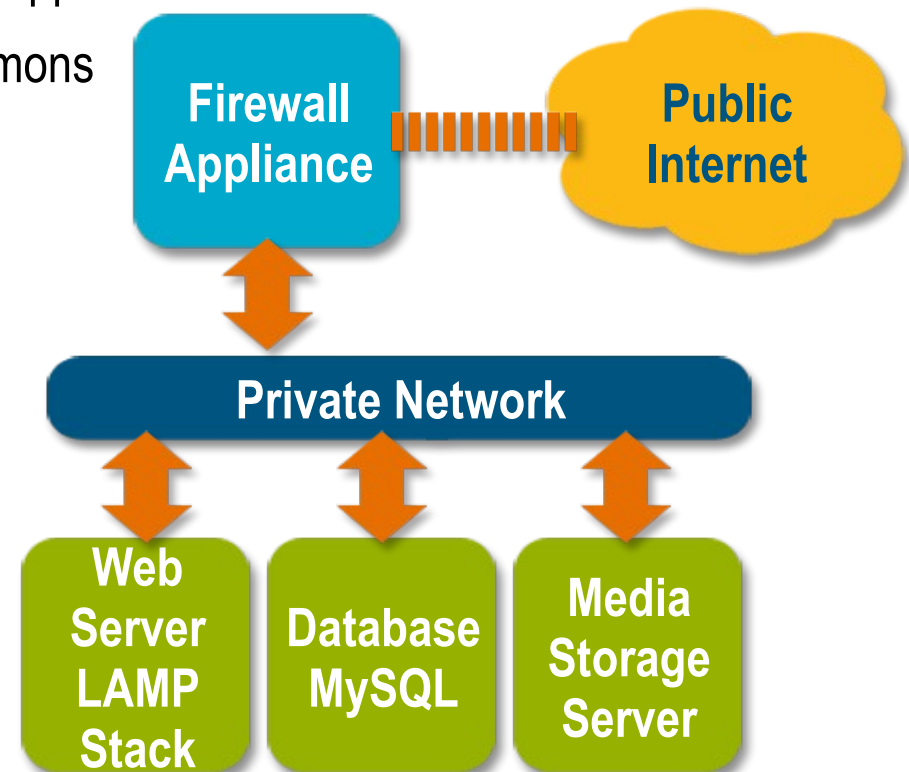
Sun Cloud Open RESTful API

- Everything is a resource – http GET, POST, PUT...

- Requires only a single starting point - other URIs are discoverable

- Easy to create, save, load, stop, start entire applications

- Released to the public under Creative Commons

```
•   GET /xrgy.cloud.sun.com
•
•   Server response:
•
•    {
•      "name" : "XRGY Virtual Data Center",
•      "uri" : "http://xrgy.cloud.sun.com",
•
•      "addresses" : [ ],
•      "vnets" : [ ],
•      "volumes" : [ ],
•
•      "create-vnet" : "/ops/create-vnet",
•      "create-volume" : "/ops/create-vol",
•      "create-cluster" : "/ops/create-cluster",
•
•      "clusters" :  [
•        {
•          "name": "cluster1",
•          "uri": "/clusters/cluster1",
•          "create-vm" :
•   "/clusters/cluster1/ops/create-vm",
•          .......
•        }]
```
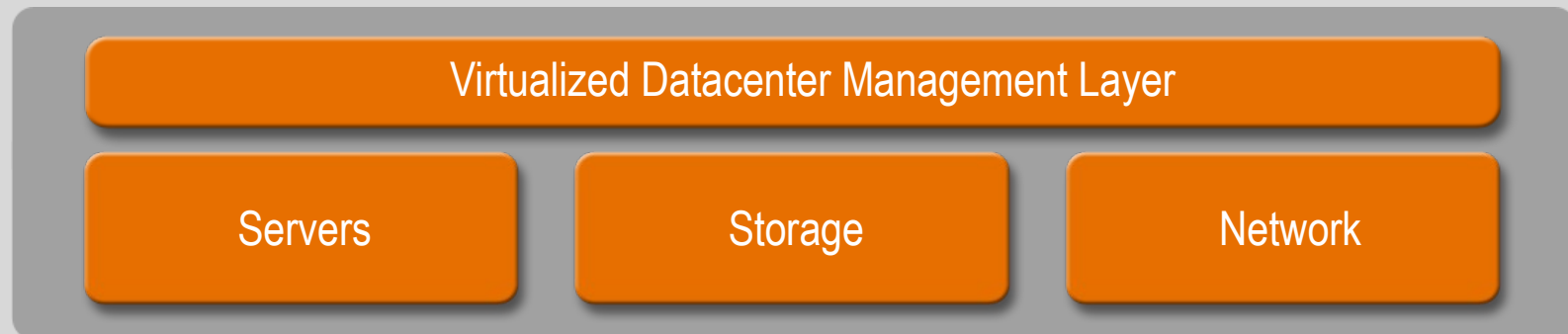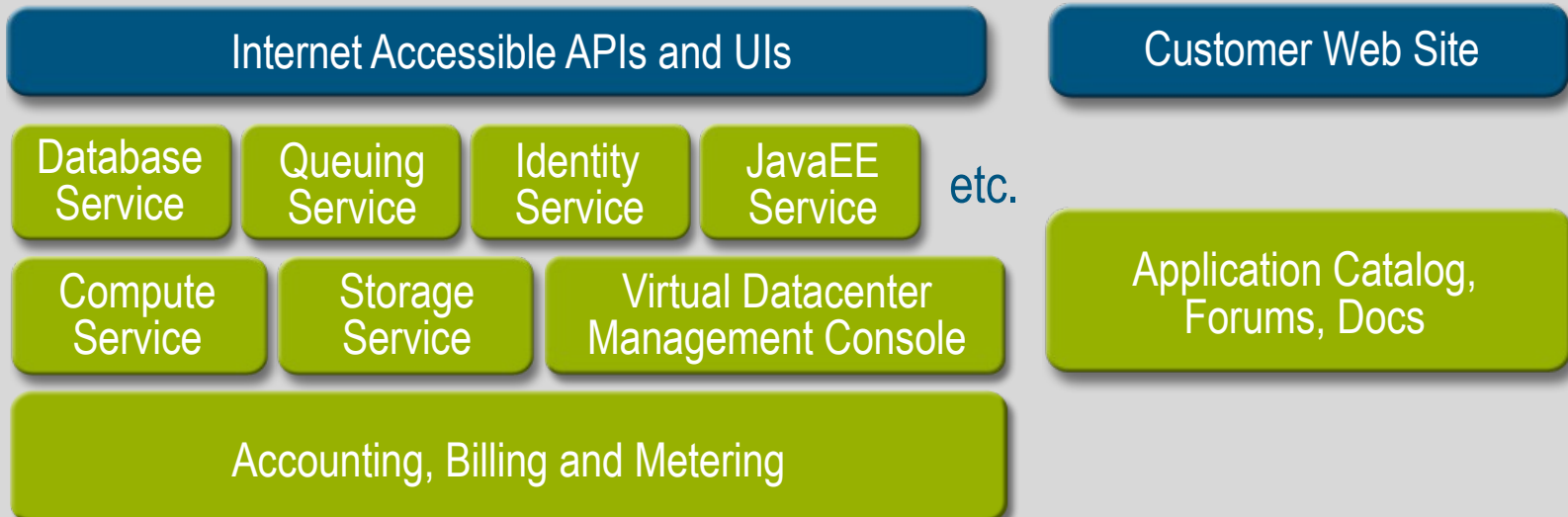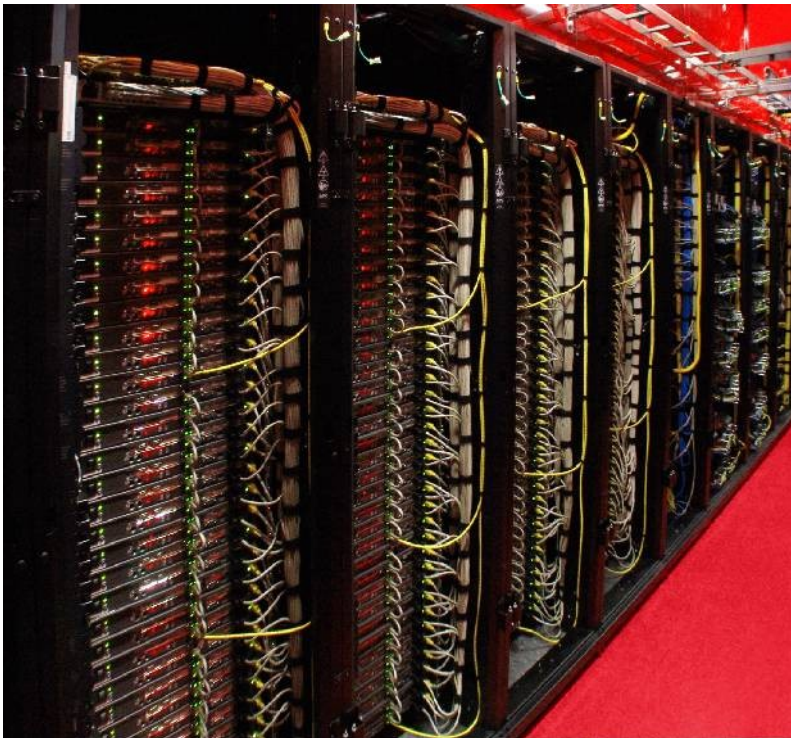

Firewall Appliance — Public Internet — Private Network — Web Server LAMP Stack — Database MySQL — Media Storage Server

http://kenai.com/projects/suncloudapis/pages/Home
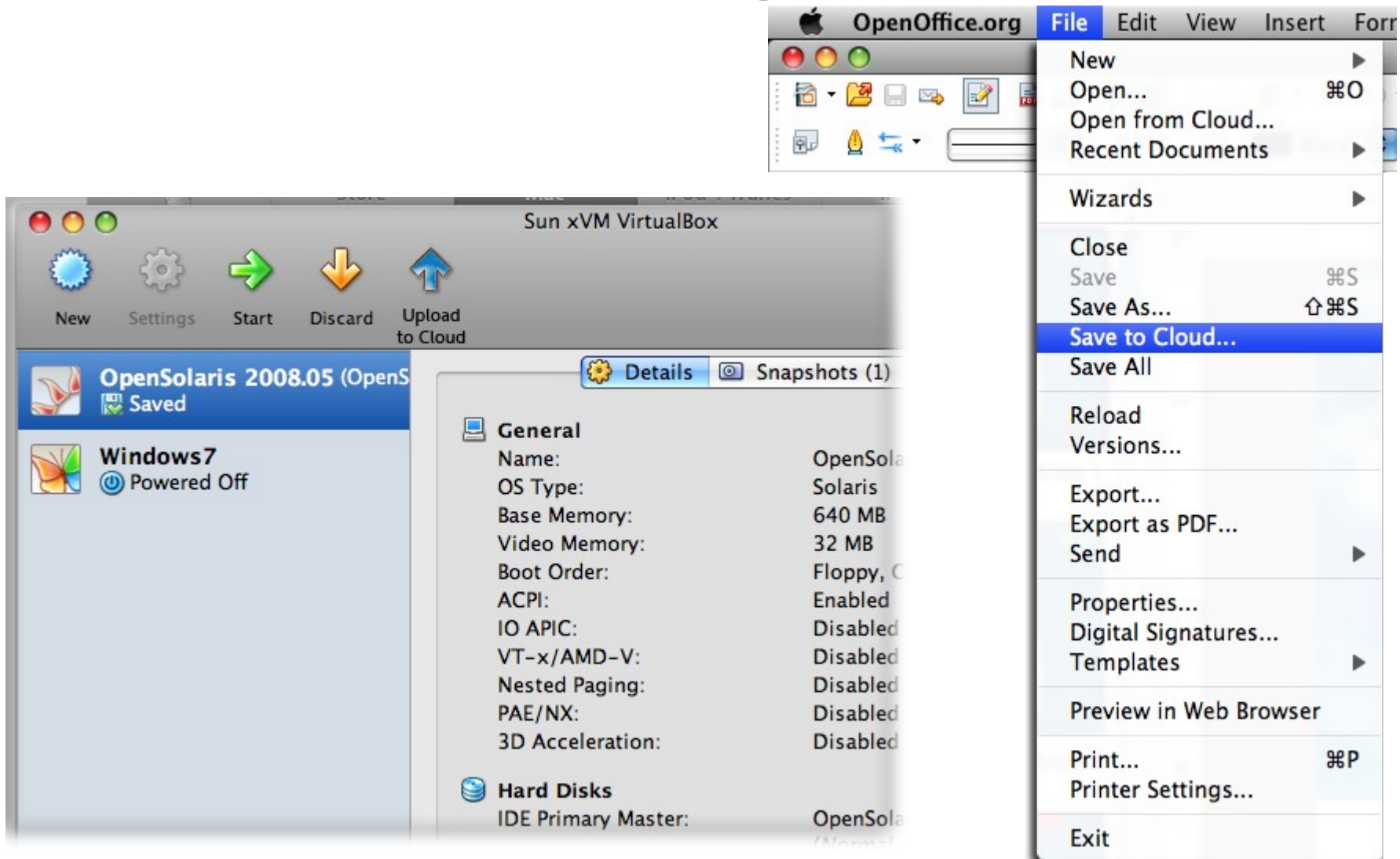
Cloud Architecture – Future

User Apps and Services

Internet Accessible APIs and UIs

Customer Web Site

| Database Service | Queuing Service | Identity Service | JavaEE Service | etc. |

Application Catalog, Forums, Docs

| Compute Service | Storage Service | Virtual Datacenter Management Console |

Accounting, Billing and Metering

Virtualized Datacenter Management Layer

| Servers | Storage | Network |

Partner and Build

Sun's Computing Cloud at Switch Communications' SuperNAP (Las Vegas)

- State of the art facility
  - > 1500 watts per sq ft density
  - > 146 MVA generator capacity
  - > 100% heat containment
  - > 7000+ cabinets
  - > 24/7/365 security
- Second to none connectivity
  - > 26 national carriers are physically on-net within the data center

Cloud enables many possibilities....

Partner Ecosystem

Backup and Archival

QA/Lab Management/Testing

Security and Compliance

Online Media

SaaS

Management and Infrastructure

Open Cloud Platform Business Models

- Public Clouds
  - > À la carte services for users
  - > Utility pay-as-you-go competitive pricing models
  - > Easy sign-up and self-provisioning
  - > Flexible billing and IdM options
- Private Clouds
  - > Hosted Private Clouds
  - > Enterprises via Sun and partner Sales and Services to operate own clouds

Sun Cloud Computing Proposition

Innovative

Open

Choice

Opportunities to Work Together

- Participate in the Development of our Open Cloud APIs

- Partner with Sun to Deliver new Cloud Services

  - Private Cloud built using Sun Open Cloud platform for development, test, evaluation, and services delivery

  - Public Cloud for SME using Sun Open Cloud Platform

Sun Cloud Introduction

Sungwoo Kim
Sun Microsystems, Inc.

Sun Cloud Companion Services

App Catalog

Community and ISV solutions for instant deployment
App store
Infrastructure
library.network.com

Project Management

Cloud aware
Code repository
Collab tools, incl. chat and talk
kenai.com

Cloud IDE

Netbeans update
Cloud and Kenai aware
Build and debug on cloud

Introducing "Cloud Office"

- A complete office suite in your browser
  - > Create text and spreadsheet documents
  - > Open & share presentations
  - > Access from any web browser

- Coming soon...
  - > Email, calendar, tasks, address book and instant messenger
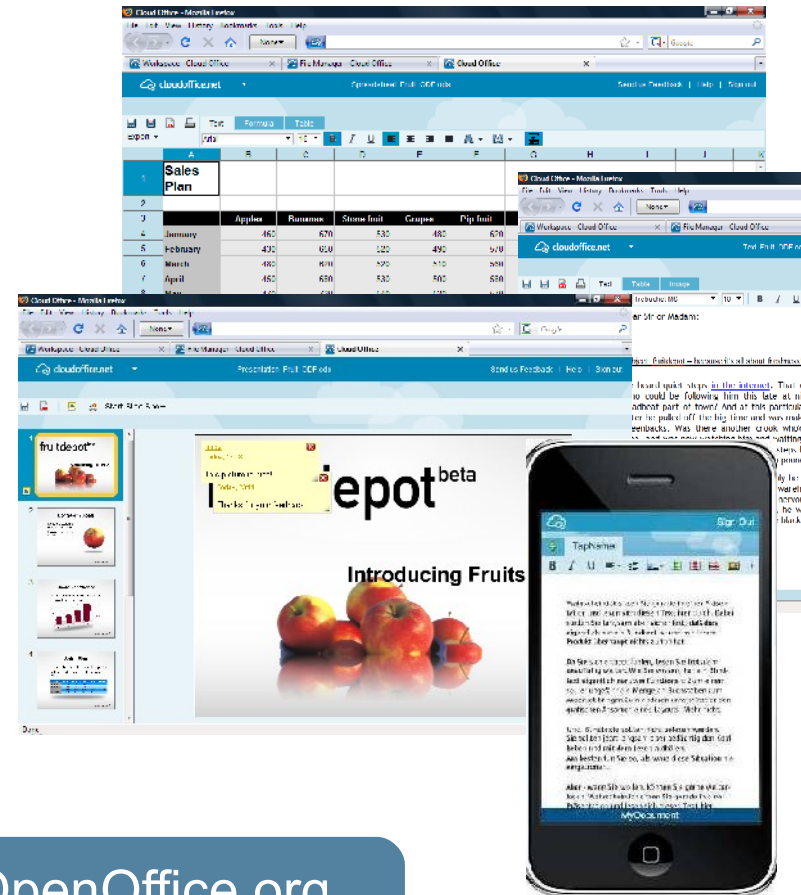
Seamless round trip with OpenOffice.org (ODF) plus MSFT Office & PDF im/export

Mobile Phone Access

- Read private and shared documents on your mobile
  - > Optimized for iPhone and other touch-screen phones
  - > Works on most 3G phones available 2009

- Coming soon...
  - > Add sticky notes from your mobile for last-minute reviews