



COUNCIL OF  
INFORMATION SERVICES  
DIRECTORS



vmware®

# What are the other State Governments doing with virtualization?

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Presentation: <http://goo.gl/ZXeX>

Materials: <http://goo.gl/kVCM>



## NASCIO: State CIO Priorities for 2010

### Priorities Strategies, Management Processes and Solutions

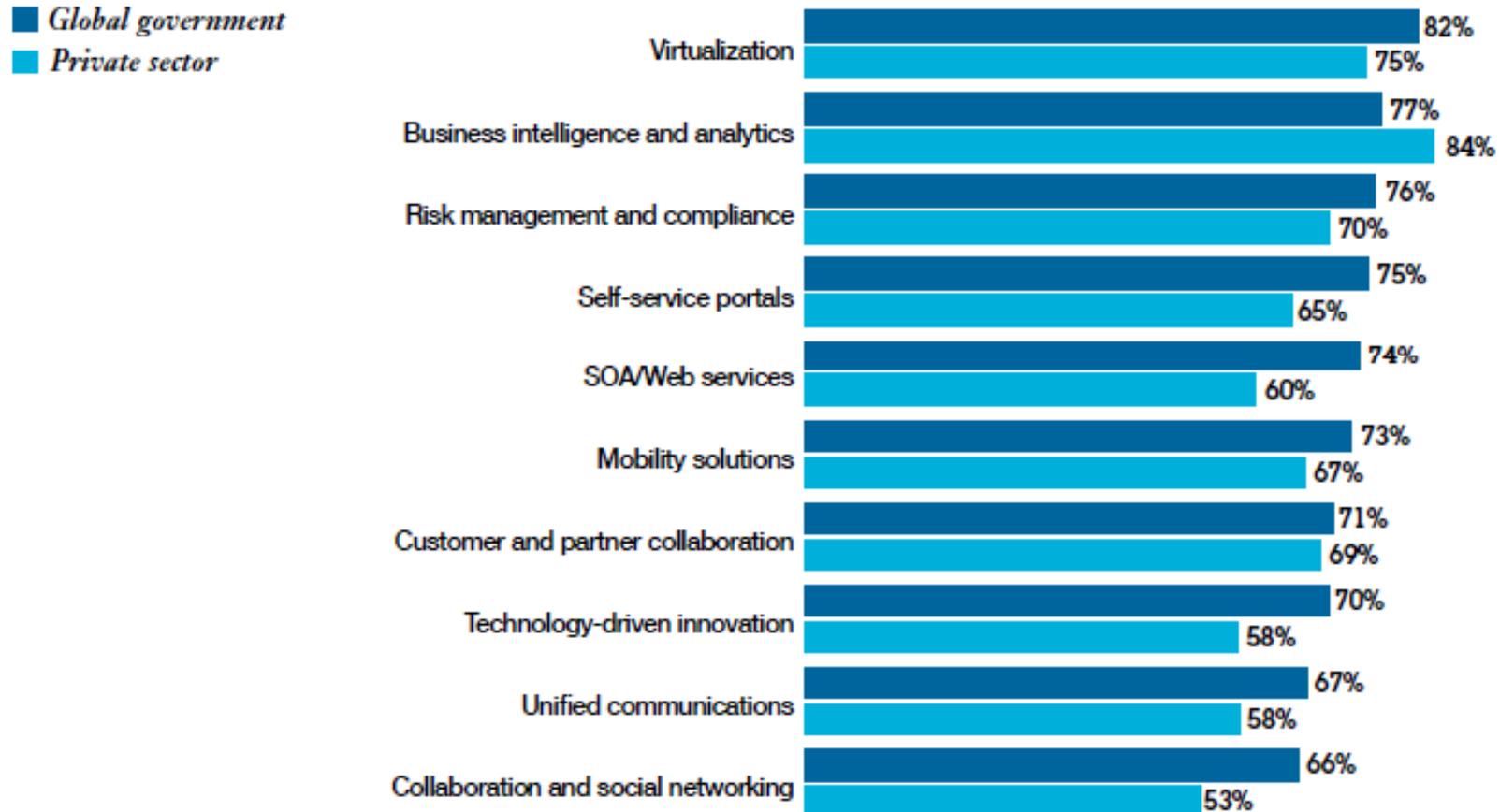
- Budget and cost control (up from #3)
- Consolidation (down from #1)
- Shared Services (down from #2)
- Broadband and connectivity
- American Recovery and Reinvestment Act
- Security (down from #4)
- Transparency (up from #8)
- Infrastructure
- Health Information (same)
- Governance (same)

## NASCIO: State CIO Priorities for 2010

### Priority Technologies, Applications and Tools

- Virtualization (storage, computing, data centers, servers, apps) (#1)
- Networking, voice/data communications, unified communications (#4)
- Document/content/records management (#2)
- Cloud computing, software as a service (new)
- Security enhancement tools (new)
- Enterprise resource planning / legacy modernization (#3)
- GIS (#8)
- Business Intelligence and Business Analytics (#9)
- Identify and access management (#7)
- Social media and networking (#5)
- (Dropped from 2009 – Green IT, Mobile work force enablement)

## Government CIOs vs Private Sector: Visionary Plans



NOTE: CIOs were asked to select all applicable answers to the question, "What kind of visionary plans do you have for enhanced competitiveness?"

## NASCIO: State DC Consolidation - Nothing New

### Status of State's Data Center Consolidation Initiatives

Initiative	Percent	Count
Completed	14%	4 of 29
In Progress/ Partial	38%	11 of 29
In Planning Phase	24%	7 of 29
Proposed	17%	5 of 29
No Activity	7%	2 of 29

Source: NASCIO's 2007 survey of state data center consolidation initiatives.

## **Consolidation Drivers**

### **States Reported**

**Disaster Recovery (82.8%)**

**Replication, Redundancy and Fault Tolerance (75.9%)**

**Cost Savings (65.5%)**

**Security and Data Classification (62.1%)**

**Better access to new technologies for all agencies  
(55.2%)**

**Aging State Facilities (51.7%)**

**Improved Information Sharing / Data Integration (51.7%)**

## Consolidation Challenges

### States Reported

**Workforce resistance to change (89.7%)**

**Agencies' desire to remain autonomous (86.2%)**

Problems moving infrastructure away (48.3%)

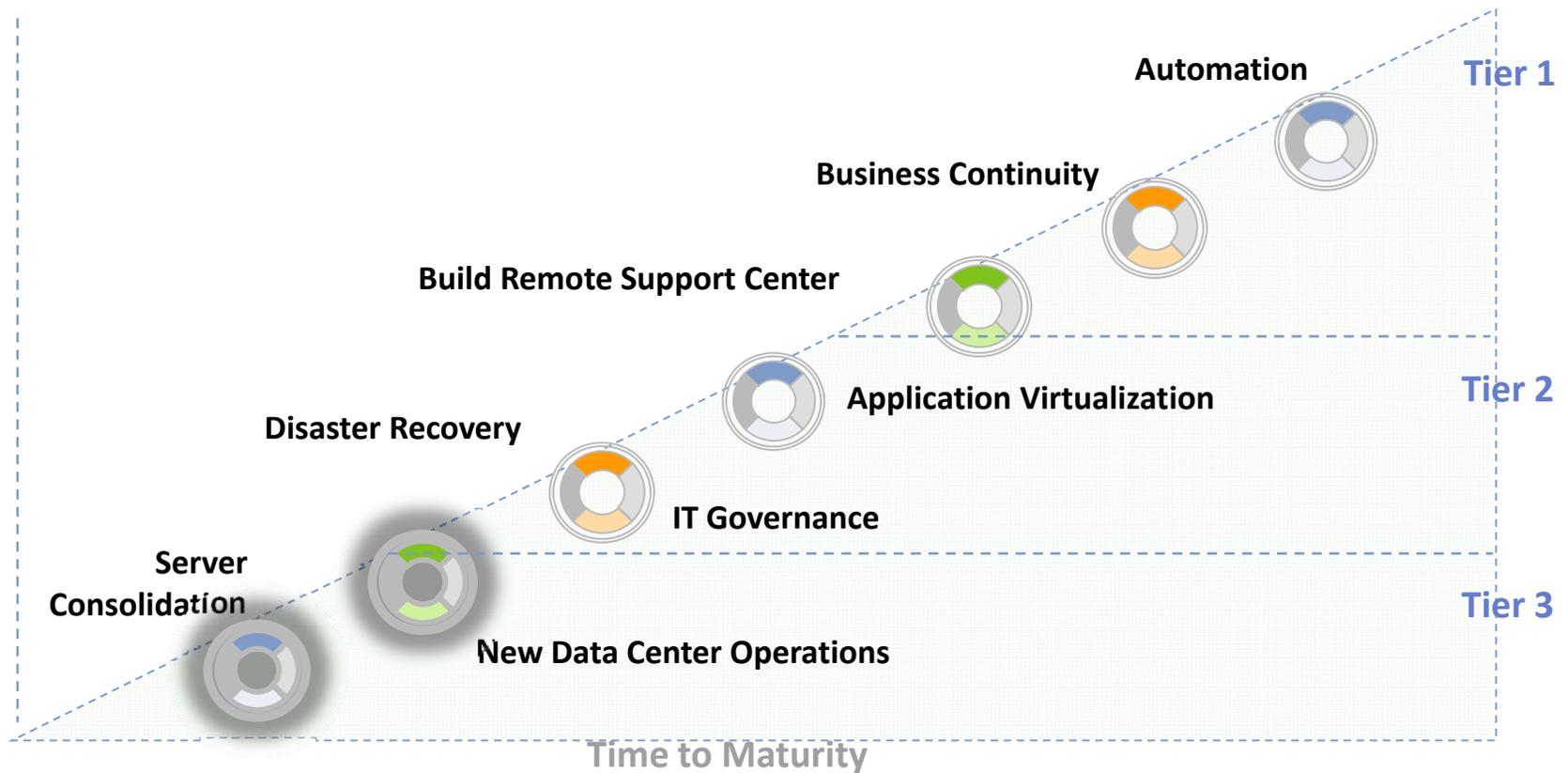
Backlash when consolidation didn't meet needs (20.7%)

Failure to identify and adhere to SLAs (3.4%)

# State of CA: Plan for the Big Picture Deploy Incrementally

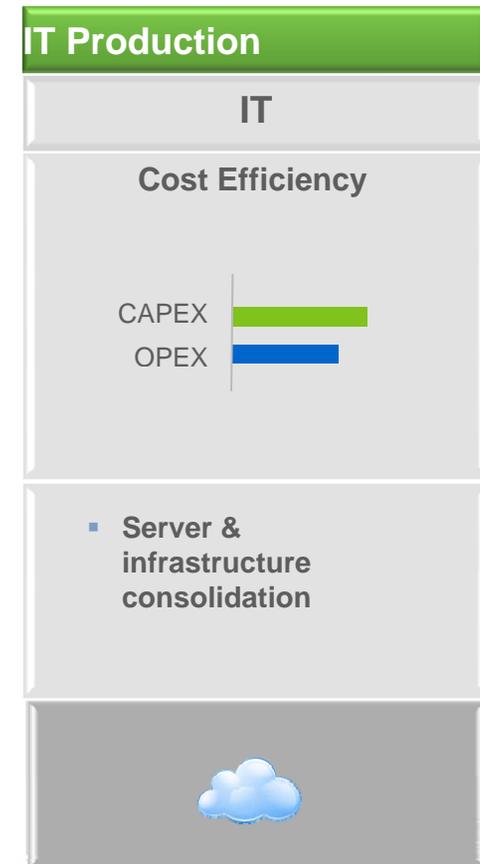
Virtual  
Machines

Criticality  
of  
Applications



## First Phase: IT Production

- Cost cutting initiatives
- Server sprawl
- Major hardware refresh
- Infrastructure outages, downtime
- Exploration of virtualization
- Capex / Opex



## Utah State Government



2005: Single IT department for all state IT personnel, assets & contracts

2007: Architecture Review Board established for standards

2009: Virtualization Platform standardized on VMware

2010: Data Center Consolidation

- From 26 Agencies, 35 Data Centers down to 2 Data Centers
- Completed Summer 2010 in 18 months

Server Consolidation through virtualization at same time

- 1,864 servers reduced to 591
- 200 IT staff lost through attrition not replaced
- Increased security and performance
- \$4 Million annual savings (server, support, energy), 6 month ROI
- Contact: Jim Matsumura [JMatsumura@utah.gov](mailto:JMatsumura@utah.gov) Dir Infrastructure

Next Step: Hybrid Cloud providing state hosted and commercially provided offerings delivered through Dep of Tech Services Catalog



<http://dts.utah.gov/about/documents/FY2010DTSAccomplishmentsReport.pdf>

## State of California

### 2/9/2010 Executive Order: Technology Consolidation

- **Goal: 1.5B saved over 5 years**
- Overhaul of IT facilities, networks, email, servers and storage
- All agencies under Governor to state's shared email solution by 6/2010 (one email directory from 100) – hosted by 7/2011
- **Reduce datacenter square footage by 25%** (75k square feet in 12 months) by 7/2010 & 50% by 7/2011
- Begin transitioning all mission critical & public facing apps to tier 3 data centers by 9/2010
- Migration of network services to California Gov Network by 7/2010
- Cost savings in IT and telecomm equip energy usage: 10% by 7/2010, 20% by 7/2011 and 30% by 7/2012
- As of 6/2010 **60% of departments had virtualization programs**

- <http://www.govtech.com/gt/765338>

## State of California

### “Consolidation Lessons learned so far”

- Tracking compliance with scorecards
- Allow enough time
- Plan and meet early
- Having the right team members
- Escalating issues sooner than later
- Backbone: “Trust that the outcome is going to work”
- **Executive order is budget-neutral – doing the work with refresh dollars**

## State of California

### Key Success Factors to Virtualization Transformation

- ☑ Treat virtualization as an **architectural decision**—think strategically
- ☑ **Design for the big picture**—deploy incrementally
- ☑ Form a **core virtualization team**—Center of Excellence
- ☑ Implement a **high quality design**
  - **Coordinate buy-in from all IT stakeholders (server, network, storage, security, applications)**
  - Institute robust best practices in technical design
  - Establish proficient ways to track and remediate issues

## State of California



### VMware Virtualization Practices Standard

- DRS (fully automated, 3 stars) and HA should be used
- Blade HW where the ROI makes sense / ESX runs despite any 1 chasis failure
- Multi-Proc CPUs
- At least 32GB per Host, clusters with same host configurations
- 6 GB or 2 10 GB ethernet ports
  - 2 SC port, 2 Vmotion, 2 IP storage, 2 VMs, 2 HA Heartbeat
- 2 FC or 2 iSCSI ports
- Boot from local disk, leverage server IPMI
- vSwitch: reject promiscuous mode, MAC address changes, forged transmits
- LUN: 1 VMFS, .3T to 1T, RAID 5 for high read, RAID 1+0 for high writes, 8MB Block, 16 VMs / LUN, isolate ISOs
- P2V Decision Flowchart
- <http://www.cio.ca.gov/wiki/Enterprise%20Architecture%20Standards.aspx>

### “The Virtual State of Tennessee”

- During the Cumberland River flood, State Agency retrieved production servers and completed virtual conversion in 7 hours
- **45 days to physical provision reduced to less than 5 in virtual world**
- Project **initiated Fall 2006** with 100 virtual machines
- Currently running 680 virtual machines on 65 hosts.
- Results: **increased services (greater uptime, disaster recovery capabilities), increased System Admin ratio 3x, no increase in cost to agencies**
- Based on VMware virtualization
- Benefited from standardization
- Saving \$2.25 Million annually in energy costs, \$9 Million in HW avoidance
- Finalist in 2010 NASCIO Enterprise IT Management Initiatives

## Illinois State Government



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State Government  
September 27, 2010

State of Illinois, Data Center Server Consolidation and Virtualization  
Project  
Category: Improving State Operations

- In 2003, Illinois faced a 5B budget deficit
- **Data Center/Server consolidation, IT shared services** identified as savings areas – Legislation passed.
- **Project DC Consolidation initiated 2006:** 22 data centers reduced to 2 (22.8k sq feet eliminated)
- **Server Virtualization Project initiated Jan 2008 (after consolidation) and completed in Nov 2009**
- Currently running 1044 virtual machines on 190 blade hosts
- **Eliminated 854 aging physical servers** (many over 10 years old).
- Results: **increased services : greater uptime, full offsite disaster recovery capabilities, reduced server/storage provisioning time**
- Based on VMware virtualization
- **ROI 13 month breakeven, \$10.7M ROI since 2006**
- Saving \$4.3 Million annually in DC costs, \$1.5 Million in power savings and HVAC upgrade avoidance, \$1.9M in HW server savings
- Contact: [don.warren@illinois.gov](mailto:don.warren@illinois.gov) DC Ops Executive



# State of Ohio: Department of Commerce



## Operational Efficiency

- “We’re kind of a conglomerate agency with many different missions”  
CIO Alan Shellhause
- VMware offered a way to control growth while making operations more efficient.
- 85% virtualized
- We’re going to get as close to 100 percent virtualized as we can
- Reduced energy 55-60%, “helps us stay in line with State of Ohio’s goals of going green”.
- Reduced cooling 35%
- **Do more with less**, “With state budgets the way they are, we are not able to get additional staff to manage additional deployments. You have to find ways to manage the data center with the same number or a smaller number of people. That’s another benefit from virtualizing”

➤ [http://www.vmware.com/files/pdf/customers/09Q3\\_ss\\_vmw\\_Ohio\\_Dept\\_english.pdf](http://www.vmware.com/files/pdf/customers/09Q3_ss_vmw_Ohio_Dept_english.pdf)

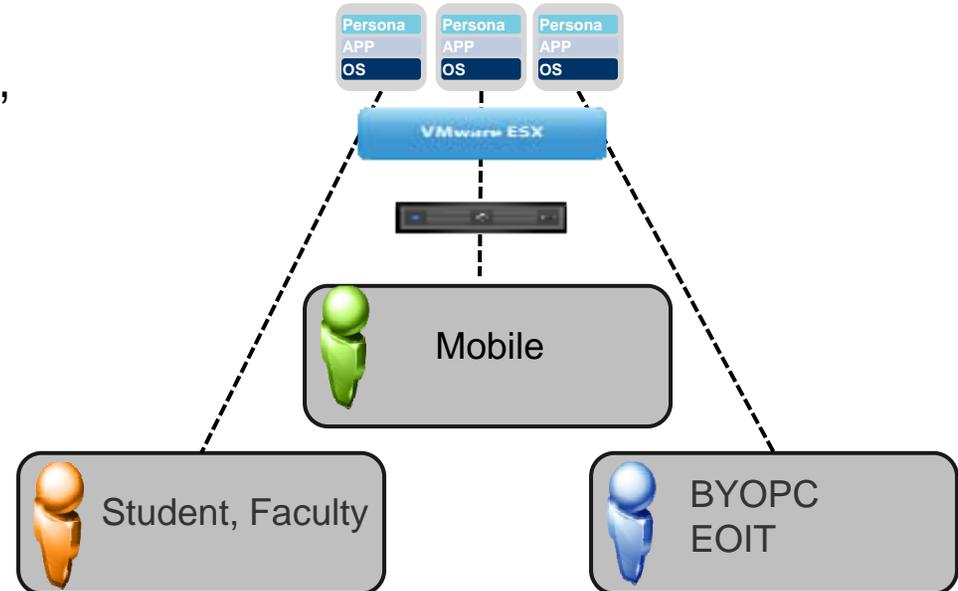


## Rebalancing IT expenditures

- 1/2008, State agencies **CIOs asked to cut tech spending 30%** for a total of \$240M
- 70% IT operations spent on maintaining infrastructure
- “Our move toward **server virtualization is a way to rebalance our IT investments**” CIO Sam Orth
- “We should be investing 70% in maintaining applications and 30% in maintaining infrastructure” Orth
- “If you consolidate 60% of the servers you eliminate upward of 2,500 servers. That’s substantial” Orth
- 2009: 26 agencies participating in virtualization project
- Server virtualization helpdesk: planning, estimation tools, Capacity Planner, dedicated VMware technical account manager
- **Negotiated state (Universities, Local) discounts with VMware**
- **Power rebates**, UPS no longer taxed, \$10M savings going to \$16M “extremely conservative estimated” Orth

## Extending access to the University

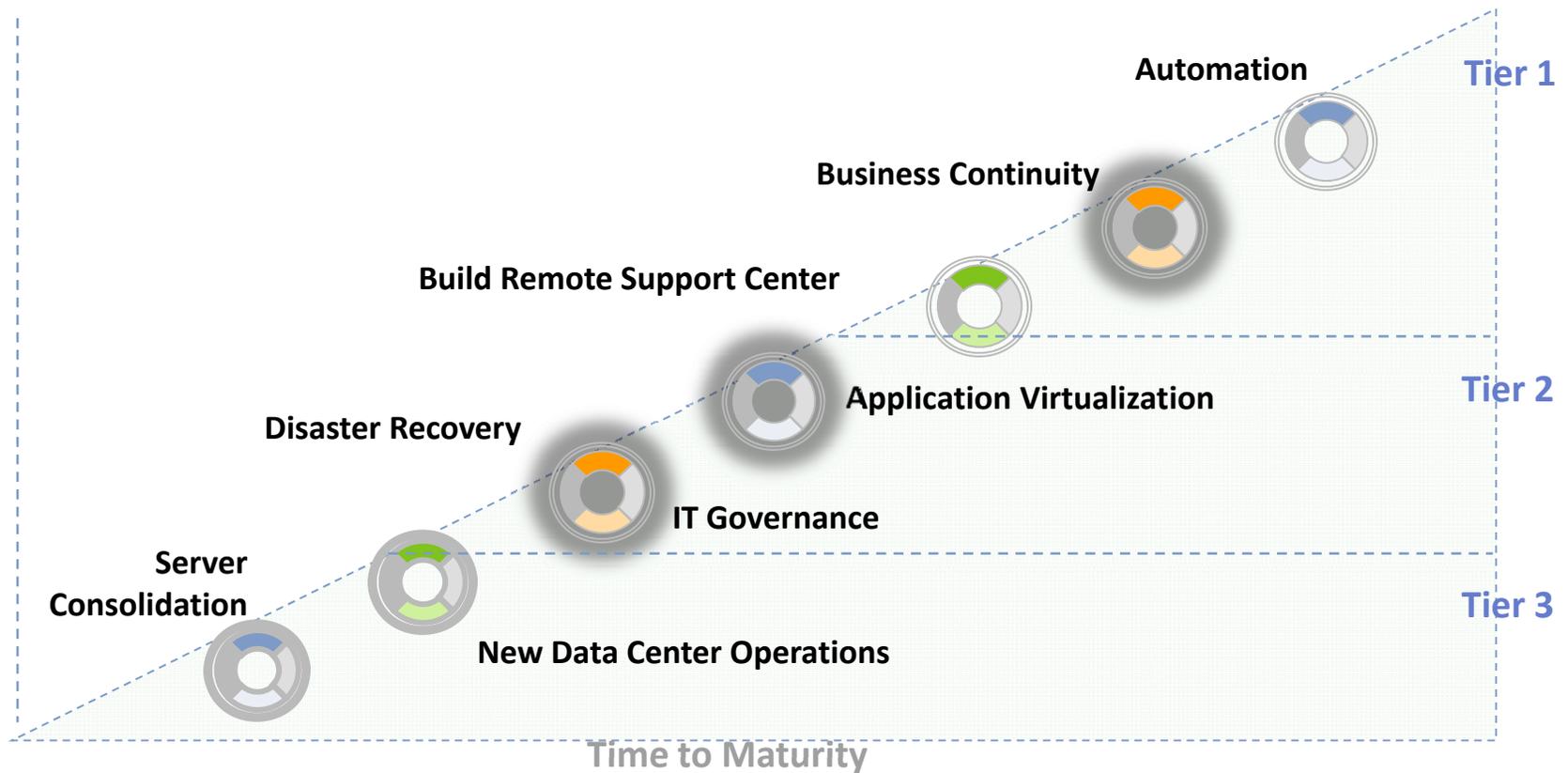
- “View really extends the boundaries of the university out to our students wherever they are” Desktop Team Lead
- “Students access their H drives, apps and network resources even if they are off campus”
- 3%-5% application/OS upgrade failures brought to nearly 0
- Reduced energy by 60%
- “Using our PC refresh budget”



# State of CA: Plan for the Big Picture Deploy Incrementally

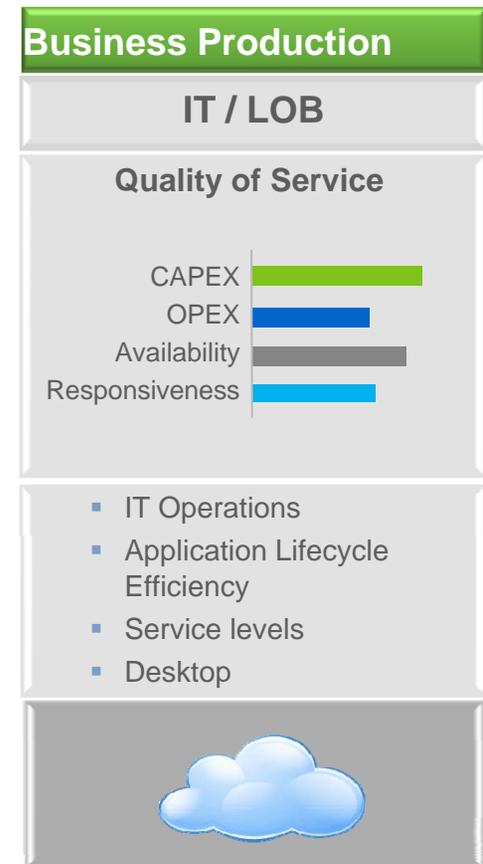
Virtual  
Machines

Criticality  
of  
Applications



## VMware Second Phase: Business Production

- Virtualizing Tier 1 applications
- Service level requirements, BC/DR
- Better monitoring and management of IT
- Application lifecycle inefficiencies
- OpEx per app
- Desktop management & support



## Disaster Recovery Pain Points

### **Lack of a reliable disaster recovery plan**

- 27-30% of business have no disaster recovery plan (VMworld, Imation)
- 40% indicated they don't test or update their DRP yearly

### **Inability to meet RTO and RPO requirements with current plan**

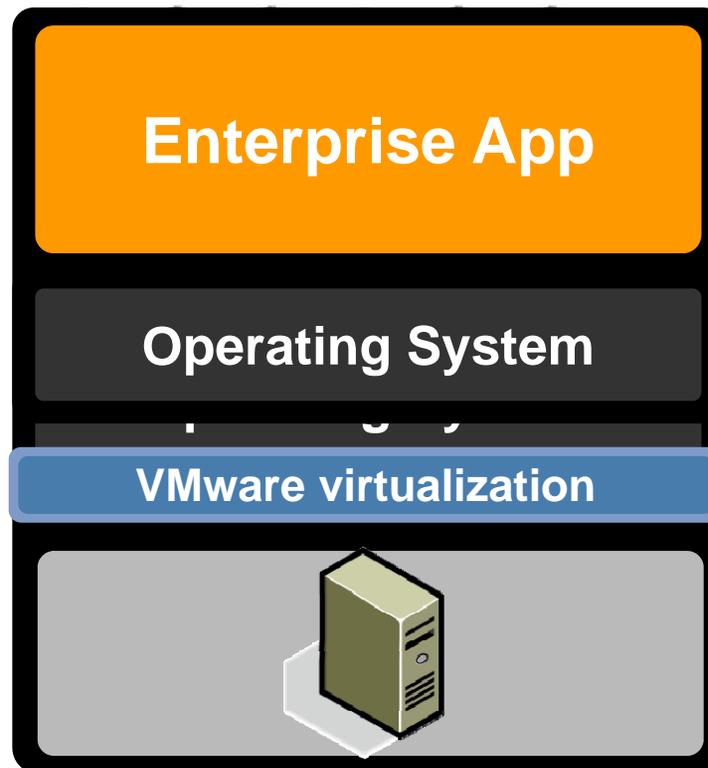
- Regulatory or Funding needs
- Need to improve RTO from days to minutes or hours
- Unique processes for system, application and data recovery

### **Expense related to hardware at remote site**

- Idle hardware at recovery site (capital cost)
- Need to maintain system and application images at secondary site (operational cost)
- Unable to instantly repurpose machines at the secondary site (RTO impact)

## How Does Virtualization Help DR?

VMware decouples software from hardware.



## CO e-FORT Purpose

**e-FORT Purpose: Provide a facility that individual State of Colorado agencies can use to recover their systems in the event of a disaster.**

**Uses a 6,500 square foot facility contracted for by the State of Colorado Secretary of State office as a recovery site for other State of Colorado Departments. [Also open to CO universities]**

**e-FORT Initiative**

**State of Colorado Consolidation Plan**

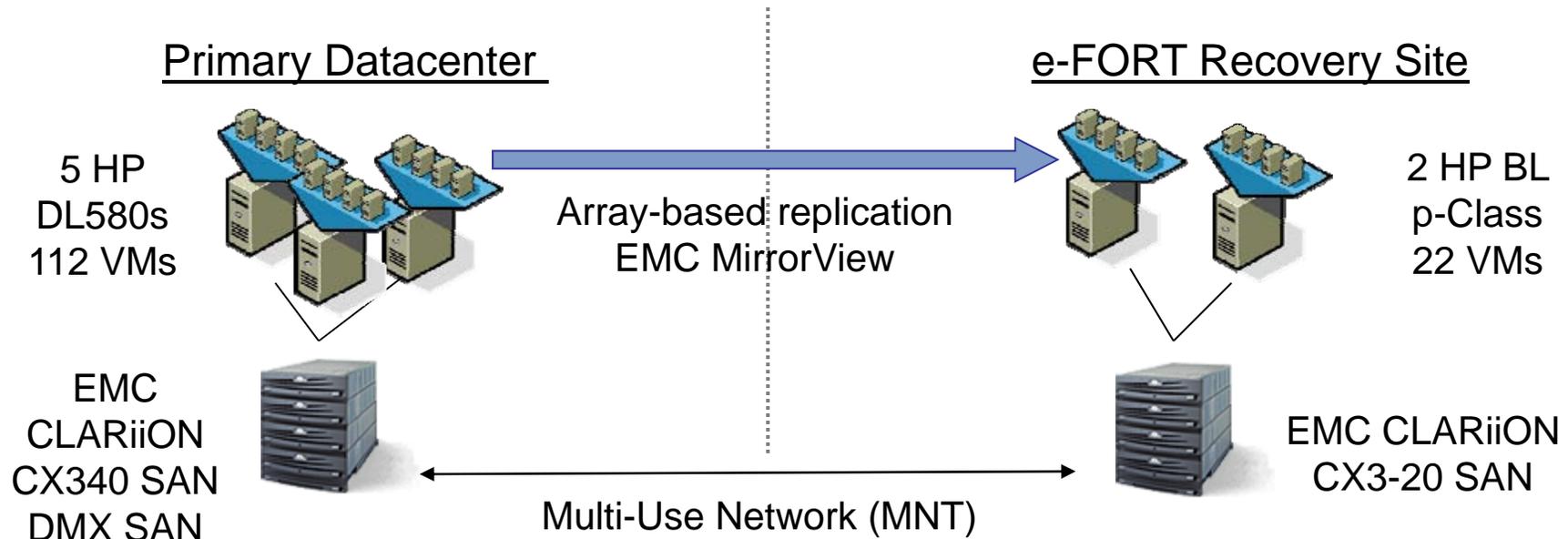
### **Profile:**

- Second largest agency in CO State Government
- Oversees the state's 64 county social/human services, state's public mental health system, developmental disability services, juvenile corrections system, state and veterans nursing homes.
- More than 5,000 employees
- 7,000 Portal Users: Trails, CBMS, CFMS
- One of first state agencies to utilize e-FORT and virtualization

### **Challenges:**

- 2,400 concurrent users need access to Trails, CBMS, CFMS
- Diverse county infrastructures and requirements

## Solution

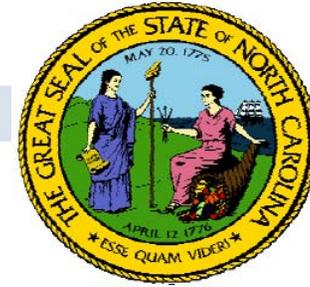


## Result

- Services delivered also at e-FORT
- Recovery Time Objective 4 hrs, Point Objective 24 hrs
- Delivering services with VMware successfully for 5 yrs



# North Carolina State Government



## Business Continuity

- Initiated 2009
- Partnered with Homeland Security and NC Division of Emergency Management to perform risk assessment
- Goal was to provide a **single approach to business continuity (30 separate plans in place)**
- **Insourced Disaster Recovery**; Tracked dependencies; provided agencies with BCP
- **Leveraging their 2008 virtualization investment & 2 State Datacenters**: agencies completed 2009 BCPs using standardized approach and enterprise toolsets
- Results: Savings through 4/2010 > \$1.7M

# State of Michigan



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September 27, 2010

## Risk Management

State of Michigan, Government Cloud Protection Program: Disaster Recovery Services Transformed for the Perfect Storm  
Category: Risk Management Initiatives

- Three Data Centers
- Data growth from 13TB in 2001 to 4.4 PB
- Funding came from efficiencies gained
- **Identified: all IT assets needed to support red card**
- **Developed DR plan for consolidating in 1 DC**
- ITIL based processes
- **Leverages MI's VCoE framework**
- **40 data centers reduced to 3 hosting centers**
- Consolidation has saved \$19M and reclaimed 30k sq feet office space
- 700 email servers to 70; 70 email versions to 2
- 20:1 VM to Host Ratio
- Agencies charged a system rate, going to usage rate schedule
- <http://pressreleasepoint.com/nascio-recognizes-outstanding-achievement-state-government>

Life Threatening if Application is not available			
Critical Application Name	Business Function	Agency	Hosting Location
ED Systemwide Surveillance	Public Health Systemwide Surveillance Database	Community Health	State Hosted
ERIC for Labs (ERL)	ERIC for Labs	Community Health	State Hosted
Hospital Primary System (HPS)	Hospital Primary System	Community Health	State Hosted
MI Disease Surveillance System (MDSS)	Local, State, and National Disease Surveillance	Community Health	State Hosted
Newborn Screening (NBS)	Screen for Metabolic and/or Genetic Disorders	Community Health	State Hosted
Remedy Biometrics Trading	Storage of Internal Biometric Data	Community Health	State Hosted - Remote
Corrections Management Information System (CMIS)	Offender (arrests, fines, etc) Management	Corrections	State Hosted
Offender Management Network Information System (OMNIS)	Offender (arrests, parole management)	Corrections	State Hosted
Service Worker Support System (SWSS)	Service worker support system	Human Services	State Hosted
Criminal History Record (CHR)	Law Enforcement Communication with State, Local, Federal, etc.	State Police	State Hosted
Law Enforcement Information Network (LEIN)	Law Enforcement Communication with State, Local, Federal, etc.	State Police	State Hosted
MI Criminal Justice Information Network (MICJIN)	Law Enforcement Communication with State, Local, Federal, etc. agencies	State Police	State Hosted
Michigan, Wisconsin, Indiana & Illinois (MI-WI-IN-IL)	WIC (Infant and Toddler) System	Community Health	State Hosted



## NASCIO: State Sourcing Models 2010

### Definitions

- **Outsourcing:** obtaining IT operations and platforms from a 3<sup>rd</sup> party
- **Managed Services:** transferring all IT operations and responsibilities to a 3<sup>rd</sup> party
- **IT Shared Services:** Single Government entity providing IT services to another government entity

- **66% Use IT shared services for some or all IT operations**

- 58% Outsource some of their IT infrastructure operations
- 55% Own and operate a consolidated data center
- 50% Use managed services
- 42% Outsource some IT application operations
- 32% Own and operate all state IT assets and operations

## NASCIO: Future State Sourcing Models 2010

- **76% Expand existing IT shared services model**
- **49% Expand existing managed service model**
- 27% Build new data centers
- 27% Expand outsourcing
- 27% Introduce IT shared service model
- 19% Introduce outsourcing as a new service model
- 16% Downsize state-owned and operated data centers
- 16% Introduce a managed services model
- 15% Insource some operations that are outsourced

Most state CIOs plan to significantly expand IT shared and managed services

## NASCIO: Emerging Technologies

Half of State CIOs are investing in cloud computing  
1/3 are running active or pilot cloud projects

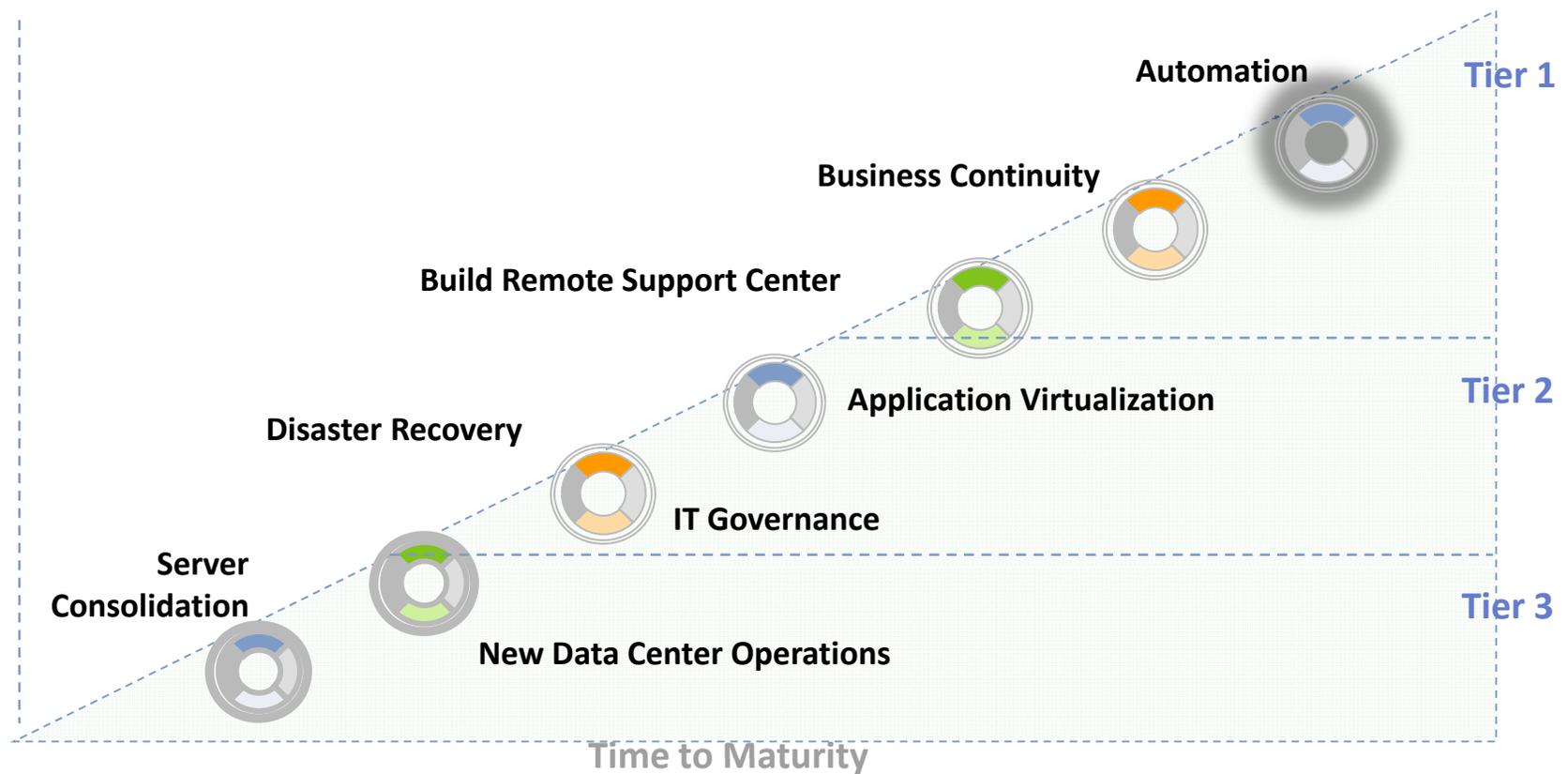
As virtualization matures, the next “big thing” will be automating the composition and management of virtualized resources

Gartner 9/27/2010

# State of CA: Plan for the Big Picture Deploy Incrementally

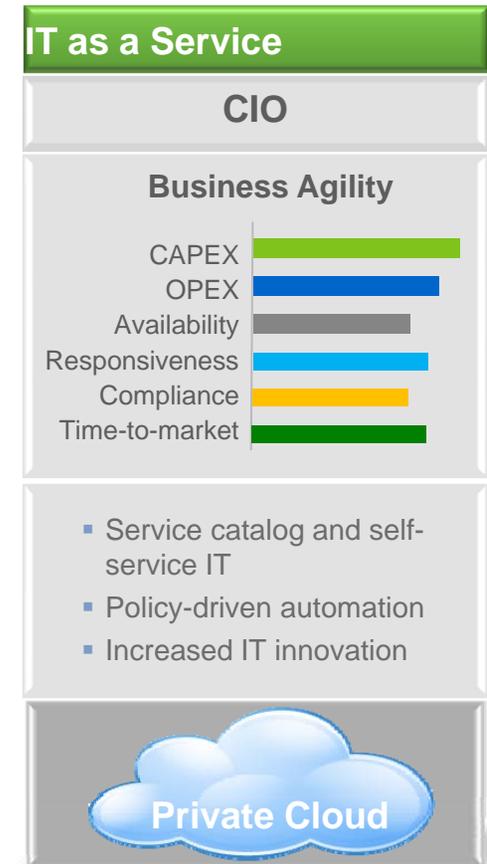
Virtual  
Machines

Criticality  
of  
Applications



## Third Phase: IT as a Service

- **Management-driven IT transformation**
- **New services based on variable & low cost IT**
- **Want to build a service catalog**
- **Want to leverage public clouds**
- **Provide on-demand resources**
- **Often multi-tenant**



# Utah State Government



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State of Utah, Creating Utah's Cloud Infrastructure  
Category: Enterprise IT Management Initiatives

## Private and Hybrid Cloud

- Two Data Centers
- Initiated February 2009
- Accessed via the Internet, **usage based billing**
- Portal supports **self-provisioning/self-service**
- **Shared services model** with some customization capability
- Based on VMware virtualization (12/09 510 servers virtualized, 5/2010 1868 servers virtualized)
- **Results: Lower costs, HA, self provisioning, standard services, improved security and data managed, single sign-on**
- 3 steps to cloud: Change IT culture, implement private cloud platform & develop a process for selecting and contracting for public cloud services. **Meeting objectives by data center consolidation, server virtualization and preparing a cloud platform**
- Plan: **Delivering public cloud services** (web services, email) to local government / schools

➤Details <http://www.nascio.org/awards/nominations/2010/2010UT6-Nascio%20Utah%20Cloud%202010.pdf>

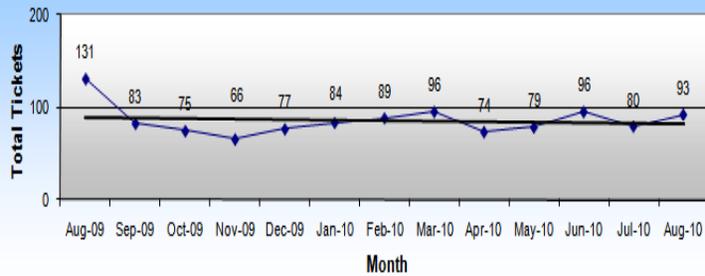
<http://www.utahta.wikispaces.net/file/view/Utah%20Hybrid%20Cloud%20ER%2010.4R.pdf>

<http://www.govtech.com/policy-management/State-CIOs-Offer-Government-Cloud-Option.html>

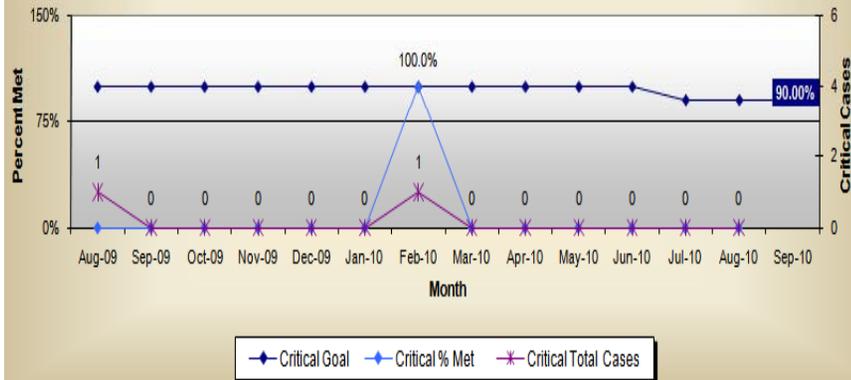


# State of Utah DIS Score Cards to Agencies

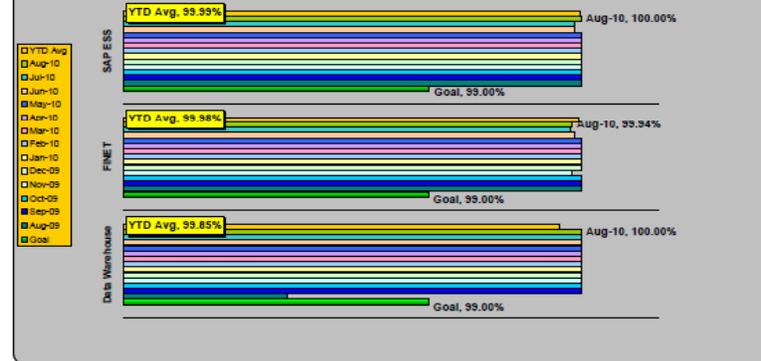
DAS Total Cumulative Tickets



DAS Critical Cumulative TTR



DAS Application Availability FY10/11



Service Level Agreement Metrics

Agencies	Application Availability		Total Time to Resolution		Time to Initial Response		First Contact Resolution	
	Goal	Actual	Goal	Actual	Goal	Actual	Goal	Actual
AGRC	99.00%	100.00%	90.00%	85.70%	85.00%	66.70%	65.00%	28.60%
BOP	99.90%	100.00%	90.00%	100.00%	86.00%	100.00%	66.00%	60.00%
DABC	99.00%	99.68%	90.00%	97.80%	85.00%	89.90%	65.00%	78.70%
DAF	95.00%	99.94%	90.00%	100.00%	85.00%	97.10%	65.00%	71.40%
DAS	99.00%	100.00%	90.00%	91.40%	85.00%	81.70%	65.00%	25.80%
DCC	99.34%	99.90%	90.00%	95.30%	85.00%	81.20%	65.00%	27.10%
DEQ	99.00%	99.98%	90.00%	98.30%	85.00%	97.70%	65.00%	54.70%
DFI	99.00%	99.90%	90.00%	100.00%	85.00%	60.00%	65.00%	20.00%
DHRM	99.00%	100.00%	90.00%	92.00%	85.00%	84.00%	65.00%	40.80%
DHS	99.90%	100.00%	90.00%	97.71%	85.00%	97.20%	65.00%	40.50%
DNR	98.76%	100.00%	90.00%	89.30%	85.00%	83.70%	65.00%	23.90%
DOC	99.00%	100.00%	90.00%	97.60%	85.00%	91.30%	65.00%	57.50%
DOH	99.00%	99.97%	90.00%	87.70%	85.00%	83.10%	65.00%	14.80%
DOT	99.90%	99.93%	90.00%	98.55%	85.00%	94.70%	65.00%	57.40%
DPS	95.00%	97.86%	90.00%	98.20%	85.00%	97.00%	65.00%	79.30%
DWS	99.79%	99.96%	90.00%	97.20%	85.00%	90.40%	65.00%	41.20%
GO	95.00%	99.99%	90.00%	100.00%	85.00%	100.00%	65.00%	64.30%
GOED	100.00%	100.00%	90.00%	95.50%	85.00%	90.90%	65.00%	45.50%
LC	99.00%	100.00%	90.00%	98.40%	85.00%	89.10%	65.00%	71.90%
PSC	99.90%	100.00%	90.00%	100.00%	85.00%	100.00%	65.00%	87.50%
TAX	100.00%	99.98%	90.00%	97.30%	85.00%	91.80%	65.00%	62.60%
UDC	99.83%	100.00%	90.00%	98.90%	85.00%	96.30%	65.00%	78.80%
UID	99.00%	99.69%	90.00%	93.30%	85.00%	85.00%	65.00%	53.30%
AVERAGE	98.80%	99.86%	90.00%	96.09%	85.00%	89.08%	65.00%	51.55%

# Kansas State Legislature



## E-Democracy

- Live October 1, 2010
- Goal is to provide citizen access to the legislature process (committee chambers to legislature documents)
- Tracked closely by the Feds
- 130 systems virtualized on 4 hosts
- Video capability coming
- Run by a single administrator
- Contact: Terri Clark / Director (terri.clark@las.ks.gov)

[Home](#) > Listen In Live

### Listen In Live

House:	Senate:

### Related Sources

- [Multi-Bill Tracking \\*](#)
- [Lobbyist-In-A-Box \\*](#)
- [Lobbyist-In-A-Box Demo](#)
- [Listen In Live](#)

> Details [http://www.propylon.com/index.php?option=com\\_content&view=article&id=97](http://www.propylon.com/index.php?option=com_content&view=article&id=97)





### Tennessee Enterprise Shared Services : Nascio Honorable Mention

- **Governs all services that should be consolidated at the enterprise**
- **Began in 2007**
- Email, Firewalls, File/print, WAN/LAN, EMC, BI, GIS, ...
- **Consolidation and Shared Services** (email, GIS, AV, records...)
- **Results: improved services (greater uptime, disaster recovery capabilities, security), increased utilization, consistent service and support, increased depth of IT staffing skills**
- Based on VMware virtualization
- Offering disk rates at < industry averages
- **Cost per VM 50% less than physical** (Cost avoidance)
- Annual hard cost savings 34M (manpower 15M, facility 6M, SW license 4M, ...)

## State of Michigan: Shared Services



### Virtual Center of Excellence (VCoE)

- MI Department of IT serves 19 state agencies
- MDIT chose a shared services environment: Highlighted by **NASCIO**
- VCoE framework provides capacity-on-demand (Server, Storage)
- “Virtual First” policy (Agency w 125 servers saves \$840k over 4 yrs)
- Long term vision is a **private cloud based on virtualized servers**
- Results: **Improved provisioning, greater availability, lower op costs, DR enabled, increased security, increased staff capability**
- Partnerships with **city/local governments**
- **Piloting a pay-as-you-go private/self service storage of nonsensitive data within the MI cloud (MiCloud).** Expanding to local government.
- Pilot initiative expanding to provide **VM as a Platform as a Service**
- “Investment in DC consolidation and virtualization has positioned MI to take advantage of cloud technology” Dan Lohrmann, CTO

■ [http://www.nascio.org/awards/nominations/2009/2009MI8-VCoE\\_NASCIO\\_2009.pdf](http://www.nascio.org/awards/nominations/2009/2009MI8-VCoE_NASCIO_2009.pdf)

■ [http://www.michigan.gov/documents/itstrategicplan/Appendix\\_I\\_Infrastructure\\_Services\\_327698\\_7.pdf](http://www.michigan.gov/documents/itstrategicplan/Appendix_I_Infrastructure_Services_327698_7.pdf)

■ <http://www.michigan.gov/cgi/0,1607,7-158-53021---S,00.html>



## State of Washington



2/10/2009 Governor's Directive: "shared services model"

- Moving from distributed (49 data centers) to consolidated environment
- Method: server virtualization, capacity on demand, managed storage networks, statewide sharing of common tools and "virtual containers"
- **Virtual Containers:** agencies exercise a **degree of autonomy and isolation** in managing their portion of the state's private cloud.
- 6/2010 Project Plan for DC migration:  
<http://ittransformation.wa.gov/docs/Unisys%20Excipio%20Phase%20II%20cost%20and%20move%20report%208%2030%2010.pdf>
- State estimates of the 5,130 agency systems today, 29% are currently virtualized. By increasing to 50% virtualized they will save an additional 3.6M over 5 years.
- **95% of WA state physical servers will need to be replaced by 2011. Agencies encouraged to "virtualize in place" to prepare for future State Data Center (SDC). "Simplifies server migration to SDC"**

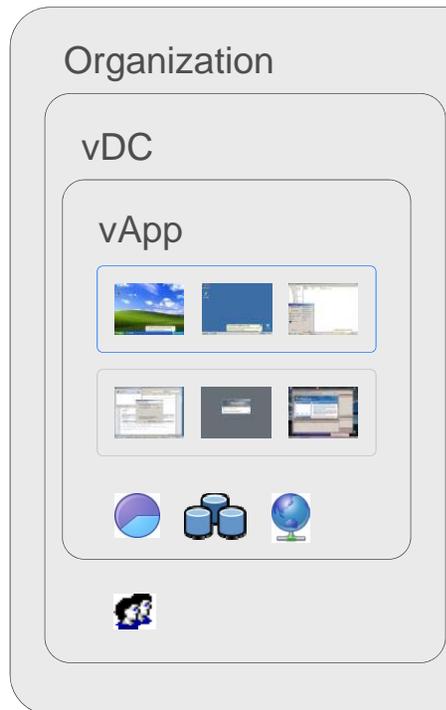
- <http://ittransformation.wa.gov/sharedservices.aspx>



Provide secure multi-tenancy

## Multi-Tenancy & Containers

### vCloud Director



#### **Organization:** Top Level User Container

Set up by installation administrator

- Hard Walls (multi-tenancy) or Soft Walls
- Access Methods (self service, API)
- Users with Roles/Rights
- Fully-Virtual Resources
- Catalogs (Template, Media, vApps)
- Policies (Quotas, Leases)

#### **vDC:** Resource Containers

- A deployment environment for vApps.
- Owned by an Org; Orgs may have multiple vDCs.
- Bundles *storage, compute and networking*
  - E.g. 500Gb of fast storage,
  - 100 GHz/30Gb RAM of compute, etc.
- Abstracted resource container
- Not a user container

#### **vApp:** Grouping of dependent VMs

- Fenced or Unfenced (at deploy time)
- vCloud vApp has slightly different capabilities from VC vApp

# WA: Hosting Service Matrix



Increase provider mgmt, reduce agency resources

Service ↓					
<b>LOB</b> Not Offered	Agency				
<b>M4</b> Base Software					
<b>M3</b> OS Only			Option	Option	Maturity Target
<b>M2</b> Platform			Option		
<b>M1</b> Environment		Transition			Provider
<b>Platform</b> →	H1* A la Carte	H2 Virtual Platform	H3 Physical Platform	H4 Virtual OS Instance	

\* Transitional offering for consolidation, H2 becomes standard at next hardware refresh cycle

Leverage common infrastructure, consolidate hardware, reduce cost



## WA: Virtualization Benefits

Washington's  
IT Transformation

WA Shared Services CAB Briefing 6/11/2010

- **For every 100 Servers virtualized = \$ 1M in savings / 5 years**
- For every \$200k savings / year = 3 FTE jobs saved
- Vastly improved disaster recovery
- Enhanced performance (all VMs on SAN, 10Gb Network)
- **Significantly reduced staff time requirements**
- **High availability / Fault tolerance for all virtual servers**
- Improved security / management
- **Every month you delay leaves \$100k's on the table**

What can you do now to prepare?

- **Virtualize physical infrastructure NOW (before consolidation).**
- Streamline and de-dupe data
- Policy and Culture: Virtual is the standard - Governance
- <http://dis.wa.gov/initiatives/cab/Default.aspx>



## Server Hosting Services - Servers à la Carte

### How Do We Charge?

The rates for Server Hosting are comprised of rates for monitoring, space, and a negotiated network charge.

Description	Fee
Space – Full Rack	\$800 per month
Space – Half Rack	\$400 per month
Space – Per Server	\$125 per month
Optional 24X7 Monitoring	\$125 per server, per month
Network Connections	Negotiated per customer's business needs

## Shared Web Hosting Services

### How Do We Charge?

Description	Fee
One time set up fee	\$60
Basic (0-20 MB Web Storage)	\$20 per month
Standard (21-100 MB Web Storage)	\$60 per month
Intermediate (101-500 MB Web Storage)	\$200 per month
Advanced (includes up to 1GB Web storage)	\$400 per month
Additional Web Storage above 1GB	\$100 per month, per additional GB
Redirect Page	\$20 per month



## Server Hosting Services - Virtual Server Hosting

### Features:

- New servers can be provisioned in hours rather than weeks
- Simple virtual server hardware resource upgrades
- Easy integration with other DIS hosted services
- Use of VMware® Virtual Infrastructure 4 (ESX and Virtual Center)
- Use of VMware's VMotion to move servers from one physical host to another without disruption
- Dynamic Load balancing to ensure virtual server workloads are evenly distributed across physical server hosts
- High Available compute, network, and storage
- Dynamic restart of virtual servers on an alternate physical server host if a host server fails
- DIS maintenance and monitoring of the virtual server environment
- Technical support 24 hours a day

### How Do We Charge?

Description	Fee
Virtual Server Hosting	Monthly rate is based on a custom Service Level Agreement (SLA) in order to meet customer's business needs

## Where to go next

# State of California VMware Virtualization Practices:

<http://www.cio.ca.gov/pdf/consolidation/VMWare%20Virtualization%20practices%2004222010.pdf>

State of California  
Office of the State Chief Information Officer  
Infrastructure Consolidation Program  
Server, Virtualization, Backup and Storage Workgroup

*VMware Virtualization Practices*



## Where to go next

### Server Virtualization Forum: State of CA

- August 5, 2010 State of CA Server Virtualization Forum
- Videos:  
<http://cioarchives.ca.gov/wiki/Infrastructure%20Consolidation%20Program%20Storage%20and%20Backup%20Workgroup%20.ashx>
- 178 members, 6 work groups;
- CA Virtualization First Business Drivers: DC consolidation, reduction in number of physical servers, reduction in energy consumption of servers, faster server deployment, enabling standards for server OS and virtualization environment and reduction in operating and capital expenses.
- Chris Wolf, Gartner/Burton presentation on server virtualization
- CA: reduced 75k square feet of dc space in 12 months

## Where to go next

Hard Consolidation lessons learned from Texas:

<http://www2.dir.state.tx.us/SiteCollectionDocuments/DCS/projectstarholisticremediationstrategyfinal.pdf>

“Contract does not align business intent with the organizational, financial and operational realities of the State’s complex operating environment”

Review of outsourcing issues with Virginia and NG:

<http://jlarc.state.va.us/meetings/October09/VITA.pdf>

VMW response to CO RFI on Transforming to a Shared Infrastructure

<http://goo.gl/ND0S>

CIO Council on the state of public cloud computing

[http://www.cio.gov/documents/StateOfCloudComputingReport-Finalv3\\_508.pdf](http://www.cio.gov/documents/StateOfCloudComputingReport-Finalv3_508.pdf)

Finally

# Thank You!

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# State of Minnesota



## Business Continuity and Disaster Planning

- **17 MN Health Licensing Boards**
- **Executive order in 2006 to provide a Continuation of Operations Plan**
- Addressing Emergency Planning and Pandemic Flu Outbreak
- Leveraged Katrina Lessons (Health Professional Imposter, Loss of Critical records)
- Return To Operations (RTO) of 48 hours
- Worked with Office of Enterprise Technology to **develop single plan**
- **Challenges included each HLB statutorily autonomous, personnel turnover, no system standards**
- Solution: Virtualization to reduce physical server count, backups of VMs to offsite along with tape storage
- **Project completed in Oct 2007**

➤ Details [http://www.nascio.org/awards/nominations/2008/2008MN1-HLB%20COOP%205-29-2008%20\(2\).pdf](http://www.nascio.org/awards/nominations/2008/2008MN1-HLB%20COOP%205-29-2008%20(2).pdf)



# State of Utah DIS Service Request Portal

## Enterprise Services Online Order Forms

If you can't find a form for the service you require, please go to the Get Help page by clicking [HERE](#), or call 801-538-3440 for assistance.

All  

- + Form Request Procedure
- + Change Management
- + Desktop Management
- + Finance (DTS Division of Finance)
- Hosting
  - [Hosting Services](#)
  - [Application Redeployment](#)
  - [DET Data Center Work Order Form](#) 
  - [Data Center Server and Device Naming Standard](#) 
- + Print
- + Security
- + Storage
- + Telecommunications
- + Wide Area Network (WAN)
- + Wireless

<http://dts.utah.gov/services/serviceorders.html>

