



California  
**DEPARTMENT OF TECHNOLOGY**

# CalCloud Executive Symposium

August 17, 2015

# Introducing...



# Chris Cruz

**Chief Deputy Director, Operations  
Department of Technology**

# Agenda

- **Welcome**
- **Department Initiatives**
- **CalCloud Mission, Vision and Goal**
- **CalCloud Strategy & Governance**
- **CalCloud Services**
- **Technology Roadmap**
- **Framework**

# Agenda (cont.)

- **CalCloud Portfolio Status**
- **CalCloud Rate Reductions**
- **IaaS Timeline**
- **Optional Vendor Services**
- **Security**

# Agenda (cont.)

- **Who is Using CalCloud IaaS Now?**
  - Success Stories
  - IaaS User Group
- **CalCloud On-boarding Process**
  - IaaS Training
  - How to get Started
- **Upcoming Vendor Forum**
- **Summary**
- **Questions & Answers**

# Department Initiatives

- Department Strategic Plan
- Service Catalog Redesign
- IT Service Management (ITSM) Improvements in areas such as:
  - Incident Management
  - Service Level Management
  - Knowledge Management
  - Problem Management
  - Service Request Fulfillment
- Cyber Security
- CalCloud
- Statewide PMO

# CalCloud Mission, Vision, Goal

## ■ Mission

- Offer cost-effective cloud solutions that will provide customers convenient, on-demand access to a shared pool of configurable resources.

## ■ Vision

- To be the catalyst for emerging new technology delivery models by delivering efficient, flexible, and secure cloud services to all customers.

## ■ Goal

- Drive customer adoption of CalCloud through new workload and business opportunities.

# CalCloud Strategy & Governance



# CalCloud Services

**CalCloud is a suite of Cloud services offered by the Department of Technology, which includes:**

- **Vendor Hosted Subscription Services (VHSS)**
- **Email**
- **Infrastructure as a Service (IaaS)**
  - **A private cloud infrastructure service hosted at the Office of Technology Services (OTech) data centers**

# CalCloud Customer Benefits

- **Lower Cost Model**
- **Rapid Availability**
- **Secure Hosting**
- **Multiple Service Offerings**
- **Technology Recovery**
- **No Capital Expenditures**
- **Improved Flexibility**

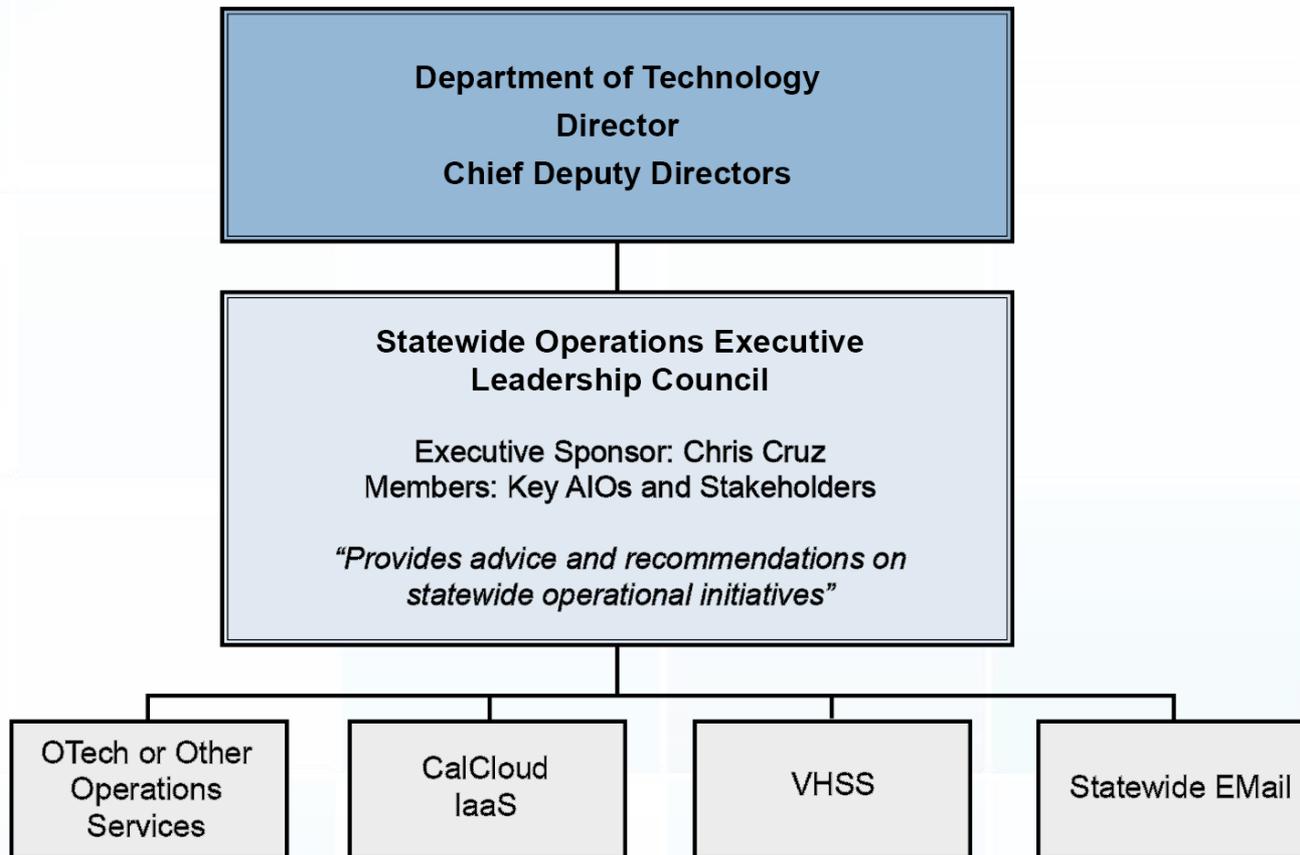
# CalCloud Adoption Strategy

- Work with customers to identify ways they can benefit from cloud technologies
- Add new VHSS providers to the CalCloud portfolio based on customer demand
- Offer managed services in CalCloud IaaS
- Create and maintain an Adoption Roadmap to track and monitor customer migration activities
- Secure multiple assessment and migration vendors for optional use by customers for CalCloud IaaS
- Offer shared services within CalCloud IaaS

# CalCloud Technology Roadmap

- Create and maintain a roadmap that tracks and monitors new and enhanced cloud services
- Identify additional CalCloud IaaS features based on customer input
- Enhance existing cloud services
- Implement new cloud services
- Ensure new security controls are added as security regulations are updated
- Establish measurable analytics

# Governance Framework



# Introducing...

# Ellen Ishimoto

## Acting Chief, OTech

## Department of Technology

# CalCloud Portfolio Status - VHSS



## ■ VHSS Services Today

- Remedy On Demand
- Salesforce
- Clarity

## ■ VHSS - Future Expansion

- Expand services based on customer demand
- Prioritize future service categories
- Develop vendor technical and procurement qualifying criteria
- Coordinate vendor presentations within categories for customer review

# CalCloud Portfolio Status - Email



## ■ Email – Today

- Ca.Mail - on-premise state solution hosted at OTech
- California Email Service (CES) - off-premise state solution offered through Microsoft

## ■ Email – Future

- Current CES contract extension is underway
- New CES replacement for a state solution is in progress
- Assess options

# CalCloud Portfolio Status – IaaS



## ■ Current IaaS Today

- Infrastructure in a private cloud securely hosted at the OTech data centers
- IBM is the service delivery partner
- Offers a self-service web-based portal for on-demand access to a shared pool of computing resources
- Ability to rapidly provision and release virtual servers on a pay-as-you-go basis

# CalCloud Portfolio Status – IaaS



## ■ Current IaaS Today (cont.)

### ■ Includes “extras” such as:

- Increased Storage
- RAM
- Disaster Recovery
- Backups

# CalCloud Portfolio Status - IaaS

## ■ IaaS Planned Improvements

- Significantly reduced rates for existing services
- Doubled computing power from 1GHz to 2GHz/CCU
- Enhanced security to address latest FedRAMP regulations and controls
- Expanded server types for clients who want to perform their own operating system management, including patching

# CalCloud Portfolio - IaaS

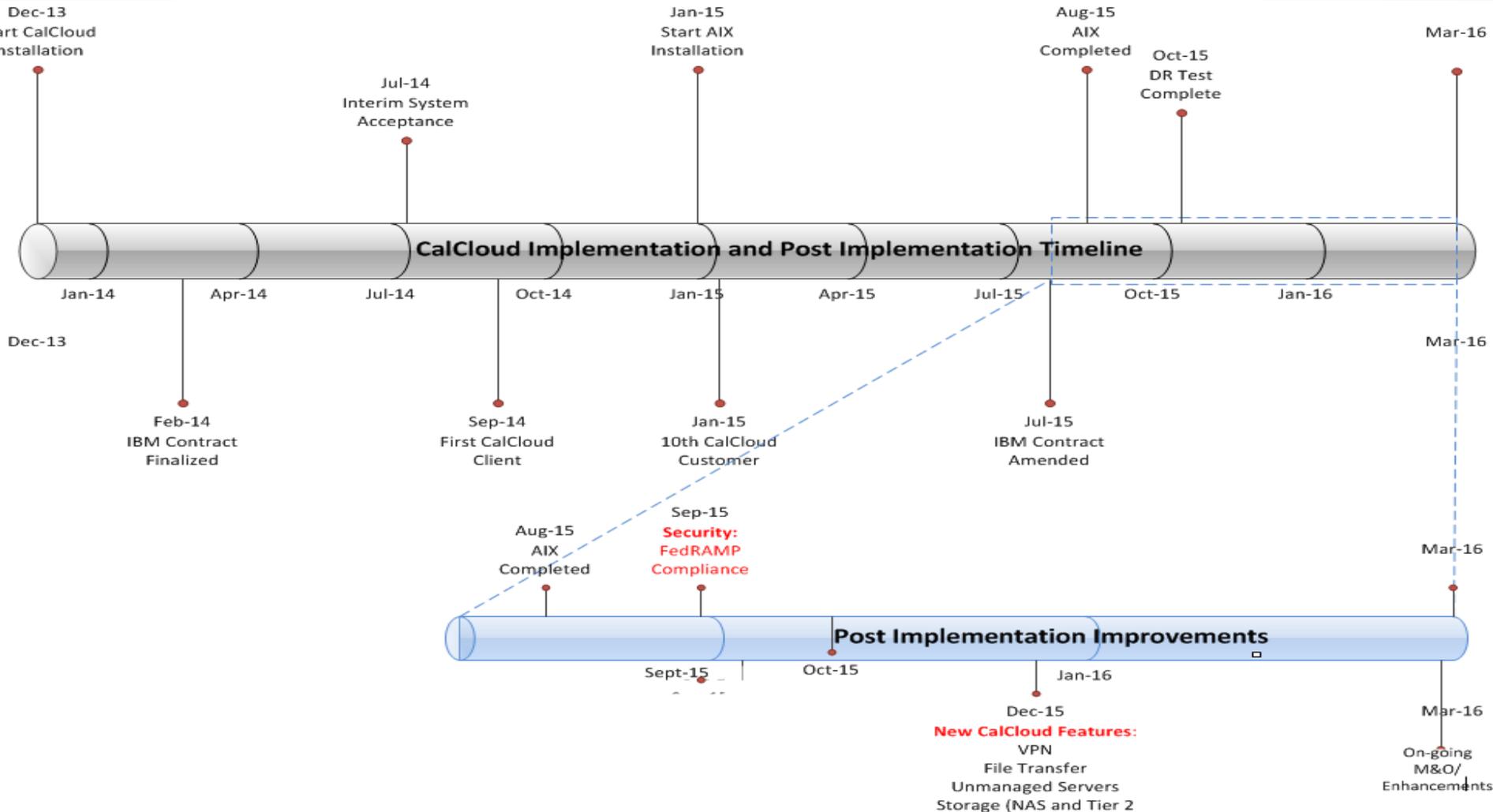
- **IaaS Planned Improvements (cont.)**
  - Enhance Tier 2 storage – local and remote connections
  - Add File Transfer option for clients who need to move files to/from CalCloud and external sites
  - Add VPN option to enable site-to-site connectivity between client, CalCloud and external site
  - Streamline acquisition path for CalCloud Assessment and Migration services

# CalCloud IaaS Rate Reductions



Description	Current Rate	Proposed Rate **		
		Managed	Unmanaged Licensed OS*	Unmanaged Unlicensed OS *
Small Windows Server	\$680	\$370	\$315	\$296
Medium Windows Server	\$945	\$496	\$422	\$397
Med Windows Server w/Tier 1 DR	\$1,498	\$817	\$695	\$654
Large Windows Server	\$1,308	\$702	\$597	\$562
X-Large Windows Server	\$1,902	\$875	\$744	\$700
Medium Linux Server	\$916	\$481	\$408	\$385
Medium AIX Server (CCU)	\$1,721	\$1,635	\$1,390	N/A
Memory (RAM)	\$14.604	\$11.530		
Data Storage (Tier 1)	\$0.437	\$0.428		
Data Storage (Tier 2) *	N/A	\$0.264		
Archive (Tier 3)	\$0.204	\$0.161		
Backup Storage (Tier 1)	\$0.346	\$0.265		
Backup Storage (Tier 2)	\$0.265	\$0.242		
Virtual Private Network *	N/A	\$231		
File Transfer Server *	N/A	\$288		
* New features will be available later.				
** Proposed rates need to be approved by DOF.				

# CalCloud IaaS Timeline



# CalCloud IaaS Optional Vendor Services



- A limited number of complimentary IBM-provided “suitability analysis” assessments are available (Contact your CDD Account Lead)
- Assessment and Migration Vendor Services
  - Multiple vendor contracts available for use by customers in Fall 2015
  - Financing options are available for these services

# Introducing...



# David Langston

## Branch Chief

## Security Management

## California Department of Technology

# CalCloud Security

## General

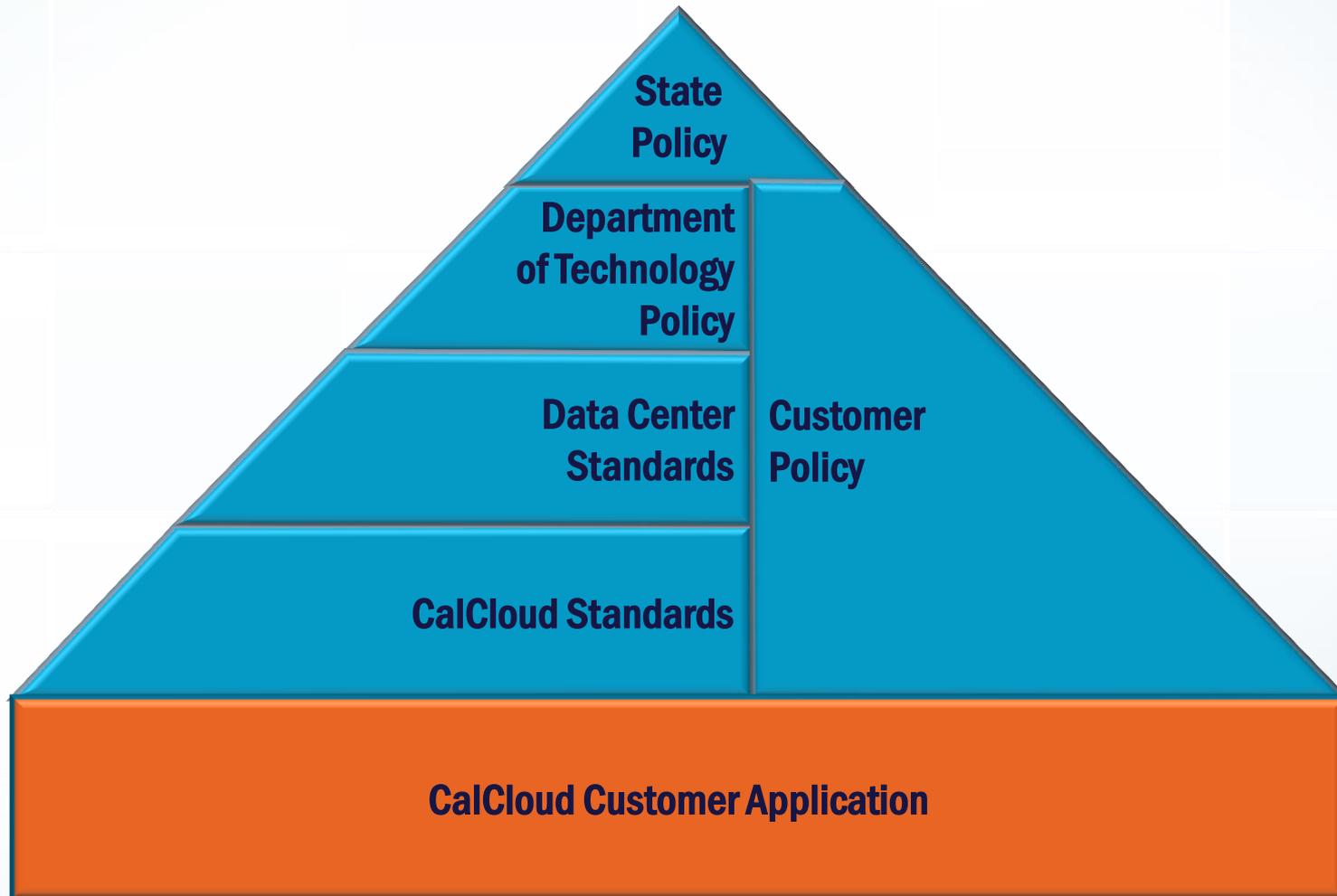
- Provide services that meet the operational and compliance requirements of the State
  - SAM/SIMM
  - NIST
  - FedRAMP where applicable
  - Other regulatory controls if/where applicable
- Ensure that vendors are conforming to best security practices

# CalCloud IaaS Security

The goal of CalCloud IaaS is to deliver security that is equal to or better than security available in "dedicated" environments

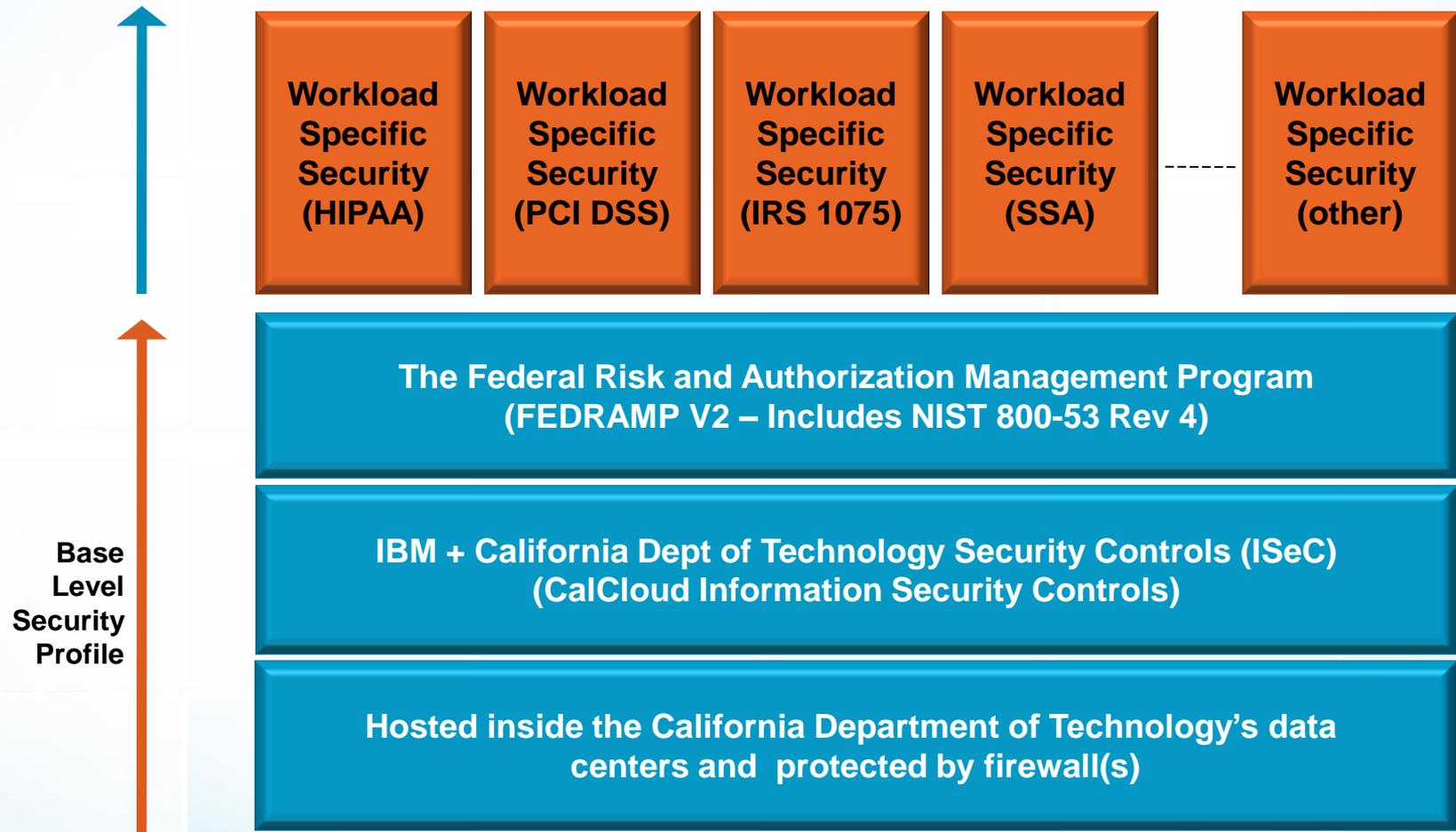
- CalCloud IaaS environment was designed with security in mind
- Tenant isolation and zoning is key to the security model
- Best practices are used throughout the infrastructure
  - (e.g. two-factor authentication, least privilege practices, encryption options...)
- FedRAMP compliance is cornerstone to the security controls implemented
  - FedRAMP v2 in current implementation; redirection from v1 effort started early in 2015
- IBM projected compliance for FedRAMP, HIPAA, and IRS in September 2015

# CalCloud IaaS Security Policy Pyramid



# CalCloud IaaS Security Stack

*CalCloud provides a comprehensive and tiered security model*



# CalCloud IaaS Security Controls

- A formal security control program is in place (based on IBM ISeC processes, cloud experience, and FedRAMP V2)
- ~325 FedRAMP controls assessed against 25+ domains
- Compliance support to other authorities available (infrastructure controls only)
- CalCloud security controls can be shared with customer security personnel under strict controls and agreements

# CalCloud IaaS Security

## Key Elements



<b>Encrypted Two-Factor Authenticated Sessions</b>	<b>Cloud Border Security</b>	<b>Admin Access Only from Territorial U.S.</b>
<b>Log of All Administrative Actions</b>	<b>Least Privilege and Separation of Duties Practice</b>	<b>Data are Property of the State</b>
<b>Infrastructure Hardening</b>	<b>Coordinated Security Incident Handling</b>	<b>Vendor(s) Background Checked</b>
<b>Encryption at Rest (Option)</b>	<b>Coordinated Change Control</b>	<b>Security Awareness Training Including IRS Disclosure</b>
<b>Strong Tenant Isolation</b>	<b>Coordinated OS Patching</b>	<b>No Shared Credentials</b>
<b>Isolated Security Tiers (network)</b>	<b>Configuration and Vulnerability Monitoring</b>	<b>Controlled Administrative Access</b>

# CalCloud IaaS Security

## Then and Now

- 2014 1H focused on getting IBM ISeC in place (this stood up the basic IBM processes for the environment)
- 2014 2H focused on FedRAMP v1 control implementation and processes
- Late 2014 FedRAMP focus switched to FedRAMP v2 (using NIST 800-53 v4 controls)
  - IRS had converted to NIST 800-53 v4 and customers need IRS compliance
  - IBM was moving other cloud infrastructures to FedRAMP v2
  - Decision to “bite the bullet”

# Who is Using CalCloud IaaS Now?

CALIFORNIA DEPARTMENT OF  
Health Care Services 



CALIFORNIA DEPARTMENT OF  
FOOD & AGRICULTURE



California Department of  
Motor Vehicles



**CALIFORNIA EMERGENCY MEDICAL  
SERVICES AUTHORITY**



**CALIFORNIA**  
High-Speed Rail Authority



California  
DEPARTMENT OF TECHNOLOGY

**California Secretary of State**

# CalCloud IaaS Success Stories

- **EMSA Migration by Jim Switzgable**
- **CDFA PiercesDisease.org by Robert Schmidt, AIO**

**Introducing...**

**Jim Switzgable**

**Chief Information Officer**

**Emergency Medical Services Authority  
(EMSA)**

# Emergency Medical Services Authority



Transitioning from Managed OTech Servers to the



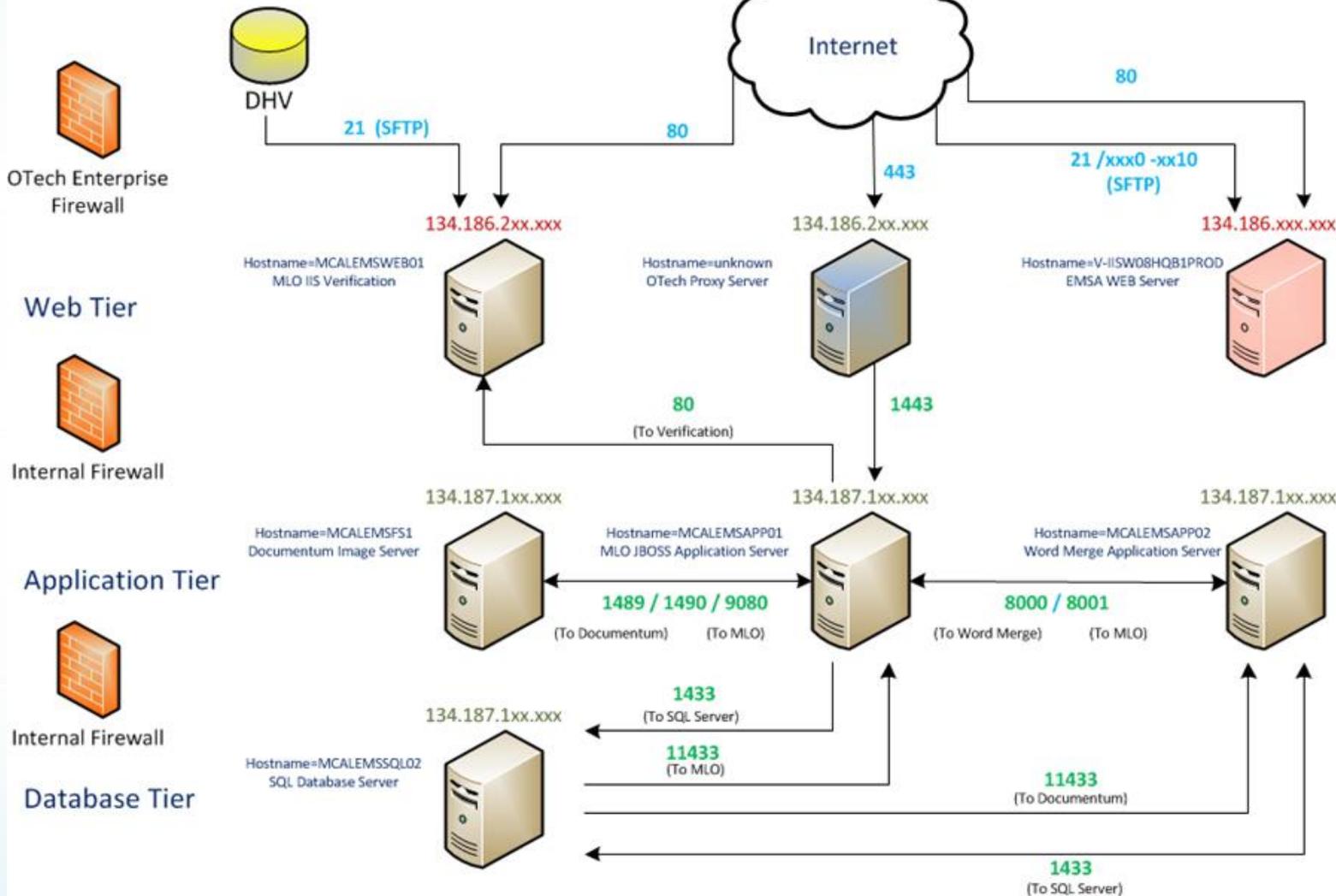
Powered by IBM

# Emergency Medical Services Authority

## Managed OTech Environment



External Environment

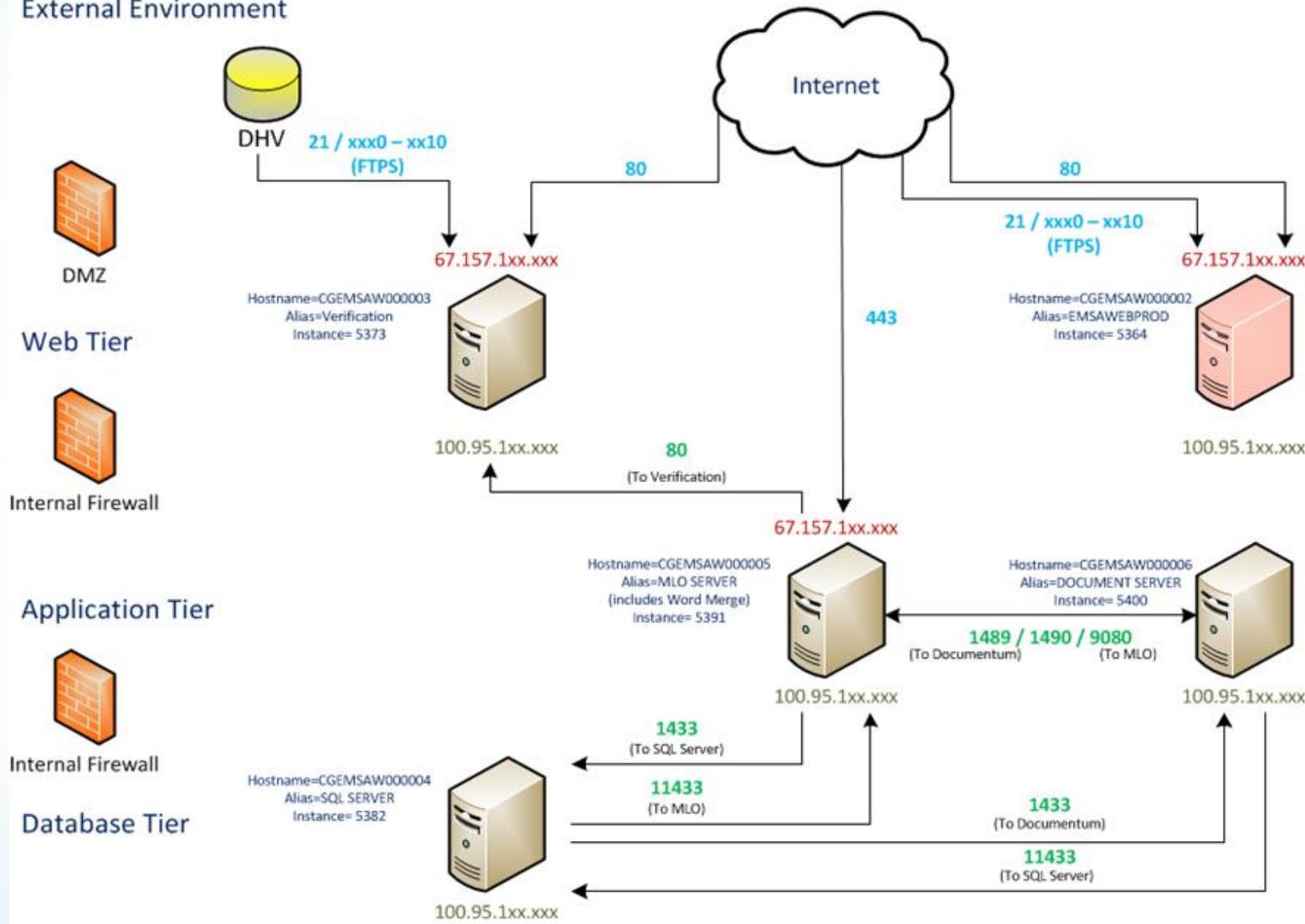


# Emergency Medical Services Authority

## CalCloud Environment

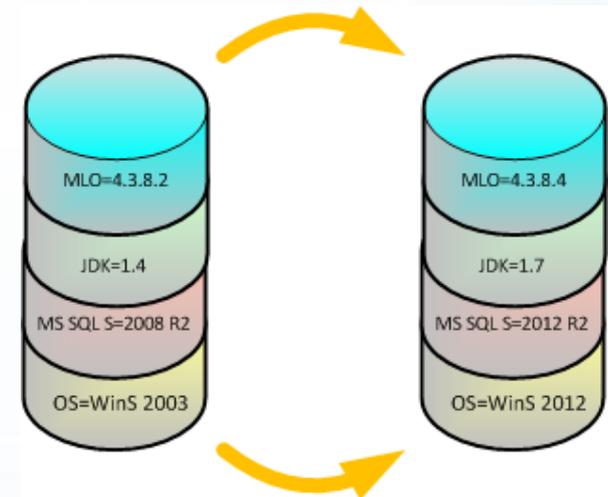


External Environment



# Reasons for Transitioning

- **Cost reduction, especially for department website**
  - Data transmission fees
  - License fees
  - Mandatory support fees
  - Server consolidation
- **Server upgrade requirements**
- **Application upgrade requirements**
- **Support response in Managed OTech was not optimal**
  - Slow turnaround for additional server resources
  - “Partial Solutions”: (ex. Web Server)
- **No Disaster Recovery solution for windows server environment**



# Project Milestones

Milestone	Estimated Date	Actual Date	Comments
Meeting to plan procurement, learn portal environment and define approval process after completing forms	10/16/2014	<b>10/16/2015</b>	Combined Dept of Technology / IBM <b>technical presentation</b> . Hands on creating sample servers. Well done but portal was changing.
Meeting to review new portal and procure servers	3/2/2015	4/22/2015	Delayed due to desire to optimize solutions for both MLO and Department Webserver. MLO new release delivered on 4/14 for user testing.
Procurement completed	4/23/2015	<b>4/23/2015</b>	<b>Provisioning</b> of servers occur 40 minutes after last level of approval is completed
Clarify and purchase SQL Server licensing	4/30/2015	<b>4/30/2015</b>	Settled on <b>SQL Server</b> Standard edition. Needed clarification on the VM environment for calculating licenses.
Ports opened on Web Server	5/1/2015	<b>5/14/2015</b>	Initial request submitted on 4/29. <b>Ports</b> not opened until 5/14. Indication there was a communication issue with our request at AT&T. Should have an SLA of 5 business days.
SSL Certificate transferred from old MLO application website to new one	5/25/2015	5/25/2015	Completed request to OTech on 5/15 (ticket request with follow-up forms and approvals in CSS). Comodo delivered on 5/22. <b>Certificate</b> implemented without any issues. Had to wait until port 443 was open to test and confirm.
Ports opened on MLO Server	5/20/2015	<b>5/26/2015</b>	Request not submitted until 5/18 due to question of application proxy server support. <b>Ports</b> implemented on 5/26. Much of the implementations and any testing between servers could not start until this task was completed.
Web Server goes live in CalCloud	5/22/2015	<b>5/21/2015</b>	The department <b>web server</b> went <b>live on 5/21</b> , 1 day ahead of schedule.
Request to open more ports on Web Server for FTPS	6/3/2015	6/3/2015	Submitted a request on 5/27 to establish FTPS on the Web Server. This will <b>improve</b> the update process previously active using our Orchard content management software. Request completed on 6/3. This was to support an enhancement and did not impact the production changeover.
MLO Servers go live on CalCloud	6/8/2015	<b>7/5/2015</b>	Proxy server issue, port issues, Java xml changes, SQL connectivity issues, all impacted the delivery. Only the first two issues could be associated with Calcloud. <b>MLO</b> goes <b>live on 7/5</b>

# Provisioned Servers

Host Name	Host Alias	Tier	Site name	Operating System	SQL Server	Basic Provision
CGEMSAW000002	EMSAWEBPROD	Web	<a href="http://www.emsa.ca.gov/">http://www.emsa.ca.gov/</a>	MS Win Server 2012 R2	none	Small (2 CCU, 4GB RAM, 90GB Storage)
CGEMSAW000003	VERIFICATION	Web	<a href="http://www.centralregistry.ca.gov/">http://www.centralregistry.ca.gov/</a>	MS Win Server 2012 R2	uses lookup service thru MSIS in MLO to access instance 2 (licenses)	Small (2 CCU, 4GB RAM, 90GB Storage)
CGEMSAW000004	SQL SERVER	Database		MS Win Server 2012 R2	SQL 2012 / MCALEMSSQL01 instance (1) SQL 2012 / ISQL instance (2)	Medium (4 CCU, 8GB RAM, 90GB Storage)
CGEMSAW000005	MLO SERVER	Application	<a href="https://www.emtcert.emsa.ca.gov/mlo/">https://www.emtcert.emsa.ca.gov/mlo/</a>	MS Win Server 2012 R2	uses instance 1 (docs) / instance 2 (licenses)	Medium (4 CCU, 8GB RAM, 90GB Storage)
CGEMSAW000006	DOCUMENT SERVER	Application		MS Win Server 2012 R2	uses instance 1 (docs)	Small (2 CCU, 4GB RAM, 90GB Storage)

Host Alias	Additional Memory (GB)	Additional Storage (GB)	Backup	Disaster Recovery	Cost: Basic Server	Cost of Additional Server Memory	Cost of IDR T1/T2 Additional Memory	Cost of Additional Storage	Cost of Backup Solution	Total Cost/Month (as of May)
EMSAWEBPROD	0	0	Tier 2: Daily Incr / Weekly Full	Tier 1: RTO: <1hr, RPO: <1hr	\$ 1,233.00	\$ -	\$ -	\$ -	\$ 10.04	\$ 1,243.04
VERIFICATION	0	0	Tier 2: Daily Incr / Weekly Full	Tier 1: RTO: <1hr, RPO: <1hr	\$ 1,233.00	\$ -	\$ 58.40	\$ -	\$ 15.60	\$ 1,307.00
SQL SERVER	16	0	Tier 1: Instant Backup (Hourly Snapshot)	Tier 1: RTO: <1hr, RPO: <1hr	\$ 1,498.00	\$ 0.14	\$ 233.60	\$ -	\$ 32.98	\$ 1,764.72
MLO SERVER	0	0	Tier 1: Instant Backup (Hourly Snapshot)	Tier 1: RTO: <1hr, RPO: <1hr	\$ 1,498.00	\$ -	\$ 31.96	\$ -	\$ 10.04	\$ 1,540.00
DOCUMENT SERVER	4	150	Tier 2: Daily Incr / Weekly Full	Tier 2: RTO: <96 hr, RPO: <24 hr	\$ 957.00	\$ 58.40	\$ 150.50	\$ 131.10	\$ 33.28	\$ 1,330.28

# Advantages of CalCloud

- Fast turnaround provisioning servers or adding resources
- Disaster Recovery solution for Windows Servers
- Administrative access to the system
- Lower cost per server
- Login from anywhere
- Monitor resource usage easily
- Goodbye to CSS
- We own SQL Licenses and don't have to buy additional support
- We control software upgrade schedules
- We can create our own custom backup snapshots

# Financial Picture

OTech Managed Services Servers	
Service Description	Charge
Department Website	
Shared Web Server	\$ 193.00
Shared Web Tier II Additional Storage	\$ 2,600.00
Shared Web Tier II Additional 1 GB Transfer	\$ 1,690.00
<b>Webserver Cost per month</b>	<b>\$ 4,483.00</b>
MILO Servers	
Operating System Charge (Wintel Ent Ed)	
Windows Virtual Server, 1 Core, 1 GB RAM	
Virtual Server Additional Core / Mem	
Virtual Server Total Charges	\$ 5,172.00
Database Support - Tier 1 (MS SQL Server)	\$ 1,200.00
Site to Site + Individual VPN	\$ 256.00
Backup Chgs, Storage, Web Support	\$ 3,551.00
<b>MILO Server Cost per month</b>	<b>\$10,179.00</b>
<b>Total per month</b>	<b>\$14,662.00</b>

OTech CalCloud Servers		
Service Description	Charge	
Department Website		
Monthly Server Fee	\$ 1,243.04	Web Server
<b>Webserver Cost per month</b>	<b>\$ 1,243.04</b>	
MILO Servers		
Monthly Server Fee	\$ 1,307.00	Verification Server
Monthly Server Fee	\$ 1,764.00	MLO Server
Monthly Server Fee	\$ 1,540.00	SQL Server
Monthly Server Fee	\$ 1,330.28	Documentum Server
<b>MILO Server Cost per month</b>	<b>\$5,942.00</b>	
<b>Total per month</b>	<b>\$7,185.04</b>	
<b>SQL Server 2014 Std Core License</b>	<b>\$4,678.32</b>	<b>one time cost (no longer have OTech support cost)</b>
<b>Consultant Services to support XFER</b>	<b>\$4,940.00</b>	<b>one time cost</b>
<b>Two and one-half months of overlapping costs</b>	<b>\$14,350.00</b>	<b>estimate of overlapping costs</b>
<b>Total one-time cost</b>	<b>\$23,968.00</b>	

# Lessons Learned

- Concentrate on getting your port requirements together early in the project and test as quickly as you can with telnet.
- Set up approval process that involves as few people needed for different layers or involve more than one person for each layer.

**Request** → **Operations** → **Security** → **Finance**

- Modify the Start screen at the beginning to more easily access commonly accessed utilities and programs.

**Introducing...**

# **Robert Schmidt**

**Agency Information Officer**

**California Department of Food and  
Agriculture**

# CalCloud IaaS Success Story...

## ■ CDFA PiercesDisease.org



Pierce's Disease .org  
news and research about Pierce's Disease

### What is Pierce's Disease?

Pierce's Disease is a bacterial infection, which is spread by bugs that feed on grapevines, particularly the "glassy winged sharpshooter." Grapevines that become infected with PD can quickly become sick and die.



# CalCloud IaaS Success Story...

## ■ History

- 2007 Public Intellectual Property Resources for Agriculture (PIPRA)
  - Public Facing Website
  - 200 Active Scientists Worldwide for Grants, Papers, Collaboration
- 2014 Modernization of Website
- 2015 Engaged CalCloud Team
  - Training
  - Deployment
  - Next Steps

# CalCloud IaaS User Group

- **User Group was implemented to:**
  - Align IT tactical efforts with IT Strategy
  - Contribute to the technology roadmap
  - Provide input on CalCloud enhancements
  - Enhance CalCloud visibility while managing implementation risk
  - Communicate the organization's cloud strategy to government business and IT leaders

# CalCloud IaaS User Group

- **Members are responsible for:**
  - Serving as change champion within their agency
  - Aligning tactical IT implementation with IT strategy
  - Assessing the business impact of moving IT services to the hybrid cloud

**Introducing...**



**Michael Ochoa**

**Account Director**

**Customer Delivery Division**

**California Department of Technology**

# CalCloud IaaS On-boarding

## CalCloud IaaS Customer On-Boarding Process

### CALCLOUD ONBOARDING STEPS

#### CSS Service Request

- Attach Onboarding Questionnaire
- Establish CalCloud Provisioning Budget

#### Subscription Meeting

- Service Overview
- Discussion Onboarding Process
- Discuss Network Connectivity
- Questions and Answers

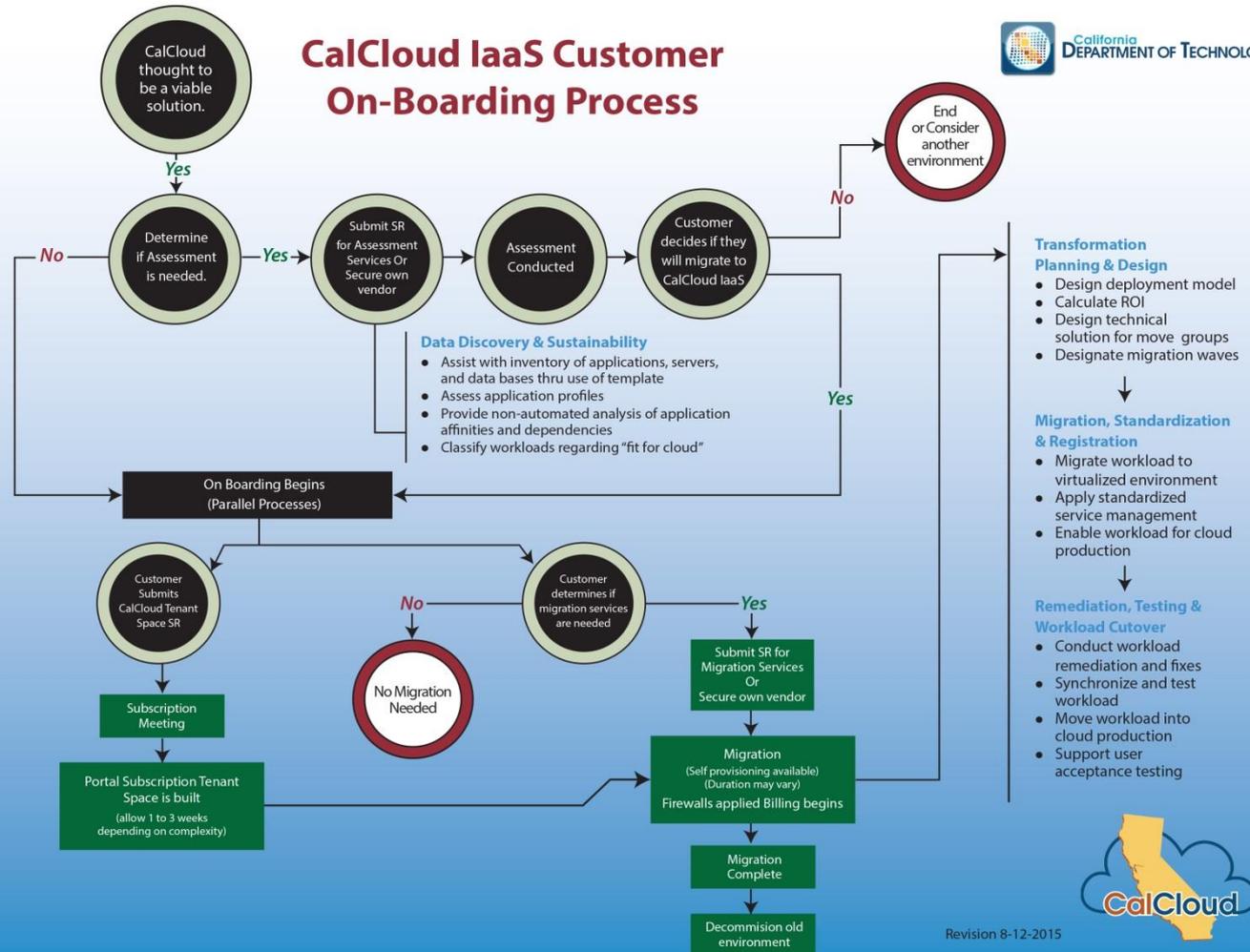
#### Portal Subscription

- Hands-On Portal Training
- Remedy User Guide
- Setup Portal Users and Workflows
- CalCloud Tenant Guide

#### Self Provisioning!



- Begin Billing
- VM's created in as little as 25 minutes



Revision 8-12-2015



# CalCloud On-Boarding Process

- For VHSS or Email
  - Customer submits Service Request (SR)
- For CalCloud IaaS

<b>Tenant Space</b> <i>(minimum 30 days)</i>	<b>Assessment/Migration Services</b> <b>(optional)</b>
Customer submits SR for tenant space	Customers submits SR for assessment/migration services
Subscription Meeting: <ul style="list-style-type: none"><li>• Determine Requirements</li><li>• Analyze Environment</li><li>• Design Network</li></ul>	Begin Assessment (optional) Begin Migration Activities: <ul style="list-style-type: none"><li>• Self-provisioning starts</li><li>• Firewalls applied</li><li>• Billing begins</li></ul>
Build Tenant Space	Complete Migration
Receive Portal training	Decommission Legacy Environment

# CalCloud IaaS Training

- Portal user training is provided as part of the on-boarding process
- Portal user guide is provided during training

# How to get Started...

## ■ CalCloud Links

- [www.servicecatalog.dts.ca.gov/services/cloud/calcloud/overview.html](http://www.servicecatalog.dts.ca.gov/services/cloud/calcloud/overview.html)

## ■ Contact your CDD Account Lead

- [www.otech.ca.gov/Customers](http://www.otech.ca.gov/Customers)

# Upcoming Vendor Forum

- Introduce vendors to the process of onboarding as a CalCloud services provider
  - Technical Criteria
  - Procurement Criteria
- To be scheduled in September 2015

# Summary

- **Creation of CalCloud Strategy and Governance**
- **Based on Customer Feedback:**
  - IaaS rate reductions / doubled computing power
  - Security enhancements
  - New services (VPN, File Transfer, Assessment/Migration)
  - IaaS User Group
  - OTech Managed Services in IaaS

# Questions & Answers



# Thank you for Coming!!