Session 407

Business Process Integration for Telecom Management

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Automating Telecom Management

The Goal: Improve telecom operations through automation and business process integration.

Shrink wrap management applications provide functionality for system administration and performance measurement. Often many of those functions are only part of a business process.

Integration of telecom management with IT infrastructure is the enabler of business process integration.

Automating Telecom Management

Integrating telecom management with IT infrastructure enables:

- Applying IT tools and existing processes to manage telecom data and resources.

- Leveraging Identity Management technology to streamline telecom management and integrate it with business processes.

Identity Managers and Work Flow engines

Directory technology has evolved from X.500 in support of X.400 email standard through LDAP and meta-directories to Identity Management.

Identity Managers complemented by workflow engines provide a powerful infrastructure for business process automation.

Transactions are triggered by events in a lifecycle of an identity. Directory information is leveraged to implement role based provisioning.

User Administration Automation

The Challenge

Creating and maintaining user accounts and their access to specific services, applications and databases is a huge challenge for any enterprise. The problem grows exponentially as the number of users, applications, services and databases grows rapidly within any enterprise.

The Solution

Automating the essential tasks of creating and maintaining user accounts and their access rights can provide huge time-and-cost savings, as well as rapid deployment of user identities, applications and services.

Automated User Administration

Common functions:

- Add, Edit, Delete accounts (Provisioning)
- Role based entitlement management
- Password management
- Self service provisioning and request initiation
- Delegated administration
- Work flow for provisioning and approval
- Event logging and reporting
- Resource usage, monitoring and optimizing

Identity Managers and Role Based Provisioning

Identity Managers work across disparate systems through connectors (aka management agents) to common components in the IT infrastructure:
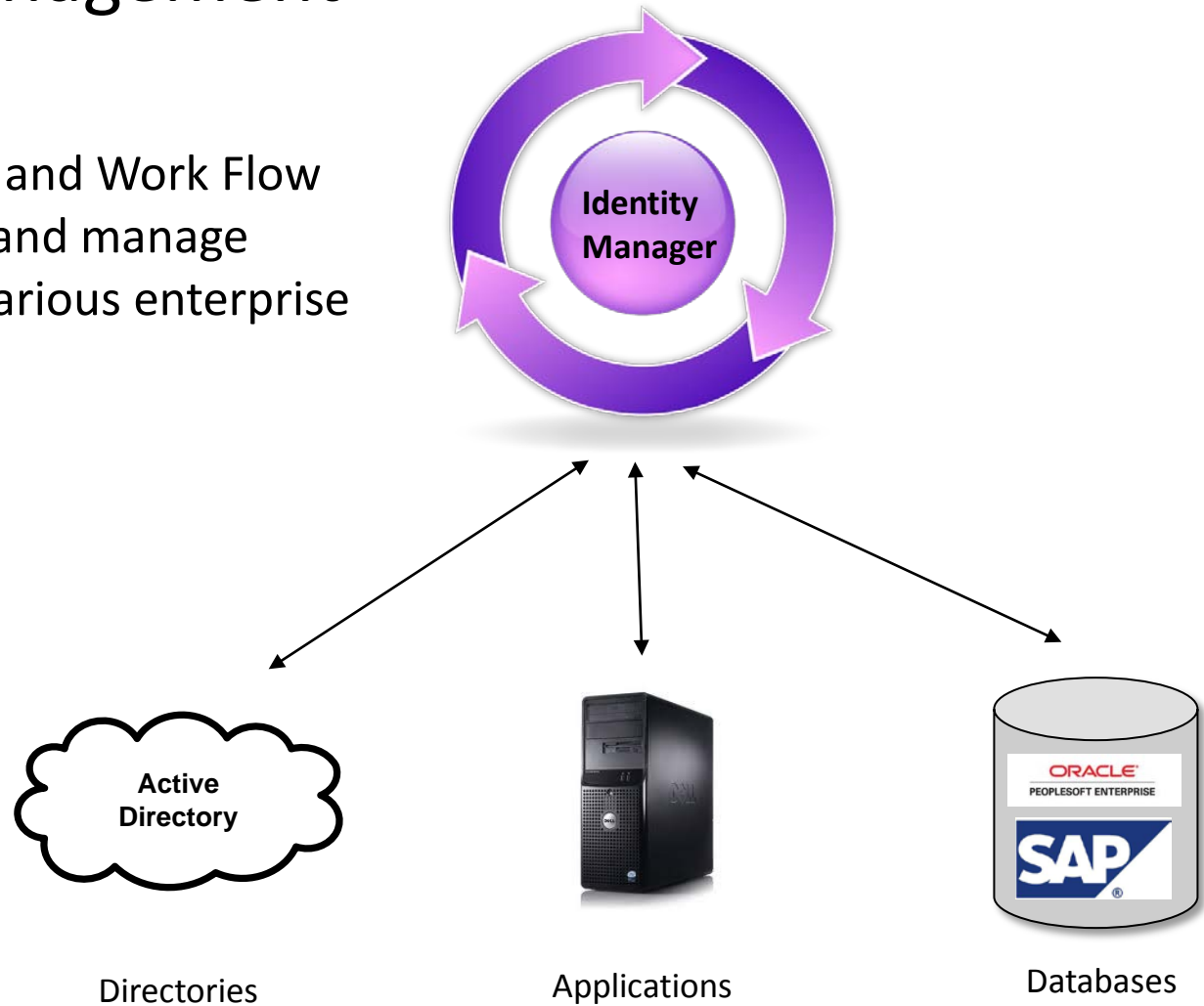
- Applications
- OSs
- Databases
- Directories

Identity Management

Identity Managers and Work Flow engines provision and manage resources across various enterprise systems.

Identity Manager

Active Directory

Directories

Applications

Databases

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Identity Managers and Role Based Provisioning

Identity Management allows enterprises to manage end-to-end lifecycle of user identities across all enterprise resources:

- Microsoft Forefront Identity Manager & Identity Lifecycle Manager

- Novell Identity Manager

- Oracle Identity Manager

- IBM Tivoli Identity Manager

Gartner Magic Quadrant for User Administration
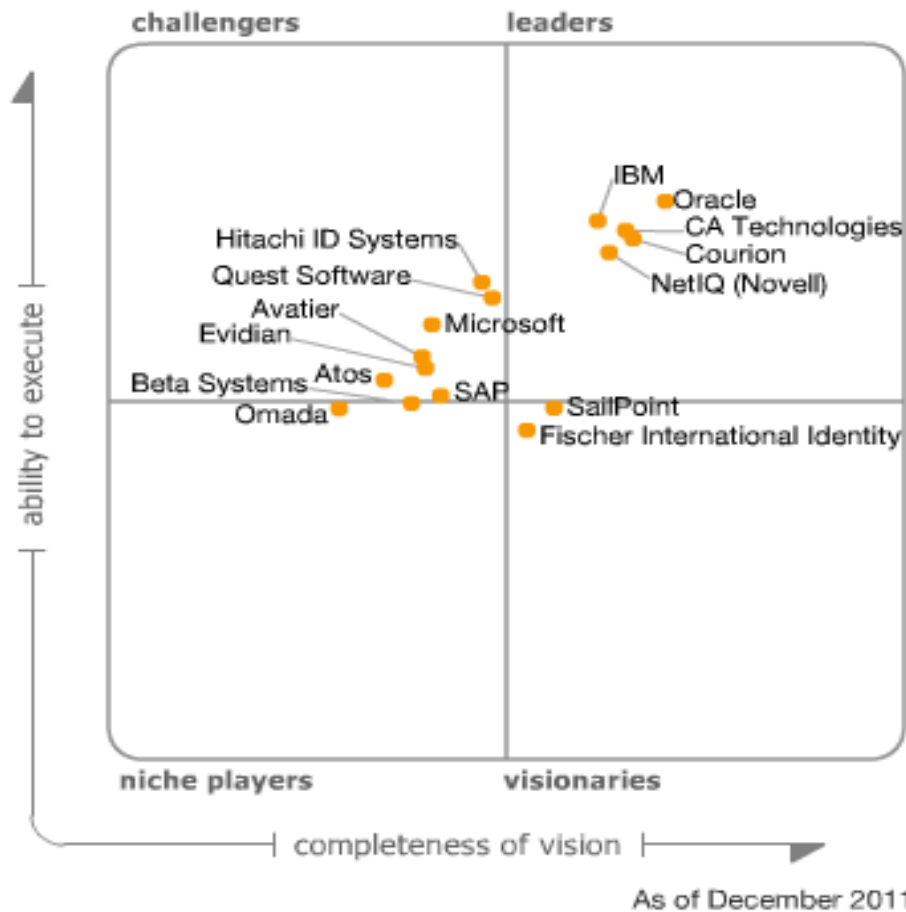
Source: Gartner (December 2011)

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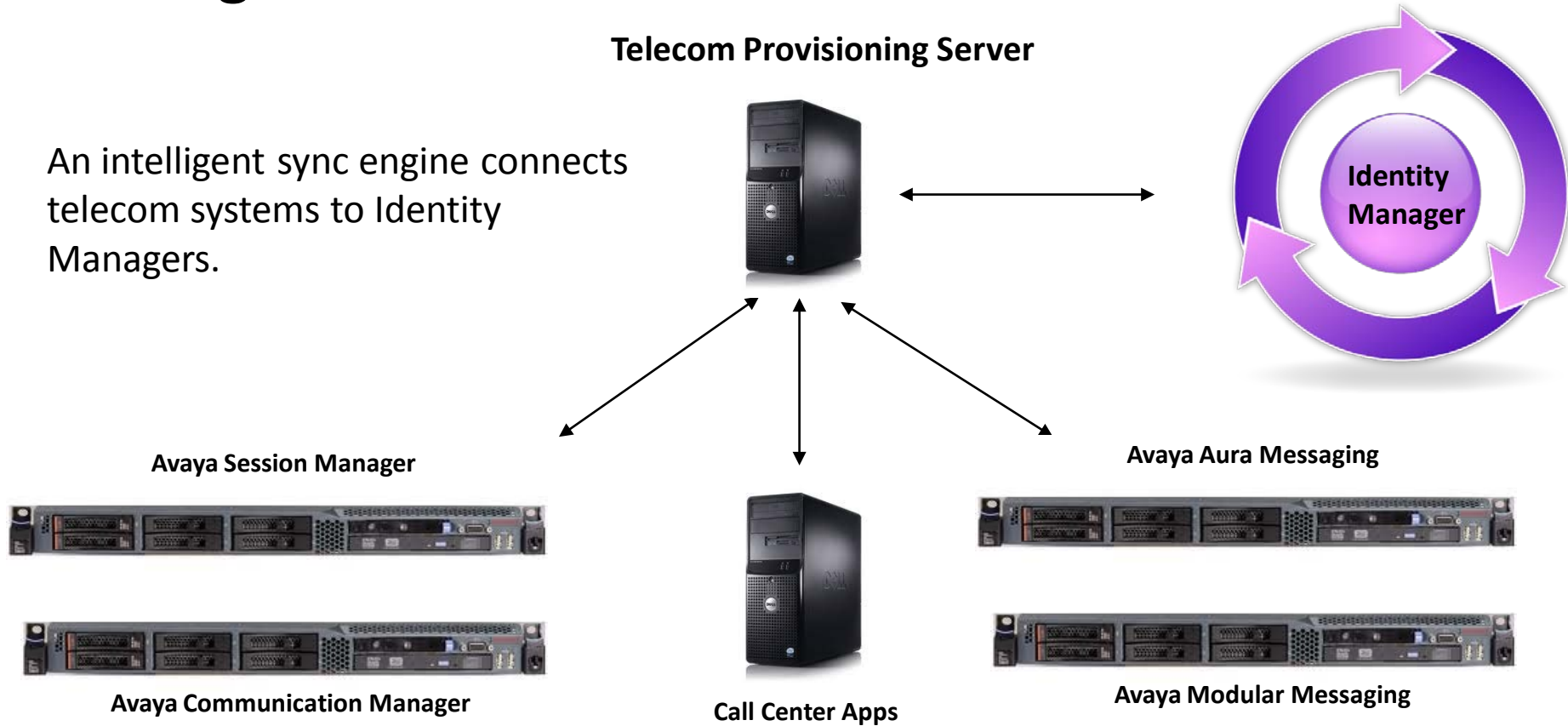# Identity Managers and Role Based Provisioning

Key Benefits:

- Reduced administration costs of on-boarding, off-boarding and maintenance of resources

- Improved Productivity: Rapid deployment of new users

- Improved Security: Immediate and accurate de-provisioning of resources

Leveraging Identity Management for Telecom Management

Telecom Provisioning Server

An intelligent sync engine connects telecom systems to Identity Managers.

Identity Manager

Avaya Session Manager

Avaya Communication Manager

Call Center Apps

Avaya Aura Messaging

Avaya Modular Messaging

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Self Service and Work Flow Engines

- Self Service management refines Identity Managers granularity by delegating some tasks to the end-user. It is powered by the Identity management engine.

- Work flow engines are leveraged to implement request approvals, transaction sequencing and event notifications.

- At the tail end of the process, the work is performed by the provisioning server.

Self Service Management

Refining configuration of telecom resources

- Web based portal enables end-users:
  - Make controlled changes to resource configuration and options.
  - Submit requests for changes and additions of service and resources which are approved through integrated work flow systems.
- Integration with Identity Manager provides authentication and authorization to support self service management.
- Back end implementation by the provisioning server.

Delegated Administration

Refining configuration of telecom resources

- Web based portal enables helpdesk staff to:
  - Make controlled changes to resource configuration and options on behalf of end-users.
  - Restricted access to telephony management functionality with customized UI.
- Integration with Identity Manager provides authentication and authorization to support self service management.
- Back end implementation by the provisioning server.

Monitoring and Optimizing Resource Usage

Keeping track of how resources are actually used once they are provisioned allows administrator to optimize and refine the amount of resources required:

- Setting thresholds to be alerted when capacity reaches a certain level

- Identifying idle resources

- Reclaiming idle resources and making them available for re-provisioning

Identity Management Integration Case Study

Global manufacturing enterprise (> 100k employees) upgraded their telecom infrastructure.

IT infrastructure includes:

- Microsoft Active Directory
- HR databases
- Microsoft Identity Manager (ILM) that synchronizes and provisions various services
- End user portal for request initiation
- Work flow process for request approval

Telecom integration with IT infrastructure is a requirement.

Identity Management Integration Case Study

Deployed a Telecom Provisioning server to connect the Identity Manager to the telecom system.

The provisioning server hosts directory information about users and sites:

- Site information
    - Location data
    - IP Telephony data: CM, Gateway, AAM, AES, Presence Group
- User information
    - HR data
    - Telephony data: phone + voicemail template, phone number

ILM synchronizes with the provisioning server by:

- Writing site location and user HR data
- Reading telephony data

Identity Management Integration Case Study

Initialization Process

- ILM populates user and site information in provisioning server.

- As new sites are cut over, telephony attributes are populated in the provisioning server and then propagated by IM

- Initial user to extension map (station review) is validated against HR data and loaded into provisioning server

- ILM propagates relevant telephone attributes to AD user objects to enable click-to-dial and Sametime integration.

Identity Management Integration Case Study

Day 2 Process

- New users initiate requests using self service portal

- Users initiate change requests using self service portal

- Requests are approved by managers and automatically populated in provisioning database

- ILM synchronizes updated telephony template with the Provisioning Server

- Provisioning server reacts by executing transactions, sending notifications and updating user data

Identity Management Integration Case Study

Day 2 Process (Continued)

- ILM synchronizes data from the Provisioning server and propagates phone numbers to various data stores

- Work orders are automatically generated for physical delivery of hardware

- Periodic transaction reports are emailed to telecom administrators

Going Beyond Innovation

As the world evolves, so do we. Yet we remain driven by our passion for inventing solutions to solve important problems, perfecting those solutions and delighting our customers.

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INTUIT Case Study

Challenge

- Manual management of stations, login IDs and voice mailboxes = heavy administrative burden

- Over provisioning of stations and login IDs while administered ones are idle

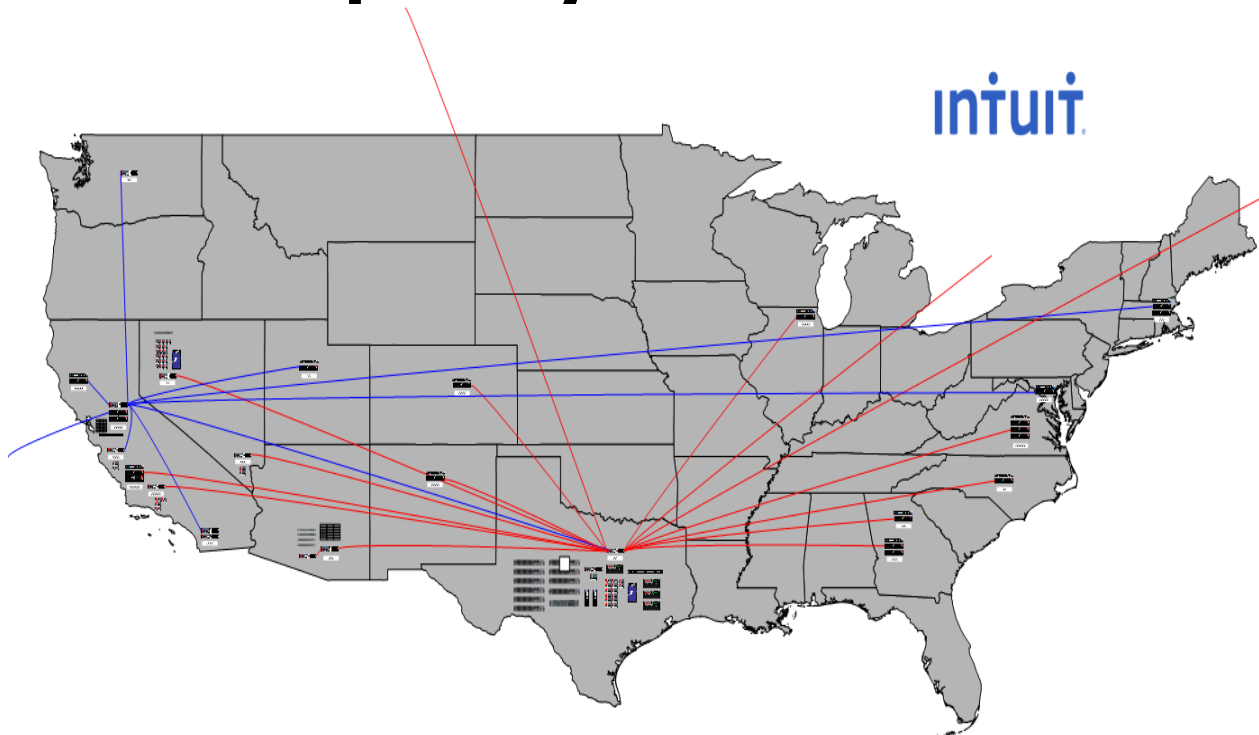- Resource availability / utilization visibility

INTUIT Case Study

Background

- Automation strategy
- Operational efficiencies / cost savings
- Alignment to corporate strategic priorities
- Telecom resources are part of identity management

INTUIT Case Study
Telephony Infrastructure

Many US & multiple global locations

INTUIT Case Study

Process Prior to Initiative

- Manual MACs (stations, login IDs and voice mailboxes)
- Manual reporting generation for analysis / optimization
- Manual capacity management
- Oracle Directory Service propagating data to AD
- On-boarding team updating AD data

INTUIT Case Study

Solution

- Automate on-boarding and off-boarding
- Integrate the process with AD / enterprise Identity Mgmt
- Monitor actual usage of agent login IDs & stations
- Automate report generation to identify idle resources
- Establish notification process based on thresholds

INTUIT Case Study

Automating O-Boarding

- Defined 2 main worker types
  - Admin
  - Agent
- Defined AD attributes to control telephony settings
  - Telephony Role
  - Location

INTUIT Case Study

Automating O-Boarding

- Defined transactions triggered by events in lifecycle of AD user
  - Add: create station, AAM mailbox, agent login ID & CMS dictionary entry
  - Modify: name, telephony role
  - Delete: remove station, AAM mailbox, agent login ID & CMS dictionary entry
- Designed data flow to feed the Oracle directory services
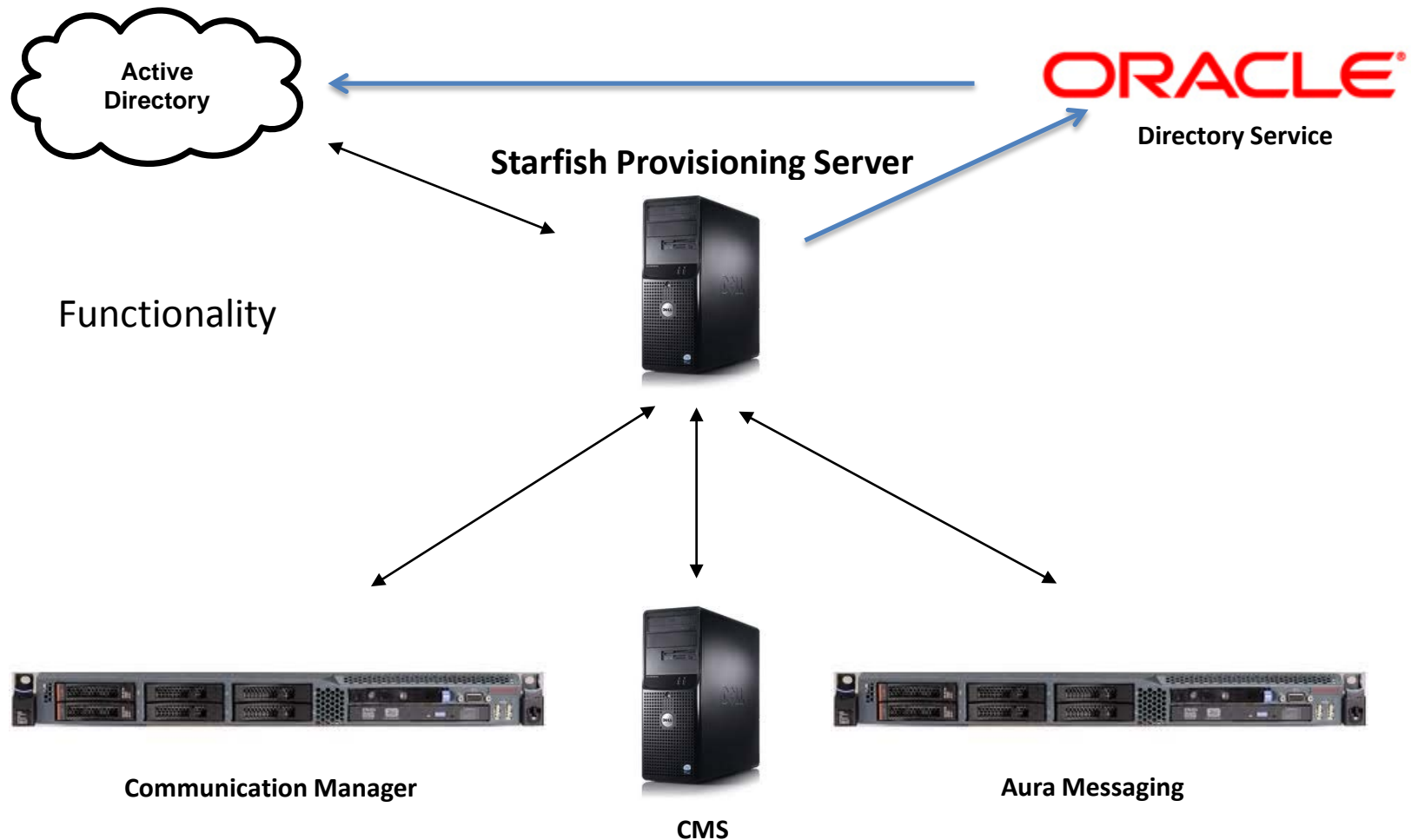- Designated station ranges, login IDs & station templates by locations

INTUIT Case Study

Automating O-Boarding

- Deployed Starfish Provisioning Server in lab environment
- Verified 'Admin' provisioning functionality (stations & AAM mailboxes)
- Deployed Starfish Provisioning Server in production environment
- Coordinated with O-Boarding team
- Rolled out automatic provisioning of 'Admin' type
- In the process of verifying 'Agent' provisioning in the lab
- Coordinating production roll-out

INTUIT Case Study

Active Directory

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Directory Service

Starfish Provisioning Server

Functionality

Communication Manager

CMS

Aura Messaging

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INTUIT Case Study

Automating O-Boarding

- Dovetail into existing processes / procedures / applications
- Starfish Provisioning Server "listens" for changes in AD
- Work closely with "O-Boarding" team
- Documentation
- Training
- Support

INTUIT Case Study
Automating O-Boarding
Email Notifications:

Add	Change	Delete	Error Handling
Phone created. *FirstName=Anne* *LastName=Kunaro* *Location=TCS-01* *Extension=2648* *Voice mailbox created.* *FirstName=Anne* *LastName=Kunaro* *Location=TCS-01* *Mailboxnumber=2648*	*Voice Mailbox Modified.* *FirstName=Jim* *LastName=Thomas* *Mailboxnumber=4122* *Phone display name Modified.* *Extension=4122* *New Name=Thomas, Jim (IFS – Biz Dev)* *Old Name=Thomas, Jim*	*Phone removed.* *FirstName=Melissa* *LastName=Mitchells* *Location=RNO-2S* *Extension=4829* *Voice Mailbox Removed.* *Mailboxnumber=4829*	*Cannot add station 7259 for user CN=Jones\, Fred,OU=PLN,OU=INTUIT,OU=People,DC=corp* *Cannot find an available extension for location ARL-01.* *Cannot connect to AD after several attempts.* *Shutting down ADConnector service.* *Please take action*

INTUIT Case Study

Monitoring / Optimizing Resources

- Identified call center agent locations / allocation of login IDs
- Defined thresholds for max number of idle days for login IDs
- Defined thresholds for max number of idle days for stations
- Defined notification and reclamation process
- Coordinated with related business units

INTUIT Case Study

Monitoring / Optimizing Resources

- Deployed *Resource Manager*
- Monitor usage of agent login IDs and stations by locations
- Define thresholds for idle resources
- Automate idle resource reports to identify "candidates"
- Notify and reclaim idle resources based on thresholds
- Implement resource usage dashboard
- Configure capacity alert thresholds for notifications

Resource Manager - Station Monitoring

Station Dashboard: Dashboard view of station usage highlighting stations that are not in use. Licenses can be reclaimed by using the bulk de-provisioning tool

Station Usage Report: Generate station usage report highlighting stations that are not registered to CM for period of time

Bulk Provisioning: Provision stations in bulk *(future)*

Bulk De-provisioning: Remove stations in bulk and automatically remove them from CM *(future)*

Station Auditor Report *(daily email)*

Stations idle for more than 20 days :

Extension	Last Activity	Name
3195	*04/09/2012*	*ACD 3195*
3522	*04/13/2012*	*ACD Mgr David Hora*

Stations idle for more than 25 days :

3380	*04/09/2012*	*ACD 3380 I Mehran*

Stations idle for more than 30 days and should be deleted :

3484	*ACD 3484*

Resource Manager - Agent Monitoring

Agent Dashboard: Agent login ID usage highlighting idle agents that consume licenses but are not in use. Licenses can be reclaimed by using the bulk de-provisioning tool

Agent Usage Report: Generate agent login ID usage report highlighting idle agents eligible for reclamation

Bulk Provisioning: Provision agents in bulk and automatically update CMS dictionary entries with agent names and login IDs (*revised implementation*)

Bulk De-provisioning: Remove agents in bulk and automatically update CMS dictionary entries and CMS groups (*revised implementation*)

Agent Auditor Report *(daily email)*

Agents idle for more than 75 days :

LoginID	Last Activity	Name
4083	02/16/2012	Melissa Flante
4089	02/13/2012	Alex Long

Agents idle for more than 85 days :

6377	02/04/2012	Kim Jones

Agents idle for more than 90 days and should be deleted :
40303   Alily Ohara Alce

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Resource Manager – Capacity Alerts

Capacity Alerts: Dashboard view of several resources in CM.

• 2 configurable thresholds.

• Alerts based on exceeding both thresholds

*The following Predefined capacity **Escalation** Thresholds have been reached or exceeded on the following Resources.*

Trunk Ports Used=1991
System Limit=2000
*Available=**9***
Warning Threshold=1840
Escalation Threshold=1900

Logged In Advocate Agents=828
System Limit=1441
*Available=**613***
Warning Threshold=800
Escalation Threshold=1000

Learnings

- Simple solution – detailed implementation
- Must have cross-functional representation and support including Sr Leadership
- Business processes
- Implications of technology changes
- Flexibility – *(i.e. migration from Audix to AAM)*
- "Manual Over-ride" must stay
- Coordination of multiple numbering ranges dial-plans
- Data syncs

What's Next?

- The journey has been worthwhile

- Progress to date – station provisioning

- Next steps – agent provisioning & on-going support

Questions?