

Introducing CenturyLink



CenturyLink™

Our History

“If you do the right things, success will follow.”
– Clarke M. Williams, Founder

- During more than 60 years of service, Clarke M. Williams laid a foundation of leadership and integrity that will forever shape our view of how to manage the Company.

Mr. Williams set a lasting example for our company, both in the way he conducted business and in the way he led his life. His legacy is most clearly manifested in our Unifying Principles. These attributes are the foundation upon which our company is built.



Our Unifying Principles

- Fairness
- Honesty & Integrity
- Commitment to Excellence
- Positive Attitude
- Respect
- Faith
- Perseverance

CenturyLink is an industry leader



- Pro forma 2011 annual revenues of \$18.5 to \$18.8 billion*
- Serve customers ranging from Fortune 500 companies to families in rural America



Customers as of September 30, 2011

14.8 million access lines

5.5 million broadband customers

1.8 million video customers



- 210,000 route mile national fiber network
- Committed to being the broadband leader in our markets
- Global leader in managed hosting and cloud services



***Pro forma guidance for FY2011 as of November 2, 2011, which is valid only as of that date. Includes purchase accounting adjustments.**

CenturyLink is a local company

Northwest Region
HQ: Seattle, Wash.
President: Brian Stading

Mountain Region
HQ: Denver, Colo.
President: Kenny Wyatt

Midwest Region
HQ: Minneapolis, Minn.
President: Duane Ring

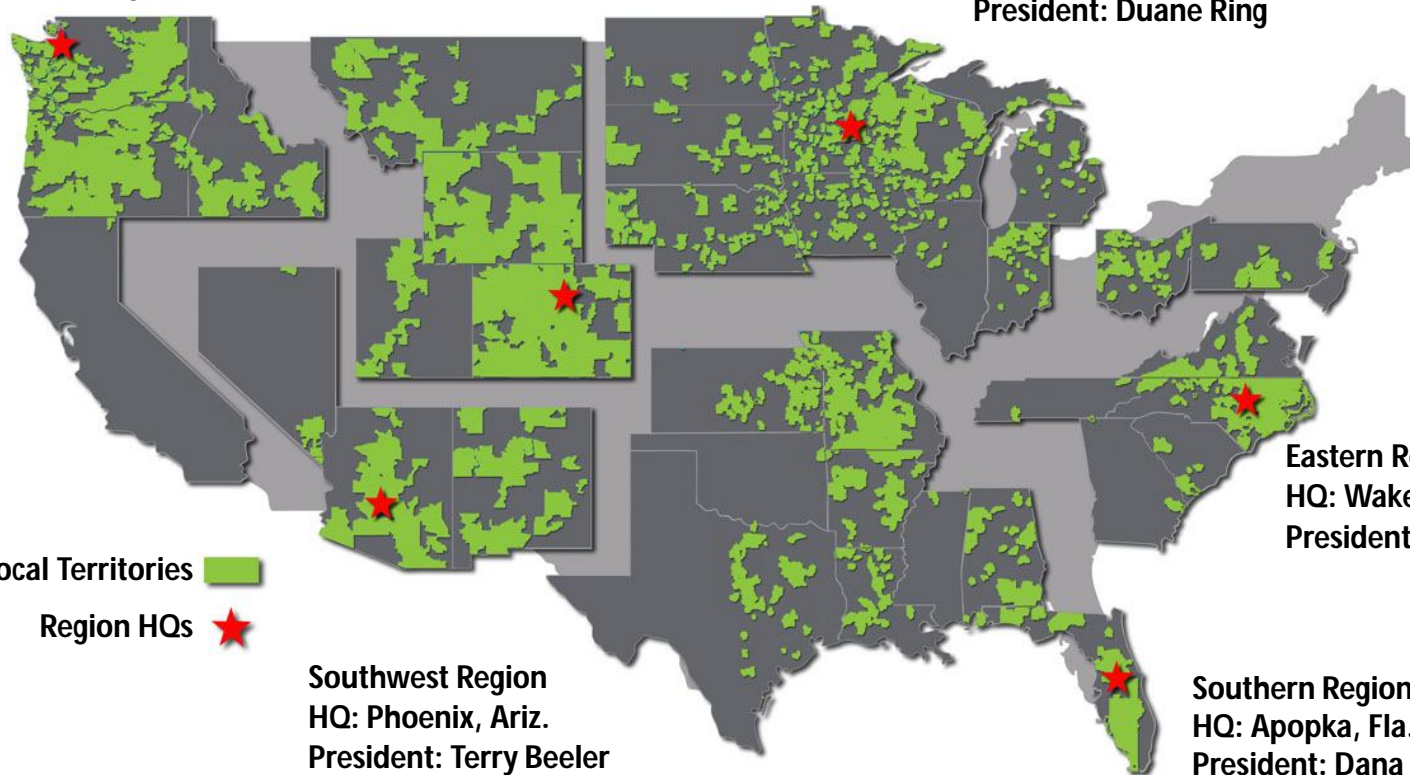
Eastern Region
HQ: Wake Forest, N.C.
President: Todd Schafer

Southern Region
HQ: Apopka, Fla.
President: Dana Chase

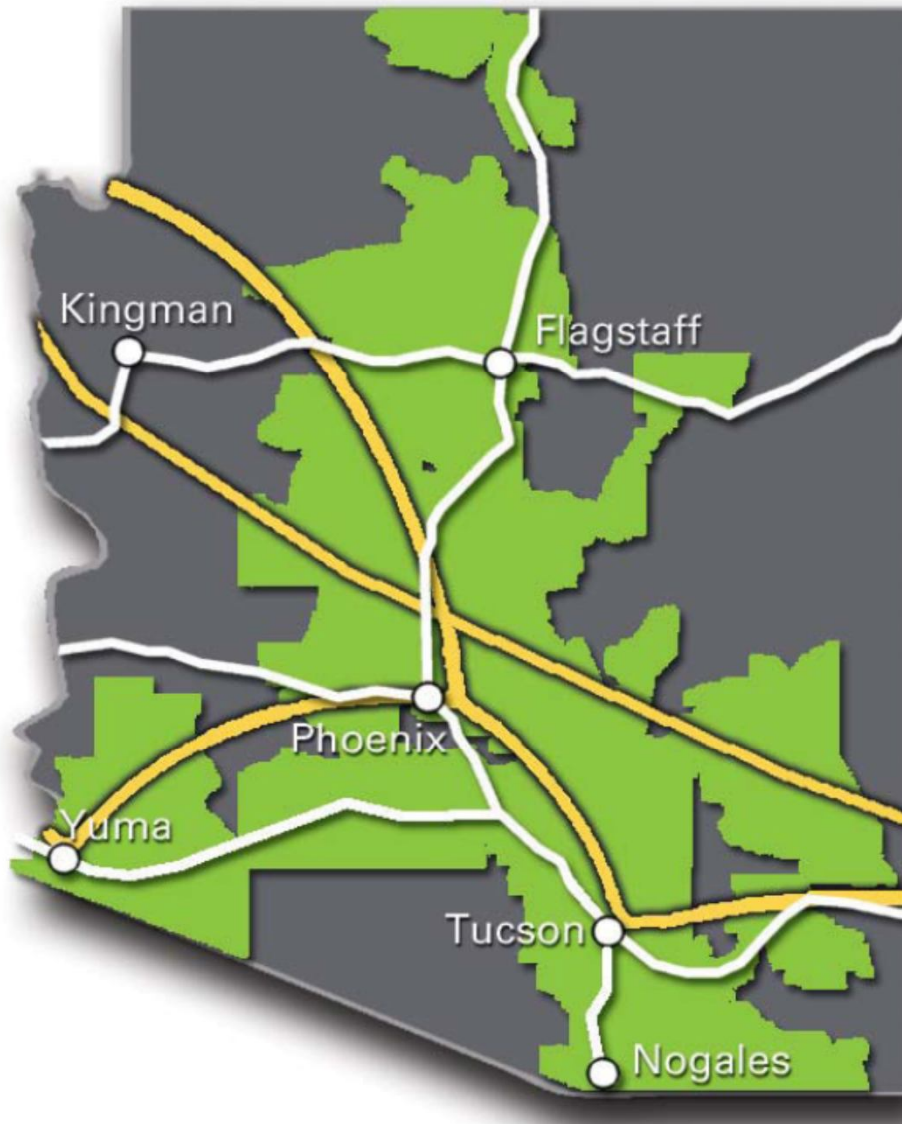
Southwest Region
HQ: Phoenix, Ariz.
President: Terry Beeler

CenturyLink Local Territories

Region HQs



Local Depth Arizona



Local Presence:

- **Employees:** 3,140 in Arizona
- **Annual Payroll:** \$232M, \$7M Annual Payroll Tax
- **City of Phoenix Revenue:** \$6.9M
- **State of Arizona Revenue:** \$35M
- **AZ Network Investment:** \$7.3B
- **Local Contributions:** \$685K

Local Leadership:

Region President: Terry Beeler
Vice President/General Manager: Ken McMahon
Vice President/General Manager: Guy Gunther
VP Regulatory and Legislative Affairs: Jerry Fenn
VP SOHO/Mid-Market Sales: Betty Reynolds
Director Sales Government and Education: Al Macaluso
Director Sales Business Markets Group: Matt Fassnacht

Decisions about Phoenix are made in Phoenix!

AZNetII Technology Evolution

July 16, 2012

CenturyLink Vision

- Transition existing data and voice service and support to the Centurylink Operations team.
- Stabilize existing service through chronics reviews and action plans
- Design a redundant state of the art core and data center infrastructure adding increase business value to the State of Arizona Stakeholders
- Implement Technology with the features and services that meet the Design and Engineering Principles of AZNetII
- Meet and exceed the contract service level requirements (SLR's)
- Provide Excellent Customer Service
- Maintain High Service and Network Reliability
- Provide "increased value" to the State of Arizona Stakeholders
- Perform technology refresh projects within contract timelines

Increase Value to the State of Arizona Stakeholders

Lower the Total Cost of Ownership

Reduce operating expenses

Improve network efficiency

Build a flexible and adaptable network topology

Develop recommendations for technology strategies

Migration and implementation to approved technology to improve standardization

Increase Network Reliability

Assess the current network capability to accommodate the proposed system

Produce an optimal network design to prevent network congestion, delay and errors.

Validate the network performance for the expected network performance and operation

Proactively monitor and address availability, security

Optimize the network to enhance performance

Improve Agility

Establish business requirements and standards

Provide for future interconnectivity

Develop a migration path to future network technologies without redesign

Use technology that complies with industry standards and is a leader in that technology

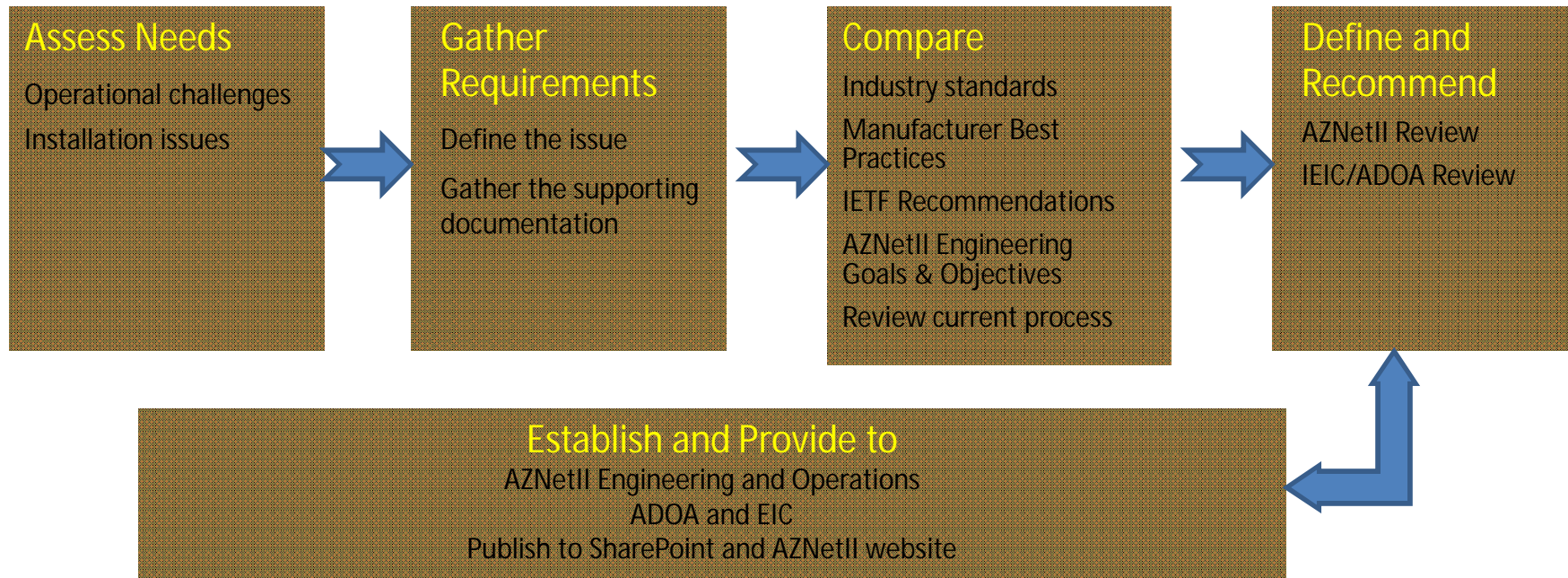
Enable Services, Features and Applications

Improve operational readiness

Improve service-delivery efficiency and effectiveness through standardization

Improve availability, reliability, and stability of the network and applications

AZNetII Engineering Principles Methodology



Design Approach

- *Understand the Agency business and system requirements*
- *Document the requirements and assessment for review*
- *Comply with the AZNetII general overarching, high level Network Engineering Design Principles*
- *Use Best Practices for the Implementation and Transition to Service (ITIL)*
- *Define and develop recommendation for review and consideration*
- *Communicate to stakeholders*

New Site Data Architecture

- **New Site – Data Architecture:**
- Routers
- To maintain a consistent, efficient and cost-effective environment, a single vendor deployment statewide using Cisco Systems routers is recommended. A limited set of Cisco routers will be defined and used for agency deployments. Consideration will be given to other manufacturers if a requirement exists.
- Routing Protocols
- Routing protocols used in the network will be OSPF, EIGRP, iBGP and BGP. Static routing will only be used in limited and necessary circumstances. By design, routing goals should provide the shortest/smallest routing tables possible. Route summarization and default routes should be employed where appropriate throughout the entire state network.
- WAN Bandwidth Requirements
- Site Bandwidth requirements will be evaluated on a site by site basis. Site seat count and usage requirements (i.e. call center, video, hub site, etc.) will determine the specific circuit size.
- WAN and MAN Connectivity Options
- WAN connectivity will be based on dark or dim fiber solutions, or, when available, Metro Optical Ethernet. If the designated carrier's Metro Optical Ethernet is not available or cost effective, it may be possible to obtain Metro Optical Ethernet from an alternative carrier. If possible, Hub sites must be connected through Metro Optical Ethernet. When dark or dim fiber is available, Gigabit Ethernet connectivity onto MAGNET-2 will be provisioned with private Metro Optical Ethernet. For sites requiring additional resiliency, Optical solutions will be considered when other sites with similar requirements can be connected via a SONET ring. Enabling the security and privacy features of Metro Optical Ethernet is the preferred design option, whether a carrier-provisioned service, AZNetII-provisioned service or a hybrid of both.

New Site Voice Architecture

- **New Site – Voice Architecture:**
- Routers
- The routers identified in the new site Data Architecture section support IPT.
- QoS
- QoS will be provisioned on all WAN links when voice or video traffic is traversing the links. CoS will be provisioned on LAN infrastructure in line with Cisco best practice recommendations for IPT deployments.
- IPT Migration
- New sites will migrate to IPT if practical. IPT migration will be implemented in the following order, if possible:
 - All sites using the SL-100 will migrate to the Cisco IPT Cluster.
 - All Phoenix on the Mall and Tucson sites will migrate to the Cisco IPT Cluster.
 - All small sites (>10 seats) will migrate to the Cisco IPT Cluster (if possible).
- Sites that do not fit in the three definitions above shall have their voice equipment determined on a site by site basis. The alternative choices are only Cisco IPT using the Cluster or a Local Call Processing design or a VoIP-enabled Nortel BCM or SC1000.
- IPT Cluster Architecture
- The IPT Cluster is based upon a multi-site centralized call processing model with three (3) physical locations:
- Two sites for the northern half of the state
- One site for the southern half of the state
- The two sites in the northern half of the State are Phoenix nodes on the MAGNET-2 optical ring. The site in the southern half of the State is a Tucson node on the MAGNET-2 optical ring. Inter-cluster trunks will be used to connect any standalone IPT clusters (e.g. ADC Prison Locations) to the centralized IPT Cluster, to ensure interoperability and functionality. This architecture will support inter-site dialing, toll by-pass, and tail end hop off functionality.

New Site Voice Architecture cont..

- **New Site – Voice Architecture:**
- Compression
- G.711 call compression will be used for calls on MAGNET-2 due to the high availability of bandwidth. G.729a will be used when communicating to remote locations over lower bandwidth WAN links.
- Centralized Call Processing and Voice Mail
- All sites that are not directly on the Phoenix Capitol and Tucson Malls will use centralized IPT call processing unless business requirements require a stand alone cluster. The decision to use either centralized or local call processing will be made on a case-by-case basis at locations with more than 360 users. Cost of bandwidth and redundant WAN services will determine whether local call processing is necessary. Voice mail will be provided statewide via a centralized model using the Unity solution within the IPT Cluster.
- UPS Run-Time Requirements
- Additional run-time capacity may be required in addition to the run-time configured to support the site's data requirements. These extra battery packs should increase the run-time requirements to support the additional up-time requirements for IPT.
- Redundant Call Processing
- The recommended routers will support call processing redundancy for IPT. Survivable Remote Site Telephony (SRST) licensing is based on the number of handsets per site.
- IP Addressing
- The appropriate voice IP address ranges will be allocated from 172.16.x.x – 172.31.x.x and Dynamic Host Configuration Protocol (DHCP) support will be configured on the Cisco routers for each agency voice VLAN. The 172.16.x.x – 172.31.x.x. ranges, assigned by the State's IP Addressing Committee in August 2006, will be appropriately configured for the voice requirements of each agency.

Existing Sites

- **Existing Site - Data Architecture (Upgrade of an Existing Site):**

- When upgrading a site's data architecture, the preference is to replace the existing equipment with the recommended new equipment unless the existing equipment is current, if existing equipment is used the equipment will be refreshed one time by the end of the contract term. Keeping legacy equipment is not typically in line with architectural principles and device currency. Unless a critical business justification exists, the recommendation is to pursue the standardized approach aligning with architectural principles. In addition, consolidating sites (cross-agency) is highly recommended when cost effective and the design can still support each agency's requirements.
- Circuit capacity and protocol (e.g. Metro Optical Ethernet) will be determined on a case-by-case basis in accordance with the overall network engineering design principles.
- All other requirements specified for a new site are the same for upgrading an existing site.
- **Router Remote Access**
 - Modem – Cisco routers will include an analog WIC modem for optional remote access
 - 1FB (single line, flat business rate) – each site that contains a router that AZNet manages will have an optional single 1FB connection dedicated for the WIC modem. The agency can also elect to use an analog port off an existing Key System or PBX at that location.
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- **Existing Site – Voice Architecture (Upgrade of an Existing Site):**

- When multiple sites merge or consolidate, the agency that is moving sites will migrate onto the existing infrastructure. If necessary, the existing infrastructure will be expanded to accommodate the new agency.
- Unless a critical business justification exists, voice architecture upgrades will implement IPT. However, if the existing voice system is one of the approved new voice systems and is N-2 or can be upgraded to an approved system in a cost effective fashion, then that system can be expanded to support the new tenant.

Technology Refresh Strategies

Stabilize Service

- Identify chronic systems or service problems
- Develop Service Recovery Plans for each problem agency site
- Analyze/Evaluate challenges and issues for technology refresh

Identify Risk and Technology Obsolescence

- Document End of Life (EOL) or End of Support systems
- Develop Prioritization lists based on criteria
- Develop project plans

Prioritize the Findings (SoA Voice Risk)

- Critical-High Risk-Medium Risk-Low Risk
- Project Priorities
- Design and Build Solution

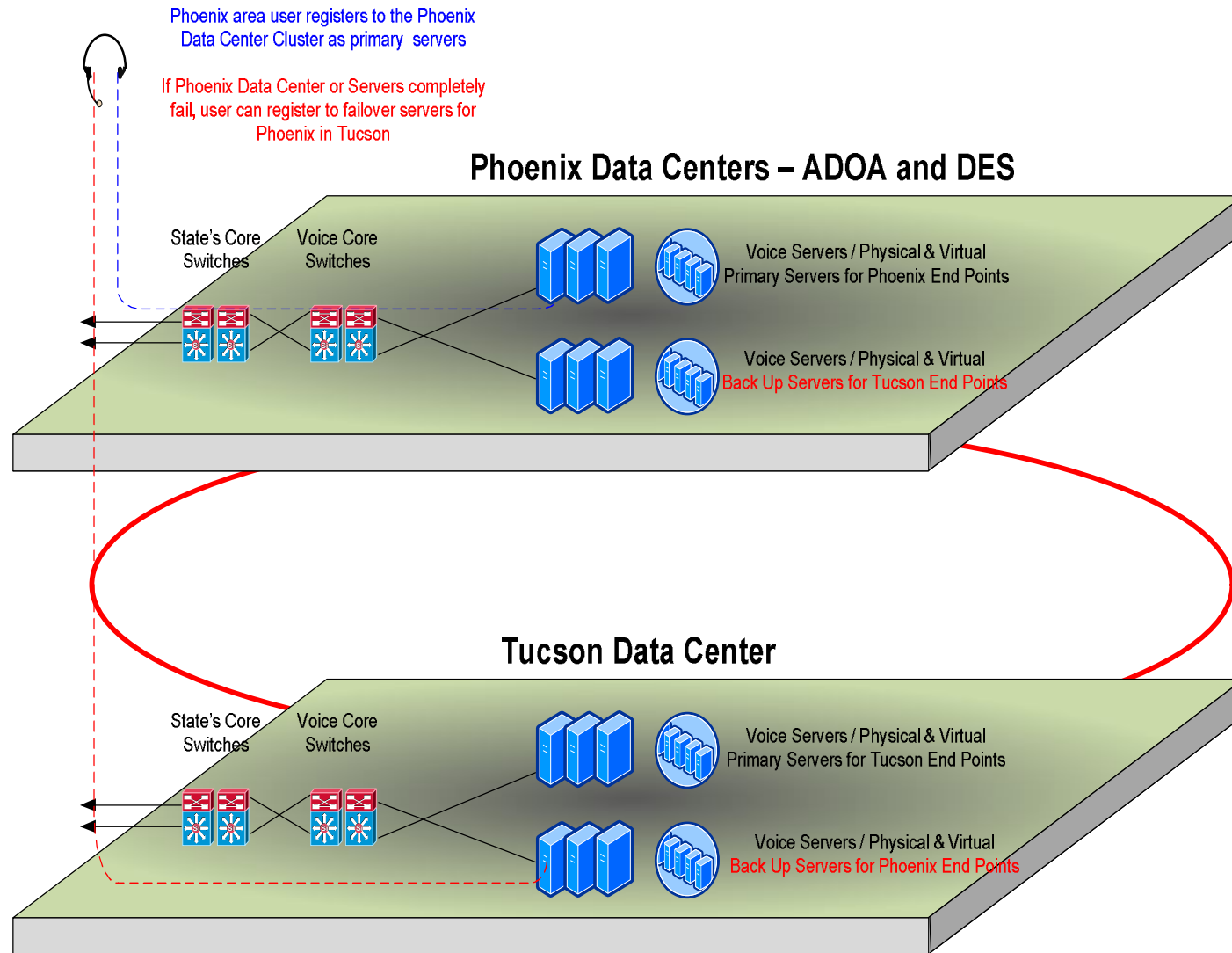
Build the Data Center Core Network Infrastructure

- Design and Build the Core Data Center Platform
- Design and Build the Core Infrastructure
- Design and Build the Network Connectivity and Topology

Implementation

- Operational Analysis and Network Assessment
- Migration Strategy and Planning
- Architecture Design Review, Validation and Development
- Implementation Plan, Service Test Plan, Acceptance Plan and Implementation
- Operation and Optimization

Build a Redundant Data Center Topology

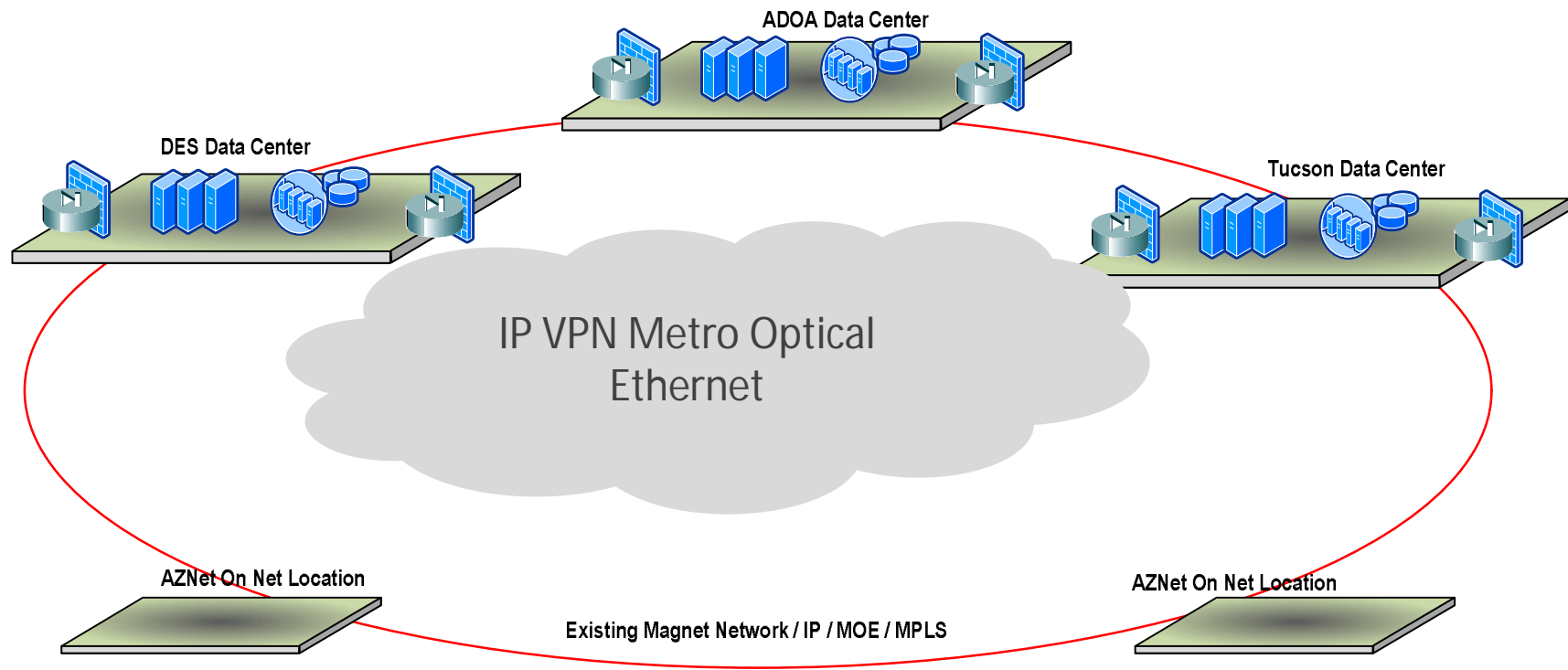


Architectural Requirements

- Assess the current environment
 - Current Network Topology
 - Discovery data from current switches and routers
- Identify areas of vulnerability and Risk
 - Single point of failure
 - Redundancy and Data Center locations
 - Environmental concerns
- Identify the business needs
 - Features and solutions
 - Capacity considerations
- Design the solution
 - Architect the solution using IETF and best practices
 - Follow the Plan Design Implement Operate Model

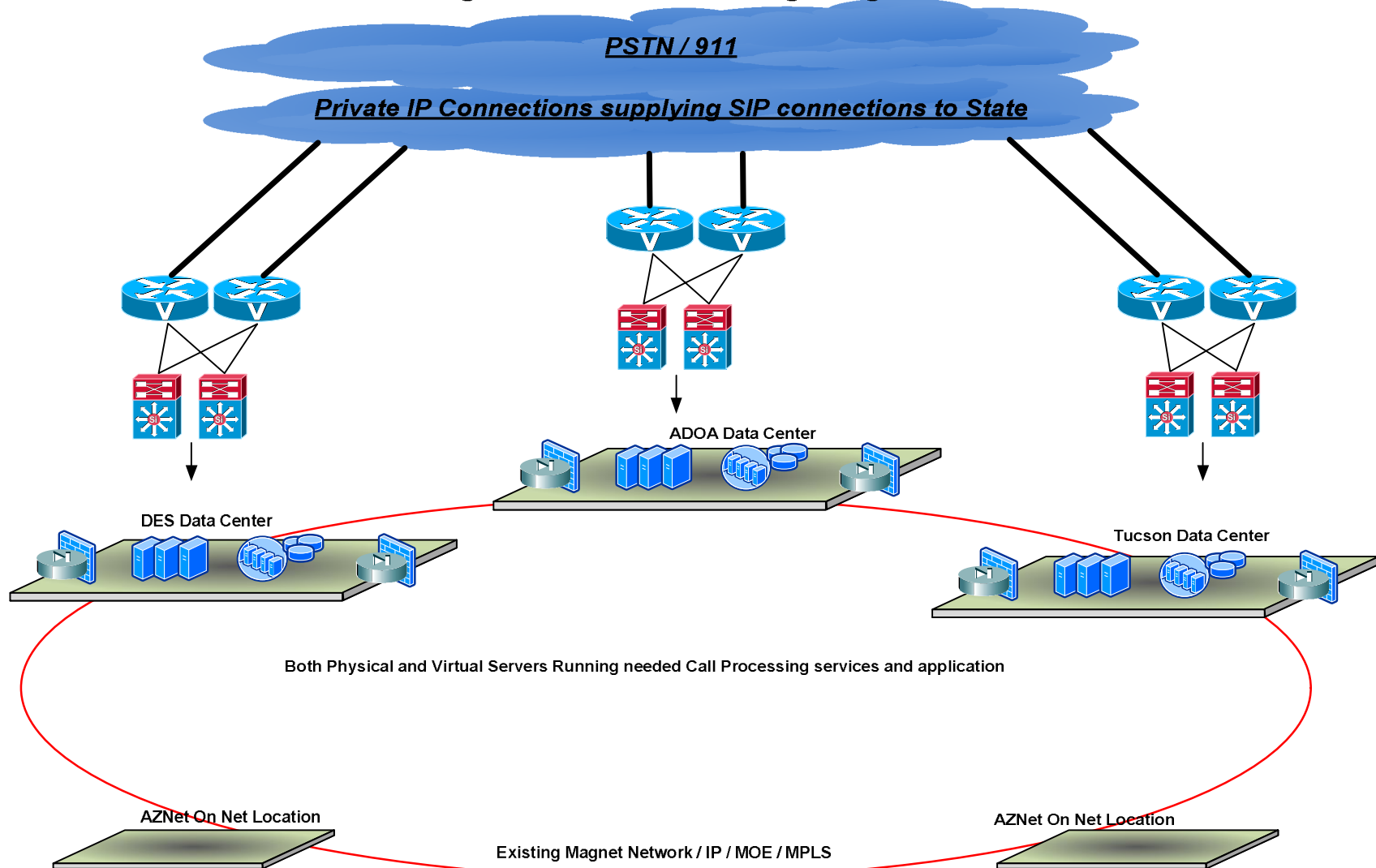
Build the Core Infrastructure

Implement the core network infrastructure to support services agency migration

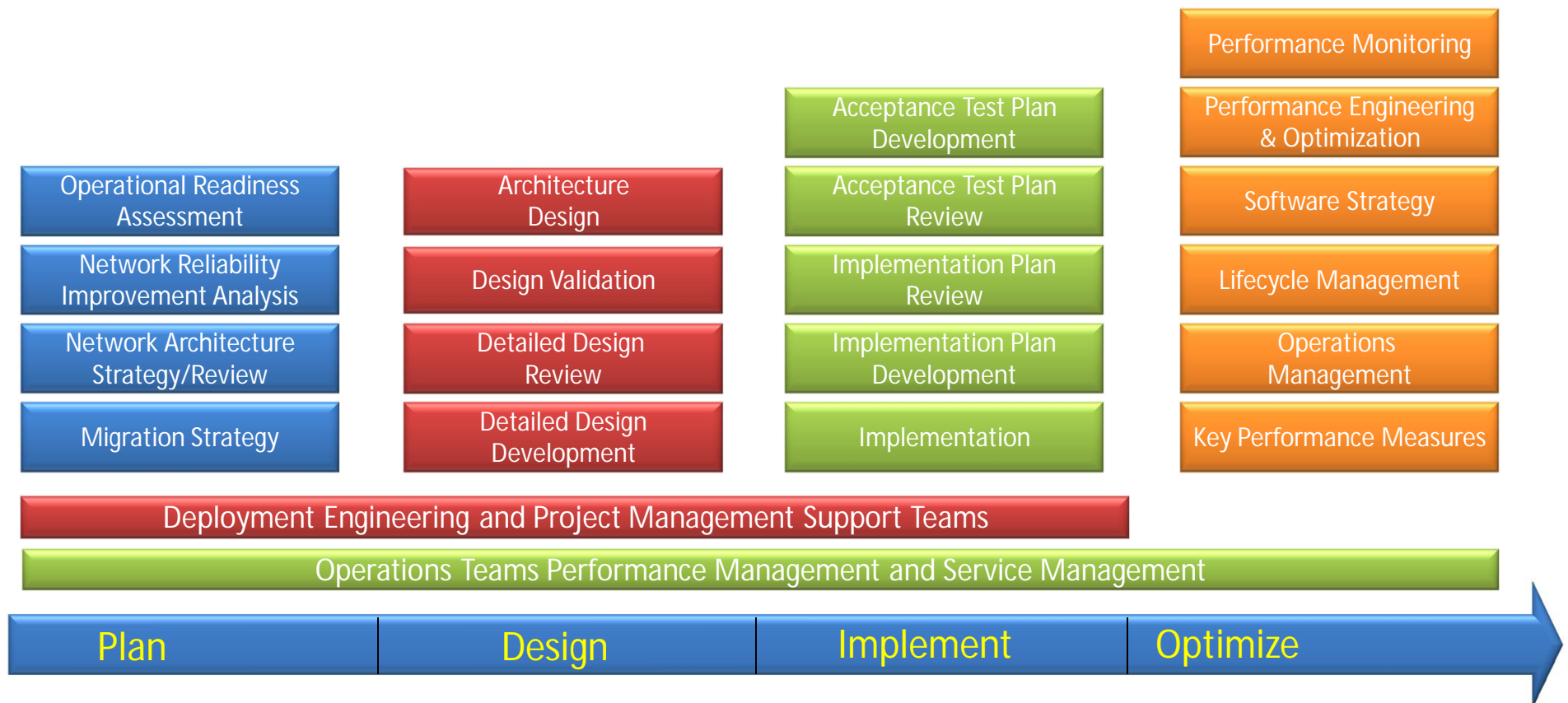


IP SIP Connections to the agencies

High Level SIP Trunking Diagram



Implementation and Transition to Service



Technology Refresh Timeline

Network

- Network Discovery **July 9-27**
- Review and Analysis of the network discovery findings **August 6-21**
- Identify network users (voice/data migration) **August 6-24**
- Design the required network capacity **August 28-September 14**
- Collect input from the State's representative's/stakeholders for prioritization **August 27-31**
- Place network orders for core network infrastructure **September 7**

Voice

- Assume responsibility for current voice systems. **July 31**
- Assess the potential concerns and shortfalls for the existing voice systems **July 23-August 17**
- Use the discovery information to evaluate the functionality, usability, reliability, and potential problems the systems might have. **On-going**
- Identify the system as Critical-High-Medium or Low Risk-**Complete**
- Develop the platform/system solution **September 7-28**
- Develop the migration plan and resources **September 7-28**
- Implementation of the core phone system **October 1-November 20**
- CenturyLink will have the core phone system installed **within 90 days** of the network portion being completed.

Technology Refresh Timeline

Network

- Upon contract award, CenturyLink will meet with representatives and stakeholders from the State and Agencies and the current vendor to jointly define the transition timeline and milestones. CenturyLink will propose a baseline Transition Plan based on our proven processes and experience with customers of similar scope and size. CenturyLink will then collect input from the State's representatives and stakeholders to identify and prioritize transition activities that will least impact the State's critical business requirements and mission critical applications. If current processes and operational standards align with CenturyLink's current methodologies, they may be adopted and directly transitioned

Voice

- Upon contract award, CenturyLink will assume responsibility for all voice systems. CenturyLink will use the discovery phase of the contract to work with the State to determine the potential concerns and shortfalls the State has for the existing voice systems and assess the current systems to evaluate the condition and continued usability for each system. The discovery phase allows CenturyLink to evaluate the major components of the State's voice systems in place today and with the State prioritize the refresh of the equipment during the life of the contract. This allows us to determine functionality, usability, reliability, and potential problems the systems might have. Our findings during the discovery phase will not impact the seat price or what is considered in scope. CenturyLink has built in a complete voice refresh in the response. This includes refreshing all handsets and phone systems that are in place today. CenturyLink will have the core phone system installed within 90 days of the network portion being completed.