

Legal Services Corporation Technology Initiative Grant (TIG) Conference

Strategic Planning for Telephone Systems How To and Examples

Presented by
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Agenda

- Introductions
- Discuss best practices
- Report our experiences – Case studies
- Share our thoughts on do's and don'ts

Strategic Planning

Strategic Planning

- Most Legal Aid organizations don't have a strategic plan
- Limited options
- Technology infrastructure is often a second thought
- No ties to funding models
- Leaves holes in the budget planning

Best Practices

- Identify business needs
- Involve stakeholders during major milestones
- Identify multiple strategies
- Prepare a strategic sizing and growth model
 - Type of network devices
 - Where devices are located
 - How systems will grow

Best Practices

- Voice network
- End user devices
- Adjunct systems
- Local area networks (LAN)
- Telecommunication Room (TR) impact
- Intake integration
- Back up power
- Wide area network (WAN)
- Wireless LAN
- Cellular
- Disaster recovery
- Professional services

Best Practices

- Prepare capital requirements
- Address total cost of ownership
- Include refreshment cycles
- Prepare a timing of funds model for each of the following categories:
 - Physical infrastructure
 - Voice, LAN, WAN, video, and wireless networks
 - Intake integration

Report Our Experiences

Case Study # 1

Client Background

- Voice network
 - 500 plus telephones
 - Standalone old systems
 - 10 sites

Client Background

- LAN network
 - Mixed environment
 - Mostly non power over Ethernet
 - Centrally managed
 - 500 plus data device connections

Client Background

- Physical environment
 - 10 sites
 - In-building voice cable – old Cat 3
 - 24 Telecommunication Rooms (TRs)

Client Background

- Wide area network
 - MPLS
 - Data only

What the Client Wanted

- Understand business drivers
- Identify how technology will be used
- Determine infrastructure requirements
- Identify gaps between current and future technology requirements
- Provide recommendations

Approach

- Step by step process
 1. Established project team
 2. Developed planning assumptions
 3. Developed models
 4. Assessed Telecommunication Rooms (TRs) & wide area network (WAN)
 5. Prepared budgets – capital and life-cycle
 6. Choose a strategy

1. Established project team

Project Team

- Telephone Committee

2. Developed Engagement Assumptions

Assumptions

- Network and voice electronics
- 7- year planning horizon
- 5 - year refresh cycle for voice and network electronics
- 3 - year refresh cycle for UPS devices
- Call center is out of scope (recently installed)
- Each voice system will be survivable

Assumptions

- Network design included
 - Edge electronics & Core electronics
 - For voice and data
 - On going network management
- Video conferencing
 - 4 Large sites
 - 6 Small sites
 - Costs did not include video bridging equipment
- Voice and data port growth - low

Assumptions

- Future WAN bandwidth requirements
 - Electronic records
 - Video conferencing
- Wireless LAN as a convenience
- No financing will be included in life-cycle costs

3. Developed Models

Strategic Choices

● Issues

- Continue operating existing phone systems
- Upgrade to new TDM stand-alone systems
- Upgrade to new Voice over IP phone systems
- How to address wireless technology
- How to address bandwidth requirements

Strategic Choices - Models

Configuration Models				
	Continue using existing voice and data systems	New IP PBX Separate LAN	New IP PBX Converged LAN	Server based PBX Converged LAN
Stand-alone Systems	1	2	X	X
Networked Systems	X	3	4	5

4. Assessed Telecommunication Rooms and wide area network



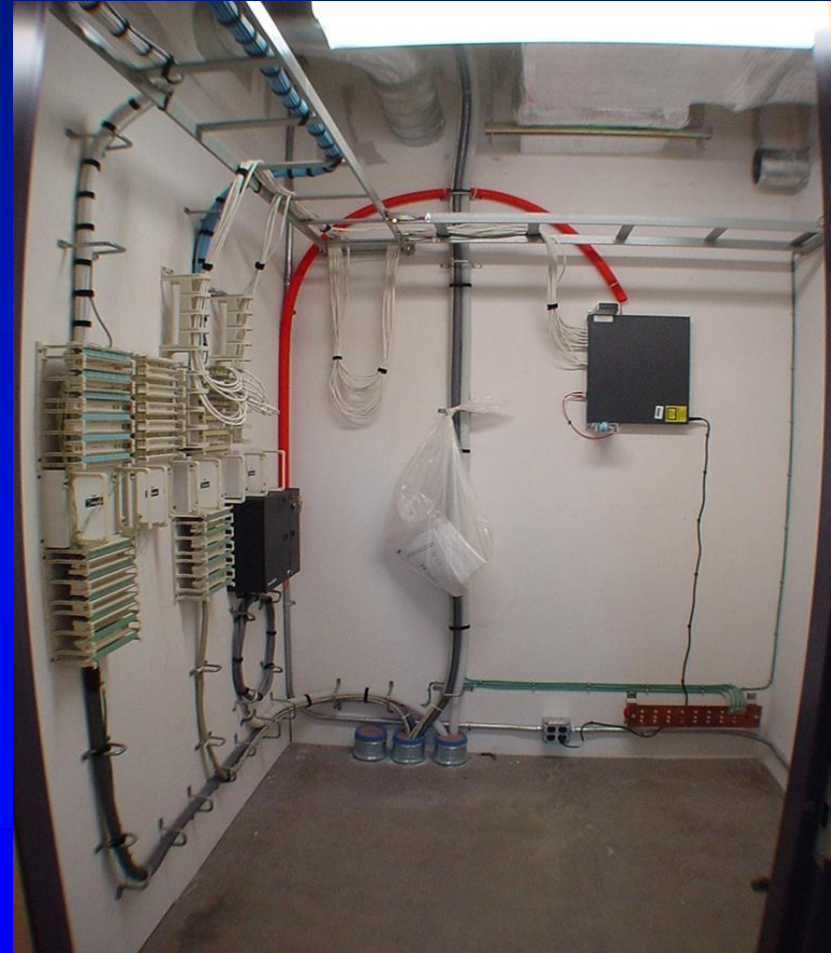
Telecommunication Room Assessment

Telecommunication Room Assessment

- Physical Survey of 24 TRs
- 75 elements examined
 - Room size
 - Power
 - Cable type
 - HVAC
- Developed TR budgets

Compliant Telecommunication Room

- Good Lighting
- Proper Cooling
- Good Cable Management
- Adequate Power
- Sufficient Conduit Structure
- Proper Grounding
- Space for 7 Year Growth



Non-compliant Telecommunication Room

- Inadequate Power
- Poor Lighting
- No HVAC
- Difficult Cable Management
- Full Conduit Structure
- No Grounding
- Code Violation
- Can not support 7 Year Growth



Telecommunication Room Assessment

- Wide range of conditions in the TRs
 - Requiring extensive modifications
 - Requiring minor modifications
 - Requiring no modifications

TR Modification Cost

TR Elements	Estimated Cost
TR Improvements	\$215,000
Environmental Improvements	\$200,000
Horizontal re-cabling	\$175,900
Riser cable plant	\$25,000
Engineering, Implementation, & Overhead	\$95,000
Total	\$710,900

Wide Area Network (WAN)

- Current bandwidth does not carry voice
- Current bandwidth not sufficient for voice, video and new electronic health record systems
- Current WAN does not have resiliency
- Separate voice pipe for Automatic Call Distribution

Wide Area Network Cost

WAN Bandwidth and Monthly Recurring Cost			
Location	Current Bandwidth	Switched Ethernet Bandwidth	Monthly Recurring Cost
1	6 Mb	70 Mb	\$2150
2	3 Mb	10 Mb	\$1225
3	2.5 Mb	10 Mb	\$1225
4	1 Mb	3 Mb	\$1120
5	768 Kb	2 Mb	\$1105
6	2.2 Mb	5 Mb	\$1150
7	512 Kb	2 Mb	\$1105
8	512 Kb	2 Mb	\$1105
9	512 Kb	2 Mb	\$1105
10	2 Mb	2 MB	\$1105
Total			\$12,395

5. Developed budgets – Capital and Life-cycle

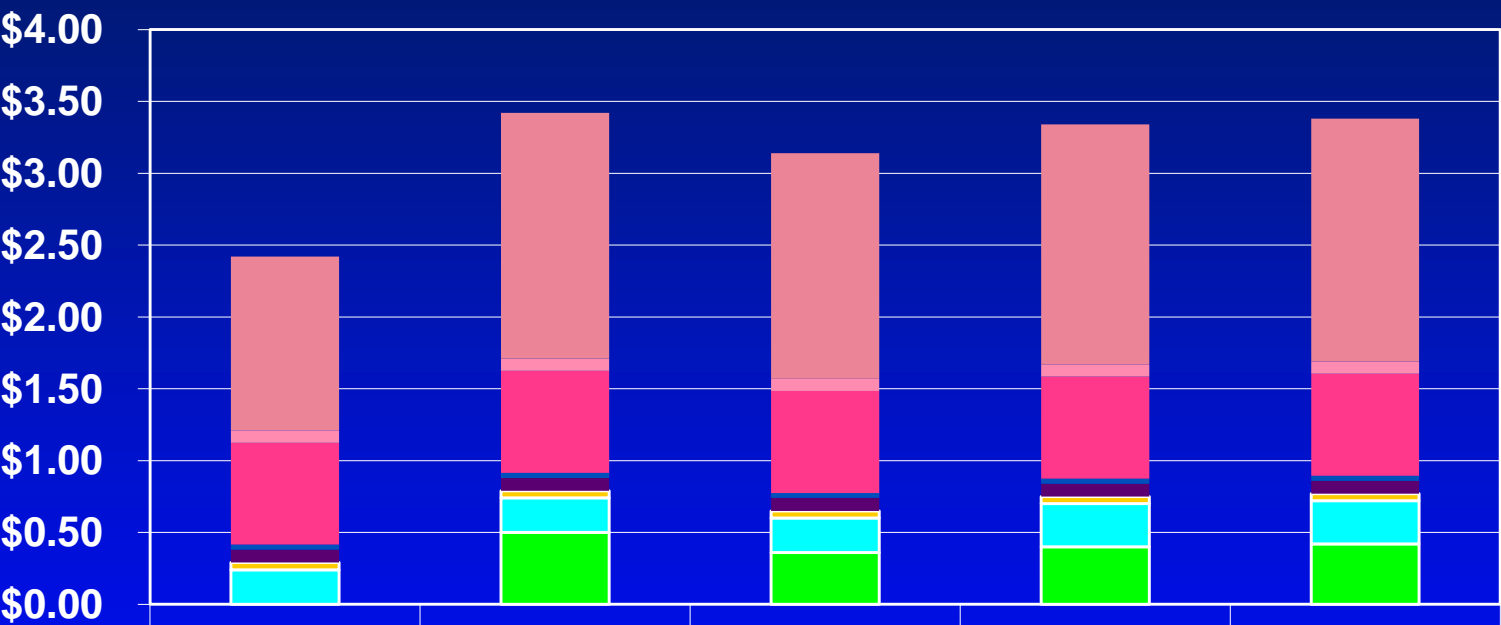
Capital Costs

- Capital costs included
 - Representative costs for electronics
 - 10% contingency
 - Wireless LAN for convenience
 - Costs with infrastructure modifications
- Capital costs did not include
 - Network security
 - Firewalls, DHCP servers, packet shaping

Capital Costs

- Breakdown of the capital costs
 - Voice electronics
 - Data electronics
 - ISP modifications
 - Video conferencing
 - Wireless electronics
 - WAN electronics
 - Implementation

Capital Costs



■ Total	Config I	Config II	Config III	Config IV	Config V
■ Implementation Costs	\$1.21	\$1.71	\$1.57	\$1.67	\$1.69
■ ISP Infrastructure	\$0.09	\$0.09	\$0.09	\$0.09	\$0.09
■ WAN Capital	\$0.71	\$0.71	\$0.71	\$0.71	\$0.71
■ Video Conferencing	\$0.04	\$0.04	\$0.04	\$0.04	\$0.04
■ Wireless Network	\$0.09	\$0.09	\$0.09	\$0.09	\$0.09
■ Data Network	\$0.05	\$0.05	\$0.05	\$0.05	\$0.05
■ Voice Network	\$0.24	\$0.24	\$0.24	\$0.30	\$0.30
	\$0.00	\$0.50	\$0.36	\$0.40	\$0.42

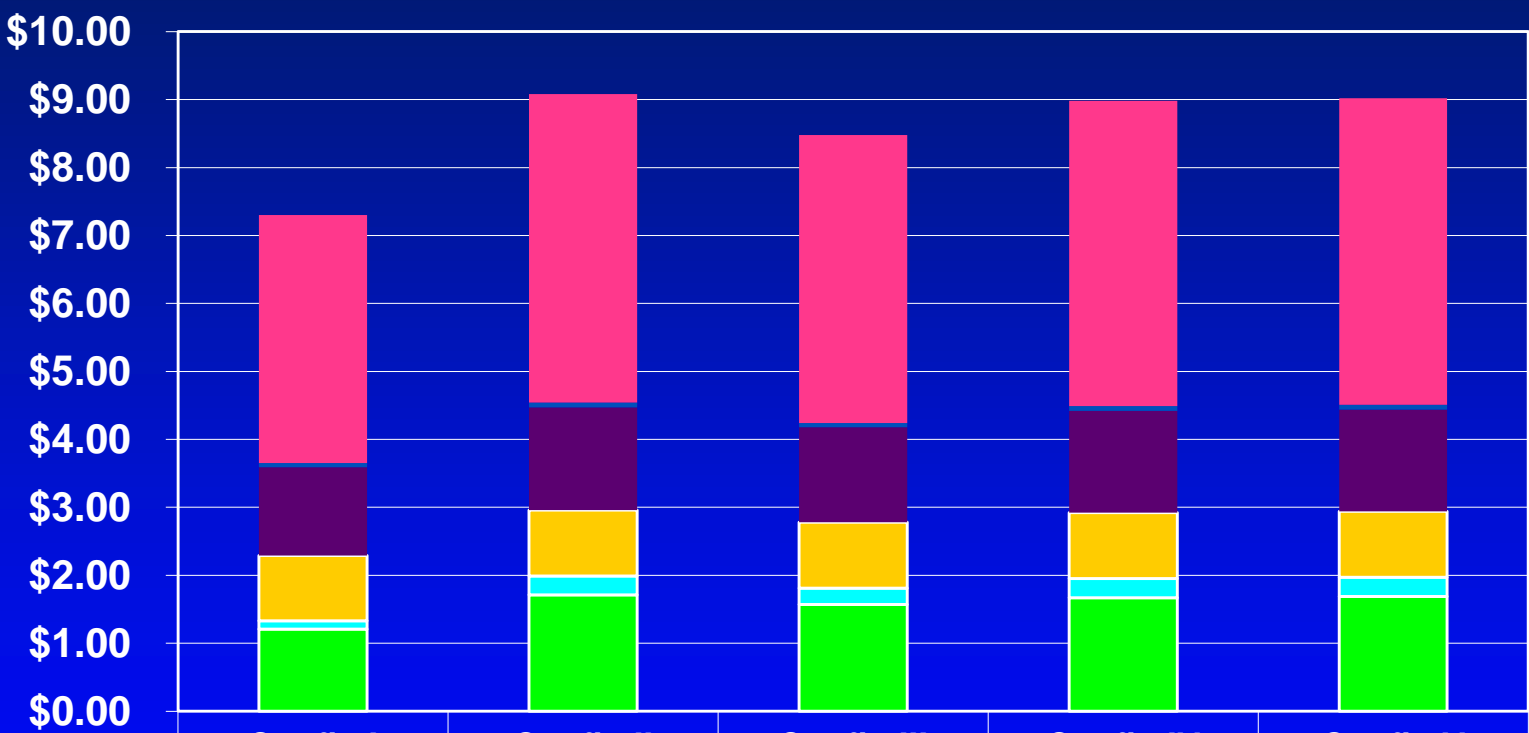
Life-cycle Costs

- Life-cycle costs included
 - Capital costs
 - Annual maintenance
 - Growth costs
 - Refresh costs
 - Some recurring costs
- Life-cycle costs did not include
 - FTEs
 - Refresh of existing voice and data systems

Life-cycle Costs

- Life-cycle costs based on
 - 7-year planning horizon
 - Refreshing network and voice electronics every 5 years
 - Refreshing UPS batteries every 3 years

Life-cycle Costs Include Capital



	Config I	Config II	Config III	Config IV	Config V
Total Life Cycle	\$3.65	\$4.54	\$4.24	\$4.49	\$4.51
System Growth	\$0.06	\$0.07	\$0.06	\$0.07	\$0.07
Voice Operations	\$1.30	\$1.51	\$1.40	\$1.50	\$1.50
Maintenance	\$0.96	\$0.97	\$0.97	\$0.97	\$0.97
Refreshment	\$0.12	\$0.28	\$0.24	\$0.28	\$0.28
Capital	\$1.21	\$1.71	\$1.57	\$1.67	\$1.69

6. Choosing a strategy

Choosing a strategy

- Costs were approximately the same for new Voice over IP and traditional voice technology
- TRs were not ready to support Voice over IP
- Centralized system is easier to manage and provides improved functionality
- Stretch life of existing systems

Choosing a strategy

- Review end of life telephony systems
- Upgrade TRs where it makes sense

Choosing a strategy

- Develop a detailed roadmap and timing of funds model
- Conduct a competitive RFP process to evaluate choices for WAN services, voice systems, data network upgrades, & video conferencing systems