

## Are You Still On TDM? You Could Be On Death Row

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In the world of VOIP and IP Telephony/IPT, there is a turn in the tide. Do you see it, hear it, feel it?

It is the turn of the industry from VOIP being a casual "look" to an essential component of the business technology infrastructure. It is the turn in the tide from the days of VOIP quality and issues to a stable, vibrant technology environment. It is the R&D investment by all Telecommunications CPE manufacturers and carriers in IP - period.

These industry changes are creating major shifts in the market. No longer is Telecommunications looked at as a commodity market, selling and buying on price alone, with little-to-no consideration for technology or services. Major shifts in how we use basic telephony are taking place at the core level. Mobility and remote worker acceptance are examples of this shift. Disaster Recovery/Business Continuity are essential, critical components in the organization's business plan, and VOIP integrates well to this corporate strategy.

As technologies mature, so does the emphasis on cost savings/cost reductions. No longer is VOIP only a vehicle to reduce costs of a current traditional TDM telephony or WAN environment. It is the technology replacing traditional TDM at the root level. It is no longer considered "new" technology - issues that were prevalent in VOIP systems just a few years ago have been stabilized. Telecom Departments are now under the auspices of IT and not Facilities; Telecom is now a function of the IT infrastructure.

VOIP is a data technology and therefore the rules of the data world now apply - some of those areas include:

- IP addressing schemes (both static and DHCP)
- NIC cards
- Cabling infrastructure
- UPSs and HVAC requirements in local closets
- Ethernet and Ethernet switches and routers
- Voice as an application on the LAN/WAN

- VLANs
- Network Management Tools that support both voice and data
- Security requirements
- Software subscriptions and associated costs

## **EXTERNAL FORCES AT WORK**

For "mature" TDM systems, external forces are at work, forces you cannot control. They include:

- **Manufacturer Discontinuance of Systems in Place** - For systems that have been manufacturer discontinued, spare parts are refurbished and are increasingly becoming less available. These include, but not limited to, older releases of:
  - Avaya's Definity G1, G3, and Dimension systems (yes, there are still a few Dimension systems out there),
  - NEC's NEAX 2400 HDS and ICS, and 2000 IVS,
  - Nortel's Meridian Option 11, 21, 51, 61 and 81 (depending on Version and Release),
  - Mitel's SX-200 and 2000 and Intertel Axxess non-supported systems,
  - Siemens ROLM 9XXX Series,
  - Alcatel's Omni PCX 4400 (depending on Version and Release),
  - Astra Telecom's legacy Intecom systems,
  - Fujitsu PBX systems,
  - Toshiba's DK, Strata, and Perception products.

Systems need to be "currently supported" in order to get proper support for maintenance contracts and engineering support at the manufacturer and VAR levels, which equates to risk to the enterprise user's system(s) that is not currently supported. To get systems "currently supported" by the manufacturers and VARs in many cases requires a major investment, forcing the enterprise user to "throw good money after bad", and in some cases could require several million dollars. These costs only represent an upgrade/replacement of core equipment, and typically do not include any station/desktop equipment (leaving the end user experience unchanged).

- **Capacity Issues with Current Systems and Associated Costs** - Systems that are near/at capacity are difficult, at best, to add capacity for additional trunk or station cards without major software and hardware investments. Some capacity increases cost up to 40% of what it would cost to replace the existing system with a new one.

- Consumer-Driven Requirements - Consumer-driven technologies are creating new requirements for Campus (common in University, Healthcare, business campus environments, and even Hospitality) and City (urban) environments.
  - Threats to campus environments and the ability to respond quickly and leverage communications to key personnel and all consumers or employees, i.e., Virginia Tech.
  - Mobility, SMS and texting, IM - flexible, instant communication are expected and driving integrated applications.
- Lesser-to-No Investment by Telecom Manufacturers in Traditional TDM Voice - All manufacturers are systematically investing in resources and applications for VOIP and no longer in traditional TDM. This essentially spells the end of TDM as we know it today.
- Systems Age - The age of the systems (7 years or more as a baseline) can be a clear indication of the deterioration of support for parts and technicians. Enterprise customers will receive manufacturer notices that all parts supplied are refurbished and are manufacturer discontinued and are no longer supported. Parts unavailability over time becomes critical. Updates are unavailable for upgrades, bug fixes, patches of older systems.
- Fewer Trained Resources - Fewer and fewer technicians have the knowledge and skill sets to support older, mature systems " over time such expertise wanes considerably. Technical/engineering resources available from the manufacturer erode over time as well.
- Risk of a Multi-Day Outage Increases - Based on the age of the systems and increasing number of outages and issues over time, the state of the systems in place poses greater risk to basic communications services. An outage, in some cases, could last several days. How would your organization communicate in the event something like this happened? How would it function? What risk(s) would this pose to the safety of the staff and community at large?
- Newer systems added onto older system to solve capacity issues - Creates a more complex maintenance environment.

## **EMERGING APPLICATIONS**

With IP-based systems now mainstream and flagship for major manufacturers, the migration to a mature VOIP model has begun.

Below are several IP applications that the enterprise user may benefit from. Note that all of the applications presented are driven by VOIP technologies.

- E911 (campus) - E911 services are emerging as baseline services to access key people anytime, perform broadcast during emergencies to the community at large, and track Caller ID to Building and Floor. Such services are fast become a user requirement,
- Record Threatening Phone calls - IP-based systems allow for continuous or ad-hoc recording of calls, especially threatening ones,
- Mobility (voice and data) - Mobility allows key personnel to connect from anywhere - it can be performed with a single number dialed with follow-me features, and can transfer cell calls to desktop and vice versa,
- Business Continuity (second or third site) - VOIP-based systems provide redundant databases and architecture across multiple sites in the event one of the core sites fails,
- Unified Messaging - Unified Messaging has been used in TDM environments already, and with IP, it is priced to be acceptable as mainstream. IP-based UM can bring together Voice Mail, e-mail and fax in one e-mail client, leveraging caller ID for voice mails rather than having to listen to messages in a set order (e.g., last in/first out).
- Unified Communications - Next-Gen systems now provide a multimedia approach, integrating softphone, IM/Chat, Presence (friends list), IP audio conferencing, IP video conferencing, Web integration and document sharing,
- Integrated LDAP Directory - provides electronic directory of all staff, using dial-by-name functionality on phone,
- Virtual, Portable office - Allows one to work remotely, "porting" his/her phone electronically at a visiting phone for the day. Workers can make and receive all calls as if they were at their own desk.
- Remote Worker - Can use a hard phone or softphone client to make and receive calls as normal from any off site location with a fast DSL or cable modem connection. Works well-to-very well for individuals

working from home when needed, or out of town.

- Centralized Network Management and Security - Increases the reach of network management by integrating security and QoS tools into the mix.
- Wireless LAN - Latest wireless LAN offerings include and integrate both voice and data using a common 802.11xx protocol. Extends mobility reach.
- Latest IP Telephone Offerings - The latest IP desktop telephone offerings include many of the technology areas outlined above. Below is a list of those features included from most of the manufacturers:
  - 10/100 NIC cards -> GB cards
  - Virtual, portable office
  - Converged desktop w/Unified Communications applications
  - Softphone integration
  - Unified Messaging Integration
  - Mobile integration
  - Wireless integration
  - Wireless clients
  - Desktop interactive applications and alerts
  - Display Video, Video Streaming, Video
  - Collaboration
  - User-programmable keys
  - Better audio codecs (G.722)
  - Desktop diagnostics
  - Color screens
  - Bluetooth-capable
  - SIP compliance, capable
  - Active Directory integration
  - Web integrated apps
  - Security keys
  - I/M support
  - Downloadable ringers
  - Customizable GUIs
  - Touch screens

## WHAT IT MEANS FOR YOU

So what does all this mean for you and your organization? With the investment in IP by all CPE manufacturers and carriers and the rapid erosion of TDM market support, it is inevitable that the timeline for TDM support is shrinking. Your TDM environment could very well be on "death row".

There are several options available for moving forward. They include:

- Do nothing - Do not upgrade or replace installed systems,
- Upgrade or IP-enable installed systems - Major expenditure and no replacement of existing endpoints/telephones,
- Replace current environment with traditional TDM and IP system (hybrid) - heed the warnings as outlined in this article if considering such,
- Replace current system with multiple VOIP systems, a centralized VOIP system and gateways/remotes, or combination thereof,
- Consider an option for an IP Centrex solution.

## THE PLAN

Your Plan to move your organization is not an easy one, yet rewarding in the end. Your mission, "should you decide to accept it", is to do the following:

1. Identify areas of risk in your current environment - capacities, manufacturer discontinuance, parts availability, technician knowledge, risk of a multi-day outage. All systems implemented over 7 years ago should be considered,
2. Review the corporate and IT strategic plans so that you can align the new replacement system technology with these plans, thus taking the replacement from strictly an operational need to one that is strategic,
3. Engage the help of industry experts who can help identify your organizational technology needs and facilitate the process, including the points listed in this plan,
4. Identify and brainstorm those VOIP technologies that your organization can benefit from that can differentiate you from the competition and set you and your organization apart from others in the market.
5. Ensure that the technologies you are considering integrate well with your organization's needs and wants, and break out applications accordingly,

6. Review your voice and data closet requirements and any investment required in cabling, UPSs, space, and HVAC to support the new infrastructure,
7. Review your current data switch and router infrastructure. Are data components VOIP-ready? POE-capable?
8. Review your Wide Area Network requirements enabling VOIP, audio conferencing over IP, and videoconferencing over IP, and determine how you can leverage Return-On-Investment strategies in the overall system replacement. Include redundancy and network resiliency as a part of your WAN strategy. Consider the current service available and consider newer WAN technologies such as MPLS and Ethernet Private Line Services that can improve on infrastructure cost by as much as 30-40%,
9. Identify budgetary requirements of the system replacement based on number of endpoints, growth, number of sites, technologies to be considered (required vs. want). In addition to capital requirements, include software subscription costs and maintenance as part of ongoing support recurring cost requirements. Prepare a 7-10-year Total Cost of Ownership (TCO) schedule. Consider creative financing options available from the manufacturers and VARs (some of the latest creative financing options are significant - some include:
  - a.) One manufacturer is currently offering ZERO percent financing for 48 months or the first 90 days at ZERO payment (for promotional and incentive purposes).
  - b.) \$1 buyout and Fair Market Value (FMV) leases are available. FMV lease provides the option at the end of lease to (a) continue leasing, (b) give back to the vendor, or (c) purchase the systems at a Fair Market value (note for this type of lease, I recommend forcing a "cap" percent buyout at the beginning of the lease, otherwise the leasing company could ask for an excessive percentage at the end of the lease term). Straight operating leases are also available (but rare), where the system is returned at the end of the lease period (or term extended) and the customer is never given an option to purchase.
  - c.) For larger, staggered implementations (multiple buildings/sites over 24-36 months), some options available include:
    - Option 1 - Fund the entire amount at one time. Doing so allows capital allocated to systems implemented in future phases to be placed in high yield interest-bearing accounts, thus reducing the net interest on the lease

--Option 2 - Based on a staggered two phase installation, obtain lease funding as two sub-leases: one sub-lease at lease start, and the second sublease starting at Month 13 for the remainder of the lease term. In this case, only the system portion implemented (one-half during year one) will be financed for the entire lease, while the second half will start in year 2, tied to the remaining lease period. For example, for a \$10 million project for 72 months, \$5M will be leased for 72 months and the remaining \$5M will be leased for 60 months. The advantage here is to keep payments down in Year 1, providing an avenue to facilitate the implementation short term. The lease will end for both halves concurrently, or co-terminus.

--Option 3 - Same as Option 2 but semi-annual, quarterly, or monthly payments. Note that this lease's payments over 12 months will be higher than the single annual payment in Option 2.

--Option 4 - Variations on Options 2 or 3 above, but with the implementation staggered over a 36 month period, and thus 3 sub-lease arrangements.

For any of the above, it is important to work closely with your CFO's Office and Finance Department, as different lease options may be more financially advantageous to your organization's accounting practices relative to capital and operating funding.

10. Determine timing requirements for deployment purposes and number of sites involved for the deployment. Will the project replacement take place over a weekend, several months, or even a 24-36 month period based on the size and timing requirements of your organization?

11. Obtain management approval for the capital project, and then seek to procure a new system based on the development of system specifications and Request For Proposal.

## **A CASE STUDY**

We have a client who just went through a transition to VOIP based on the manufacturer discontinuance of the TDM system in place and near-term non-support manufacturer issues. The client provides benefits to several million members - benefits include insurance in the form of life, automobile, homeowners, health and disability, financial services including investment plans, loans and mortgages, discounts on various member-related products, and educational forums for its membership.

We worked with an internal team/committee identifying the needs (required) and wants (optional) of the organization. We then asked what technologies

can be employed that could make a marked difference improving on organizational processes and facilitating overall organizational effectiveness. Some of those areas included:

- Call Center - IVR for self-service, Routing, Reporting, Chat, CTI Screen Pops, Call Recording, Call Monitoring, Broadcast Dialing, Speech recognition
- E911 capability for access to the organization at large and key personnel,
- Remote Workers, VPN access, softphones for all users
- Unified Messaging and Fax Server migration
- Unified Communications
- Network Management System
- Centralized Move and Change tools, reducing move and change costs
- Wireless - data and voice
- Upgraded UPSs
- LDAP integration with all IP phones
- Call Accounting
- Touch color screen desktop telephones for executive and key IT management
- MS Exchange integration for specialized applications

Once the system was implemented, it was quite apparent that the technology now available facilitated the client's executive management and company business processes. Technology was now viewed as strategic (and not just tactical), differentiating the company from its competition, and better serving its members. This provided management the ability to look to tie the new technology to their vision and five year strategic plan. For example:

- Users could now instant-message one another, from a desktop or phone, providing instant communications. This technology is especially effective in the call center, where supervisors can now provide direct assistance and approval without any disruption of the call in progress, thus reducing call time,
- Presence functionality allows teams to be organized virtually, and be available to help clients or assist with issues as they arise in a real-time environment,
- Hardphones and softphones now mobilize key employees to work remotely, providing a level of flexibility for employee availability and increase employee longevity with the company,
- Unified Messaging provides faxes and voice mail in e-mail Inboxes, with voice mail forwarding and notification on their Blackberry wireless handheld devices.

The VOIP/UC system implemented was not only good for the organization as a whole, but strategic for streamlining IT management and organization operations, which included softphones for all employees in the event of a

pandemic. We are currently working on steps to showcase this client to other affiliates, to demonstrate what can be done and executed strategically with VOIP.

## **SUMMARY AND CONCLUSIONS**

VOIP is now mainstream and no longer a "leading edge" technology. Now that all of the manufacturers' R&D is being invested in IP-based systems, time is of the essence, and the dreaded warning--that systems in place are manufacturer discontinued or at capacity--is here (or will be here shortly). It is critical that we begin to plan and take the necessary steps to assess the current environment, consider the technologies that can make fundamental changes in our organizations and help differentiate us from the competition, and create value for the organizations we serve.

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