

Hosted Versus Premises IP-Telephony

By Warren Williams and Ken Dolsky

In the converged world, it may make more sense to rent rather than buy.

According to InfoTech's research, the demand for hosted IP Telephony will account for more than 25 percent of total telephony line shipments in the next 3–5 years, and is anticipated to grow in revenue from \$310 million in 2005 to \$5.9 billion by 2010. Currently, there are more than 60 providers of commercial hosted IP-telephony services in the U.S. and at least another 60 outside the U.S., and these numbers continue to grow. It is safe to say that in the next two years, every major enterprise and many mid-tier and small business companies will receive overtures to consider hosted solutions.

This article, based on InfoTech's provider and enterprise panel research, will examine the key factors involved in the decision to migrate to IP-telephony and compare their effects on hosted and premises-based solutions.

Some companies believe that purchasing a premises system provides more control than a hosted service. This is true, but along with control comes responsibility and cost. The real question is, "How much control is necessary, and how valuable is it?" This can only be determined by examining the specific elements of control, covered in the discussion below, and summarized in Table 1, p. 52.

Implementation

Hosted services are less likely to have post-installation problems. Most hosted providers include the station review as part of their service and, therefore, station reviews are conducted by experienced personnel, which may not be the case if companies do it themselves. Between the time the station review is completed and the data entered into the system (2–3 weeks), changes take place, and that's usually where trouble occurs. In hosted solutions, dial tone is unlimited, so there is no penalty for not planning growth, and changes can be made easily. Hosted providers also have application subject matter experts readily available at their centralized sites if there is a problem immediately following cutover.

Installation of telephony equipment in a hosted environment is less complicated, which should lead to better first-time accuracy. The process involves fewer steps; less equipment needs to be shipped to the customer site, new hardware does not need to be burned in, there is no need to assemble racks at the customer site, there is no installing and testing of software, etc. The hosted provider mainly needs to manage the station installation and cutover.

There is also less need for enterprise participation (such as station reviews, directories and detailed network planning). This means the process is less subject to "customer-not-ready" issues, and the hosted service provider can set an implementation schedule with a high degree of confidence.

Also, hosted solutions can be implemented on a line-by-line basis and can co-exist with the customer premises equipment (CPE) supporting other users. Customers don't need to cut over completely to the new system at one point in time, as is generally the case with CPE solutions. Hosted services can run side by side with premises systems as needed to handle any issues. This reduces the criticality of having a totally clean cutover for every user on Day 1. Cutover can be department by department and is much more flexible at meeting user schedules.

Finally, hosted solutions' implementation charges are much less than CPE system charges—but customers still need to compare costs on a multi-year total cost of ownership (TCO) basis to see if this is really a savings.

Growth Management

Managing growth in a hosted environment is easier than with a premises system. There is no need to track line cards and trunk cards and maintain cushion capacity.

Nor is there a need to manage gateway scalability and upgrades if capacity is exceeded. Traffic analysis in a hosted environment is performed by the service provider's operational support systems (OSS), and there is no need to worry about switch and trunk capacity, performance and configuration.

From a financial standpoint, the hosted service's pay-as-you-go approach provides savings

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use a hosted provider with proven ability to meet this challenge.

In any network, most configuration problems are due to human error. Allowing hosted providers with well-defined change management processes to handle this function should produce fewer problems than those typical of a CPE environment.

Premises systems enable self-supporting customers to move faster on moves, adds and changes for high-priority situations. But hosted service providers do offer SLAs that can be customized to address very high-priority situations. This is one area in which CPE control is an advantage, especially if this type of situation occurs regularly.

Mixed IP And TDM Environment

Hosted services provide immediate centralization of voice applications for all locations and lines deployed at any site, regardless of whether a main site is converted to IP or not. More work is required (e.g., planning, design, installation and ongoing management) to interface a mix of IP and TDM systems in a CPE-based environment than in a hosted environment. In a hosted environment, carriers handle all the architectural issues such as IP/TDM interfaces and softswitch functionality. Customers can deploy IP-telephony by work function across multiple locations, without having to disrupt other corporate functions (although this would require some additional integration with the TDM environment with regard to dialing plans and voice mail and/or unified messaging).

Hosted services generally offer customers more terminal choices than do CPE solutions. Independent vendors like BroadSoft, Tekelec and Sylanro provide multiple IP terminals, giving customers a wider range of choices than offered by individual CPE providers. For example, Broadsoft offers terminals from Polycom, Cisco, Zhone, Uniden and ipDialog. Customers can also use Citel gateways to support many TDM terminals, allowing retention of existing equipment. However, CPE providers such as Avaya do enable customers to retain existing TDM terminals.

Security

In a hosted service, voice firewalls are all managed by the carrier with carrier-grade security management. Customers do not have to be involved with firewall management for voice communications, avoiding the need to employ expensive technical talent or pay for it on an outsourced basis. Hosted services also provide centrally managed intrusion detection, and customers avoid the same overhead costs to manage intrusion detection for their maintenance ports.

Hosted service customers do not have to manage server security patches and fixes and associated issues of version control, regression testing and compatibility of OS versions with applications. Software patches are becoming a time-consuming management nightmare in the IP-telephony envi-

ronment. In some cases, customers may even refuse to download specific software because of known problems. In other cases there may be issues with version control, and updated versions causing problems with working software. As a result, customers may spend some significant time testing patches to make sure they work.

Hosted equipment also has very good physical security in a carrier datacenter. It is well-guarded and has well-defined security practices. Some CPE environments may have equivalent security, but most do not.

Reliability, Continuity

Carrier-grade reliability is provided for hosted services, with element redundancy usually exceeding that of premises solutions (or, at least, customer willingness to purchase the same level of CPE redundancy). Operation centers are hardened and usually better protected against natural disasters than CPE sites. Hosted service customers also avoid the need to purchase UPS protection for the telephony servers.

Business continuity/disaster recovery capabilities are one of the most important benefits of hosted services. Hosted solutions are backed up with the most current configuration. CPE solutions can be backed up, but there is an extra cost in terms of either internal resources (and storage) or external resources (managed service).

If a CPE customer were to lose its system due to fire, flood, tornado, etc., they would have to pay to replace it (or pay for the insurance against such a loss). In a hosted service environment, it is less likely that these events would disrupt service, and even if there were a disaster, customers would not be liable for the replacement costs.

Single-site businesses with CPE have relatively few options for seamless disaster backup. In a hosted environment, enterprise users can take their IP terminals or soft clients home, connect through Windows XP phone system to any broadband access connections, log in and have the terminals operate as if they were at their place of work. This provides the ability to maintain business operations and receive calls during disasters that prevent people from getting to work. Some CPE systems, such as Mitel's, can offer this capability but most, at this time, require employees to have soft-phone capability provided (at an additional cost) to achieve the same functionality.

E-911

The capability to have 911 calls traced to individual jacks/offices in a building is built into the hosted offer. CPE capabilities in this area vary, but to obtain comparable functionality, customers often have to buy additional servers and application software. Some vendors do not offer this level of capability at all, and their E-911 solutions only provide building address information to the Public Service Answering Point (PSAP).

E-911 is largely a moot issue with hosted

Hosted solutions save money if your user population declines

TABLE 1 Advantages/Disadvantages: Hosted [Icons] vs. CPE

System/Service Element	Premises System Advantage	Hosted Service Advantage
Implementation		✓
Growth Management		✓
Maintenance		
Network Management		✓
Administration	✓	
Mixed IP and TDM Network		*
Mixed IP and TDM Terminals		✓
Security		*
Reliability		✓
Continuity		*
E-911		✓
Virtual Office		✓
Purchasing Leverage	✓	
Cash Flow	0	0
Custom Applications	*	
Software Upgrades		*
Mergers and Acquisitions		*
Staffing		*
Obsolescence		✓

Degree of Advantage:
 0 - No advantage to either approach (may depend on customer's circumstances)
 ✓ - Modest advantage
 * - Strong advantage

in certain charges and internal resources. Hosted terminal licenses are sold on a line-by-line basis (bundled into the per seat charge) rather than in bundles of 5 or 10, as is the case with some CPE provider terminals. Inventory tracking and management overall is less extensive in a hosted environment. There is no need to track elements at the host site such as cards, servers, gateways, power supplies, UPS systems, etc.

Another important advantage of hosted services is that their costs can decrease if the user population declines. With a premises system, there may be opportunities to decrease maintenance costs by reducing active ports, but the opportunity to sell excess equipment is limited, and original purchase expenses might not be fully recovered by the enterprise.

Maintenance

When critical CPE problems occur that cannot be cleared remotely, CPE customers have to wait for a truck roll and could easily have a total time to repair of 4+ hours (many maintenance plans' objective is to arrive on premises within 4 hours to start the repair process). The repair on the hosted system with similar trouble may be completed almost immediately because techs are on site at the provider location.

Hosted solutions have 24x7 management and monitoring. In order to receive similar 24x7 support for a CPE system (which may still mean a 2-4-hour wait for a tech to arrive on premises) customers usually have to pay an uplift charge and, in some cases, an additional fee for remote monitoring and management.

Less critical issues, such as alarms, are cleared so quickly by hosted providers that they are often not even noticeable and customers do not have to spend time and resources investigating.

Another key maintenance benefit from hosted solutions is that the provider is responsible for dealing with network/CPE interface finger-pointing problems, and customers do not need to purchase agency support services to handle these issues.

By eliminating some servers and associated uninterruptible power supply (UPS) systems, hosted customers also reduce their need for such maintenance support functions as testing/monitoring UPSs and replacing batteries.

From a financial standpoint, hosted maintenance charges are included in the per-seat charge and are only applied against the actual number of seats in use. Many CPE provider maintenance contracts are based on available or equipped ports, which means any port that can be connected to either a terminal or a trunk, even if they are not currently in use. Since hosted customers only pay maintenance for ports being used, there is less need to keep track of ports incurring maintenance charges in order to remove unused ports from the inventory.

Network Management And Administration

In a hosted environment, customers who bundle WAN management services with hosted telephony do not need to proactively manage WAN quality of service (QOS). This reduces the amount of resource, training and test systems needed (e.g., equipping laptops with sniffer cards) in a CPE environment.

A major caveat here relates to the rapidity with which a customer needs to change their network to meet changing business requirements; be sure to

**One down side:
The issue of
advanced
applications is
much less settled
in a hosted
environment**

In a hosted environment there is also no need to set up, update or manage associated E-911 directories. The hosted solution also eliminates the need to manage the additional servers running the E-911 application.

Virtual Office

The same hosted terminal "broadband plug-in" functionality mentioned above facilitates regular virtual office work without the cost overhead of softphones for users who only work either at home or at a company site (i.e., not road warriors). It also allows companies to pay their corporate rate for calls made from workers' homes instead of the employees' residential or business rates, with the added overhead of expense reimbursements.

Purchasing Leverage

Hosted solutions may cause a loss of price leverage that comes from having multiple providers of CPE solutions. Customers usually can leverage equipment vendors and drive down prices of equipment and maintenance by using multiple suppliers. However, InfoTech research shows that customers are increasingly migrating to single manufacturer solutions, so this leverage may be evaporating anyway.

Admittedly, it is less likely that customers would be able to play multiple hosted providers against each other for two reasons. First, in secondary markets it is hard to get multiple providers (at least at this time). Second, utilizing two hosted service provider networks defeats the objective of a centralized architecture and applications environment.

Cash Flow

Hosted solutions smooth out cash flow requirements and free up cash in the first year for other needs, rather than being spent on capital equipment (although premises systems can be leased, which also smoothes out the cash flow). When equipment is capitalized, companies benefit from depreciation but the net cash flow benefits have to be assessed based on a multi-year total cost of ownership to determine the advantage or disadvantage of capitalizing the equipment.

Custom Applications

Unquestionably, the ability to develop and integrate customized applications on CPE systems is the greatest advantage of CPE solutions over hosted services, especially as IP-telephony matures. In order to run additional applications such as those developed by manufacturer software development partners, hosted solutions have to either extend an API interface to the premises or run the application on their site. At this time InfoTech has not seen an API interface offer from any hosted provider. It is not known how flexible the hosted providers will be in any such offers.

Another issue is the manufacturer equipment

used by the service provider. Hosted providers using Avaya or Cisco systems, for example, for their IP-telephony offers would force customers to go to the corresponding set of software development partners for applications.

Counting on hosted providers to run custom applications in the provider's own datacenter can be problematic. The hosted provider would need to approve of the application and the server, and this opens the question as to who maintains the server/application. Will hosted providers have the capacity to continue to add hardware/software to support these efforts? InfoTech has seen no evidence that carriers are planning to support vertical applications that customers might elect to use from outside sources.

Software Upgrades

In hosted services, application and OS software upgrades are bundled in with the cost of the service. There is no need for customers to manage or be involved in this process, as the hosted provider will handle the implementation details, including regression testing. As noted above, problems and issues that arise in a CPE environment regarding software version control are eliminated.

In addition, telecom managers don't have to make a business case to migrate to the next version of software, which is especially difficult when the benefits are soft productivity improvements. When this is bundled into a hosted service, there is no need to obtain business approval to proceed. Moreover, this avoids the issues that sometimes arise when customers feel they are being forced to migrate just to maintain currency.

The elimination of the need for a business case, plus provider commitments to keep up-to-date result in upgrades being available more quickly in a hosted environment.

Mergers And Acquisitions

Hosted services offer customers the ability to deploy in any increments, so as new locations are brought into a company and are ready to migrate, they can be added easily. It's generally faster and easier to use hosted services to add new locations to the network, especially when integrating voice and data networks. There is no need to test the WAN, and less planning is required on the part of the customer. And there is no concern that new locations could be configured to operate differently from existing locations, since they all use the same service. (This also avoids the overhead project management effort needed to create a template so that all locations will be implemented the same way.)

Staffing

Planning a new hosted system generally requires less customer resources than planning a CPE system implementation:

■ Financial/business planners do not need to

negotiate lease arrangements or develop business cases to receive scarce capital resources and set up accounts for depreciation. Maintenance contract negotiation is also eliminated, although some of this may be replaced with negotiations to set SLAs. There is less likely to be a need to develop and manage detailed RFPs to compare multiple systems offers (both functionally and financially) and to compare and negotiate installation charges. Since call accounting functionality is included in all hosted services, there is also no need to upgrade or procure new call accounting systems.

■ Telecom managers and technical and network planners do not need to manage station reviews, participate in detailed network (WAN) planning, develop processes for self management of the network and train administrators on the details of system support. For example, technicians' IP-telephony certification can easily cost \$10,000.

■ Project management is reduced, as the hosted provider does virtually all this work and does not need as much customer interface when equipment is not being installed on site. In multisite installations, project management is not needed to ensure all locations are being configured identically.

■ Security/continuity specialists do not need to spend as much time planning for security control of the PBX functions and continuity processes.

Ongoing management and technical resources are reduced as well in a hosted environment:

■ Telephony inventory management is basically reduced to terminal management. (LAN equipment including UPS supplies would be the same in either environment). There is no need to track ports in use in order to minimize maintenance charges.

■ Change control only requires an office manager to forward and check on requests to the hosted service provider.

■ Ongoing network management, review of traffic studies and identification of need for additional bandwidth, etc. is minimal, as the hosted service provides bandwidth based on demand.

■ Basic maintenance including checking alarms and first investigation of troubles is totally eliminated. The need for customer technical resources to interface with providers to handle remote and on-site maintenance issues is greatly reduced.

■ Downloading, testing and installing software patches are also eliminated. InfoTech research indicates that the minimum resource needed for patch management of Windows servers averages 1 hour of technician time per server per week. If testing is required, this could expand considerably.

■ Management of application servers such as E-911, conferencing/collaboration, music on hold, messaging, find-me/follow-me, etc. is eliminated.

■ Management of software upgrades and changes in technology (e.g., upgrades to faster servers or higher-density interface cards) is eliminated.

■ On-site preventative maintenance functions such as battery, voltage and fan checks, vacuum-

ing filters and cleaning/testing tape drives, adding new area codes to the dialing plan, etc., are reduced or totally eliminated.

■ Financial management is reduced as there is no capital expense to depreciate and there is no need to develop annual budgets for maintenance.

■ Business cases and associated internal proposals for software upgrades are eliminated.

■ Security management of firewalls, security policy development and investigations are minimized or at least reduced.

■ Continuity processes such as configuration backups and restorations are eliminated.

Obsolescence

A hosted solution eliminates the issue of CPE becoming obsolete, which is often accompanied by higher maintenance costs and/or difficulty getting spare parts, and ultimately results in a major RFP-based effort to evaluate new offers and replace the system.

InfoTech's research shows that the average life of server-based systems is 3-5 years as opposed to traditional PBX lifetimes of 7-10 years or longer. In addition, open platforms now emerging to serve the hosted services market promise to include real-time multimedia applications from multiple providers, through an IMS (IP Multimedia Subsystem)-compliant architecture, and will reduce the risk of functional obsolescence.

Conclusion

Hosted services offer savings and reduced complexity in many areas. Companies considering hosted solutions should investigate how each would apply to their situation. While many companies may save money in these areas, this article was not intended to be a full comparison of all costs involved in each scenario, and companies should still go through a full TCO/ROI analysis to compare the true costs of each solution.

From a functional standpoint, the conclusion is clearer: Unless a company has unique mission critical requirements, the value of "control" is largely a myth. The second part of this article, which will appear in next month's *BCR*, will present some key results from an ROI tool that will show more detail on the financial comparisons. □

Companies Mentioned In This Article

Avaya (www.avaya.com)
BroadSoft (www.broadsoft.com)
Cisco (www.cisco.com)
Citel (www.citel.com)
ipDialog (www.ipdialog.com)
Polycom (www.polycom.com)
Sylantro (www.sylantro.com)
Tekelec (www.tekelec.com)
Uniden (www.uniden.com)
Zhone (www.zhone.com)

In next month's issue, we'll present key results from an ROI tool