EVALUATING THE TOTAL
COST OF OWNERSHIP
FOR SMALL & MEDIUM BUSINESS VOIP

WHAT OPTION IS RIGHT FOR YOU?

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Evaluating the Total Cost of Ownership (TCO)
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Key Questions

VoIP service providers offer a range of products to meet the needs of Small and Medium Businesses (SMBs). Unfortunately, there has been very little practical guidance for SMBs wishing to upgrade their phone systems to VoIP solutions.

In a 2006 study conducted by Savatar, SMB owners revealed their confusion about VoIP and a list of telephone problems, all too familiar to the owners and managers of SMBs:

- It's too difficult to make a routine Move/Add/Change (a MAC change) to the phone system.
- The current system lacks features that are critical to business productivity, and it costs too much to add them.
- It is difficult to manage their system across multiple office locations, and it costs too much to expand it.

VoIP can be the breakthrough technology SMB owners need to solve these problems while enjoying significant cost advantages. But, it's a challenge for a SMB owner to evaluate products and make smart business choices. Where do you start?

Here we'll explain the concept of Total Cost of Ownership (TCO) and how it can be used to compare the economic benefits of VoIP to your business. We will answer the following key questions:

- What is TCO?
- How can TCO be used to evaluate the economics of VoIP products?
- How can TCO be used to compare the costs of VoIP with those of your current voice and data systems?

Calculating Total Cost of Ownership for VoIP

Unfortunately, comparing the cost of VoIP solutions to each other and to traditional systems is not as straightforward as comparing the cost of competing long distance plans from different companies. Because a VoIP solution will replace and improve your voice and data infrastructure, another type of assessment is needed.

The correct way to evaluate competing systems, both VoIP and traditional, is to calculate and compare the Total Cost of Ownership (TCO) of each solution. In this section we will define the TCO concept, show you how to calculate TCO and recommend ways to use TCO to compare offers from different service providers.

The concept of TCO is not new; it has been used by information technology professionals for years to compare the economic consequences of a major equipment purchase. They use TCO to sum up all costs – purchase, use, maintenance, one-time, recurring – over a set period of time.

Calculating TCO - An Example
Before tackling a TCO calculation to compare the economic value of different kinds of VoIP solutions, let's understand the basic concepts of TCO with a simple illustration.

You may have even unknowingly used TCO when evaluating options for personal purchases like automobiles. The TCO equation for a car purchase is simple.

TCO = (Cost of purchase) + (Cost of maintenance) + (Cost of fuel) – (Resale value)

Let's consider this in a bit more detail. Suppose that you want to buy a new car that you plan on keeping for three years and that you drive about 20,000 miles per year. Your two top contenders have the attributes shown in the following table.

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	Luxury Car	Sports Car
Vehicle Cost	$ 38,000	$38,000
Maintenance Cost (annual)	free	1,700
Fuel Economy	20 mpg	15 mpg
Resale Value after 3 Years	$21,000	$18,000

Both cars have the same purchase price but how will their TCO's stack up? To calculate the TCO, we will need to do calculations in a few areas.

- **Cost of Purchase –** No calculation is needed here; the Sports Car and Luxury Car have the same purchase price.

- **Cost of Maintenance –** The Luxury Car offers free scheduled maintenance so the cost is zero. Over three years, the Sports Car is estimated to have a maintenance cost of $1,700 per year so its cost of maintenance is $5,100.

- **Cost of Fuel –** This will need to be calculated. If we drive 20,000 miles per year, over three year we will drive 60,000 miles. The Luxury Car gets 20 miles per gallon so in 60,000 miles, we will use 3,000 gallons of gas (60,000/20). The Sports Car will use 4,000 gallons of gas (60,000/15). If gas costs $3 per gallon, the Cost of Fuel will be $9,000 for the Luxury Car and $12,000 for the Sports Car.

- **Resale Value –** No calculation is need here, the Luxury Car has a resale value $3,000 higher than the Sports Car.

Putting these numbers into our TCO formula, we get the results shown below.

	Luxury Car	Sports Car
Cost of Purchase	$ 38,000	$38,000
Cost of Maintenance	0	5,100
Cost of Fuel	9,000	12,000
Resale Value	$21,000	$18,000
TCO	$26,000	$37,100

Strictly evaluating TCO, the Luxury Car is a better value; its TCO is almost 30% lower. Of course other factors may come into play such as which car would better fit your driving needs or would the Sports Car dealer provide better service. Those factors may more than compensate for the difference in TCO.

TCO for VoIP

A VoIP system's TCO equals the sum of its three cost components:

TCO = (Acquisition Costs) + (Monthly Recurring Costs) + (Annual Maintenance Costs)

Let's look at each element separately.

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Acquisition Costs

An acquisition cost is any cost that is paid up front. For VoIP, acquisition costs are more than just equipment purchases. They include system installation and employee training. Remember that with VoIP, voice and data are carried over the same connection so there are usually charges related to the provisioning of that connection.

An easy way to get to your Acquisition Costs is to ask your prospective VoIP vendor, "What do I need to write a check for up front to make a switch to VoIP?"

For IP PBX, acquisition costs include the cost of the IP PBX and other necessary equipment like routers, switches, phones, cabling and power supplies. There will be costs for shipping, installing and configuring the equipment. There might be a charge for the software that runs the IP PBX.

Hosted IP PBX has significantly lower acquisition costs because there is no IP PBX to purchase and little additional equipment required (usually some networking equipment and a device to ensure Quality of Service). However, hosted IP PBX systems do require the purchase of new phones.

IP Business Trunking solutions have very low acquisition costs, usually only a small charge for installing the converged voice/data circuit.

Monthly Recurring Costs

With VoIP, monthly recurring costs cover both voice and data service and can take different forms. Some service providers charge per minute usage fees for local and long distance calls, along with a fixed monthly cost for data. Others bundle these charges together into a single monthly fee that offers unlimited data access and either a block of voice minutes for shared use by everyone in your company or unlimited voice minutes.

Regardless of how the service provider constructs the charges, it's easy to get to Monthly Recurring Charges by asking your prospective VoIP vendor, "What do I need to write a check for every month for my voice and data service?"

With most IP PBX solutions, monthly charges will include a fixed charge for the data circuit. Voice charges are handled differently for IP PBX and Hosted IP PBX.

For IP PBX, voice charges vary from month to month because calls are charged on a per-minute basis. This means that you'll need to estimate your voice minute usage for local, long distance and local toll calls, and multiply these by the per-minute charge.

Often, SMBs will purchase an IP PBX as a managed service offering, which means that the vendor is responsible for all management and maintenance of the IP PBX and any other equipment that resides in your office. Although this means that you will not be training staff and dedicating them to system management, you will have the monthly recurring management charge to include in the TCO.

With Hosted IP PBX, monthly recurring voice charges are simpler. Normally, the service provider will charge a fixed monthly cost per telephone set. This fixed cost includes unlimited local, long distance and local toll calls, and all fees related to system management and maintenance. There may also be a monthly charge for the cost of the data circuit.

IP Business Trunking solutions are similar to Hosted IP PBX. The service provider will either charge on a per-user, per-month basis for unlimited local, long distance and local toll calls, or will bill for a single charge related to the number of employees. For the latter, service providers include a set number of calling minutes each month. There is also a monthly charge for the converged voice/data circuit.

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Annual Maintenance Costs

Annual maintenance costs have been a given in hardware or software purchases for years. Companies often charge 10-20% of the purchase cost of these products each year to guarantee technical support and product updates. The situation is no different with VoIP.

Ask your VoIP vendor, "What do I need to write a check for at the end of each contract year to maintain my voice and data service?"

For IP PBX, each vendor handles these costs a bit differently. Some will charge a single fee that is a percentage of the purchase price of the IP PBX. Others will charge a fixed annual fee for each piece of equipment under management. Some offer different levels of support at different fee levels. They may charge one price for telephone-only support during regular business hours, or they may offer a higher price for premium support that includes technicians coming on site within two hours, seven days a week, to fix any problem that arises.

Hosted IP PBX and IP Business Trunking are simpler: there are no annual maintenance costs.

TCO Example for VoIP

Let's take a look at how our options might stack up for a typical SMB. Savatar was recently involved in the purchase of a VoIP solution for an insurance company based in a large metropolitan area on the east coast.

The company had 35 employees and was using different providers for local and long distance voice services and a third provider for T-1 access to the internet. They had an aging PBX bought nearly ten years earlier that provided them with basic voice mail and calling features. The company had no dedicated IT staff to manage the PBX but paid another vendor for this service.

With a switch to VoIP, the company hoped to meet several business objectives that should seem familiar to any small business. They wanted to:

• Reduce their overall voice and data costs
• Reduce the number of vendors providing these basic services
• Avoid hiring dedicated staff to manage the new infrastructure

We started the buying process by compiling a list of 10 vendors who offered VoIP products and researched their offerings on their websites. Some offered all three types of VoIP products, some only one.

We then placed calls to the vendors to learn more about their products and see how their salesforce operated. We found that many of the vendors did not return our phone calls and, of those who did, many had a very shallow understanding of the products. Worse, some of the vendors did not appear to be interested in learning about the company's concerns and business objectives.

We quickly whittled down the list to two vendors based on their responsiveness and product knowledge. Both vendors were very recognizable names in the telecommunications industry. Vendor A offered an IP PBX solution; Vendor B, a Hosted IP PBX solution and an IP Business Trunking product. Through a series of sales meetings and site visits we began to gather the information necessary to calculate the TCO of their product offerings.

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Acquisition Costs

The IP PBX and Hosted IP PBX solutions required the purchase of new phones. Vendors A and B carried similar name-brand VoIP telephones at about $250 per phone. The IP Business Trunking solution from Vendor B could use the existing phones.

There were other acquisition costs:

Vendor A would provide a name-brand IP PBX and a number of other pieces of equipment for the company's new voice and data infrastructure. The total equipment cost including shipping the equipment to the company site was $15,064. Additionally, Vendor A would charge $6,125 for installation and configuration of the equipment. Note that if Vendor A offered to lease the equipment, the equipment charge would appear in the Monthly Recurring Costs category but would have no effect on the TCO calculation.

Vendor B's acquisition costs for the Hosted IP PBX included a device to ensure Quality of Service (QoS) and a new data router to replace one that was seven years old. The total equipment cost for Vendor B was $2,000. Vendor B offered installation, activation of service and end user training for an additional $2,500.

Vendor B's acquisition costs for the IP Business Trunking product were a flat $1,000 for installation and training.

Monthly Recurring Costs

Each vendor would provide a data circuit to carry the company's voice and data traffic. Vendor A's price was $445 per month; Vendor B's, $350 per month for the Hosted IP PBX and no separate data charge for the IP Business Trunking product. In all cases the company would be required to sign a three year contract.

For voice charges, Vendor A used a complex formula that offered tiered pricing based on per minute usage levels for local and long distance calling. After scouring the company's phone bill and much discussion with the vendor, we were quoted voice charges of $386 per month base on about 326 minutes of usage per employee per month.

The company wanted Vendor A to manage and support the new IP PBX. This service was offered for a fee of $500 per month.

Vendor B's voice charges were much simpler. The Hosted IP PBX product allowed for unlimited calling for a charge of $33 per user per month: a total charge of $1,155 per month that included all management and maintenance. The IP Business Trunking product had an even simpler structure: the total monthly charge for voice, data, management and maintenance would be $895.

Annual Maintenance Costs

To keep their new IP PBX up to date and have on-site support on-call, the company would need to purchase a maintenance contract from Vendor A. The cost was $3,080 per year. Vendor B had no annual maintenance charges for its products.

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Traditional Voice/Data Service

As a final check, we approached the local phone company to cost out a replacement traditional voice and data service. The phone company recommended a package of Centrex voice service (essentially a hosted traditional PBX), plus T1 dedicated Internet access.

The acquisition costs were very low, $420 with no new phones required. Monthly recurring costs included $550 per month for the data circuit, 3.9¢ per minute for all local, long distance and local toll calls, and a charge of $1,602 per month for the service pack of calling features. Using the same 326 voice minutes per user per month, we came up with total monthly recurring cost of $4,043 per month. There were no annual maintenance costs. This included all taxes and fees and surcharges. It is important to note that VoIP services do not charge for all of these which amounts up-to 25% of MRCs.

TCO Comparison

The table below summarizes our TCO calculation.

	Vendor A IP PBX	Vendor B Hosted IP PBX	Vendor B Converged Voice and Data	Traditional Voice/Data Service
Acquisition Costs				
Phones	$ 8,750	$ 8,750	$ -	-
Equipment	15,064	2,000	-	-
Installation, Configuration, Training	6,125	2,500	1.000	420
Subtotal	$ 29,939	$ 13,250	$ 1,000	$ 420
Monthly Recurring Costs				
Data Circuit	$ 16,020	$ 12,600	$ -	$ 19,800
Usage Charges	13,896	-	-	22,885
Service Contract	-	41,580	32,220	57,672
Management Fee	18,000	-	-	
Subtotal	$ 47,916	$ 54,180	$32,220	$100,357
Annual Maintenance Costs				
Maintenance and On Site Support	$ 9,240	$ -	$ -	$ -
Subtotal	$ 9,240	$ -	$ -	$ -
TCO	$ 87,095	$ 67,430	$ 33,220	$ 100,770

The numbers in this table are for a 35-person company over three years, and include all voice and data costs for the company. If we take the TCO number, divide by the number of employees and divide again by the number of months in the contract, we can come up with a total cost for voice and data per employee per month.

In this case, it works out to about $69.12/employee/month for the IP PBX, $79.98 for traditional voice and data service, $53.51 for the Hosted IP PBX, and $26.36 for the IP Business Trunking service.

Total Cost for Voice and Data per Employee per Month
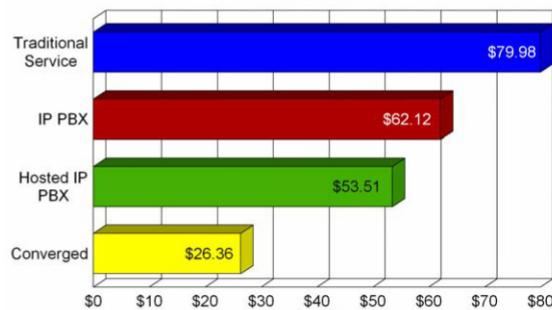
Traditional Service	$79.98
IP PBX	$62.12
Hosted IP PBX	$53.51
Converged	$26.36

How to Decide

The previous TCO analysis shows VoIP's economic advantage over traditional phone service. It also shows the economic differences among the three types of VoIP products. So, how can you make a decision that best benefits your business?
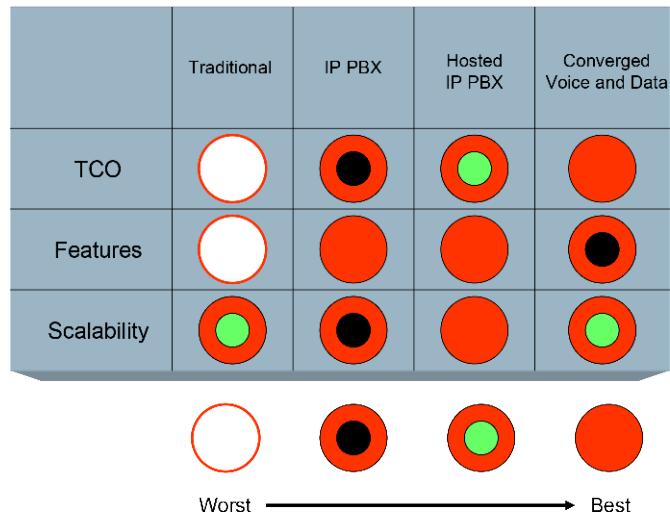
If cost savings are the only factor in your decision, the choice is clear: IP Business Trunking systems are the least costly by far. But, there is a trade-off. IP PBX and Hosted IP PBX offer a much richer feature set than IP Business Trunking services. Many of the features are only available with VoIP systems and can certainly enhance a company's productivity.

An even more critical tradeoff is that, with IP Business Trunking solutions, you are still using your existing, possibly old, phone system. If you encounter a problem with that system, it will need to be repaired or replaced. And, since the replacement system will likely be a VoIP solution, you may be able to easily migrate from IP Business Trunking to Hosted IP PBX.

If cost savings and adding productivity enhancing features are both factors in your decision, again the choice is clear: Hosted IP PBX provides all of the advanced features of IP PBX but at a much lower cost.

All of the products offered system administration superior to traditional voice and data service. You are probably familiar with the administrative challenges of traditional systems. Changing an extension requires a call to the phone company, a cost for making the change and a day or two wait until the provider actually does the move. With any of the VoIP products, the same change would take about 30 seconds, at no charge, using a web browser application.

The right choice is the one that offers an economic advantage and is best suited to your business needs. If replacing existing equipment and adding features is important to you, the Hosted IP PBX is very attractive. If you can get by with your current phones and live without many advanced features, the IP Business Trunking product should be considered. The table to the right summarizes the relative strengths of the four types of products with respect to TCO, Features and Scalability.

	Traditional	IP PBX	Hosted IP PBX	Converged Voice and Data
TCO	○ (white)	● (black)	● (green)	● (red)
Features	○ (white)	● (red)	● (red)	● (black)
Scalability	● (green)	● (black)	● (red)	● (green)

○ (white) — ● (black) — ● (green) — ● (red)

Worst ⟶ Best

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Other Considerations

Whatever product choice you make, there are other factors that augment TCO analysis that should be considered when analyzing VoIP service providers. Two of the most important are VoIP network performance and solution scalability.

VoIP Network Performance

Any VoIP solution is only as reliable as the network that carries your voice and data traffic. Service providers who offer business class VoIP services carry voice and data packets over a managed network to ensure service quality.

Any provider offering such a network can and should provide information on the network's performance including security, redundancy, and reliability. When selecting a VoIP service provider, poor network performance is knockout criteria. There is simply no point in working with a vendor who offers a large TCO advantage but has a track record of poor network performance. Ask your potential service provider, "How reliable is your network?"

Solution Scalability

There are two dimensions to consider when evaluating the scalability of a VoIP solution: adding users to the system, and adding features to the system.

A VoIP solution with a 30% TCO advantage for a 40-person company may not maintain that advantage as the company grows to 70 employees. For IP PBX, you should be especially careful in this respect.

IP PBXs come in many different sizes, often characterized by the number of ports in the equipment. Generally, each port can support one voice/data connection. A 48-port IP PBX can support a voice/data connect for each employee of a 40-person company but is many ports short when the company grows to 70 people. When you exceed the port capacity of the IP PBX, you need to either purchase additional ports or, in the worst case, a larger IP PBX. Obviously, this will affect TCO greatly.

Ask your prospective service provider, "How will my costs scale as I add new users to the system?"

When it comes to adding new features, be sure that a prospective vendor can supply them in a cost effective way. It is equally important to know that a vendor has an evolutionary product path in place to ensure an easy transition to a more sophisticated or larger system as an SMB grows. Ask the prospective service provider, "What happens when I outgrow this new system? Can your system grow as my business grows?"

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What Does VoIP Mean to a Business Owner or Manager?

As VoIP has matured, it has emerged as an important technology that can help SMBs contain their voice and data costs. It is also a technology that is well within the reach of any business, any size. But, technology is not enough. VoIP can deliver real benefits to your business through:

- **Reliability and Efficiency:** IP is connectionless and doesn't require the always-open dedicated connection of the PSTN, and routing calls over VoIP private networks guarantees a high quality of service. In short, your calls are routed reliably and efficiently.

- **Cost Savings:** You don't need separate infrastructures to handle voice and data traffic, and you don't need to budget for long-distance toll calling either because VoIP treats your toll calls more like email than PSTN calls, covering all traffic under one monthly rate. Further, if your SMB has more than one office, calls between your locations never cross the PSTN. These so called "on net" calls have no toll associated with them so that calls between your east and west coast offices are free.

- **Convenience:** The administrative burden is far smaller than that of a conventional system. More over, routine changes are easily made, and business-oriented features (e.g., call waiting and conferencing) are built in, not added on.

- **Productivity Enhancing Features:** The advanced features associated with VoIP can be a real benefit to many businesses. SMBs will find that Mobility Features will make mobile workers (like salespeople) reachable at all times. Unified Messaging features make it easier for employees to manage all their voice mails (office and cell) in one system using their computer or their phone.

Questions? Contact us at 877-REVERE-4 or online at www.reveresystems.com

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