

An overview of managed IP telephony services

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- Defining IP telephony infrastructure deployment options
- How much management?
- Finding the right solution for you

Managed services have been part of the telecommunications industry since the very beginning. In the 19th century, someone sending a telegram would hand a message to an operator and someone else would receive the message. Everything in between – the operator encoding the message into Morse code, the physical network between two points, another operator decoding the Morse and a messenger delivering the telegram – was managed by the carrier.

In the 21st century nearly every telecommunications user is, to a greater or lesser degree, a buyer of a managed service. The company that chooses to build its own network, from optical fibres or copper wires through to switching equipment, is a rarity. Some companies manage parts of their own networks, but almost nobody builds their own network from the ground up.

The distinction is important if we're to discuss "managed IP telephony services" intelligently. Nearly every IP telephony service will involve some degree of service management delivered by a service provider – the question you have to answer as a customer is "How much of my IP telephony infrastructure do I want to manage myself?"

This article will provide a brief explanation of the different components of a business IP telephony service, and will then offer a primer for customers trying to choose between different kinds of managed IP telephony services.

DEFINING IP TELEPHONY INFRASTRUCTURE DEPLOYMENT OPTIONS

In this analysis we segment IP telephony infrastructure options by architectural and operational models:

- Architectural model: VoIP gateway, hybrid IP-TDM PABX and pure IP.
- Operational model: Do-it-yourself (DIY, in-source), facilities management and outsource.

The horizontal axis shows the development of technology infrastructure from traditional TDM (time division multiplexed) telephone systems through to pure IP systems, while the vertical axis shows the spectrum of deployment models, from DIY through to completely outsourced models.

There isn't sufficient space to discuss the technical architecture in detail, so we'll concentrate on the deployment options, how these relate to different kinds of service providers, and how deployment options and service provision together shape the customer's managed service choices.

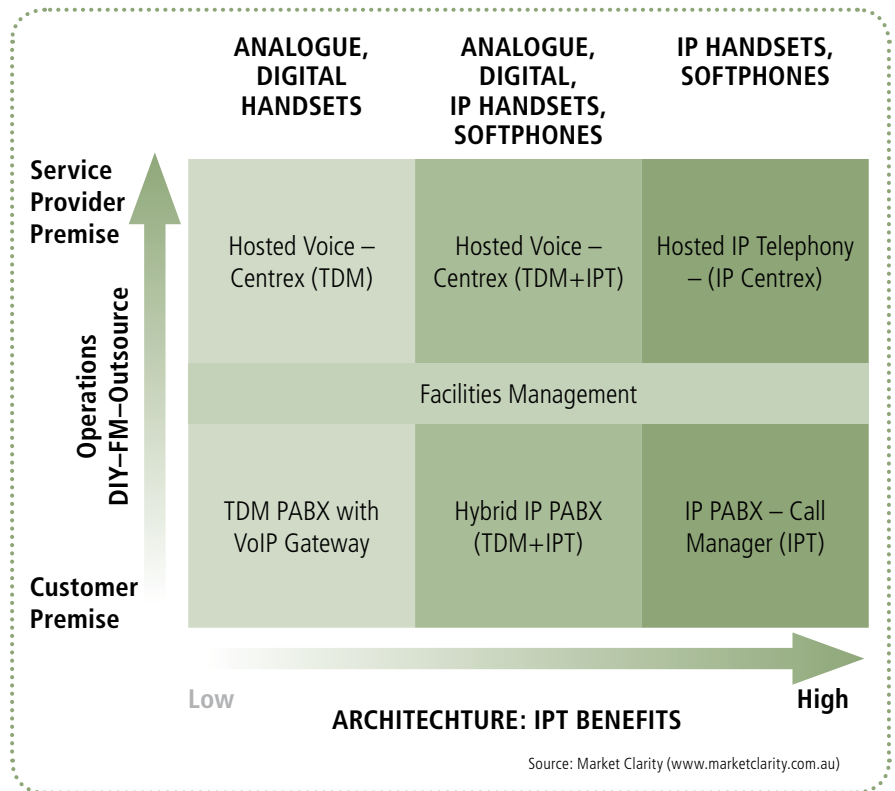


Figure 1: IP telephony infrastructure deployment options

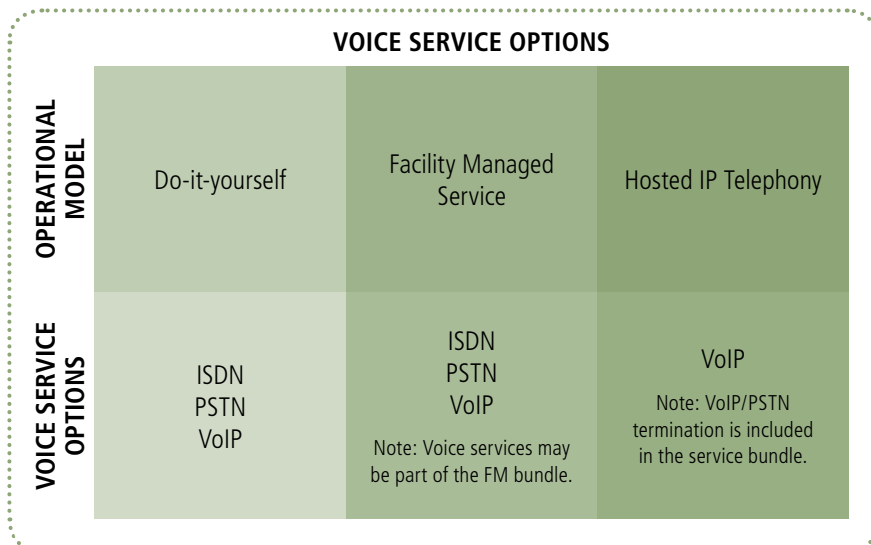


Figure 2: Business telephony deployment options

We define these three deployment options as follows:

- DIY: The customer is responsible for owning and operating the office telephone system, which may be a traditional PABX, a hybrid system, or a pure IP telephony system. The customer also arranges connection to carrier PSTN, ISDN or VoIP services. Contractors may carry out specialist tasks on behalf of the customer.





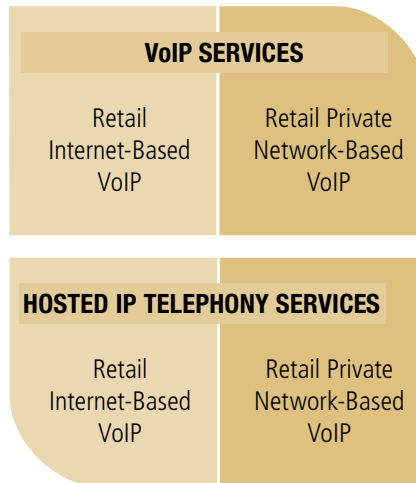
- Facility managed service: Systems (such as handsets and switches) are owned or leased by the customer, but all operational management is outsourced to a facility managed service provider. The equipment may reside on the customer's premises, with the service provider combining remote management with site visits; or it may reside in the provider's data centre with a high-capacity link to customer sites. The customer may be responsible for connection to the carrier service, or this may be included in the facilities management service bundle.

- Hosted IP telephony service: All switching equipment is owned and operated by the service provider in its own data centre. The customer subscribes to the service using either its own broadband connection, or a link operated by the service provider. Voice services are included in the bundle.

Finally, Market Clarity uses the following categorisations to define the VoIP/hosted IP telephony services market:

- Whether the service is delivered over the public internet or a private data network;
- Whether the service provider offers VoIP call termination only, or an IP Centrex or Hosted IP Telephony service; and
- Whether the service targets residential or business customers.

Figure 3: VoIP and hosted IP telephony service options



While residential VoIP services fall outside the scope of this article, it's important for potential business VoIP users to understand the difference between residential and business services.

Residential VoIP services are generally delivered over internet-grade broadband connections, with no guarantee that your VoIP calls get guaranteed service quality or reliability. There is no guarantee of dial tone in these types of services. Moreover, many residential-grade VoIP services have no emergency services access; they may not support some call types (such as 13/1300/1800 calls); and the terms and conditions of the service may state that the service is for "personal use only", giving the service provider the right to terminate the account if it deems the customer to be making excessive use of the service. Hence for the remainder of this article, we will focus on business VoIP and hosted IP telephony services delivered over the internet or private data networks.

HOW MUCH MANAGEMENT?

To understand how much management can be offloaded to a service provider, we also need a brief discussion of the technical components of different IP telephony elements.

To place a VoIP call, several components are required. At the very least, business VoIP needs:

- Handsets: The handset may be an IP phone, or a normal analog telephone with an adapter connecting it to a VoIP service, or a softphone (a software application which takes conversations and encapsulates them into IP packets for transmission over the network).
- Call processing: Within an office, you need some way to direct calls to the right handset; while calls to outside destinations need to be switched to that destination.
- Customer LAN: Within the office, IP calls travel over the Ethernet LAN, which may be self-managed or may be provided as a managed service.
- IP routing: Once the conversations have been placed in IP packets ("packetised"), those packets have to be addressed and routed over the network (either the internet or a private data network). Routing of some kind will be needed whether the call is travelling between two offices of the same company, or to another destination on an IP network, or to an ordinary telephone. Within one location, routing will be handled by the office LAN, or if all stations are on a single sub-network, may not be required.
- Broadband connections: All destinations on the IP telephony network (for example, different offices of the company using IP telephony) need data services able to support IP telephony calls.
- Call termination: Any company wanting to make and receive calls from the PSTN needs a link from their VoIP system to the PSTN.

The table on the next page, outlines the choice between do-it-yourself and managed services for these components.

BUSINESS VOIP SERVICE COMPONENTS

COMPONENT	DIY	MANAGED SERVICE
HANDSETS	<p>Select, buy, install and maintain IP handsets and/or softphones on business network.</p> <p>Pro: Wide choice of devices.</p> <p>Con: Requires skills in IP telephony and LAN administration.</p>	<p>Either facility managed or hosted service models offer managed services covering handsets:</p> <p>Facility managed service: a systems integrator or similar provider offering contract maintenance/configuration services.</p> <p>Hosted IP telephony: many providers include handset support, but only for approved devices.</p> <p>Pro: Minimum or zero administrative load; Hosted model offers “per seat, per month” pricing.</p> <p>Con: More expensive than DIY; may restrict choice of device; some providers do not support softphones.</p>
CALL SWITCHING	<p>Select, buy, install and maintain an IP-PABX, or a pure-IP telephone system.</p> <p>Pro: Wide choice of systems. Intense vendor competition resulting in lower prices for SME-level systems.</p> <p>Con: Very heavy technical administration load required both in initial configuration and in change management.</p>	<p>Either facility managed or hosted service models offer managed services covering handsets:</p> <p>Facility Managed service: a systems integrator or similar provider offers contract maintenance/configuration services. Switching system may be installed either at customer site or in service provider data centre.</p> <p>Hosted IP telephony: provider operates switching equipment on its own premises.</p> <p>Pro: Zero administrative load; provider assumes all system administration responsibility.</p> <p>Con: More expensive than DIY; customer has no choice of call switching technology in hosted model; feature selection limited to features supported by service provider.</p>
ROUTING	<p>Not applicable: most companies do not manage their own routing for any traffic beyond their own office LANs. Only the largest or best-funded network owners build their own private internetworks with no involvement from a carrier service.</p>	<p>All internet or data service routing is a “managed service”, in that end users have no input to ISP or carrier routing schemes.</p> <p>All private carrier IP network service routing is a managed service, although customers may have some input to routing schemes.</p> <p>Customers can build their own IP routing over Layer 2 data networks, but require carrier-side management to maintain connectivity between routers.</p>
CUSTOMER LAN	<p>Customer manages installation, configuration and maintenance of Ethernet LAN. Individual aspects (such as cabling, initial configuration, etc) may be outsourced to contractors.</p> <p>Pro: Lower cost; in a relatively static office, Ethernet networks are low-maintenance items.</p> <p>Con: Inflexible; will involve escalating costs if network configuration changes frequently.</p>	<p>Customer LAN management is available under both facility managed and hosted IP telephony models:</p> <p>Facility managed LAN: the provider assumes responsibility for LAN operation; “soft” configuration can be managed remotely, but site visits are required for physical changes (such as cabling new outlets).</p> <p>Hosted IP telephony: some Hosted IP telephony providers will only guarantee service on an end-to-end basis if they are contracted to manage the customer LANs.</p> <p>Pro: Zero administration load.</p> <p>Con: May be too expensive for SMEs; small, static LANs are unlikely to need frequent administrative visits, resulting in a perception that subscription fees are wasted.</p>

COMPONENT

BROADBAND CONNECTIONS

DIY

All broadband services are managed by the carrier or service provider. Broadband services may be used to provide connectivity to an internet or Private Network VoIP service.

MANAGED SERVICE

All broadband or data network services are managed services within the carrier network.

Note: Private network connectivity allows for QoS support – required for service guarantees.

CALL TERMINATION

Customer arranges connection, choosing between any of:

An IP-based connection to a VoIP provider offering PSTN termination;
A carrier-based PSTN or ISDN service.

VoIP-only Pro: Single unified network; lower call costs; reduced PSTN line costs (a PSTN line will still be required if DSL-based broadband provides the data connection.)

VoIP-only Con: No PSTN backup; broadband service must be secured against internet-borne security threats; requires SLA sufficient to guarantee call quality.

Market Clarity recommends businesses use VoIP provider termination in tandem with PSTN/ISDN connections, unless the carrier/service provider can provide guaranteed “PSTN equivalent” service for VoIP calls.

The managed service provider is responsible for ensuring that VoIP calls are properly terminated to the PSTN.

VoIP service: Calls are delivered from the customer’s IP telephony environment (either over a private data network or over the internet). The VoIP service provider operates the gateway through which calls are terminated to the PSTN.

Facilities managed service: The customer may have the option to select a provider for call termination, or this may be part of the facilities managed bundled.

Hosted IP telephony: The service provider manages the gateway through which calls are terminated to the PSTN.

Pro: Customer does not replicate VoIP provider’s termination capabilities; customer does not pay for PSTN lines.

Con: Customer is dependent on VoIP provider for PSTN access; a network failure in the VoIP provider will leave the customer without emergency services such as “000” calling; network attacks against customer broadband connection may disable all calls; available PSTN features (such as 13/1300/1800 calls) are determined by the VoIP provider.

WHAT’S RIGHT FOR ME?

The best answer to this question is “ask an expert” – but not all companies have the resources to engage a consultant. In choosing between DIY VoIP and a managed services model, the key questions you have to answer are:

- How big is my system? Very large and very small companies paradoxically have the greatest range of options available to them. Very small organisations can buy “boxed” IP telephony solutions that should need a minimum of maintenance, but can also buy small business-scale hosted solutions (they’re unlikely to attract the attention of facilities management companies). Very large companies probably have the skills to build an IP telephony network from the ground up, or can choose from either hosted or facilities managed solutions. The choice is most difficult in the middle, where both IT resources and dollars are at a premium.
- What are my resources? The more IT skills available to a customer, the more

likely it is to consider a DIY solution. Companies lacking those skills will find managed services more attractive.

- What is the total cost of ownership? Answering this question is a challenge for anybody buying IT, because every sales force has TCO figures backing its solution. Working out what you currently spend on telephony systems and telecommunications is a vital starting point in deciding how far down the managed services road you want to go.
- What features do I need? Before starting down the IP telephony road, it’s

a good idea to build a comprehensive table showing the telephone system features you use now, and the features you want in your next system. The availability of different features will have a major impact on your choice of either managed services or DIY systems.

- What is the Capex-Opex tradeoff? If your organisational financial policies favour operational expenditure over capital investment, then you should look at managed services. If you want to own the systems, then you should look at a DIY system with “spot” contracting of technical tasks.



ABOUT THE AUTHOR

Shara Evans is the CEO of Market Clarity, an independent research and strategic advisory organisation that specialises in the Australian telecommunications market. Shara is recognised as a pre-eminent expert in the telecommunications industry, and is a long-time evangelist of converged technologies and services.