

# The end of the line

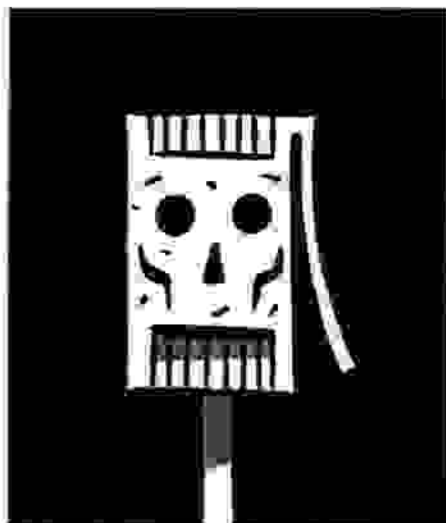
Traditional fixed-line telephony has had its day

**I**T WAS the industry's bread and butter for over a century. But the end is now in sight for traditional telephone service, which will soon be overtaken by voice-over-internet calls in terms of usage, and displaced by broadband internet access as the core revenue-earning service offered over fixed lines by telecoms firms. And even if the traditional telephone is not quite dead yet, its business model certainly is: metered telephone calls whose cost depends on the length of the call and the distance covered are becoming an anachronism.

The demise of traditional telephony can be charted in two ways: by looking at the proportion of call traffic carried using voice-over-internet-protocol (VoIP) technology, which already exceeds 50% on some routes and seems to be heading towards 100%; and by looking at the cost per minute of calls, which appears to be heading inexorably downwards, thanks to VoIP's far lower costs and higher efficiency. VoIP is cheaper because instead of establishing a dedicated circuit to connect two callers, it encodes the telephone call as a two-way stream of data packets that are sent over a high-speed internet connection. This encoding can be done either by a computer running a piece of software such as Skype, the most popular VoIP provider, which now has more than 100m users; or it can be done by a small box, called an analogue terminal adapter, which allows a standard telephone to be plugged into a broadband connection.

## VoIPocalypse now

Sending packets across the internet is free once you have paid for your broadband subscription, so calls that travel entirely on the internet, such as those between two Skype users, cost nothing. If you use a VoIP service to connect you to a traditional telephone, the call travels mostly across the internet but pops out onto the local phone network at the other end; the owner of that network then charges a fee to deliver, or "terminate", the call, typically no more than a local call. All this reduces the price of telephone calls dramatically. Indeed, Niklas Zennström, the co-founder of Skype, believes that voice calls will



eventually cost nothing. "You don't pay for each e-mail or each web page you load," he says. "It's the same with phone calls. That's where it's going. It will be free."

Aside from undermining the pricing model of a trillion-dollar industry that still makes most of its money from voice calls, VoIP is disruptive in other ways, too. VoIP phones can have traditional phone numbers associated with them. But they work wherever they are, provided they are plugged into the internet, making a mockery of geographical conventions such as area codes. So you can assign, say, a San Francisco phone number (area code 415) to your phone, take it to another country, plug it into a broadband connection and have people in San Francisco call you for the price of a local call.

More subtly, VoIP decouples the two previously intertwined components of telephony: access to the network (via a wire running into your house, for example) and service (the ability to make and receive calls). Traditionally, access and service have been provided together. But with VoIP you can buy broadband access from one firm (a cable operator, say) and a telephony service from another (such as Vonage). So owning the access network no longer confers a monopoly on voice services; conversely, it is possible to offer a voice service without owning an access network.

The result has been a surge of innova-

tion and competition as new entrants flood into the market. The spectacular failure of Vonage's initial public offering—the firm's share price collapsed after it floated on the NASDAQ exchange in May—did not signal a lack of confidence in VoIP; it merely demonstrated that Vonage now faces serious competition in a market it helped to pioneer. According to Infonetics, a market-research firm, VoIP-based telephone services worldwide had 24m residential subscribers last year; by 2009 the number is forecast to reach 131m.

## Let computer speak unto computer

Those figures exclude computer-to-computer VoIP calling, which is also growing fast. The success of Skype has prompted big internet firms, including Google, Yahoo!, Microsoft and AOL, to launch similar services, which allow free calls between computers and very cheap or free calls between computers and traditional telephones. That is why Skype sold itself to eBay for \$2.6 billion last year, Mr Zennström explains. "We thought it would be good for us, as we get into competition with big internet companies, to be part of a big internet company ourselves."

Businesses are also embracing VoIP, which allows them to use a single network to carry both voice and data within and between offices. To start with, the attraction of VoIP was simply cost reduction, says Cisco's Mr Lloyd. His company, which competes neck-and-neck with Nortel to be the leading supplier of VoIP telephony equipment, has sold over 9m desktop VoIP phones. New buildings and offices now routinely have a single network installed, rather than separate phone and data networks, he explains. Sales of traditional switchboard equipment are in decline, whereas sales of re-enabled equipment are growing at a rate of about 30% a year. Already, more than one-third of large North American companies have adopted VoIP, and two-thirds will have done so by 2010, according to Infonetics.

Having started out as a means of reducing costs, VoIP phones are now being adopted because of the new features they offer, says Mr Lloyd. With a VoIP-based phone system, office workers can sit down