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December 5, 2006

The burgeoning voice over IP industry is struggling to find staff with the right skills, industry members say. They are calling on training and educational organizations to keep up with the technological curve and break down the traditional barrier between different strands of engineering such as voice and data.

Because of the relative youth of the VoIP market, it's rare to find someone with years of VoIP dedicated experience, says James Spenceley, chief technical officer of VoIP network provider ISPhone.

"When I'm trying to hire a data engineer I look for five years of experience," he says. "In the VoIP world I look for a minimum of five months."

But even those engineers often lack important knowledge.

"Data engineers tend to pick up the basics of VoIP very well, based on internal training and knowledge sharing," Mr Spenceley says. "They can lack knowledge of the voice carrier side of things, like telecommunications regulations, number plans and allocation, interconnect between carriers, the requirements for caller line identification."

The Australian VoIP services market is expected to generate \$462 million in revenue by 2010, with research firm IDC predicting a compound annual growth rate of 39 per cent.

Australia has a shortage of 3600 skilled workers in the advanced networking technology areas of voice, security and wireless, according to an IDC report published in October. That gap was predicted to widen to 5100 by 2009.

The report, commissioned by Cisco, predicted that the shortfall of skilled staff with VoIP networking skills would be more than double the shortage of general networking staff.

It can take VoIP provider Freshtel up to three months to fill some roles, says corporate affairs director Peter Warner. Like other VoIP providers, Freshtel expects to see candidates with data networking experience rather than pure VoIP. "Inevitably we're looking for transferable skills (from data networking) rather than direct experience," Mr Werner says.

But a lack of skills on the systems integration side could mean companies aren't maximising the value of their VoIP system, says Iagu Networks Technical Manager Andrew Rutherford.

Systems built on open standards can avoid costly proprietary vendor lock-ins but require engineers comfortable with integrating more than one vendor's product, he says.

Cisco's director of technology and business solutions, Kevin Bloch, says VoIP engineers need to understand the whole system, from quality of service to security and network resilience. "As you converge the network, you often aren't in a situation where you can wheel in four different engineers because they have skills in four different areas," he says.

Technology vendors and universities are responding to IP convergence.

Avaya managing director Carlton Taya says more than 60 per cent of its courses are "convergence based" but engineers need to take responsibility for ongoing training.

Edith Cowan University will debut what it claims is Australia's first postgraduate course in Mobility in 2007. But many VoIP companies have come to rely on informal information-sharing between employees and even outside the company.

Mr Spenceley says online resources and communities provide technical resources that are the most up-to-date.

He says the best form of in-house training is fault finding. "People tend to work on a problem together, and in the process get a broader idea of what the other person does."

At Freshtel, Mr Warner says fostering a technical environment that encourages engineers to stay abreast of technology helps keep staff turnover low. "There are no formal courses in what we're doing, that's part of the tension in the industry," he says. "It takes a certain kind of engineer to pave the way."