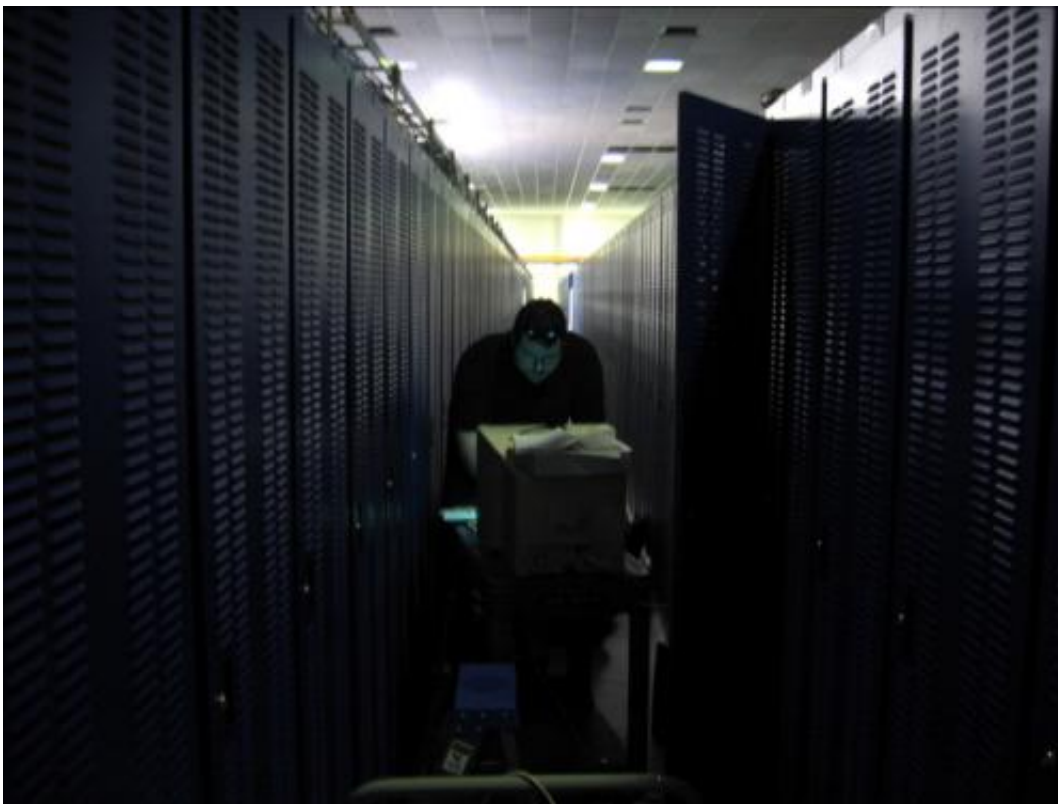


Connected computing offers a new life for blind people, and job opportunities too

September 18 2014, by Andrew Smith



On the internet, no one knows you're a blind network engineer. Credit: DogFromSPACE, CC BY-NC-SA

There are many examples of individuals with different disabilities who excel and accomplish much in their lifetime, rendering physical or mental attributes meaningless – consider [Stephen Hawking](#), Stevie Wonder and [Helen Keller](#), among many others.

But certain tasks and careers are more or less suited to some disabilities than others. Thankfully Ray Charles could sing and compose without his sight, but if his natural talent had been as a sportsman then the world may have not seen him rise to fame. Today's technology offers many new possibilities, not least the opportunity to work in the information technology field itself.

[Network engineers](#) are the plumbers of the internet, setting up and configuring network equipment such as routers and switches which ensure that data is carried swiftly and surely from one side of the world to other. They spend most of their time studying a text-based terminal, the command line interface of computers of the 1970s. Lacking the visual finesse and ease of use a modern graphic operating system affords, this becomes a benefit for the blind.

Accessible staff, wherever they are

The simple output of a text-based terminal can be re-processed by screen reader software such as [NVDA](#) or [Thunder](#), which reads the text content of a screen in a synthesised voice, turning even the longest and most complex of typed commands into intelligible speech. A braille display can be added to provide a physical rendition of the screen's content.

With tools such as these – there are braille mobile phones now too – computers offer those with disabilities considerably more opportunities to access the world around them than ever before. And if the job can largely be conducted through a terminal, then it doesn't matter much whether it's at their home, in an office, or even inside a client's server room. The software's demands on internet connection bandwidth is low, and the potential immense. In fact individuals with conditions such as dyslexia also enjoy using, and benefit from, the same technology.



The braille refreshing display shown here reproduces screen content physically for the fingertips. Credit: Sebastien.delorme, CC BY-SA

Adapted for the abstract

Blind people and people with sight loss are often more able to conjure up a clearer mental image of their [environment](#), and this is extremely helpful when dealing with [network connections](#). From a terminal anywhere in the world, an engineer may need to have in their mind an image of the complex connections between different routers, more likely to be on the other side of the world than in the server cabinet in front of them. This can put them at an advantage over many sighted engineers.

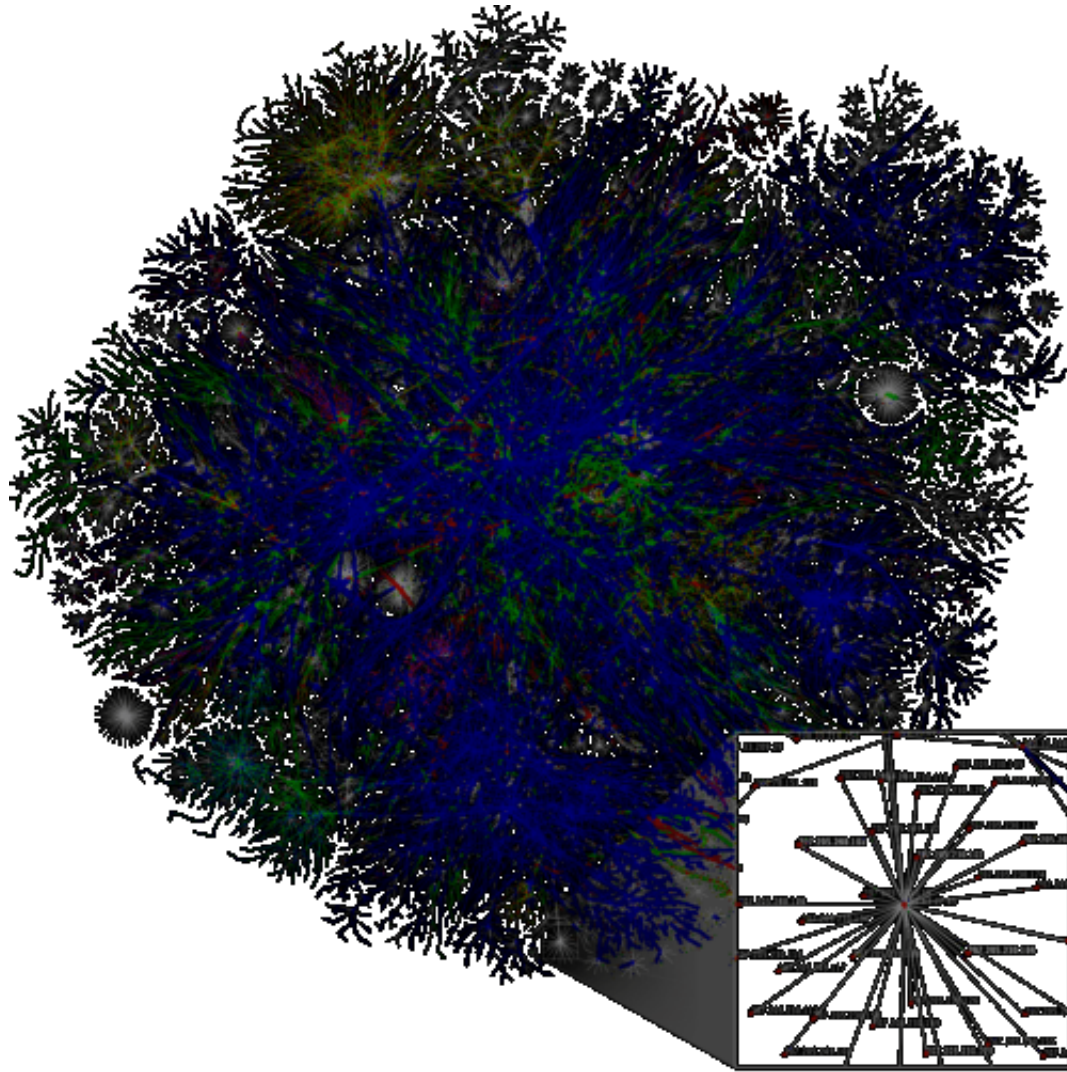
Their very lack of sight gives the blind a unique perspective into troubleshooting networks, supporting complex, distributed systems and working remotely. The challenge is to reach out and let them know of the training and employment opportunities available. Sadly, in most

countries around [two-thirds of the blind are unemployed](#).

Teaching the trade

[Cisco Systems](#) is a tech company as important as Microsoft or Apple, but you might not have heard of it because its products – networking equipment – are less visible, humming away in back offices, connecting together the many networks that make up the internet. The company runs a social enterprise, the [Cisco Networking Academy](#), which works with universities, schools, colleges, educational charities and prisons.

The academy's objective is to encourage and support the teaching of IT networking skills, irrespective of the student's background or educational experience. The courses are challenging and there is no compromise on technical level and discipline, but everyone – whether disabled or not – has the chance to succeed and further their careers in the profession.



Plumbing the internet is a complicated job, as this image of its complex, branched structure shows - but not necessarily harder when sightless. Credit: The Opte Project, CC BY

Curtin University in Australia has supported the [Cisco Academy for the Vision Impaired](#) since 2002. Teaching blind and visually impaired students in Australia, Sri Lanka, India and other Asia/Pacific nations, the university is recognised as world leaders in teaching those with vision disabilities to become network engineers.

Curtin University has solved many of the technological barriers encountered by creating alternate technologies, means of accessing the teaching material, and generating a positive mindset among the blind community.

Such inventions include software that [reads graphs and mathematical formulae](#), remote labs containing networked switches and routers that can be shared by blind and sighted alike, controlled by the addition of [Ventrilo](#) voice-over-IP software. There's also ongoing work to create a vocal output for the [Packet Tracer](#) program that that simulates network setups.

In the UK, the [Royal National College for the Blind](#) has educated the blind and visually impaired for over 140 years. Based in Hereford, their college has taught thousands in subjects as diverse as music [technology](#), psychology, and computing. Britain's Open University, long established as a university offering [accessible opportunities](#) for students, is able to support teaching staff at Royal National College through its [leading Cisco Academy](#).

The hope is that the combined expertise of these three organisations and the Cisco Networking Academy can help provide [blind people](#) with the means to become success stories in the networking industry.

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