AUT

A FUTURE IN

NETWORKS & CYBERSECURITY

WHAT ARE CAREERS IN NETWORKS AND CYBERSECURITY ALL ABOUT?

Computer networks are an inextricable part of modern life. We use computers and mobile devices to access the Internet and to connect with others in most, if not all, aspects of our work, education, and leisure. Networks with hundreds or thousands of users are operated by schools, universities, businesses, governments and other organisations. Qualified professionals are required to design, build and maintain these networks.

ICT services in NZ are forecast to grow 6% to almost $4.4 billion in 2022, according to market analyst Gartner. These services include managed services, consulting, and cloud infrastructure-as-a-service (IaaS).

Along with this rapid explosion of inter-connectivity, there is a corresponding exposure of the networks and the connected devices to nefarious activities such as hacking, information leaks, and all forms of cyber-attacks. We need qualified professionals to not only design, build and maintain these networks, but also keep them secure.

Are you interested in the challenges involved in designing, building, and maintaining large computer networks? Do you find satisfaction in helping organisations of all kinds protect their networks and information assets in an increasingly connected world? Do you love to solve practical problems, and keep up with new technologies? If so, a career in networks and cybersecurity could be just the thing for you.

OUTLOOK AND TRENDS

Constant change and threats
Networking, information security and digital forensics are key global areas of growth as are cyber-crime and computer fraud. ICT security is of paramount concern for government agencies, businesses and other organisations, particularly those in the financial sector, who must balance the need to control data access with the laws in countries where their data centres are hosted.

In New Zealand, we have experienced high-profile data security problems within the government and we are seeing increasing regulatory demands and legislative requirements for security within the financial services industry. Graduates are needed who have a sound understanding of networking and security to prevent malicious attacks on computer systems.

Cloud computing and networking
Cloud computing has radically changed the way computer applications and services are constructed, delivered and managed. To make the most of cloud-based networking, new techniques continue to be developed using software-defined networks to manage networks, share data, protect privacy, metering and billing, communications, and security of the information.

Hybrid and remote use
Over 2020 and 2021 there has been a huge increase in employers and employees using technology differently as organisations invest in multiple devices to use in remote and hybrid settings. This usage requires changes in network and security settings.

An increasing trend for healthcare to be delivered in the home, with patients fully informed and empowered to understand their healthcare options, is behind the development of a significant Health IT export industry for New Zealand. The use of IT and networks is also expected to play a dominant role in preventative health care, with new sensor technologies being coupled with more traditional IT infrastructure to aid clinicians and other health sector workers.

WORK SETTINGS

Graduates find employment in a range of industries from large corporations to smaller businesses. Opportunities are available in industry, commercial organisations, government departments, NGOs and research and development centres, as well as academic environments.

Network and cybersecurity professionals are employed in almost all medium to large organisations and many have dedicated teams of network and cybersecurity managers and professionals.

Roles may be within the IT department of the company/organisation, or in a separate security-related department.

It may be necessary to travel locally or internationally to visit clients and to attend conferences and professional development/training sessions. Many roles involve working in regular business hours. However some require evening or weekend work to complete projects or carry out maintenance.

CAREER EXAMPLES

Systems administrator
Monitors resource consumption and performs remedial actions. Locates and fixes hardware and software problems. Liaises with service providers and suppliers of hardware/software. Plans, evaluates and executes new developments. Liaises with clients/users about specific requirements and produces reports.

Network security specialist
Monitors activity on computer systems and networks for security breaches. Keeps up to date with the latest malware threats. Implements firewalls and installs anti-virus software on servers and computers within the networks. Develops and trains staff, and enforces security policies.

Security analyst
Advises on information security practices and enhancements. Installs firewalls, intrusion protection and detection systems, cryptography and other security measures. Manages system/software patches and upgrades at regular intervals. Monitors server security, security logs and alarms, and manages incidents swiftly and decisively. Carries out regular reporting and risk assessments.

Network designer
Draws up network implementation plans. Works with network architects on detailed design of network. Often involves in-house networks or larger, distributed mainframe systems. This design work can be very complex, with involving large numbers of protocols, platforms and software solutions that need to communicate with each other.

Visit www.sans.org/20coolestcareers for descriptions of the 20 coolest global information security and cybersecurity roles.

SKILLS AND KNOWLEDGE

It is essential to have strong communication skills and the ability to liaise with stakeholders at all levels.

Transferable skills

- Ability to communicate with clients, demonstrating strong interpersonal skills
- Know how to handle confidential and sensitive information with discretion
- Work well in a team environment, with minimal supervision
- Plan ahead and meet deadlines
- Good at problem-solving and time-management
- Competency in business processes and software including MS Word, Excel, PowerPoint and Outlook.

Technical skills and software

- A range of desktop and server administration systems
- Windows, Mac, Linux platforms
- LAN, WAN, WLAN, DMVPN, SSL/IPSEC, VPN, firewalls, WWAN design and implementation
- CCNA or CCNP cert (or Juniper equivalent).

PERSONAL QUALITIES

- Methodical, accurate and patient
- Able to work well under pressure, and meet deadlines
- Loyal and trustworthy
- Able to relay complex information in easily understood terms.

PROFESSIONAL REGISTRATION

This profession requires at least a bachelor's degree in information systems with coursework or on-the-job training in network and cybersecurity systems. Certifications such as a Cisco Certified Networking Professional or Microsoft Certified Professional are also helpful.

Professional accreditation is available through the Institute of IT Professionals New Zealand, via the CTech and CITPNZ certifications http://iitp.nz/Certification

ISACA (www.isaca.org) is a global professional association offering membership and appropriate certifications, eg CISA, CISM, CISSP.

SALARY GUIDE

To stay competitive internationally, most IT jobs in New Zealand now provide a package with additional benefits, such as health care plans, company paid training, and additional annual leave.

	Salary (per year)
Systems administrator	Junior/Intermediate $50,000-$85,000 Senior $75,000-$100,000
Network engineer	$50,000-$60,000 1-3 years $82,000-$120,000+ 10 years +
Security analyst	$80,000-$120,000+
Security consultant	$120,000-$200,000

Sources: Recruit I.T. Technology & Digital Salary Update 2021, payscale.com, SEEK, Careers NZ, Jobted

Salary range is indicative of the New Zealand job market at the time of publication (early 2022) and should only be used as a guideline.

THE AUT ADVANTAGE

AUT graduates have studied the curriculum of the Cisco CCNA and CCNA security certification exams. Students learn theoretical and practical skills to design and implement security measures using Cisco routers and switches.

There is a research and development project in Year 3 involving industry clients, such as Fisher & Paykel Healthcare, Eagle Technology and FutureTech.

Graduates leave with skills and knowledge that can be applied to SMEs as well as large corporates.

FURTHER STUDY OPTIONS

Further study in networks and cybersecurity is available at postgraduate level, including postgraduate certificates and diplomas in computer and information science.

Postgraduate students can also undertake study at master's level in analytics, computer and information science, information security and digital forensics, science, informatics or service-oriented computing. There are also options to study at Master of Philosophy and Doctor of Philosophy level.

CHELSEA BATES

Network Engineer at healthAlliance

Bachelor of Computer and Information Sciences in Networks and Security (now Networks and Cybersecurity)

"I started at healthAlliance as an implementation technician while I was still studying, then moved into my network engineer role after nine months. As network engineer, I'm leading a large project for the ADHB to increase the clinical WIFI capability, along with other projects, while being a site lead to one of the main hospitals in Auckland. My dream has been to work with the DHB using my networking skills to help people. I find it very rewarding to be part of ensuring the DHB's network runs smoothly and continues to help people.

All aspects of IT interested me, but I chose networks and security for the high paced work and constant challenge. I like to continually learn and improve my skills and knowledge as I progress through my career – currently I'm studying towards CCNP and CWNA certifications. Every new challenge teaches me something new. I love the busy environment and the great team I work alongside – I learn so much from them.

I have always wanted a job where I can work remotely and be challenged continuously. Although my job allows me to maintain the network remotely and do the majority of my work from home, it was still an adjustment to work from home over lockdown and attend meetings on Zoom.

Because our time on site is limited currently, I need to plan to ensure I get as much done as possible to access network equipment or prepare and configure new equipment on the days I can go in. I think we will stay mostly working remotely which I love – I get more done and I like the flexibility – but it is also good to catch up with the whole team to celebrate when we reach milestones.

I'm using a lot of skills I developed through university project work, particularly my final year project. I also find many of the documentation pieces we developed at university prepared me for the process and standards we follow here.

I advise students to throw themselves into their final year project because it gives them a taste of real world experience and is a great way to learn how to put the skills you learn to use and find the right path for you."

EMPLOYER COMMENT

"For a network engineer we look for CCNA level Cisco knowledge, a methodological approach, and good communication, troubleshooting and organisational skills. We want someone with a willingness to question and not assume, in order to learn and build on existing knowledge.

These skills are important to support the network and assess and breakdown situations, both technical and non-technical. We need good listeners who can discuss and explain issues to people at different level of the DHBs. Chelsea had already demonstrated her communication skills, she showed a good entry level knowledge of Cisco networking, was willing to learn and showed a real interest in building on that knowledge.

Graduates need to be honest about their skillset and show they have a clear direction of where they want to go. Networking while doing job work experience can be key to opening up opportunities."

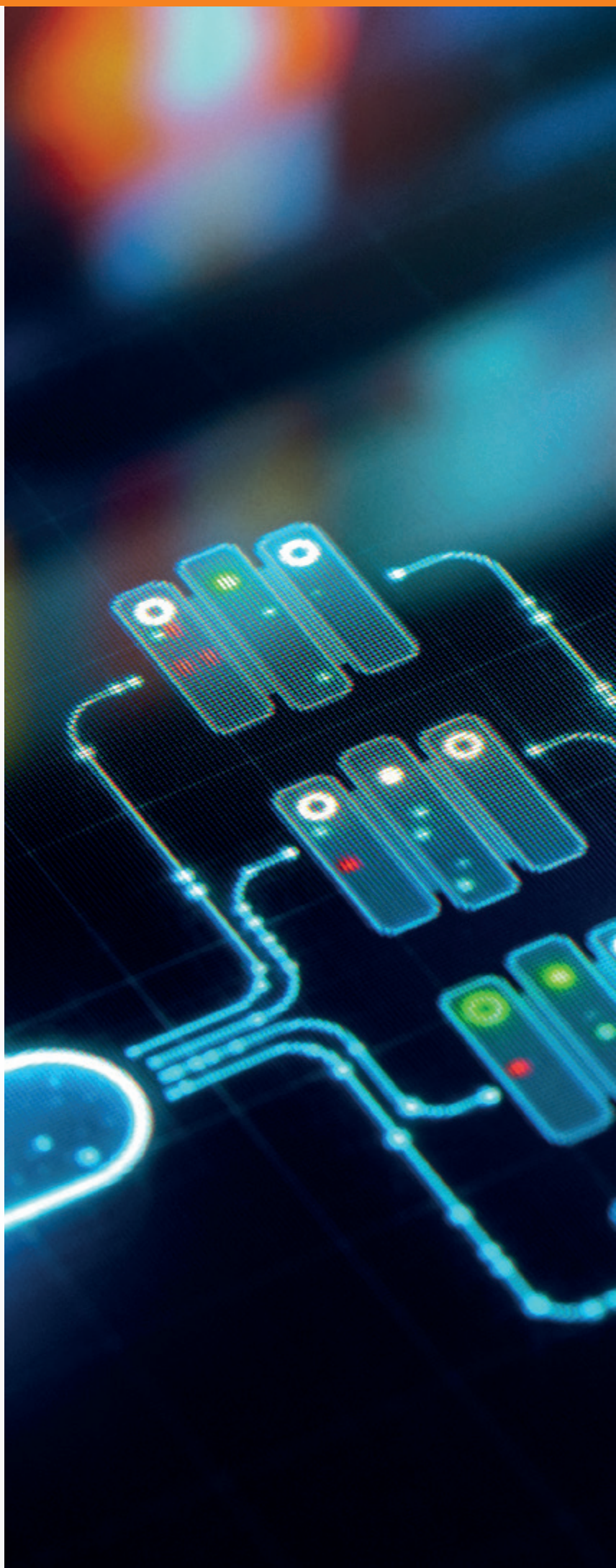
Chris Wallace
healthAlliance Secure Comms Manager

USEFUL WEBSITES

Institute of IT Professionals
www.iitp.org.nz

New Zealand Technology Industry Association
www.nztech.org.nz

Summer of Tech
www.summeroftech.co.nz



FURTHER INFORMATION

For the most up to date information on networks and cybersecurity studies and the Bachelor of Computer and Information Sciences, visit:
www.aut.ac.nz/networks-security

EMPLOYABILITY & CAREERS

For other Future Career Sheets visit:
www.aut.ac.nz/careersheets

For employability and career support, AUT students can book an appointment through
https://elab.aut.ac.nz/

FUTURE STUDENTS

Contact the Future Student Advisory team for more information: www.aut.ac.nz/enquire

futurestudents@aut.ac.nz

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CURRENT AUT STUDENTS

Contact the Student Hub Advisors team for more information: 0800 AUT UNI (0800 288 864)

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CITY CAMPUS

55 Wellesley Street East, Auckland Central

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The information contained in this career sheet is correct at time of printing, early 2022.