As a network engineer you'll have responsibility for setting up, developing and maintaining computer networks within an organisation or between organisations. You'll offer support to users, who can be staff, clients, customers and suppliers, and troubleshoot any problems that arise. You may, in some cases, also be involved in designing new networks.

Your aim is to ensure the integrity of high availability network infrastructure to provide maximum performance for your users. Networks can include:

* computer
* voice
* firewall.

Network engineers may work internally as part of an organisation's IT support team, or externally as part of an outsourced IT networking consultancy firm working with a number of clients.

Other job titles used for this area of work include:

* network/helpdesk support
* support/security/systems engineer
* IT/systems support engineer
* network administrator
* first/second-line support
* network architect
* VoIP/Cisco engineer.

## Types of network

You could work with a variety of network types, such as:

* LANs - local area networks, linking a limited area such as a home, office or a small group of buildings
* MANs - metropolitan area networks, linking a large area such as a campus
* WANs - wide area networks, which link nationally or internationally
* WLAN - wireless local area network
* GANs - global area networks, combining all of the above with satellite mobile communication technologies
* SAN - storage/system/server/small area network
* CAN - campus/controller/cluster area network
* PAN - personal area network
* DAN - desk area network
* VoIP - voice over internet protocol network.

## Responsibilities

As a network engineer, you'll need to:

* establish the networking environment by designing system configuration, directing system installation and defining, documenting and enforcing system standards
* design and implement new solutions and improve resilience of the current environment
* maximise network performance by monitoring performance, troubleshooting network problems and outages, scheduling upgrades and collaborating with network architects on network optimisation
* undertake data network fault investigations in local and wide area environments using information from multiple sources
* secure network systems by establishing and enforcing policies, and defining and monitoring access
* support and administer firewall environments in line with IT security policy
* report network operational status by gathering and prioritising information and managing projects
* upgrade data network equipment to the latest stable firmware releases
* configure routing and switching equipment, hosted IP voice services and firewalls
* provide remote support to on-site engineers and end users/customers during installation
* provide remote troubleshooting and fault finding if issues occur upon initial installation
* undertake capacity management and audit of IP addressing and hosted devices within data centres
* liaise with project management teams, third-line engineers and service desk engineers on a regular basis
* speak to customers via email and phone for initial requirement capture.

Your role will depend to a certain extent on the sector you work in and the size of your organisation. For example, in a large investment bank you may have specific responsibility for one area of the system, whereas in a small company you may need to troubleshoot for any IT-related problem that arises.

## Skills

You will need:

* an up-to-date knowledge and understanding of your employer's business and industry needs, as well as the technical demands
* to recognise the importance of customer focus and/or of serving the needs of the end user
* excellent communication skills, particularly the ability to communicate with staff who aren't technically trained
* the skill to take on a variety of tasks and pay attention to detail
* analytical and problem-solving ability
* teamwork skills and the ability to feel comfortable working with different teams, clients and groups of staff across an organisation
* organisational skills and the ability to prioritise your workload.

## Professional development

Due to the rapidly-changing nature of the industry and the skills needed, you'll need to make training a constant part of your career development.

Large companies may send you on training courses and will provide training as they introduce new systems or expand their IT facilities.

However, you'll often have to seek out appropriate training for yourself, especially if you're seeking promotion, a career move or are self-employed.

Relevant qualifications include:

* [Cisco Certification Program](https://www.cisco.com/c/en/us/training-events/training-certifications/overview.html) – available at entry (CCENT), associate, (CCNA), professional (CCNP), expert (CCIE) and architect (highest level of accreditation achievable) levels
* [CompTIA Certifications](https://certification.comptia.org/certifications) – including CompTIA A+ and CompTIA Network+
* [Juniper Networks Certification Program (JNCP)](https://www.juniper.net/us/en/training/certification/) – available at associate, specialist, professional and expert levels
* [Microsoft Certifications](https://www.microsoft.com/en-gb/learning/certification-overview.aspx) – including Microsoft Certified Solutions Associate (MCSA) and the higher level Microsoft Certified Solutions Expert (MCSE).

## Career prospects

Your career path will depend, to a certain extent, on the size of the organisation you work for and the scope of its IT systems.

Having gained experience, you can progress to senior network manager and network management positions. Some network engineers choose to broaden their careers into other IT, customer-related or management functions. Technical or infrastructure project management and network architecture are possibilities.

Those who start as help-desk technicians can sometimes progress to network engineer posts, then on to senior network support and finally network controller (mainly involved in decision-making, staff management and advice on future strategy). This may be the typical route in an organisation such as a large bank or a major government department. If you work for a small company, you may be the network controller from day one and also have many other IT and technical support-related responsibilities.

Network engineering and network support roles tend to move you away from programming, so if this is something you enjoy and want to keep up, you need to be aware of this before you commit yourself to a systems support role.

With experience, there are opportunities to move into IT contracting and self-employment.