

# GET HARDWIRED FOR SUCCESS

## HARDWARE AND NETWORKING •

While the number of jobs in software is shrinking fast, those in hardware and networking are growing rapidly, finds Avijit Chatterjee



PIC COURTESY: MANIPAL UNIVERSITY

**A**sish Kumar, a fourth-year BTech computer science student of Bhubaneswar Engineering College, took his parents by surprise when he opted for a hardware and networking course at a private institute. A bright student all his life, he was expected to go into software and find his way to fame and fortune.

Until recently, hardly anyone wanted to be in hardware and networking as the money wasn't that good and the avenues for success were few. But with the global software industry in the doldrums because of the economic uncertainty in the US and Europe, the future looks bright for those in hardware and networking.

Also, with most companies moving towards cloud computing, which involves shared access to a pool of computing resources such as servers, storage, applications and services, the demand for professionals to set up, run and maintain these devices has shot up.

"The recent advancement in technology requires a thorough knowledge of hardware and networking. As the work mechanism (of cloud computing) is dependent on the Internet, knowledge of networking has become necessary for a computer engineer," points out Kumar. Concurs Anuj Kackar, chief operating officer, Aptech, the IT training provider. "Hardware and networking will

drive the IT sector in the near future. The demand for hardware and networking experts has shot up considerably, thanks to the increase in computer-based activities, requiring maintenance and repair of computers on a 24x7 basis."

"With the world moving towards ubiquitous secure, borderless networks, the demand for network engineers and network administrators will rise," says N.S. Ramesh Murthy, director, directorate of distance education, Sikkim Manipal University.

According to the National Association of Software and Services Companies (Nasscom), around 3.75 lakh hardware and networking professionals will be required in India by 2013.

So what is hardware and networking all about? Hardware is the combination of different physical components of a computer. Networking involves linking a group of two or more computer systems for the purpose of sharing information and data. Professionals associated with the discipline of maintaining and installing computer hardware and the development of computer networks are known as hardware and network engineers.

Basically, a hardware profes-

### WHAT YOU EARN

- ▶ **ENTRY LEVEL:** Rs 8,000 to Rs 12,000
- ▶ **MID LEVEL:** Rs 20,000 to Rs 40,000
- ▶ **SENIOR LEVEL:** Above Rs 50,000

sional has to keep computers up and running. The work involves routine troubleshooting and fixing hardware components such as the memory and the processor as well as peripherals such as printers.

A diploma in hardware and networking is sufficient to enter the profession and the eligibility is a pass in Class X or XII. "Here, more than academic performance, it is aptitude that matters," says Anuradha S. Boxwala, senior vice-president, global sales and marketing, career building solutions, NIIT Ltd. What is required is the ability to think on one's feet and come up with a solution. Of course, after gaining some experience one can upgrade one's skills by seeking certifications such as Cisco, Security+, N+, CCNA, CCNP, MCTS, MCITP. "Such certifications would hold good in the long run," points out Kackar.

One can also go in for higher education. A diploma holder in hardware and networking can seek admission to a BTech course

through lateral entry. He or she can go for degree courses such as bachelor of computer application (BCA), bachelor of computer science (BCS) and bachelor of information technology (BSc IT).

"It would be better if a person pursues a degree course after completing a diploma. This will offer him or her a lot more career choices," says Sharad Talwar, chief executive officer, Indiacan, a joint venture between Educamp, India's largest education company, and Pearson, the largest education service provider in the world.

**C**areer prospects in hardware and networking are quite good. The sector is expected to create the most jobs in the near future. "One can find employment in hardware companies, BPO companies, telecom companies, public sector undertakings, financial institutions as well as schools and colleges, among others. Besides, one can start a hardware assembling firm or run a consultancy to develop hardware according to the requirements of clients. Teaching in technical institutions is also an option," says Subhankar Bhat-

tacharya, divisional head, east, IIJT, the vocational training firm.

Generally, a hardware engineer begins as a field service technician or a help desk customer service engineer and grows up to become a security specialist or an IT infrastructure leader. There are various areas where one can work such as communications, security database development, networks and administration, desktop support and help desk, hardware engineering, system administration and intranet.

"The growth prospects for hardware and network engineers in terms of technical knowledge and escalation to higher positions are among the fastest in the technology industries," says Siddarth Bharwani, head marketing and communication, Jetking Infotrain Ltd, which offers training in hardware and networking.

Apart from traditional roles as system administrators and support engineers, hardware and network personnel can work in off-shore support, which entails

itoring to India and this sector offers huge scope to technically skilled English speaking professionals," says Bhattacharya.

Another area where hardware engineers can work is in remote infrastructure management. This refers to remotely managing IT infrastructure such as workstations, servers, network, storage and IT security devices. "By outsourcing hardware and networking services, companies can reduce operational costs," says Bhattacharya.

All said and done, hardware and networking can be considered a "safe option" as it provides job security. "An economic downturn does not have much impact on this sector because companies will always need people to keep their computers running smoothly," says Talwar.

Agrees Kumar. "Though many in the software industry faced unemployment during the downturn, hardly anyone from the hardware and networking sector lost their jobs."

So, just brush up on your technical skills and gear up for an exciting career. You could be the Mr Fixit or Ms Fixit the industry is looking for.

### WHERE YOU STUDY

- NIIT ([www.niit.com](http://www.niit.com))
- APTECH ([www.aptecheducation.com](http://www.aptecheducation.com))
- INDIACAN ([www.indiacan.com](http://www.indiacan.com))
- IIJT ([www.ijit.net](http://www.ijit.net))
- JETKING ([www.jetkinginfotrain.com](http://www.jetkinginfotrain.com))

A beginner can expect to earn in the range of Rs 8,000 to Rs 12,000. A Cisco certified engineer with three to four year's experience can hope to earn Rs 4 lakh to Rs 5 lakh per annum. Salaries increase with experience and there is no limit to what one can earn.

managing and running the network operations of companies across the globe. "Because of the high overhead costs, many IT companies in North America and Europe have started outsourcing services such as network support, business server support and mon-

You might be great at your job but can you look at a system from a broader perspective? Industrial engineers can and so they are in great demand, says **Abimanyu Nagarajan**

# Look for the big picture

**L**ike a lot of his peers, when Indranil Ghosh cleared the engineering entrance exam he opted for information technology (IT). Then came the downturn. Ghosh decided to take up industrial engineering for his postgraduate studies instead of sticking with IT. He hasn't regretted it. "IT engineers are far better programmers but only an industrial engineer can look at a system from a broader perspective. I can make my career anywhere, in any industry," says Ghosh. "And it's not very hard to find a job — Infosys was the first company that interviewed me, and I got through. With an industrial engineering background, I can grow in any sector, even IT."

Santanu Chatterjee, a retired industrial engineer who now works as a guest lecturer at many universities, agrees. "Industrial engineering doesn't have a rigid boundary," he says. "Its scope includes many things — productivity, orientation, optimisation of resources. It's a study of man, machine, and systems."

Traditionally, industrial engineers were required only in the manufacturing sector for quality control and optimisation of the process. But over the years, as companies from many industries have made process optimisation and efficiency top priorities, the need for industrial engineers has slowly increased, says P.K. Dan, professor, department of industrial engineering and management, West Bengal University of Technology, Calcutta.

In this age of super specialisation, industrial engineers are in demand because they are the only ones who can see the big picture. And most industries need such people. "Industrial engineers used to be placed as quality engi-

**HOLISTIC VIEW:** The industrial engineer is a good manager



neers but are now hired as system integrators. They are also hired for supply chain management, and in service sectors such as airlines and hospitals," explains

Dan. "The industrial engineer is a good manager," says G.N. Shaw, vice-chairman of the Indian Institute of Industrial Engineer-

ing's Calcutta chapter. "Go to Gujarat, south India, Pune, and you'll find that large companies always want them." Shaw is also industrial engineering manager

at the Garden Reach Shipbuilders & Engineers Ltd in Calcutta.

A fresher in this profession can expect Rs 3.5 lakh to Rs 4.5 lakh per annum. If you have a background in electrical or mechanical engineering, the pay can go up to Rs 5-6 lakh per annum.

Industrial engineers may be good managers but most industrial engineers have a background in one of the traditional engineering disciplines, be it mechanical, electronic, manufacturing or civil.

**O**ne of the two universities that offer industrial engineering at the bachelors level is Anna University, Chennai. Dr Surya Prakash Rao, professor of industrial engineering at the university, says that the course

does not focus on one particular branch of engineering but gives students a grounding in multiple engineering disciplines. "They study manufacturing engineering, mechanical engineering, and management engineering. These are required of industrial engineers, in any sector," says Rao.

"I took up industrial engineering because it teaches you to look from the right perspective, and that's what companies like," says Sayandeep Ghosh, engineer, design, Paharpur Cooling Towers, Calcutta. "For example, no matter the project, you first have to conceptualise it, formulate the technology needed, the finances, and so on and so forth. You work with other departments, which is called concurrent engineering, and no other engineering stream

teaches this."

Despite the current demand for them in the service or IT sectors, the need for industrial engineers will always be in manufacturing. And that is a rapidly growing sector in India, points out Surjit Sur, head of materials and industrial engineering, Exide Industries, Calcutta. "The government is pushing many projects across the country. You will need industrial engineers to spearhead these projects, even to determine where to set up a plant."

"The government of India has set up a National Manufacturing Competitive Council (NMCC) that is going to be a key part of our GDP growth," says Dan. "The scope for industrial engineers is going to increase tremendously in the next five to 10 years."

Before that, however, people will need to be made aware of the scope of industrial engineering. "There is a knowledge gap," says Sur. "People who conceive projects think you only need mechanical, chemical, or electrical engineers to get things rolling. But unlike industrial engineers, these fields do not teach you how to contribute and add value to a system. That is going to be a problem in the near future when the country attempts to expand its manufacturing capabilities." A problem only industrial engineers can solve.

## TOP 3

### WHERE YOU CAN STUDY AT THE UNDERGRAD LEVEL

- Department of Industrial Engineering, Anna University, Chennai, Tamil Nadu [www.annauniv.edu/industrial/about](http://www.annauniv.edu/industrial/about)
- Industrial Engineering and Management, Indian Institute of Technology, Kharagpur, West Bengal <http://www.iitkgp.ac.in>
- Department of Industrial Engineering and Management, RV College of Engineering, Bangalore, Karnataka <http://www.rvce.edu.in>