



*Guide for*

## Computer Network Architects in California

**May also be called:** Network Consultants; Network Designers; Network Developers; and Network Engineers

### *What Would I Do?*

Computer Network Architects design, test, and evaluate systems such as local area networks (LAN), wide area networks (WAN), intranets, extranets, mobile technology, and other data communications networks. The configuration of systems varies from a connection between two offices in the same building to globally distributed networks, voice mail, and e-mail systems of a multinational organization.

Computer Network Architects determine user requirements and design specifications for computer networks. They perform network modeling, analysis, planning, and implementation, often involving both hardware and software. Setting up a network may involve the installation of hardware, such as routers and hubs, wireless adapters, and cables as well as the installation and configuration of software, such as network drivers. They also research and recommend network hardware and software as well as address information security issues.

### **Tools and Technology**

Computer Network Architects use a variety of tools and technology in their work. In addition to computers, they may use servers, digital telephones, network routers and switches, protocol analyzers, server load balancers, and tablets or smart phones. They may also use software related to administration, application server, LAN, network monitoring, network security or virtual private network (VPN) management, operating system, storage networking, and WAN switching.

### **Important Tasks and Related Skills**

Each task below is matched to a sample skill required to carry out the task.

Task	Skill Used in this Task
Adjust network sizes to meet volume or capacity demands.	Operations Analysis
Communicate with customers, sales staff, or marketing staff to determine customer needs.	Active Listening
Coordinate network operations, maintenance, repairs, or upgrades.	Information Ordering
Design, build, or operate equipment configuration prototypes, including network hardware, software, servers, or server operation systems.	Computers and Electronics

Determine specific network hardware or software requirements, such as platforms, interfaces, bandwidths, or routine schemas.	Telecommunications
Develop and implement solutions for network problems.	Complex Problem Solving
Develop conceptual, logical, or physical network designs.	Deductive Reasoning
Develop or recommend network security measures, such as firewalls, network security audits, or automated security probes.	Problem Sensitivity
Develop procedures to track, project, or report network availability, reliability, capacity, or utilization.	Systems Evaluation
Estimate time and materials needed to complete projects.	Judgment and Decision Making
Research and test new or modified hardware or software products to determine performance and interoperability.	Systems Analysis

Source: U.S. Department of Labor [Occupational Information Network \(O\\*NET\)](http://online.onetcenter.org) at [online.onetcenter.org](http://online.onetcenter.org).

### **Working Conditions**

Computer Network Architects usually work in well-lit offices or laboratories in comfortable surroundings. They work about 40 hours a week, but may be required to work some evenings or weekends to meet deadlines or solve specific problems. Large numbers of Computer Network Architects work on a temporary or contract basis. Designing network systems is a one-time project; therefore, Computer Network Architects are frequently needed for a short-term period. Telecommuting is becoming more common allowing Computer Network Architects to do even more work from remote locations, reducing or eliminating the need to travel to the customer's workplace.

This type of work may be stressful for some. Computer Network Architects may experience eyestrain, back discomfort, and hand and wrist problems from using a computer for long periods of time. Some lifting and moving of hardware may also be required.

Although most Computer Network Architects are not represented by unions, unionization varies by industry. Those working in telecommunications may belong to the Communications Workers of America, while public sector employees may join the Service Employees International Union.

### **Will This Job Fit Me?**

The job of Computer Network Architect may appeal to those who enjoy activities that involve working with ideas and require an extensive amount of thinking. The Computer Network Architect occupation involves searching for facts and figuring out problems. Individuals who are results-oriented and value feelings of accomplishment should enjoy working in this occupation.

Computer Network Architects frequently work together in teams, but may also work independently. They consult with customers, programmers, managers, and other staff members, so good communications skills are important. In addition to being logical, analytical, and good problem solvers, Computer Network Architects must have ingenuity, take initiative, and be able to handle multiple projects. They also need to be detail-oriented, and have good leadership and organizational skills.

### **What Wages and Benefits Can I Expect?**

#### **Wages**

Computer Network Architects is a new occupation and there is no average wage information available. However, wages are available for the larger occupational cluster of Information Security Analysts, Web Developers, and Computer Network Architects. The median wage in 2011 for Information Security Analysts, Web Developers, and Computer Network Architects in California was \$84,362 annually, or \$40.56 hourly. The median is the point at which half of the workers earn more and half earn less.

Annual Wages for 2011	Low (25th percentile)	Median (50th percentile)	High (75th percentile)
California	\$65,479	\$84,362	\$110,535

Source: EDD/LMID [Occupational Employment Statistics Survey, 2011](http://www.labormarketinfo.edd.ca.gov/?PageID=1009) at [www.labormarketinfo.edd.ca.gov/?PageID=1009](http://www.labormarketinfo.edd.ca.gov/?PageID=1009). Wages do not reflect self-employment. Wages displayed are for Information Security Analysts, Web Developers, and Computer Network Architects.

### Benefits

Most Computer Network Architects receive medical, dental, and life insurance, as well as vacation, sick leave, and retirement plans from their employers. Some employers also offer stock options and bonuses. Self-employed or independent contractors must provide for their own insurance and other benefits.

### What is the Job Outlook?

The number of Computer Network Architects in California is unknown at this time since this is a new occupation and there is no employment projections data available. Computer Network Architects should be in high demand over the next decade as organizations continue to upgrade their network systems and incorporate the newest technologies. The growing reliance on wireless networks and e-commerce as well as the expansion of healthcare information technology will fuel the demand. However, the adoption of cloud computing, which allows users to access storage, software, and other computer services over the Internet is expected to reduce the demand for Computer Network Architects. The cloud service providers will design and build the networks, which will lessen the need for organizations to perform that work in-house.

### How Do I Qualify?

#### Education, Training, and Other Requirements

A bachelor's degree in computer science, information systems, engineering, or a related field is generally required for Computer Network Architect positions. However, some employers prefer a Master of Business Administration (MBA) degree with a concentration in information systems. Employers often require several years of work experience in network administration or with other information technology systems. Prior experience is very important in this occupation. Candidates who have a background in the industry should have an advantage. Experience in information security or wireless technologies is desirable.

#### Early Career Planning

High school students interested in this kind of work should take classes in mathematics, computer science, information technology, and language arts. Other helpful classes may include business, physical science, and engineering technology. Training programs are also available through Regional Occupational Programs (ROP) in computer networking, computer science, electronics technology, information technology, internetworking, mobile electronics, network cable technology, network security, networking technology, and telecommunications. To find an ROP program near you, go to the California Association of Regional Occupational Centers and Programs website at [www.carocp.org/carocps.html](http://www.carocp.org/carocps.html).

#### Continuing Education

Rapidly changing technology makes it necessary for Computer Network Architects to keep their skills up to date. Employers, hardware and software vendors, colleges and universities, and private training institutions offer continuing education. Professional seminars can also enhance skills and advancement opportunities.

### Certification

Professional certification has become the industry standard. It is required for some positions and can demonstrate competence in a particular field. There are many different certification programs available through product vendors, computer associations, and other training institutions. Many product vendors require those who work with their products to be certified. For more information, go to the U.S. Department of Labor's Career InfoNet website at [www.acinet.org](http://www.acinet.org) and scroll down to "Career Tools." Select "Certification Finder" at [www.acinet.org/certifications\\_new/default.aspx](http://www.acinet.org/certifications_new/default.aspx) and follow the instructions to locate certification programs.

### Where Can I Find Training?

There are two ways to search for training information at [www.labormarketinfo.edd.ca.gov/?Pageid=1013](http://www.labormarketinfo.edd.ca.gov/?Pageid=1013):

- [Search by Field of Study](#) to find what programs are available and what schools offer those programs. You may use keywords such as: Information Systems Security, Information Technology, LAN/WAN Management, Network, and Systems Analysis.
- [Search by Training Provider](#) to find schools by name, type of school, or location.

Contact the schools you are interested in to learn about the classes available, tuition and fees, and any prerequisite course work.

### Where Would I Work?

Computer Network Architects work in a variety of industries. However, since it is a new occupational title, the largest industries employing the cluster of Information Security Analysts, Web Developers, and Computer Network Architects, are as follows:

Industry Title
Computer Systems Design and Rel Services
Management & Technical Consulting Svc
Management of Companies and Enterprise
Other Information Services
Local Government

Source: [EDD/LMID Staffing Patterns](#) at [www.labormarketinfo.edd.ca.gov/?Pageid=1012](http://www.labormarketinfo.edd.ca.gov/?Pageid=1012).

### Finding a Job

Networking is important in this occupation, since many Computer Network Architects find work through referrals. Jobs can also be found through direct application to employers, newspaper classified advertisements, online job boards, and professional organizations. **Online job opening systems** include JobCentral at [www.jobcentral.com](http://www.jobcentral.com) and CalJOBS<sup>SM</sup> at [www.caljobs.ca.gov](http://www.caljobs.ca.gov).

To find your nearest One-Stop Career Center, go to [Service Locator](#) at [www.servicelocator.org](http://www.servicelocator.org). View the [helpful job search tips](#) at [www.labormarketinfo.edd.ca.gov/occguides/JobSearchTips.pdf](http://www.labormarketinfo.edd.ca.gov/occguides/JobSearchTips.pdf) for more resources (requires [Adobe Reader](#)).

### Yellow Page Headings

You can focus your local job search by checking employers listed online or in your local telephone directory. Below are some suggested headings where you might find employers of Computer Network Architects.

- City Government
- Computer System Designers & Consultants
- County Government
- Internet Access Providers Wireless
- Internet Service Providers (ISP)
- Management Consultants
- Network Design & Systems
- Wireless Communication

### **Find Possible Employers**

To locate a list of employers in your area, use “Find Employers” on the LaborMarketInfo website at [www.labormarketinfo.edd.ca.gov/aspdotnet/databrowsing/empMain.aspx?menuChoice=emp](http://www.labormarketinfo.edd.ca.gov/aspdotnet/databrowsing/empMain.aspx?menuChoice=emp).

- Select the search for employers by occupation.
- Select a geographic area.
- Search for an occupation by keyword, occupation, or category.
- Select one of the top industries that employ the occupation.  
This will give you a list of employers in that industry in your area.
- Select “View Filter Selections” to limit your list to specific cities or employer size.
- Select an employer for the street address, telephone number, size of business, website, etc.
- Contact the employer for possible employment.

### **Where Could This Job Lead?**

Computer Network Architects may advance to managerial or project leadership positions. Those with significant expertise may find opportunities as an independent consultant.

### **Related Occupations**

Below is a list of occupations related to Computer Network Architects.

- Computer Programmers (SOC 15-1131)
- Computer Science Teachers, Postsecondary (SOC 25-1021)
- Computer Systems Analysts (SOC 15-1121)
- Database Administrators (SOC 15-1141)
- Information Security Analysts (SOC 15-1122)
- Network and Computer Systems Administrators (SOC 15-1142)
- Web Developers (SOC 15-1134)

### **Other Sources**

- Association for Computing Machinery (ACM)  
[www.acm.org](http://www.acm.org)
- Communications Workers of America  
[www.cwa-union.org](http://www.cwa-union.org)
- Computing Technology Industry Association, Inc.  
[www.comptia.org](http://www.comptia.org)
- Institute for the Certification of Computing Professionals (ICCP)  
[www.iccp.org](http://www.iccp.org)
- Institute of Electrical and Electronics Engineers (IEEE) Computer Society  
[www.computer.org](http://www.computer.org)
- National Workforce Center for Emerging Technologies  
[www.nwcet.org](http://www.nwcet.org)
- The Computing Research Association

[www.cra.org](http://www.cra.org)

These links are provided for your convenience and do not constitute an endorsement by EDD.

### ***For the Career Professional***

The following codes are provided to assist counselors, job placement workers, or other career professionals.

<b>System</b>	<b>Code</b>
SOC – <a href="http://www.bls.gov/soc">Standard Occupational Classification</a> at www.bls.gov/soc	15-1143
O*NET – <a href="http://online.onetcenter.org">Occupational Information Network</a> at online.onetcenter.org	
Computer Network Architects	15-1143
<a href="http://online.onetcenter.org/find/descriptor/browse/Interests/#cur">Interest Codes (RIASEC)</a> at online.onetcenter.org/find/descriptor/browse/Interests/#cur	ICR

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