



2002 SALARY GUIDE



ROBERT HALF
TECHNOLOGY™

Information Technology Professionals

A Robert Half International Company



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From the Chairman

Dear Colleague:

For firms operating in today's rapidly changing business environment, effective human resource management is critical, particularly within information technology (IT) departments. Making sound hiring decisions requires access to the most current employment and salary information available.

Robert Half Technology, a division of specialized staffing leader Robert Half International, assists IT managers by providing comprehensive data on compensation and hiring trends. Information in this guide is the result of extensive research conducted in our North American offices, the company's ongoing surveys of chief information officers (CIOs) and the cumulative industry expertise of our account executives throughout the organization.

Our *Salary Guide* is only one of many services we offer our clients and candidates. We look forward to assisting you with your project and full-time staffing needs through our offices in North America, Europe and Australia, and through our web-based recruiting and job search services located at www.roberthalftechnology.com.



Sincerely,

A handwritten signature in black ink that reads "Max Messmer". The signature is written in a cursive, flowing style.

Max Messmer
Chairman and CEO

Understanding the Guide

The *Robert Half Technology 2002 Salary Guide* provides comprehensive data on average starting salaries for technology professionals. For decades, businesses of all sizes have used this information to determine suitable compensation levels for their information technology employees. Government agencies and educational institutions also rely on the guide for the most current IT salary data. The U.S. Department of Labor's Bureau of Labor Statistics references the *Salary Guide* in preparing its comprehensive *Occupational Outlook Handbook*.

How Data is Collected

Information in the *Salary Guide* is derived from the thousands of job searches, negotiations and placements conducted each year through *Robert Half Technology's* North American offices. Salary ranges for the coming year are based on actual starting compensation in 2001 and an extrapolation of current data into 2002.

The 2002 ranges projected for each job category are salaries at the time of hire and exclude other factors that may be part of a starting compensation package, such as bonuses and incentives. Continuing or ongoing salaries are not reported since too many external factors – including seniority, performance, work ethic and training – impact the salaries of full-time professionals as work histories develop. Other variables that may affect the starting salary ranges reported in the guide include industry type, company size and employee benefits programs offered.

Adjusting National Salary Ranges for Local Markets

Salary ranges for each position listed in the *Salary Guide* represent national averages. Compensation ranges for specific markets may be estimated by referring to the Regional Hiring Trends sections beginning on page 18 for the United States and page 26 for Canada, or speaking with a local *Robert Half Technology* representative.

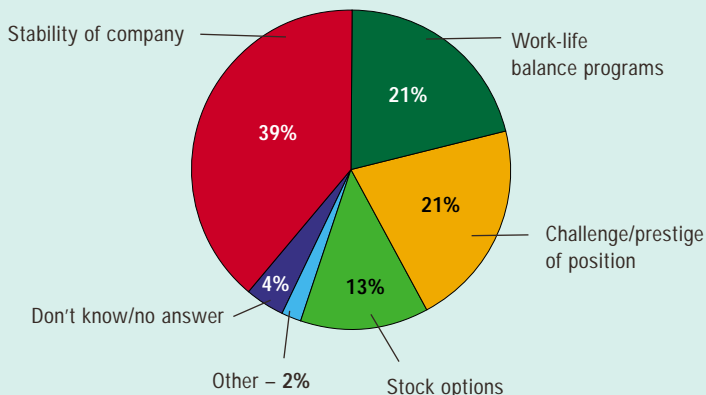
The Hiring Environment

Companies of all sizes continue to invest in technology – although, more judiciously in the current business environment – in an effort to increase productivity, streamline internal processes and gain a competitive advantage. As a result, demand continues for experienced IT talent. In fact, research from the Information Technology Association of America conducted in April of 2001 found that more than 425,000 jobs will remain unfilled in the next 12 months.¹ This number represents a decline from 2000, but is still indicative of the ongoing need for highly skilled IT professionals.

The long-range outlook for IT professionals remains positive as companies continue to view technology as a key tool for growing their business.

ECONOMIC ENVIRONMENT AFFECTS JOB-SEEKER WISH LIST

In a survey commissioned by *Robert Half Technology*, executives weighed in on the importance of corporate stability for IT professionals. CIOs were asked, “Other than salary and traditional benefits, such as health insurance and 401(k) programs, which one of the following is the most appealing to technology professionals when considering an employment offer?” Their responses:



Source: Robert Half Technology U.S. and Canadian survey of more than 1,650 CIOs from companies with more than 100 employees

¹ Information Technology Association of America study, “When Can You Start?” April 2001

One trend that has emerged as a result of a slowing economy is that businesses are taking longer to make hiring decisions in an effort to extend employment offers to only the most qualified candidates. To prevent overhiring, many firms are choosing to keep full-time staff levels constant and are bringing in IT consultants with specific skill sets to assist with periods of heavy workload or projects of a set duration, such as systems implementations or upgrades. This helps reduce the possibility of layoffs in a business downturn.

Because the skills shortage has eased somewhat in the technology sector, firms are more selective when hiring. They seek candidates who possess the exact skill sets and industry background required for the position. For this reason, experienced workers may have a slight advantage over entry-level candidates in the current environment.

Candidates, in turn, are looking for employers with a history of proven success. In fact, in a recent survey commissioned by *Robert Half Technology*, CIOs said that – other than salary and traditional benefits – today's IT candidates are most interested in a company's stability when evaluating an employment offer (see chart, p. 3).

To prevent overhiring, many firms are choosing to keep full-time staff levels constant and are bringing in IT consultants with specific skill sets to assist with periods of heavy workload or projects of a set duration.





Candidates who possess relevant industry experience, specialized technical knowledge and well-developed “soft skills” remain highly marketable to prospective employers, particularly if they can demonstrate a history of contribution to the company’s bottom line. Likewise, IT professionals with expertise in multiple technologies or platforms can command premium compensation. Individuals skilled in specialties such as network security, wireless technologies and customer relationship management (CRM) are also in strong demand.

Because the skills shortage has eased somewhat in the technology sector, firms are more selective when hiring. They seek candidates who possess the exact skill sets and industry background required for the position.

The long-range outlook for IT professionals remains positive as companies continue to view technology as a key tool for growing their business. However, average starting salaries have been impacted by the 2001 economic slowdown. In 2002, average starting salaries in the United States and Canada are expected to increase just 0.1 percent over 2001. High demand positions, such as network security administrator and database manager, will see base compensation increases from 2 to 5 percent.

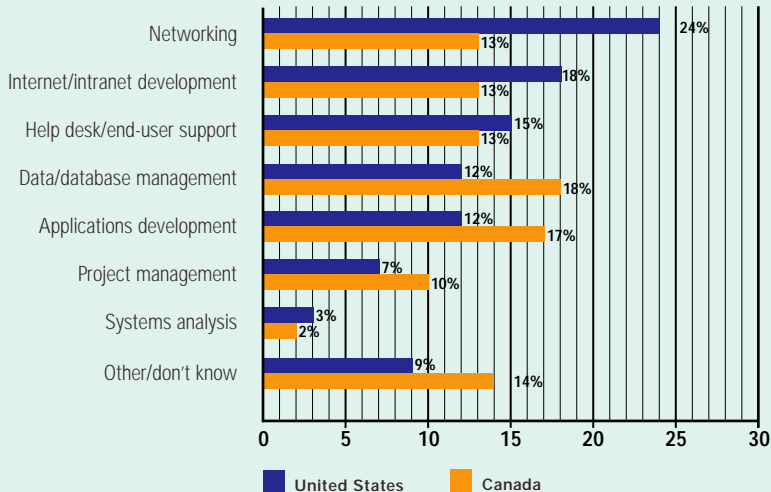
Technology's Hottest Jobs

More than 1,650 CIOs interviewed for *Robert Half Technology's* biannual *Hot Jobs Report* ranked networking, Internet/intranet development, help desk/end-user support, database management and applications development as the specialties most in demand among all IT categories.

A growing emphasis on safeguarding corporate systems and the desire to offer remote and wireless network access to an increasingly mobile workforce are just two of the factors fueling the need for those skilled in designing, securing and managing corporate networks. In addition, the escalating number of web-enabled business systems is creating continued demand for professionals skilled in Internet/intranet development. Further, data management and applications development are expected to gain momentum as firms translate vast amounts of data collected by e-commerce applications into business intelligence. Skilled help desk technicians are also required to provide end-user support and assist with upgrading network infrastructures.

INFORMATION TECHNOLOGY'S HOTTEST JOBS

The seven specialty areas experiencing the strongest growth in U.S. and Canadian corporate IT departments, according to CIOs surveyed, are:



Source: Robert Half Technology U.S. and Canadian survey of more than 1,650 CIOs from companies with more than 100 employees

Specialties and Skills in Demand

Following is a summary of technology specialties currently experiencing the strongest demand:

Networking

As companies continue to upgrade systems and expand infrastructures to meet communications requirements and incorporate emerging wireless technology, networking will remain a critical IT function. Systems engineers and network architects are highly marketable, as are security specialists who can secure corporate data. Firms are actively recruiting network administrators, architects and analysts who can establish and maintain security standards.

Job Function

- Helps firm administer, define, maintain, and expand local area networks (LANs) and wide area networks (WANs), including voice and data integration, and wireless technology
- Incorporates distributed data, troubleshoots technical problems
- Develops, implements and maintains integrated programs to protect the confidentiality of an organization's information resources

Job Skills

- Hands-on experience with Windows 2000/NT, UNIX and/or Linux systems
- Microsoft Certified Systems Engineer (MCSE), Cisco Certified Internetwork Expert (CCIE) certification
- Interpersonal and business skills
- Security-related hardware and software experience; LAN/WAN management and systems administration; background in virtual private networks, TCP/IP, intrusion detection and firewall implementation

Internet/E-Commerce Development

The need for Internet specialists and e-commerce strategists is ongoing as companies expand their web initiatives to expedite business processes and market products or services. The growing popularity of XML-based software is resulting in increased demand for developers with experience designing online applications.

Job Function

- Creates Internet, intranet and extranet sites
- Maintains and supports e-commerce sites, manages web-based applications

Job Skills

- Understanding of business strategy, company objectives, customer needs and requirements
- Java, JavaScript, JavaBeans, XML, HTML, CGI, Perl, ColdFusion, Visual Basic or Active Server Page (ASP), Oracle and C++ experience
- Interpersonal and communication skills

Technical Support

Companies are actively seeking help desk professionals to provide end-user support and assist with new software installations, such as Windows 2000, enterprise applications and web site maintenance. The growth of e-commerce combined with rapid technology advancements has resulted in continued demand for technical support specialists and help desk managers.

Job Function

- Manages hardware and/or software support; troubleshoots as needed
- Trains the end-user community on new systems; answers technical questions about equipment and applications

Job Skills

- Strong interpersonal and communication skills
- Microsoft NT/2000/98, Unix and Microsoft Office applications

Database Management

Relational databases enable companies to efficiently monitor and link information about customers, inventory, vendors and projects. As organizations recognize the value of mining data, demand for database administrators, architects and analysts will intensify.

Job Function

- Designs, manages and maintains databases that house critical data
- Analyzes business data requirements within an organization and models data flow

Job Skills

- Experience with Oracle, SQL Server, DB2/UDB, Sybase and Informix technologies

Applications Development

Applications development will remain a core foundation of IT departments. As custom applications become more prevalent on the web and within network systems, companies will continue to seek skilled programmers.

Job Function

- Designs, writes, tests and supports complex software programs that, depending on the organization, are run on internal systems or packaged for sale and general use

Job Skills

- Strong object-oriented language skills, such as Visual Basic, Java and C++
- E-commerce applications development



Hiring Smart

Making effective hiring decisions is critical to the success of any company. Organizations that emphasize their candidate evaluation processes are able to quickly identify the best potential employees and ensure they have the right talent mix to accomplish business goals.

Hiring smart begins with a plan. Following are some essential steps:

Define staffing needs. Write or revise job descriptions for each position to be filled. This will provide a better indication of the specific experience and skills required, and can serve as the basis for classified ads and interview questions.

Coordinate hiring efforts. Make sure everyone on the team knows his or her role in the process. For example, will certain employees be expected to help evaluate resumes or participate in interviews with applicants? Assign responsibilities and provide a timeline for completing each stage of the assessment.

Review each resume thoroughly. Start by looking at the document's overall appearance. A disorganized resume that contains typographical errors and misspellings should be a red flag that the candidate lacks attention to detail.

When reading the content of a resume, watch for unexplained gaps in work history, vague job descriptions or a failure to list actual positions held. Consider conducting screening calls to address initial concerns and narrow the pool of applicants who will then be invited for in-person interviews.



Prepare for the interview.

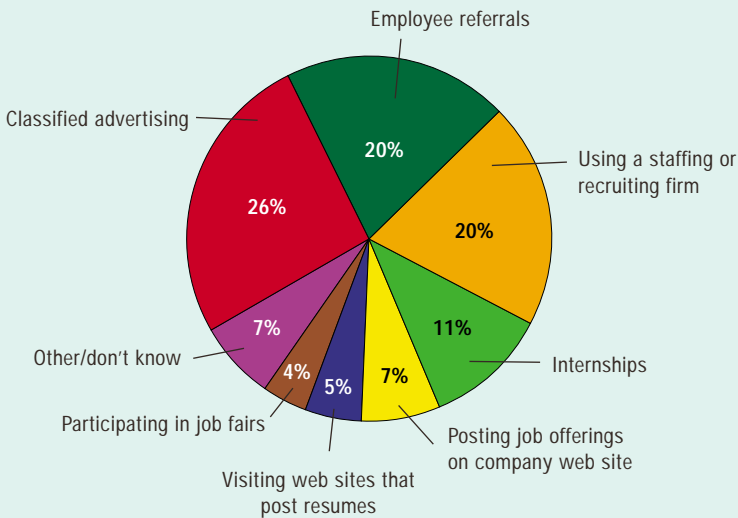
Before meeting with each candidate, create a list of questions. In addition to those designed to evaluate technical proficiency, include some points that will help gauge the applicant's communication skills and his or her ability to thrive in your company's culture. Some examples:

- What did you like best/least about your last position?
- In which type of professional environment do you feel you do your best work?
- If you could have made improvements in your previous job, what would they have been?
- What is the most satisfying project you've worked on in your career?

Get the most out of the process. It can be tempting to rush through interviews, particularly if there is an immediate need for an individual with a specific skill set. But failing to devote sufficient time to these meetings can leave organizations with inadequate information upon which to base the hiring decision.

Listen attentively to what each candidate has to say, but avoid making interpretations or judgments until after the interview. Also, be careful not to get so distracted by one aspect of an applicant's background – the fact that you grew up in the same town or attended the same university, for instance – that other important considerations are overlooked. Creating a consistent rating system based on the job description can help in comparing each candidate's qualifications and evaluating everyone equally.

CIOs were asked, “Which one of the following is the single most effective way to find qualified IT candidates?” Their responses:



Source: Robert Half Technology U.S. and Canadian survey of more than 1,650 CIOs from companies with more than 100 employees

Managing for Success

Keeping team members motivated presents a variety of challenges for most IT managers. Businesses must constantly evolve and reinvent themselves to stay one step ahead of the competition. Guiding employees through this process takes strong leadership, effective communication, teamwork and training. Following are some tips for managing for success in this dynamic environment:

Set clear expectations. One of a manager's key responsibilities is to make sure his or her staff knows what's required. It is important for employees to understand the company's overall objectives,

the department's role in achieving those goals, and how their jobs fit into the big picture. This process generally starts with an employee orientation program that covers the basics, such as company history, benefits and office hours, as well as how coworkers prefer to communicate about key initiatives.

Map out a plan. Career mapping is an effective way to build retention rates. It involves working with employees to establish long-term goals and developing a plan for achieving them. The objectives should be challenging, yet realistic. By establishing individual and team goals, managers will be more vested in the results.

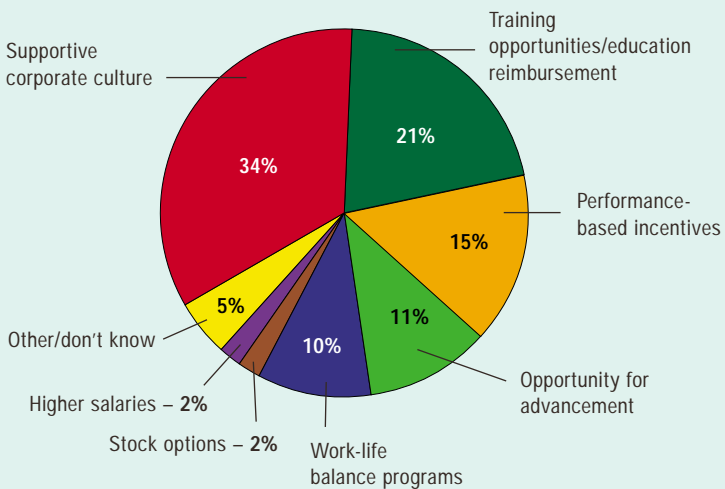
Make performance appraisal an ongoing process. Employees need feedback on a regular basis. Many managers think of appraisals as annual or semi-annual events where months of activities are summed up in one meeting. However, by regarding performance reviews as a year-round process, the task becomes less daunting and more effective. Throughout the year, managers should take notice of their team's efforts and offer praise or constructive criticism as appropriate.



This procedure ensures formal reviews hold no surprises for employees, but instead provide an opportunity for staff and managers to communicate one on one regarding past performance, future expectations and long-term career goals.

Establish a “safe-to-risk” environment. Innovation is critical to business success. Staff members who are encouraged to think outside the box are more likely to come up with better ways to do their jobs. Employees should not be censured for taking smart risks, even if the gamble doesn't pay off.

CIOs were asked, “Which one of the following is the single most effective tool for retaining technology professionals?” Their responses:



Source: Robert Half Technology U.S. and Canadian survey of more than 1,650 CIOs from companies with more than 100 employees

Managing Salary Negotiations

Salary negotiation is more of an art than a science: The approach tends to vary depending on current market conditions, and the experience level and technical skill set of the prospective hire. Still, there are steps every hiring manager can take to make this process more effective each time. Here are some suggestions:

Don't procrastinate. Once a top candidate has been identified, the offer should be made as soon as possible. A delay of even a few days can cause a firm to lose the most qualified applicant.

Research the trends. Hiring managers should be aware of compensation trends in their industries and regions. Optimally, firms should pay slightly more than their competitors in order to attract the best talent. Companies that do not have the ability to modify starting salary levels should consider offering alternative incentives such as extra vacation time, flexible schedules or pay increases after a predetermined period of time on the job.

"Sell" the firm. The best technology candidates may have other offers. Therefore, hiring managers should highlight those aspects of working at the firm that appeal to most prospective hires. Staff recognition and bonus programs, training opportunities, company reputation, stock options and profit sharing programs, advancement potential, and key elements of your corporate culture are all of interest to potential new hires.

Leave no room for misunderstandings. If possible, hiring managers should make the offer in person and describe it in detail. A one-on-one conversation provides the opportunity to explain every provision of the salary and benefits package, and gives the candidate a chance to ask questions and clarify areas of concern.

Put it in writing. Once the offer has been discussed, managers should draft a letter outlining the details. Many firms ask their legal counsel to develop a template, which should include information about possible contingencies to the offer, such as the satisfactory completion of a reference check.

Be willing to let go. If a candidate seems reluctant to accept an offer, try to pinpoint the source of concern. The issue may be negotiable, but if doing so would compromise the company's pay scale or cause other adverse effects, it's best to consider other applicants. Hiring someone who has serious reservations may do more harm than good if he or she remains dissatisfied on the job.

Keep the lines of communication open. In advance of a new hire's start date, stay in regular contact with him or her. Send information about the company, and call or send an e-mail at least once to ensure the employee has all of the information necessary for a successful first day.

Salaries for IT Professionals in the United States

INFORMATION TECHNOLOGY

Title	2001	2002	% Change
Administration			
Chief Information Officer	\$122,250 - \$200,750	\$123,500 - \$202,500	0.9%
Chief Technology Officer	\$98,750 - \$152,500	\$96,000 - \$155,750	0.2%
Vice President of Information Systems	\$111,500 - \$177,000	\$112,250 - \$168,500	-2.7%
Vice President of Technology	\$107,250 - \$168,750	\$109,250 - \$161,500	-1.9%
MIS Manager	\$92,250 - \$125,500	\$89,000 - \$120,000	-4.0%
Applications Development			
Manager	\$76,500 - \$109,250	\$78,500 - \$108,500	0.7%
Project Manager	\$74,000 - \$96,500	\$72,250 - \$95,750	-1.5%
Project Leader	\$62,500 - \$82,250	\$61,500 - \$81,750	-1.0%
Systems Analyst	\$64,750 - \$93,500	\$63,750 - \$90,750	-2.4%
Programmer/Analyst	\$51,750 - \$77,500	\$53,250 - \$80,500	3.5%
Applications Architect	\$69,500 - \$92,000	\$71,250 - \$101,000	6.7%
Business Systems Analyst	\$55,750 - \$80,750	\$56,750 - \$79,500	-0.2%
Consulting & Systems Integration			
Director	\$85,750 - \$116,000	\$87,000 - \$127,000	6.1%
Practice Manager	\$86,250 - \$112,000	\$89,000 - \$115,750	3.3%
Project Manager/Senior Consultant	\$78,250 - \$100,750	\$77,250 - \$101,250	-0.3%
Staff Consultant	\$58,500 - \$74,750	\$57,750 - \$77,250	1.3%
Package Implementation Specialist	\$61,250 - \$92,250	\$64,500 - \$92,500	2.3%
ERP Integration Manager	\$77,750 - \$96,500	\$76,000 - \$103,250	2.9%
Data/Database Administration			
Database Manager	\$82,000 - \$106,000	\$83,000 - \$114,000	4.8%
Database Developer	\$72,000 - \$99,750	\$69,500 - \$102,250	0.0%
Database Administrator	\$72,500 - \$105,750	\$71,500 - \$102,750	-2.2%
Database Analyst	\$62,000 - \$84,250	\$60,750 - \$81,500	-2.7%
Data Architect	\$74,500 - \$103,500	\$75,500 - \$105,250	1.5%
Data Modeler	\$64,250 - \$88,250	\$65,250 - \$87,500	0.2%
Data Warehouse Manager	\$80,250 - \$108,750	\$80,000 - \$107,500	-0.8%
Data Warehouse Analyst	\$70,750 - \$95,750	\$70,250 - \$93,750	-1.5%
Capacity Planner	\$70,000 - \$95,750	\$70,750 - \$95,500	0.3%

Add 5 – 10 percent for C++ development skills, 5 percent for Visual Basic, and 5 – 15 percent for Java.

Add 10 – 15 percent for Oracle database expertise, 5 – 10 percent for Microsoft SQL, and 5 – 10 percent for IBM DB2.

SALARIES FOR IT PROFESSIONALS IN THE UNITED STATES

INFORMATION TECHNOLOGY

Title	2001	2002	% Change
Quality Assurance (QA) & Testing			
QA/Testing Manager	\$63,000 - \$83,000	\$63,000 - \$81,500	-1.0%
QA Associate/Analyst	\$50,500 - \$65,750	\$49,500 - \$66,000	-0.6%
Systems Auditor	\$59,750 - \$75,250	\$59,250 - \$75,250	-0.4%
Internet & E-Commerce			
Programmer/Analyst	\$56,500 - \$84,000	\$56,500 - \$86,250	1.6%
Senior Internet/Intranet Developer	\$68,750 - \$94,250	\$69,500 - \$94,500	0.6%
Internet/Intranet Developer	\$56,250 - \$76,750	\$54,000 - \$75,500	-2.6%
Internet/Intranet Administrator	\$58,000 - \$82,500	\$56,500 - \$80,000	-2.8%
Electronic Data Interchange (EDI) Specialist	\$56,500 - \$76,250	\$55,500 - \$74,750	-1.9%
E-Commerce Analyst	\$59,750 - \$89,500	\$59,500 - \$89,500	-0.2%
E-mail/Groupware Administrator	\$47,000 - \$67,250	\$47,500 - \$67,000	0.2%
Networking/Telecommunications			
Network Architect	\$72,250 - \$102,000	\$67,750 - \$103,000	-2.0%
Network Manager	\$68,250 - \$91,500	\$66,750 - \$90,000	-1.9%
Network Engineer	\$62,500 - \$85,250	\$62,250 - \$87,000	1.0%
LAN Administrator	\$46,250 - \$68,000	\$47,500 - \$68,000	1.1%
LAN/WAN Administrator	\$48,000 - \$69,250	\$47,000 - \$68,250	-1.7%
Telecommunications Manager	\$70,750 - \$91,250	\$70,000 - \$90,250	-1.1%
Telecommunications Specialist	\$54,500 - \$73,000	\$53,500 - \$73,000	-0.8%
Operations			
Senior Manager	\$62,250 - \$81,000	\$61,500 - \$82,000	0.2%
Manager	\$55,000 - \$69,250	\$52,750 - \$68,250	-2.6%
Computer Operator	\$28,250 - \$40,500	\$27,750 - \$38,250	-4.0%

Add 5 – 15 percent for Java development skills, 5 – 10 percent for ColdFusion, 5 – 15 percent for XML, and 5 – 10 percent for Active Server Page.

Add 10 – 20 percent for Cisco Certified Internetwork Expert designation.

Add 5 – 15 percent for UNIX administration skills, 5 – 10 percent for Linux, and 5 – 10 percent for Windows 2000.

INFORMATION TECHNOLOGY

Title	2001	2002	% Change
Security			
Data Security Analyst	\$62,250 - \$76,750	\$64,750 - \$81,000	4.9%
Systems Security Administrator	\$60,500 - \$84,250	\$62,250 - \$86,500	2.8%
Network Security Administrator	\$59,750 - \$82,750	\$61,250 - \$84,750	2.5%
Software Development			
Product Manager	\$80,500 - \$116,250	\$79,000 - \$111,000	-3.4%
Pre- & Post-Sales Consultant	\$52,250 - \$75,500	\$53,750 - \$78,250	3.3%
Product Support	\$48,500 - \$68,250	\$46,750 - \$67,000	-2.6%
Software Engineer	\$62,750 - \$92,000	\$65,000 - \$97,000	4.7%
Programmer/Analyst	\$54,000 - \$77,750	\$53,000 - \$80,000	0.9%
Developer	\$58,750 - \$90,250	\$56,000 - \$90,500	-1.7%
Technical Services, Help Desk & Technical Support			
Manager	\$68,750 - \$95,500	\$66,750 - \$91,500	-3.7%
Desktop Support Analyst	\$54,750 - \$74,250	\$52,000 - \$71,000	-4.7%
Systems Administrator	\$50,250 - \$70,750	\$51,000 - \$72,500	2.1%
Help Desk Tier 1	\$30,500 - \$39,750	\$29,250 - \$39,250	-2.5%
Help Desk Tier 2	\$34,750 - \$46,000	\$33,500 - \$45,750	-1.9%
Help Desk Tier 3	\$41,250 - \$56,000	\$45,000 - \$57,000	4.9%
Technical Writer	\$42,500 - \$60,750	\$42,500 - \$63,250	2.4%
Instructor/Trainer	\$45,500 - \$60,500	\$43,250 - \$65,500	2.6%
PC Technician	\$31,750 - \$44,500	\$31,500 - \$43,000	-2.3%
Mainframe Systems Programmer	\$53,750 - \$67,000	\$55,000 - \$69,250	2.9%
Disaster Recovery Specialist	\$53,750 - \$85,000	\$57,000 - \$86,000	3.1%

Add 5 – 10 percent for C++ development skills, 5 – 15 percent for XML, 5 percent for Visual Basic, 5 – 10 percent for ColdFusion, 5 – 15 percent for Java, and 5 – 10 percent for Active Server Page.

Add 10 – 20 percent for Cisco Certified Internetwork Expert designation.

Add 5 – 15 percent for UNIX administration skills, 5 – 10 percent for Linux, and 5 – 10 percent for Windows 2000.

Adjusting National Salary Ranges for Local Markets

Information in the Regional Hiring Trends section is based on data supplied by *Robert Half Technology's* U.S. offices, the expertise of local account executives, independent research and our company's ongoing national surveys. Compensation ranges for each position listed in the *Salary Guide* represent national average starting salaries. Pay scales can be localized for your market using the following variance index numbers for selected U.S. cities in major urban areas. The average salary index for all cities is 100.

To calculate the estimated salary range for a specific position in your area, multiply the average national salary by the regional index number for your market. (Note: Use the index figure as a percentage by moving the decimal point two places to the left.)

For example, to determine the starting salary for a network engineer in Atlanta, apply this formula to develop an estimate:

$$\text{(National Average Salary) x (City Index as a Percentage) = Regional Average Salary}$$
$$\$74,625 \times 1.071 = \$79,923$$

The average starting salary for a network engineer in Atlanta would be \$79,923.

The index figures are intended to serve as a guide to determining average salary figures in various U.S. cities. A number of factors such as company size, employee benefits, a candidate's skill set and current market conditions can impact actual starting salaries. Your local *Robert Half Technology* representative can help you refine a salary package to match your local market conditions.

Regional Hiring Trends – United States

NEW ENGLAND

Connecticut, Maine, Massachusetts, New Hampshire,
Rhode Island, Vermont

Fastest-Growing Industries:

Biotechnology, insurance, real estate

Monthly unemployment rates are consistent with the national average. As companies focus on expanding CRM systems, there is an ongoing need for qualified IT specialists, particularly Oracle and Java developers.

Firms in the real estate and insurance sectors have a significant need for web developers, database administrators and help desk technicians.

SELECTED LOCAL VARIANCES:

Boston, MA	.126.0
Burlington, VT	.91.0
Hartford, CT	.115.0
Manchester, NH	.117.0
Providence, RI	.116.7
Springfield, MA	.88.2
Stamford, CT	.123.0

MIDDLE ATLANTIC New Jersey, New York, Pennsylvania

Fastest-Growing Industries:

Health care, pharmaceutical, real estate

The region's suburban areas continue to benefit from corporations that are relocating operations from major metropolitan centers. Health care and pharmaceutical companies are growing quickly and, as a result, are experiencing heightened demand for experienced network architects, systems analysts and Internet developers.

SELECTED LOCAL VARIANCES:

Buffalo, NY	.....87.4
New York, NY	.....150.1
Paramus, NJ	.....122.4
Philadelphia, PA	.....108.4
Pittsburgh, PA	.....94.8
Rochester, NY	.....93.5

SOUTH ATLANTIC Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia

Fastest-Growing Industries:

Government services, health care, manufacturing

Expansion in the region's health care industry has increased the need for skilled IT professionals to enhance existing systems. Companies are seeking e-commerce specialists, network administrators and programmers. Help desk and end-user support technicians who can assist with the installation of online applications and maintenance of corporate information systems are also in demand.

SELECTED LOCAL VARIANCES:

Atlanta, GA	.....107.1
Baltimore, MD	.....98.0
Charlotte, NC	.....98.4
Greenville, SC	.....90.3
Miami, FL	.....91.9
Raleigh, NC	.....100.0
Washington, D.C.	.....122.2
Wilmington, DE	.....109.0

EAST NORTH CENTRAL Illinois, Indiana, Michigan, Ohio, Wisconsin

Fastest-Growing Industries:

Financial services, health care, real estate

Ongoing expansion of the region's financial services industry and growth in new business sectors such as high-tech are driving the need for skilled networking experts. As companies continue to expand online initiatives, e-business and security specialists will remain in demand.

SELECTED LOCAL VARIANCES:

Chicago, IL	.118.4
Cincinnati, OH	.96.4
Cleveland, OH	.95.9
Columbus, OH	.93.0
Detroit, MI	.117.1
Indianapolis, IN	.96.5
Milwaukee, WI	.95.7

WEST NORTH CENTRAL Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota

Fastest-Growing Industries:

Construction, financial services, health care

Companies attracted by a pro-business climate and lower operating costs are relocating to the region. In turn, they are recruiting an educated workforce that is drawn by the area's low cost of living. As job growth continues in the health services, pharmaceutical and data processing sectors, firms are in need of skilled network administrators, database developers and technical support specialists.

SELECTED LOCAL VARIANCES:

Bismarck, ND	.71.1
Des Moines, IA	.92.6
Kansas City, MO	.94.7
Minneapolis, MN	.106.8
Omaha, NE	.86.3
St. Louis, MO	.95.6

EAST SOUTH CENTRAL Alabama, Kentucky, Mississippi, Tennessee

Fastest-Growing Industries:

Agriculture, health care, insurance

Growth in the region's health care industry and an increase in the number of automotive manufacturers relocating to the area have resulted in a need for IT specialists skilled in expanding corporate networks. Network architects, systems engineers and database administrators are highly marketable.

SELECTED LOCAL VARIANCES:

Birmingham, AL	.91.7
Knoxville, TN	.82.0
Lexington, KY	.84.1
Louisville, KY	.87.4
Memphis, TN	.93.5
Nashville, TN	.90.9

WEST SOUTH CENTRAL Arkansas, Louisiana, Oklahoma, Texas

Fastest-Growing Industries:

Energy, financial services, real estate

Oil and gas manufacturers and insurance and utilities companies in the region are experiencing significant growth. These firms are actively recruiting UNIX administrators, network managers and Internet/intranet specialists to assist with web development and the integration of data, voice and video through corporate networks.

SELECTED LOCAL VARIANCES:

Austin, TX	.111.6
Dallas, TX	.112.7
Houston, TX	.109.3
Little Rock, AR	.82.1
Oklahoma City, OK	.87.9
San Antonio, TX	.80.5
Tulsa, OK	.84.0

MOUNTAIN Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming

Fastest-Growing Industries:

Construction, financial services, health care

Quality of life and a lower cost of living are attracting more workers and new businesses to the region, especially within the gaming and health care sectors. Hiring activity in the metropolitan areas is expected to remain strong as companies continue to recruit network architects, web developers, help desk technicians and database administrators.

SELECTED LOCAL VARIANCES:

Albuquerque, NM	.83.0
Boise, ID	.85.6
Denver, CO	.109.4
Las Vegas, NV	.102.6
Phoenix, AZ	.93.0
Salt Lake City, UT	.100.4

PACIFIC Alaska, California, Hawaii, Oregon, Washington

Fastest-Growing Industries:

Agriculture, energy, pharmaceutical

Despite dot-com closures, companies in the Pacific region continue to hire skilled technology specialists, particularly in the biotechnology, legal and pharmaceutical industries. Positions in demand include database administrators, network security experts, desktop support technicians and programmers.

SELECTED LOCAL VARIANCES:

Honolulu, HI	.88.8
Los Angeles, CA	.108.3
Portland, OR	.98.6
San Diego, CA	.112.0
San Francisco, CA	.143.9
San Jose, CA	.160.3
Seattle, WA	.126.0
Spokane, WA	.79.1

Salaries for IT Professionals in Canada

INFORMATION TECHNOLOGY

Title	2001	2002	% Change
Administration			
Chief Information Officer	\$117,500 - \$192,000	\$116,500 - \$186,500	-2.1%
Chief Technology Officer	\$108,500 - \$155,000	\$106,500 - \$152,500	-1.7%
Vice President of Information Systems	\$112,250 - \$187,500	\$111,500 - \$184,250	-1.3%
Vice President of Technology	\$110,500 - \$185,500	\$110,000 - \$183,000	-1.0%
MIS Manager	\$88,250 - \$136,750	\$87,750 - \$132,000	-2.3%
Applications Development			
Manager	\$78,500 - \$113,750	\$78,000 - \$115,000	0.4%
Project Manager	\$71,750 - \$98,250	\$72,500 - \$97,500	0.0%
Project Leader	\$68,500 - \$82,500	\$64,000 - \$82,000	-3.3%
Systems Analyst	\$61,750 - \$91,750	\$62,500 - \$88,250	-1.8%
Programmer/Analyst	\$48,500 - \$75,000	\$48,500 - \$76,000	0.8%
Applications Architect	\$67,500 - \$90,000	\$67,500 - \$90,000	0.0%
Business Systems Analyst	\$55,000 - \$84,750	\$57,500 - \$85,000	2.0%
Consulting & Systems Integration			
Director	\$80,250 - \$115,000	\$80,000 - \$115,250	0.0%
Practice Manager	\$79,000 - \$105,250	\$79,500 - \$105,500	0.4%
Project Manager/Senior Consultant	\$81,000 - \$98,250	\$78,750 - \$95,000	-3.1%
Staff Consultant	\$50,000 - \$66,750	\$50,000 - \$67,500	0.6%
Package Implementation Specialist	\$60,000 - \$80,000	\$60,000 - \$80,000	0.0%
Data/Database Administration			
Database Manager	\$76,750 - \$97,000	\$77,500 - \$99,750	2.0%
Database Developer	\$57,750 - \$84,750	\$58,250 - \$89,000	3.3%
Database Administrator	\$62,000 - \$96,750	\$62,250 - \$95,250	-0.8%
Database Analyst	\$65,000 - \$85,000	\$64,750 - \$89,000	2.5%
Data Architect	\$70,000 - \$97,500	\$72,500 - \$97,750	1.6%
Data Modeler	\$68,250 - \$92,250	\$66,500 - \$90,250	-2.3%
Data Warehouse Manager	\$77,500 - \$92,250	\$76,750 - \$96,000	1.8%
Data Warehouse Analyst	\$67,500 - \$92,500	\$68,000 - \$94,000	1.3%

Add 5 – 10 percent for C++ development skills, 5 – 10 percent for Visual Basic, and 5 – 15 percent for Java.

Add 15 – 20 percent for Oracle database expertise, 10 – 15 percent for Microsoft SQL, and 15 – 20 percent for IBM DB2.

Note: All salary ranges on pages 23 – 25 are listed in Canadian dollars.

INFORMATION TECHNOLOGY

Title	2001	2002	% Change
Quality Assurance (QA) & Testing			
QA/Testing Manager	\$50,000 - \$63,500	\$51,000 - \$63,500	0.9%
QA Associate/Analyst	\$58,250 - \$74,750	\$52,750 - \$79,500	-0.6%
Systems Auditor	\$59,750 - \$75,250	\$60,000 - \$79,500	3.3%
Internet & E-Commerce			
Programmer/Analyst	\$57,250 - \$95,000	\$57,750 - \$92,250	-1.5%
Senior Internet/Intranet Developer	\$69,250 - \$100,000	\$67,500 - \$97,500	-2.5%
Internet/Intranet Developer	\$57,500 - \$75,000	\$57,500 - \$75,000	0.0%
Internet/Intranet Administrator	\$56,750 - \$74,250	\$57,000 - \$74,000	0.0%
Electronic Data Interchange (EDI) Specialist	\$56,500 - \$76,250	\$56,750 - \$77,250	0.9%
E-Commerce Analyst	\$51,000 - \$72,250	\$52,750 - \$75,000	3.7%
E-mail/Groupware Administrator	\$45,000 - \$68,000	\$45,000 - \$68,500	0.4%
Networking/Telecommunications			
Network Architect	\$63,000 - \$96,750	\$62,500 - \$96,250	-0.6%
Network Manager	\$65,000 - \$90,750	\$65,000 - \$88,750	-1.3%
Network Engineer	\$56,500 - \$78,500	\$56,500 - \$77,500	-0.7%
LAN Administrator	\$38,000 - \$65,000	\$37,500 - \$65,000	-0.5%
LAN/WAN Administrator	\$42,000 - \$75,250	\$42,000 - \$74,750	-0.4%
Telecommunications Manager	\$72,500 - \$86,250	\$72,000 - \$85,750	-0.6%
Telecommunications Specialist	\$58,750 - \$79,250	\$57,000 - \$78,250	-2.0%
Operations			
Senior Manager	\$65,000 - \$90,000	\$66,500 - \$88,500	0.0%
Manager	\$55,000 - \$65,000	\$55,750 - \$64,500	0.2%
Computer Operator	\$30,000 - \$45,000	\$30,000 - \$45,000	0.0%

Add 5 – 15 percent for Java development skills, 5 – 10 percent for ColdFusion, 5 – 10 percent for XML, and 5 – 10 percent for Active Server Page.

Add 5 – 15 percent for Cisco Certified Internetwork Expert designation.

Add 10 – 15 percent for UNIX administration skills, 5 – 10 percent for Linux, and 5 – 15 percent for Windows 2000.

Note: All salary ranges on pages 23 – 25 are listed in Canadian dollars.

INFORMATION TECHNOLOGY

Title	2001	2002	% Change
Security			
Data Security Analyst	\$59,500 - \$78,000	\$60,000 - \$81,250	2.7%
Systems Security Administrator	\$57,750 - \$80,750	\$58,250 - \$83,250	2.2%
Network Security Administrator	\$61,000 - \$91,250	\$62,250 - \$94,250	2.8%
Software Development			
Product Manager	\$82,000 - \$117,000	\$80,250 - \$115,750	-1.5%
Pre- & Post-Sales Consultant	\$45,000 - \$70,000	\$45,000 - \$69,500	-0.4%
Product Support	\$46,750 - \$69,000	\$46,500 - \$69,250	0.0%
Software Engineer	\$50,000 - \$92,500	\$52,250 - \$87,500	-1.9%
Programmer/Analyst	\$48,500 - \$69,000	\$48,500 - \$69,500	0.4%
Developer	\$52,250 - \$79,000	\$51,500 - \$80,750	0.8%
Technical Services, Help Desk & Technical Support			
Manager	\$71,750 - \$95,000	\$69,250 - \$94,500	-1.8%
Desktop Support Analyst	\$57,250 - \$73,500	\$56,500 - \$73,250	-0.8%
Systems Administrator	\$48,500 - \$72,750	\$49,250 - \$72,500	0.4%
Help Desk Tier 1	\$31,250 - \$35,500	\$31,750 - \$37,500	3.7%
Help Desk Tier 2	\$39,000 - \$48,000	\$39,000 - \$48,000	0.0%
Help Desk Tier 3	\$51,500 - \$58,250	\$50,000 - \$62,500	2.5%
Technical Writer	\$39,250 - \$57,750	\$40,000 - \$58,500	1.5%
Instructor/Trainer	\$45,000 - \$75,000	\$45,000 - \$73,750	-1.0%
PC Technician	\$36,750 - \$49,250	\$36,000 - \$48,250	-2.0%

Add 5 – 10 percent for C++ development skills, 5 – 10 percent for XML, 5 – 10 percent for Visual Basic, 5 – 10 percent for ColdFusion, 5 – 15 percent for Java, and 5 – 10 percent for Active Server Page.

Add 5 – 15 percent for Cisco Certified Internetwork Expert designation.

Add 10 – 15 percent for UNIX administration skills, 5 – 10 percent for Linux, and 5 – 15 percent for Windows 2000.

Note: All salary ranges on pages 23 – 25 are listed in Canadian dollars.

Regional Hiring Trends – Canada

Demand for skilled IT professionals remains healthy as businesses leverage technology to enhance revenue and reduce fixed costs. In particular, firms are actively recruiting individuals with strong C++ , Visual Basic and database development skills (Oracle, SQL, Informix, Sybase) for initiatives including customer relationship management and e-procurement. Business analysts are also needed across the country to re-evaluate short- and long-term IT strategies. Candidates who possess solid interpersonal skills, in addition to technical expertise, are particularly marketable.

Financial services and utilities firms in the greater Toronto area are reporting strong demand for e-business specialists and project managers. In Ottawa, while employment growth in the telecommunications and technology sectors stalled somewhat in 2001, government services firms and the non-technical private sector are seeing increased hiring activity, particularly for individuals able to assist with upgrades to network infrastructures. Montréal's financial services and manufacturing industries are also witnessing active IT hiring levels.

In Calgary, natural resources firms are seeking systems administrators, programmers and database specialists. Edmonton is seeing the most activity in the energy sector as well as among business services. Firms in Vancouver's forestry, mining and high-tech sectors are experiencing demand for a wide range of technology professionals, particularly in the area of online development.

Below is a cost-of-living index for selected Canadian cities. This information reflects cost-of-living variances in urban areas and takes into account costs for grocery items, housing, utilities, transportation and miscellaneous services. The average for all cities in Canada is 100.

These figures can be used to determine commensurate salaries for various locations.

Calculating the Canadian Salary Range

$$\text{Current Salary} \times (\text{City B/City A}) = \text{New Salary}$$

For example, if your firm is relocating a database administrator earning \$78,750 from Montréal (City A, 91.8) to Toronto (City B, 118.5), apply the following formula to determine the salary this person would need in order to maintain a comparable standard of living.

$$\$78,750 \times (118.5/91.8) = \$101,654$$

The comparable salary for the database administrator is \$101,654.

COST-OF-LIVING INDEX – SELECTED CANADIAN CITIES

Calgary	118.1	Québec City	89.1	Vancouver	113.5
Charlottetown/Summerside	83.0	Regina	106.6	Victoria	99.6
Edmonton	111.8	Saint John	86.0	Whitehorse	112.0
Halifax	97.4	Saskatoon	92.5	Winnipeg	93.5
Montréal	91.8	St. John's	101.5	Yellowknife	157.9
Ottawa	120.2	Toronto	118.5		

Source: *Statistics Canada* and Robert Half Technology

Meeting Your Staffing Needs

In today's business environment, the success of an organization is often determined by its ability to react to changing market conditions and remain competitive. Forecasting and flexibility are especially critical as these environmental factors require continual reassessment of human resource needs. Nowhere is this more true than within a corporate information technology department. Today, IT executives are ensuring flexibility through the long-term planning and management of their personnel needs with a practice called *strategic staffing*.

Technology managers must maintain the right combination of talent to improve quality of service, satisfy user demands and capitalize on emerging business opportunities. At the same time, they must avoid overhiring, which can lead to layoffs. The key is to develop a strategic staffing plan that emphasizes careful hiring decisions through a well-chosen mix of full-time and project employees.

Complementing regular staff with specialized IT consultants offers a cost-effective way to bring together the experience companies need to complete current and backlogged technology initiatives, as well as continue progress toward long-term goals. This assistance is ideal for short-term projects, peak workload periods, employee absences and during job searches for full-time staff. In addition to receiving immediate access to specialized experience, many companies also find contract professionals an excellent source of candidates for open full-time positions since they can be observed and evaluated on the job over an extended period of time.

Strategic staffing provides flexibility in managing human resource expenses. By using IT consultants, a company can convert a portion of its largest fixed cost – labor – into a variable expense that's tied to workload peaks and valleys. This can offer a tremendous competitive advantage.

With more than 30 years' experience placing IT professionals, *Robert Half Technology* is ideally positioned to address your specialized technology staffing needs. Our account executives typically possess industry backgrounds, which allows them to help companies better identify their requirements and locate the best project and full-time professionals to meet those needs.

As a business unit of Robert Half International Inc., the world's first and largest specialized staffing firm, *Robert Half Technology* is backed by a history of proven excellence. We have more than 100 locations throughout North America, Europe and Australia, and offer online recruiting and job search services at www.roberthalftechnology.com.

CIOs were asked, "How long does it take, on average, to fill a full-time position within your IT department?" The mean responses were:

- 43 days to fill a full-time staff-level position
- 59 days to fill a full-time manager position

Source: Robert Half Technology U.S. and Canadian survey of more than 1,650 CIOs from companies with more than 100 employees

Technology's Leading Resource

Robert Half Technology is a business unit of Robert Half International Inc., the industry's leading resource on hiring and employment trends for more than 50 years. Our chairman and CEO, Max Messmer, is a widely published author and columnist. His most recent book, *Motivating Employees For Dummies*® (Hungry Minds, Inc.), gives advice for managers on building a strong and motivated workforce. His other books include *Managing Your Career For Dummies*®, *Job Hunting For Dummies*®, 2nd Edition, *Human Resources Kit For Dummies*® (Hungry Minds, Inc.); and *The Fast Forward MBA in Hiring* (John Wiley & Sons, Inc.).

In addition to the annual *Salary Guide*, *Robert Half Technology* provides career and management-related information to its clients through complimentary publications, including *Hiring Smart* and *Keeping Your Best People*. For job seekers, our career management resources include the *IT Career Guide: Success Strategies for Technology Professionals* and *Developing Soft Skills for Technology Professionals*. To identify current trends in hiring and employment, *Robert Half Technology* regularly conducts extensive research and national surveys on workplace-related topics and shares this information with clients, candidates and the media.

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INTERNATIONAL OFFICES

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Melbourne 011-613-9691-3691
Sydney 011-612-9240-0626

CANADA

ALBERTA

Calgary (403) 237-7500
Edmonton (780) 423-1466

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QUÉBEC

Montréal (514) 875-8588

FRANCE

Paris 011-331-5504-1818

UNITED KINGDOM

London-West End 011-44-207-389-6900

CORPORATE OFFICE

Robert Half Technology
2884 Sand Hill Road
Menlo Park, California 94025
U.S.A.
(650) 234-6000
www.roberthalftechnology.com



ROBERT HALF
TECHNOLOGYSM

Information Technology Professionals

A Robert Half International Company

(800) 793-5533

www.roberthalftechnology.com

RHT-0901-3646 US

RHT-0901-7640 Canada

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