March 25, 2015

Burning Glass Technologies
Opportunities in Chicago's IT Landscape

One Lewis Wharf, Boston, MA 02210 | +1 (617) 227-4800 | www.burning-glass.com

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Opportunities in Chicago's IT Landscape:

A Demand-Based Analysis

As part of the Job Driven (JD) National Emergency Grant (NEG), the Illinois Department of Commerce and Economic Opportunity, along with CompTIA, work to provide job-driven employment and training to dislocated workers, with a focus on the IT sector.

Purpose of this Analysis:
This analysis will provide an overview of the 7-county region's IT labor market. Through this document, counselors will be able to:

- Understand the overall IT landscape
- Provide career guidance based on prior experience in IT
- Provide career guidance based on areas of expertise
- Identify opportunities for placement and advancement, and the related training requirements

Distinguishing Features:
Burning Glass has used its dataset of online job postings to deliver career analyses at a far more detailed and granular level than possible with other sources:

- Job postings data allow us to identify distinct roles based on the particular skills they require, not just broad occupational categories.
- Skill and credential analyses are based specifically on what employers demand in each labor market.
- Career pathways are informed by real people's career transitions, included within Burning Glass' database of resumes.

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Report Overview

This document will provide a framework for bringing individuals with and without an IT background into IT occupations. By providing a framework to understand career placement and advancement, identifying relevant local employers, and describing the skills and certifications required for a set of occupations, career counselors will be able to support clients in identifying appropriate training opportunities to land jobs.

The report is organized into three distinct sections:

Chicago IT Market Overview

- This section provides an overall picture of demand in the Chicago labor market and is separated according to barriers to entry in order to highlight opportunities that require little-to-no prior IT experience, moderate IT experience, and advanced training.

IT Occupation Profiles and Ladders

- This section provides an in-depth description of target IT occupations, including local demand by occupation, commonly requested skills, experience and education requirements, and the certifications and training that will support job placement.
- In addition to occupation profiles, this section will detail common career ladders and the associated skills, knowledge and certifications necessary for upward career transitions and lateral movements to new IT domains.
- The Chicago IT Market Overview includes additional roles that are IT-related but do not fit a standard career path and are therefore not highlighted as target occupations in this section.

IT Internships and Employers

- Especially valuable for employer outreach component of the project, this section will list the top employers hiring in the Chicago area for full time and internship opportunities.

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Key Findings on the Chicago IT Market

- IT positions are numerous, and more heavily concentrated in the seven-county region of northeastern Illinois than across the country.
- There were nearly **10,000 job openings for new entries** to the IT job market in 2014, including:
  - Help desk and support roles
  - Computer and IT sales, and recruitment roles
- Database roles are in high concentration in the Chicago area. Experienced IT professionals should consider adding training to shift to **data architect** and **data warehousing** roles.
- A robust knowledge of **computer programming languages** will strongly aid in transition between IT career pathways.
- Experienced web designers can expand opportunities by adding **web development skills**.
- Roughly **800 internship postings** were open in 2014. Employers with significant internship opportunity should be targeted for employer outreach.
- Network and cybersecurity positions are particularly reliant on **IT certifications** for employment and advancement.

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Key Suggestions for Career Counselors

Positions are available for individuals at all levels of IT and other professional experience. Using the career ladders and occupation profiles within this document can aid in identifying job openings to match job-seekers' skill sets and career prospects.

Clients with limited overall experience can enter the IT job market through two possible tracks:

- With the addition of a baseline IT certificate like **A+ Technician** or **Network+,** job-seekers can access help desk and entry level computer support roles
- Computer sales openings at retailers such as Best Buy offer an alternative to credentialing while gaining entry level experience working with IT technology

Clients with prior experience outside of IT can enter the IT job market through the above tracks, or additional options:

- Job-seekers with strong analytical skills and experience, especially within the finance and marketing industries, can learn **business intelligence tools** to open opportunities into BI Analyst roles
- For individuals with **client facing** experience and/or **sales** skills, entry to the IT market through IT Recruiter and Business-to-Business Sales positions build upon transferable soft skills and require knowledge of, rather than technical experience with, IT products and standards

Clients with prior IT experience can enter the market through any of the above tracks, or through adding skills and credentials necessary for upward or lateral movement through the market:

- **Programmer** clients can expand opportunity through development of advanced database skills to tap into database roles highly concentrated in the Chicago area
- **Network and systems support** clients can target security certifications to enter the rapidly growing and high paying information security market
- **Web design** professionals facing limited demand in the Chicago area can add web development skills and roughly triple the job openings available

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Definitions and Iconography

About the Data
All job postings and data reflect Cook County, DuPage County, Kane County, Lake County, McHenry County, Will County and Winnebago County, Chicago area, IL, from 2014.

- **Demand (Total postings)** reflect the number of jobs posted in Cook County, DuPage County, Kane County, Lake County, McHenry County, Will County and Winnebago County, Chicago area, IL, from 2014.
- **Location Quotients (LQ)** calculate the ratio of postings to employment in the above 7 counties compared to the national ratio as a benchmark to reflect the concentration of job openings in the Chicago area on a per capita basis.
- **Certifications** reflect commonly requested credentials for IT occupations or career advancement as per Burning Glass' database of online job postings. Listed certificates are intended to be exhaustive and illustrate the various means of skill development. Not all certificates listed are necessary for job placement.
- **Skills** are used to show the many areas of knowledge requested by employers and the functions commonly performed in these IT occupations. Like certifications, skills are intended to be exhaustive and not all job postings call for every skill listed in the occupations profiles.
- **Bachelor's Attainment** indicates the percentage of postings that call for a bachelor's degree or higher.
- **Entry Level Data** indicates the percentage of postings that call for less than or equal to two year work experience.
- **Mean Hourly Wage** is calculated by taking the average advertised salary as posted in Burning Glass' database of online job postings and dividing according to an average work schedule of 40 hours a week for 52 week per year.

Iconography

Returns user to Table of Contents

Returns user to Career Placement Navigation Home

Links user to Occupation Profiles and Career Ladders

Links user to IT Market Overview

Links user to Top Employers

Low Barrier to Entry Occupations

Moderate Barrier to Entry Occupations

Experienced IT Professional Occupations

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Career Placement Navigation

Opportunities for job placement and career training in Chicago's IT landscape can be identified in this analysis based on **level of prior experience in the IT industry** or **existing IT skills sets and domain knowledge.**

Career Placement via Experience Requirements:

For clients in search of IT opportunities based on prior experience in the IT field, Burning Glass has organized demand in the Chicago area according to barriers to entry and overall demand.

For a breakdown of IT occupations by barrier to entry, **click below:**

- **Low barrier to entry** - occupations require no prior experience in an IT job.
- **Moderate barrier to entry** - occupations require some prior IT experience and on occasion IT certification.
- **Experienced IT professionals** **-** occupations have significant education requirements and demand extensive IT experience.

Career Placement via IT Career Ladders:

Clients also may have specific IT roles, career tracks or skill sets of interest. Burning Glass has organized IT demand based on common career pathways and shared core IT skills and functions.

For a breakdown of IT occupations by career ladder, **click below** or see **Career Ladder Mapping** on slide 13**:**

- **Network, Systems and Cyber Security**
- **Web Design and Development**
- **Software and Application Development**
- **Data Mining and Database Design**
- **Computer Sales and IT Recruitment**

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Chicago IT Market Overview

Demand for IT Roles in the Chicago Area

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Opportunities in IT:

Leveraging the IT Market Overview

The tables within this section provide demand, education, and experience requirements for IT occupations based on barrier to entry. These tables should be used to explore opportunities in the Chicago IT market that correspond with job-seekers' corresponding experience in the IT field*.

Low Barrier to Entry: These occupations require minimal prior experience in IT, and are strong entry points into the IT labor market. Career counselors should target these options for clients early in their career, or aiming for career transitions.

Moderate Barrier to Entry: These occupations require prior experience in IT and likely call for a Bachelor's degree. Barriers to entry are centered on education or advanced IT skills and certifications. Career counselors should pay particular attention to the skills and certification requirements associated with these roles.

High Barrier to Entry: These occupations are considered professional IT roles and require extensive IT backgrounds, leveraging skill sets established in prior IT experience. Career counselors should use this data to identify the skills and certifications necessary for career transitions and advancement.

*Each occupation serves as a clickable link to detailed occupation profiles and career ladders for further exploration

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Low Barrier to Entry Occupations

- Help Desk roles are the largest IT opportunity open to sub-BA job seekers and those without prior IT experience, comprising almost 50% of all low barrier demand.
- Comcast, Capital One and Deloitte had the most demand for help desk roles over the course of 2014.

Occupation	Chicago Postings	% BA	% Entry Level	LQ
Help Desk/Entry-Level Computer Support	5,041	41%	47%	1.24
Computer/IT Sales	2,943	17%	85%	1.25
Satellite / Broadband Technician*	1,475	0%	44%	1.00
Cable Technician / Installer*	134	0%	58%	0.70
Computer Operator*	82	16%	62%	0.90

*Occupations not considered target IT roles for job placement and are therefore not included in the Occupation Profile and Career Ladder section

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Moderate Barrier to Entry Occupations

- Junior and mid-level software developers have the strongest demand in the Chicago area of all moderate barrier IT occupations.
- These developer roles also help build proficiencies in programming languages essential to further career progression and mobility between various IT career paths.
- Accenture, Capital One and Sears were the largest employers of junior and mid-level software developers as well as moderate barrier IT roles overall in 2014.

Occupation	Chicago Postings	% BA	% Entry Level	LQ
Junior/Mid-Level Software Developer/Engineer	13,654	91%	27%	1.55
Business Intelligence Analyst	4,198	97%	7%	1.90
Jr/Mid-Level Software QA Tester/Engineer	3,029	90%	42%	1.39
B2B IT Sales	1,923	89%	5%	1.32
Data/Data Mining Analyst	1,840	93%	11%	1.32
Advanced Computer Support	1,708	79%	33%	1.39
Junior/Mid-Level Web Developer	1,643	90%	16%	1.7
Mobile Application Developer	1,440	93%	<5%	1.57
IT Recruiter	535	84%	5%	1.70
Network/Systems Support	513	62%	32%	1.47
Webmaster/Administrator	390	95%	8%	1.03
Help Desk Manager	268	82%	9%	1.53
Junior/Mid-Level Web Designer	153	99%	12%	1.37

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IT Professional Occupations

- Senior software developer / engineers are highly demanded in the Chicago area, making up roughly 30% of all professional IT demand.
- There is also a pronounced demand for network, network security and database roles in the Chicago area, offering strong career pathways to well paying and secure IT occupations.

Occupation	Chicago Postings	% BA	% Entry Level	LQ
Senior Software Developer/Engineer	13,093	96%	<5%	1.57
Systems Analyst	6,727	94%	9%	1.64
Network/Systems Engineer/Architect	4,803	82%	5%	1.79
Network/Systems Administrator	4,644	78%	20%	1.12
Database Administrator	4,436	85%	10%	1.47
Business Intelligence Architect/Engineer	2,637	97%	<5%	1.64
Cyber/Information Security Analyst/Specialist	1,513	84%	8%	1.4
Senior Software QA Tester/Engineer	1,363	93%	<5%	1.15
Data Architect	1,321	95%	6%	1.69
Data Warehousing Specialist	1,212	93%	<5%	1.76
UI/UX Designer	1,160	96%	<5%	1.4
Cyber/Information Security Engineer/Architect	921	85%	<5%	1.43
Senior Web Developer	609	100%	<5%	1.14
Cyber/Information Security Manager/Director	281	93%	<5%	1.68
Senior Web Designer	131	99%	<5%	1.03

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Occupation Profiles and Career Ladders

A Detail on Target IT Occupations and Transitions

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Opportunities in IT:

Leveraging Career Ladders

The career ladders within this document provide demand, skill, and certification requirements for positions based on an area of IT expertise. These ladders include a mixture of low-, moderate-, and high barrier to entry occupations. The transition slides show common pathways within and across domain areas.

- **Network, Systems and Cyber Security**
  - Career advancement heavily dependent on IT certifications
  - Cyber security roles are projected to grow 30% over the next 10 years
- **Web Design and Development**
  - Web development is in higher demand and higher paying than web design roles
  - Employers increasingly demand a hybrid set of development and design skills
  - Development roles more likely to request Bachelor's degrees
- **Software and Application Development**
  - Software development stretches across a variety of programming languages such as C++ and PHP
  - Core set of programming skills are transferable across a variety of IT occupations and domains
  - Experience in development is valued much more than certification
- **Data Mining and Database Design**
  - Analytics jobs available for early career professionals with Bachelor's degree and working knowledge of SQL
  - Growing demand amidst the Big Data phenomenon in various industries including Finance and Health Care
- **Sales and IT Recruitment**
  - Strong opportunity for new IT workers to gain IT experience and build a working knowledge of the IT landscape
  - B2B sales offer a strong career transition opportunity for long term unemployed with sales and customer service skills

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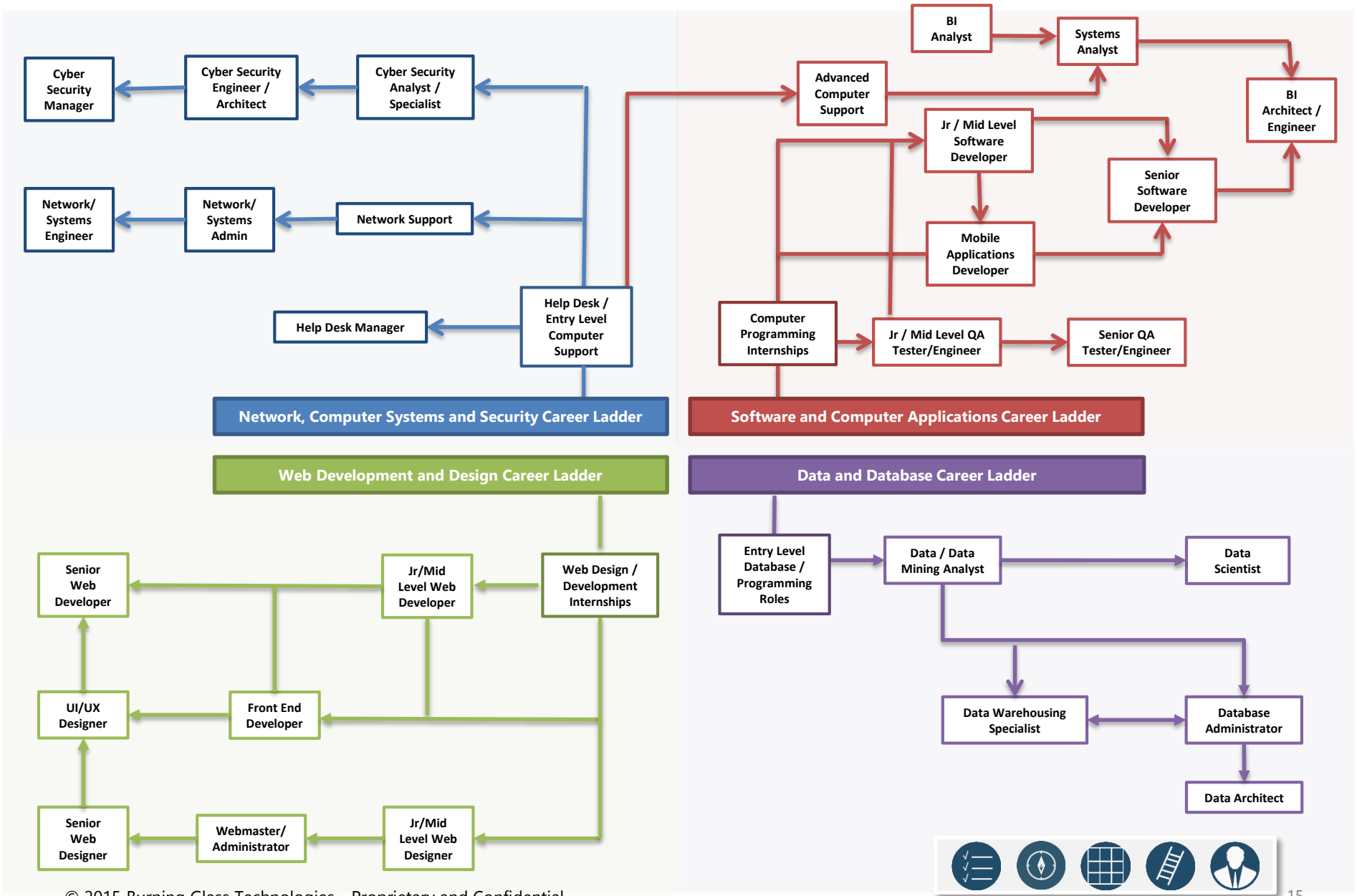
Career Ladder Mapping:



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Common Transitions Between IT Career Ladders

Transitioning to new IT career ladders is a very effective way of leveraging existing skill sets, entering new IT domains and overcoming long term unemployment. The following section serves to illustrate common transitions between IT careers and the necessary skill development to make these transitions possible.

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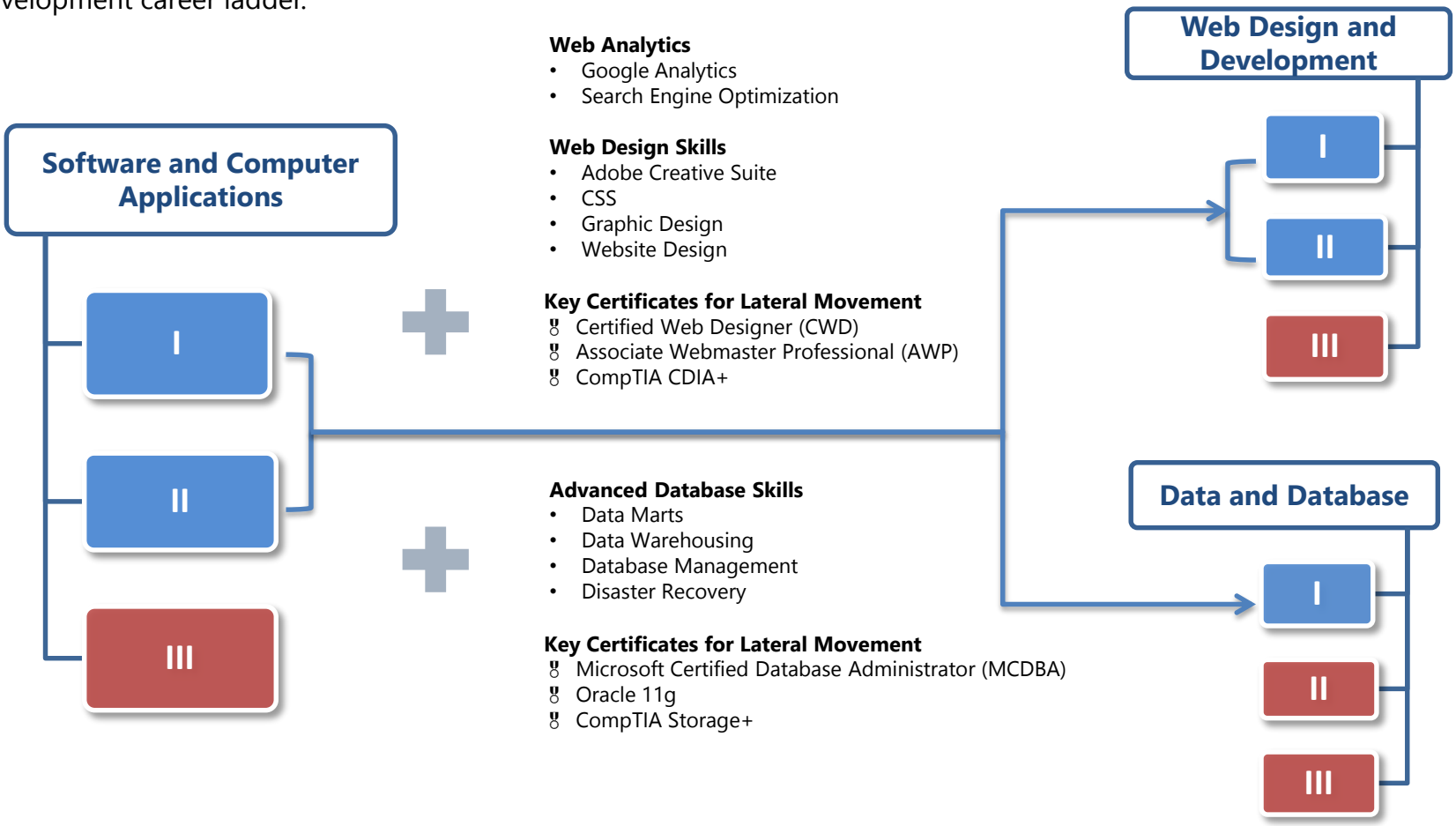
Software and Computer Applications
Career Ladder Transitions

Occupations within the software and computer applications career ladder offer the strongest opportunity for lateral movement towards other IT career ladders. The skill sets for these roles are heavily centered on programming skills and back end application development, which offer a strong foundation to build advanced database proficiencies upon in efforts to migrate to the data and database career ladder, or alternatively to learn front end web design skills to transition to the less demanded web design and development career ladder.



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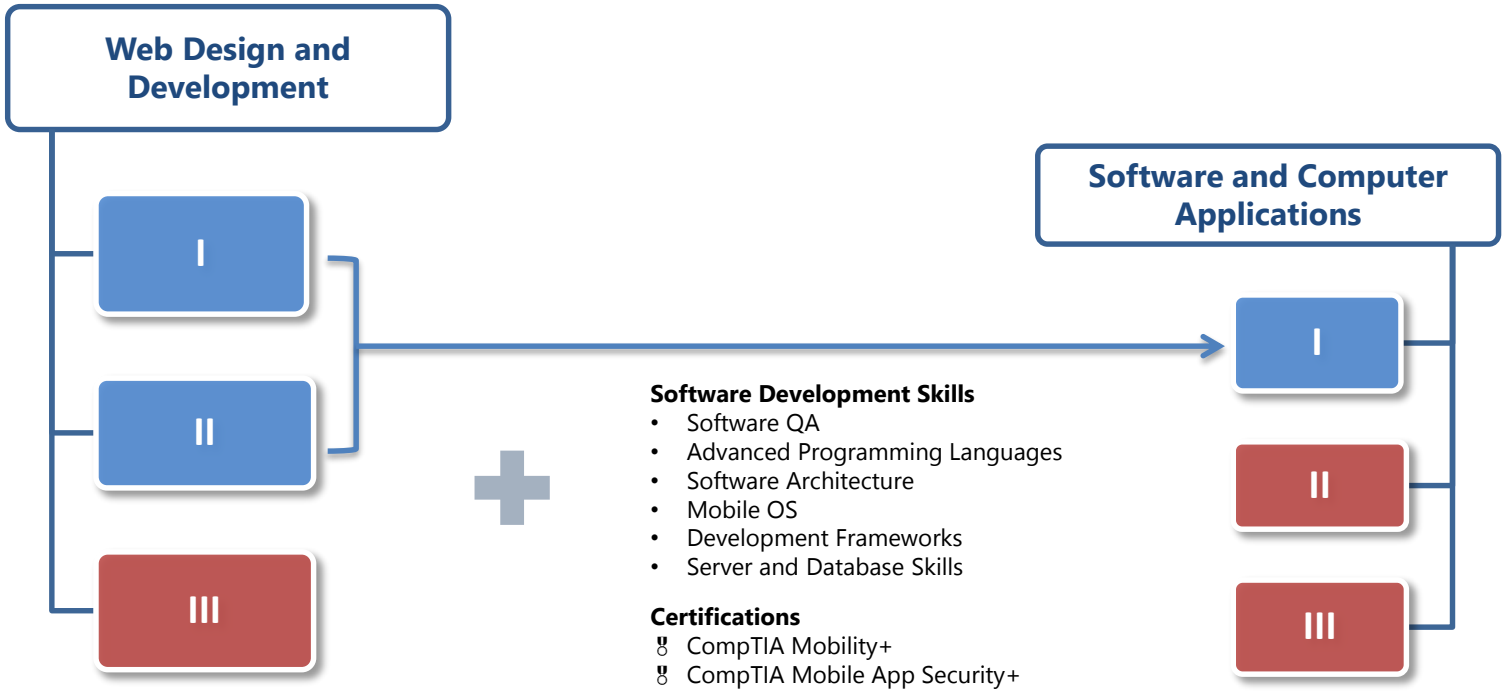
Web Design and Development Career Ladder Transitions

The key to transitioning from web design and development into the software developer career ladder rests on improving programming language skill sets and gaining a familiarity with back end development and software architecture. Roles in the web design and development ladder primarily work on the front end (e.g. website design and content management) or work mainly in developing web applications on top of existing frameworks as opposed to building software from the ground up. While web applications are becoming increasingly complex and blurring the line between web and software development, an extensive proficiency in the various programming languages and the servers / clients associated with software development is crucial.



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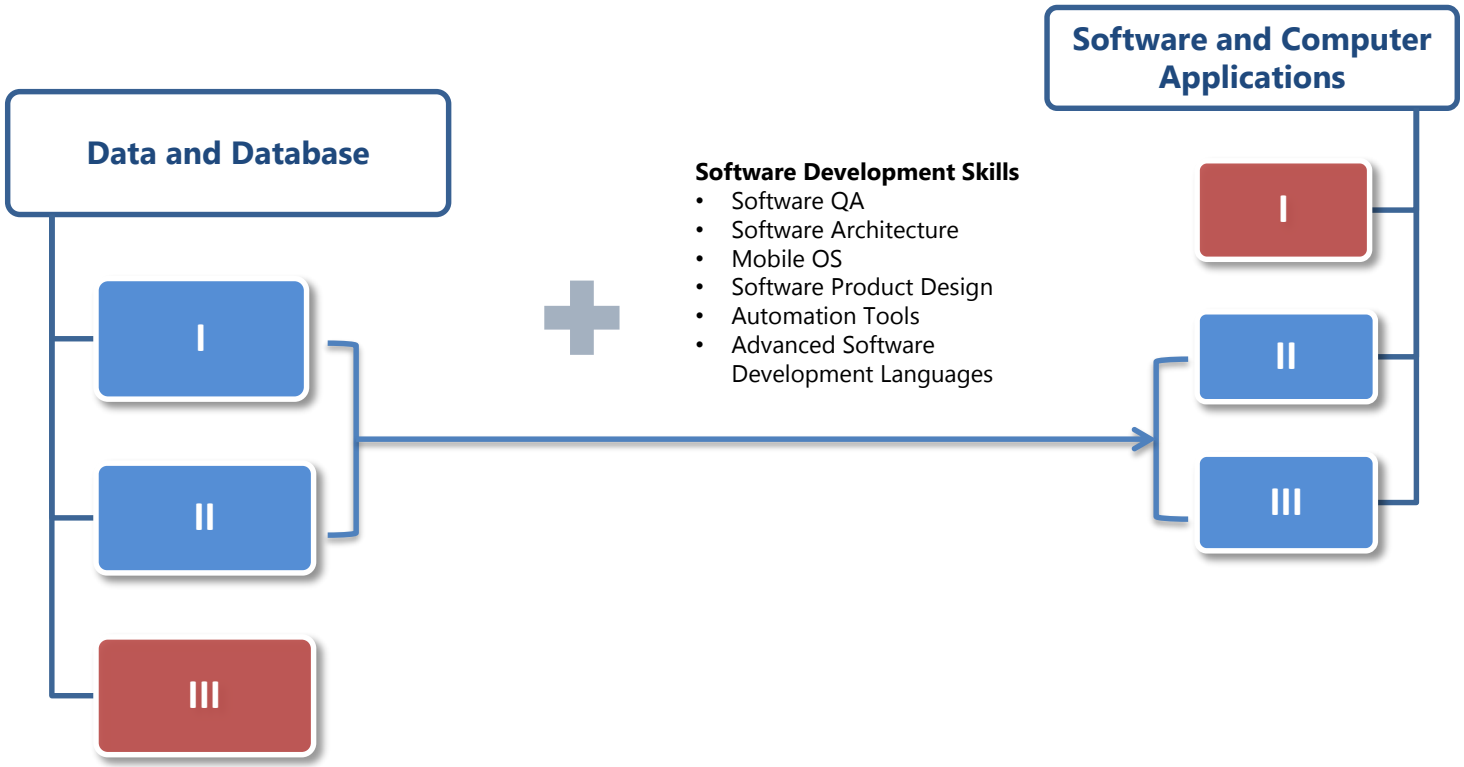
Data and Database Career Ladder Transitions

Occupations that fall under the data and database career ladder have already created a strong foundation of programming tools, server and database knowledge to make the transition to upper levels of the software development career ladder. While these roles should advance their programming language skills outside of the core used in database occupations, the most important addition for this transition is knowledge of software architecture, testing and debugging.



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Career Ladder: Network, Systems & Cybersecurity

Notes for Career Counselors on Help Desk:

- Help desk roles require a strong customer service orientation.
- Help desk manager positions rely more heavily on management skills than advanced IT skills.

Notes for Career Counselors on Network and Systems Roles:

- These jobs require at least a Bachelor's degree.
- Obtaining network and systems certifications is critical at these upward IT roles, with increasing demand for information security credentials.
- Network / Systems Administrators and Network Systems Engineer / Architects are two of the most demanded occupations in the Chicago area.

Notes for Career Counselors on Cyber Security:

- Taken together, there were over 2,500 Cyber Security job postings in 2014. These roles offer significant opportunity for advancement and are high paying jobs.
- Due to the concentration of demand in industries dealing with sensitive data (i.e. health care and finance), these roles have significant security certifications requirements and are often contracted audit roles.
- To successfully transition into cyber security roles, information security skill sets must be combined with advanced network knowledge.

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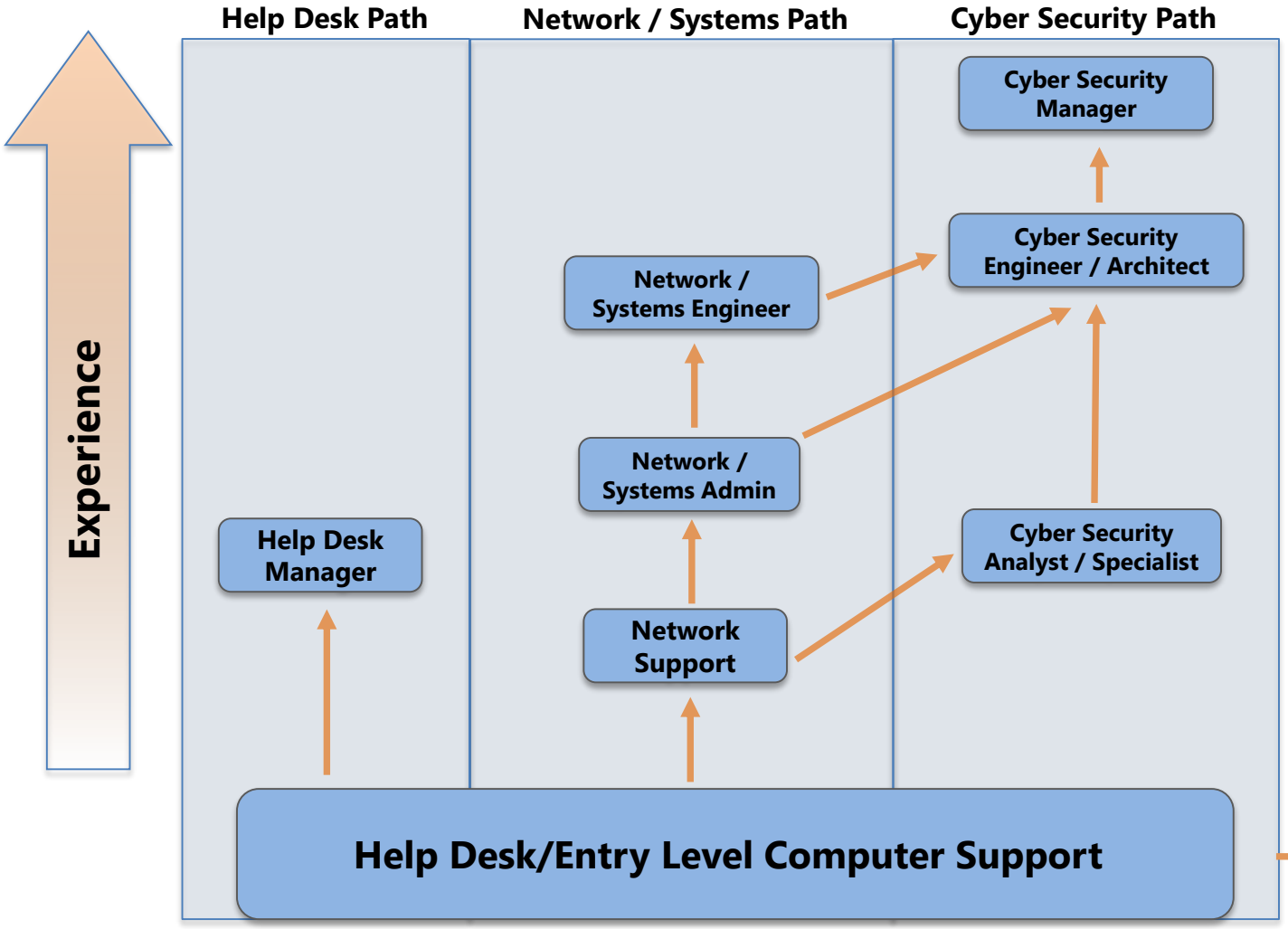
Network, Computer Systems and Security Career Ladder

Help Desk roles constitute over half of the demand for entry-level middle-skill IT workers and is an important stepping stone into the IT workforce. The chart below shows the next steps and opportunities to advance to higher-paying, higher-skill roles in network / systems support and cyber security.



Lateral Off-Ramp Roles: Roles leveraging similar knowledge and skills outside of the IT field.

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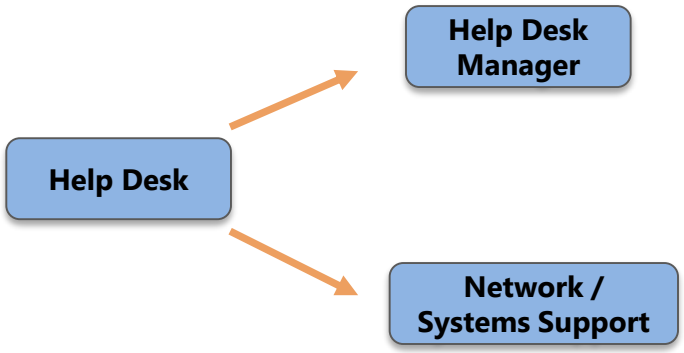
Career Ladder: Network, Systems & Cyber Security

Help Desk Pathway



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Help Desk/Entry-Level Computer Support

Provides front-line support to personal computer users and addresses basic telecommunications and networking issues.

By far the largest middle-skill IT role, Help Desk roles provide an important entry point into the IT workforce and can serve as a stepping stone to more advanced technical roles. It requires a stronger customer service orientation than most other IT roles. Common job titles include: help desk support / specialist, technical support representative / specialist, and desktop support specialist.

Overview

Demand: ★★★★ (5,041)

Salary: **$$** ($49,352)

Location Quotient: **High** (1.24)

Entry Level: 47%

Degree Requirements*

Sub-BA	BA
49%	51%

Commonly Requested Certifications

A+ Technician
Network+
Microsoft Technology Associate

Technical Skill Requirements

Help Desk
Computer Repair
Hardware and Software Installation
System and Network Configuration
Basic Troubleshooting
Microsoft Office Applications
VPN

Hourly Wage

$	Below $15
$$	$15-$24
$$$	$24-$33
$$$$	Above $33

Posting Counts

★	Below 1,000
★★	1,000-2,000
★★★	2,000-3,000
★★★★	3,000-4,000
★★★★★	Above 4,000

Baseline Skill Requirements

Communication
↑ Customer Service
Writing
Problem Solving
Organization
Leadership
↑ Multi-Tasking
Project Management
Planning
Detail-Oriented

↑ = More commonly requested for computer support than other IT roles.

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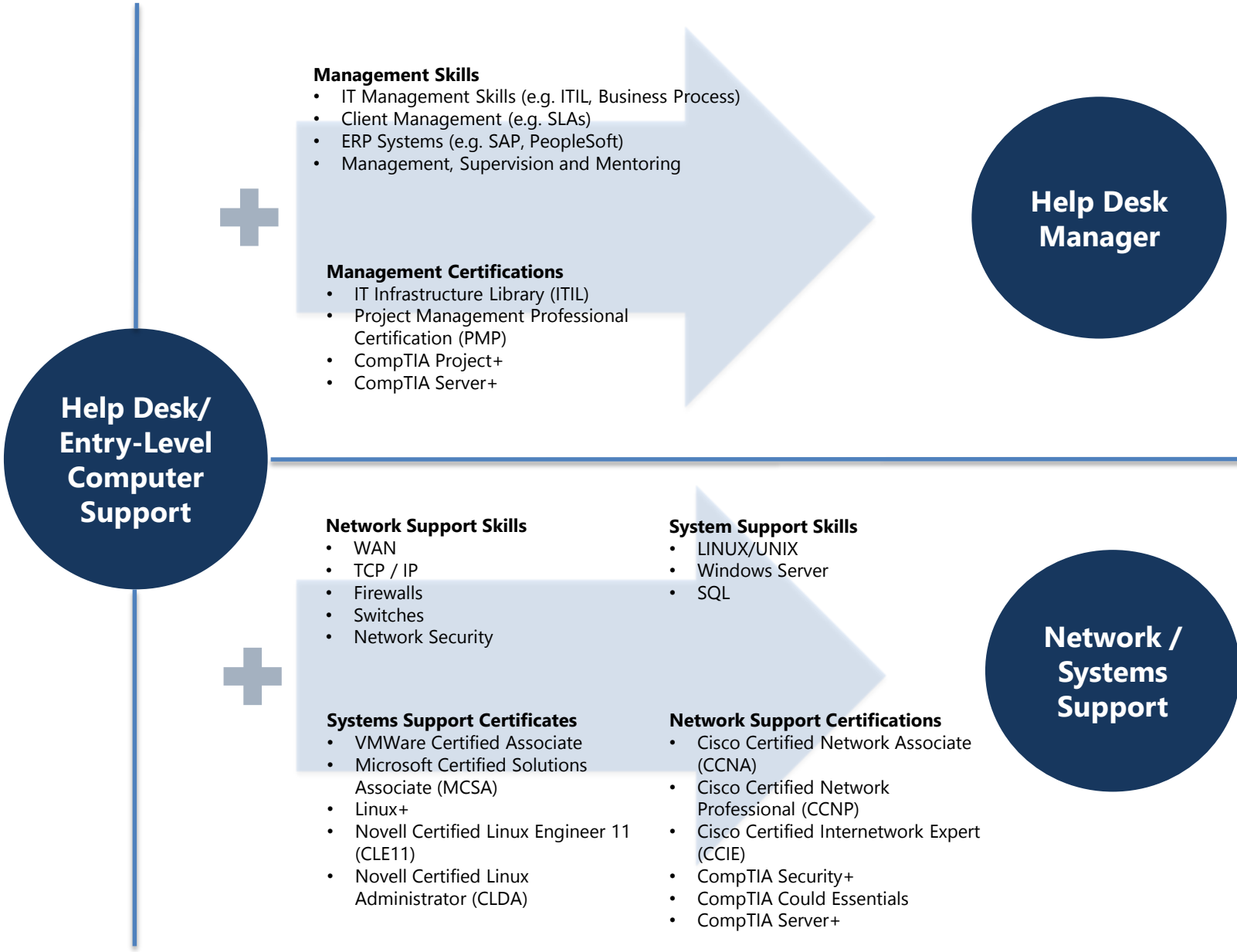
Help Desk/Entry-Level Computer Support Transitions



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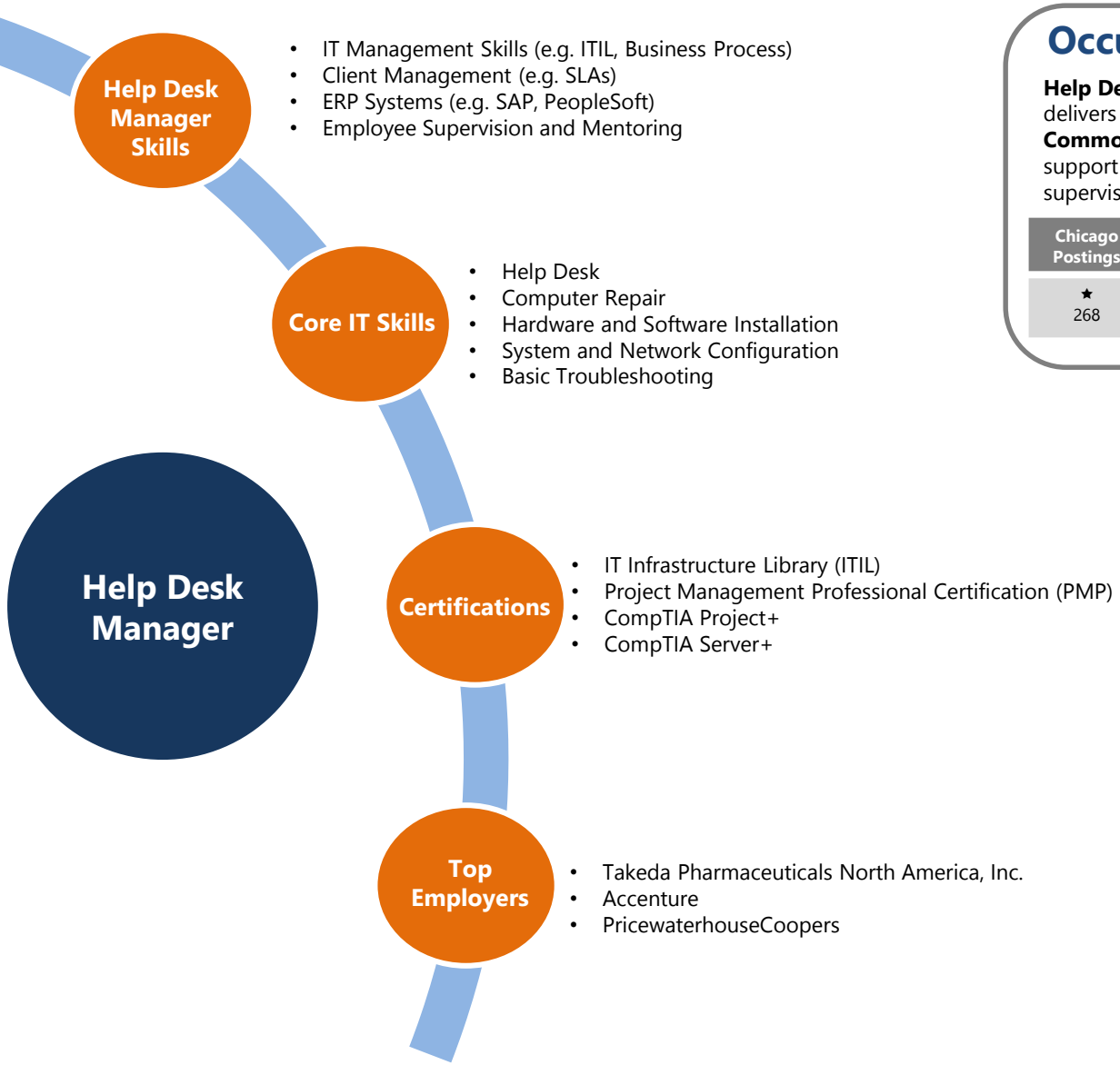
II Help Desk Manager



Occupation Profile

Help Desk Manager: Manages a help desk operation and delivers personal computer support.
Common job titles include: help desk manager, technical support manager, service desk manager, and help desk supervisor

Chicago Postings	Concentration in Chicago	% BA	% Entry Level	Mean Hourly Wage
★ 268	Very High (LQ=1.53)	82%	9%	$$$$ $33.30

Hourly Wage
$ Below $15
$$ $15-$24
$$$ $24-$33
$$$$ Above $33

Posting Counts
★ Below 1,000
★★ 1,000-2,000
★★★ 2,000-3,000
★★★★ 3,000-4,000
★★★★★ Above 4,000

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II Network/Systems Support

Occupation Profile

Network / Systems Support: Evaluates, troubleshoots, and maintains an organization's computer and network systems, usually as part of an information technology department.
Common job titles include: network specialist, network engineer, systems engineer and network technician

Chicago Postings	Concentration in Chicago	% BA	% Entry Level	Mean Hourly Wage
★ 513	High (LQ=1.47)	◑ 62%	◔ 32%	$$$ $27.36

Network Support / Systems

Network Support Skills
- WAN
- TCP / IP
- Firewalls
- Switches
- Network Security
- VPN

Systems Support Skills
- LINUX/UNIX
- Windows Server
- SQL

Core IT Skills
- Network Repair
- Hardware and Software Installation
- System and Network Configuration
- Basic Troubleshooting

Network Support Certs
- Cisco Certified Network Associate (CCNA)
- Cisco Certified Network Professional (CCNP)
- Cisco Certified Internetwork Expert (CCIE)
- CompTIA Security+
- CompTIA Could Essentials

Systems Support Certs
- VMWare Certified Associate
- Microsoft Certified Solutions Associate (MCSA)
- Linux+
- Novell Certified Linux Engineer 11 (CLE11)
- Novell Certified Linux Administrator (CLDA)

Top Employers
- AT&T
- Sears
- Chiro One Wellness Centers

Hourly Wage
$ Below $15
$$ $15-$24
$$$ $24-$33
$$$$ Above $33

Posting Counts
★ Below 1,000
★★ 1,000-2,000
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★★★★ 3,000-4,000
★★★★★ Above 4,000

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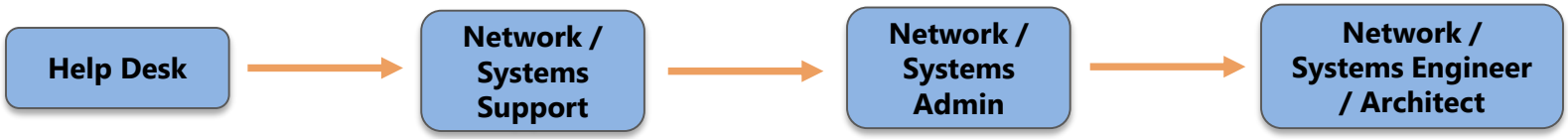
Career Ladder: Network, Systems & Cyber Security

Network / Systems Pathway



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Network / Systems Support

Network Support Skills
- WAN
- TCP / IP
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- Network Security
- VPN

Systems Support Skills
- LINUX/UNIX
- Windows Server
- SQL

Core IT Skills
- Network Repair
- Hardware and Software Installation
- System and Network Configuration
- Basic Troubleshooting

Network Support Certs
- Cisco Certified Network Associate (CCNA)
- Cisco Certified Network Professional (CCNP)
- Cisco Certified Internetwork Expert (CCIE)
- CompTIA Security+
- CompTIA Could Essentials

Systems Support Certs
- VMWare Certified Associate
- Microsoft Certified Solutions Associate (MCSA)
- Linux+
- Novell Certified Linux Engineer 11 (CLE11)
- Novell Certified Linux Administrator (CLDA)

Top Employers
- AT&T
- Sears
- Chiro One Wellness Centers

Hourly Wage
$ Below $15
$$ $15-$24
$$$ $24-$33
$$$$ Above $33

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★★★ 2,000-3,000
★★★★ 3,000-4,000
★★★★★ Above 4,000

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Network/Systems Support Transitions

Network / Systems Support

Administrator Skills
- Domain Name System (DNS)
- Microsoft Exchange Server
- Dynamic Host Configuration Protocol (DHCP)
- Network Attached Storage (NAS)
- Disaster Recovery Planning
- Lightweight Directory Access Protocol (LDAP)

Systems Skills
- Lightweight Directory Access Protocol (LDAP)
- Apache Webserver
- PERL
- Shell Scripts

Networking Skills
- Network Attached Storage (NAS)
- Cabling

Network/ Systems Administrator

Network Certifications
- Cisco Certified Network Associate (CCNA)
- Cisco Certified Network Professional (CCNP)

Systems Certifications
- Microsoft Certified Solutions Expert (MCSE)
- VMWare Certified Professional
- Red Hat Certified Engineer (RHCE)
- Red Hat Certified Systems Administrator (RHCSA)

Legal Compliance Skills
- Federal Information Security Management Act
- Health Information Portability and Accountability Act
- JAFAN Standards
- Federal Information Processing Standards
- Payment Card Industry Data Security Standard

SIEM Skills
- ArcSight
- McAfee

Audit Skills
- Management Information Systems
- Internal Auditing
- Technical Writing

Cyber Security Analyst / Specialist

Security Skills
- Cryptography
- Asset Protection
- Risk Assessment
- Malware Analysis
- Secure Sockets Layers
- Penetration Testing
- Host Based Security Systems

Information Security Certifications
- Certified Information Systems Auditor (CISA)
- Certified Information Systems Security Professional (CISSP)
- Microsoft Certified Solutions Expert
- GIAC Forensics and Penetration Testing Certificates
- Certified Ethical Hacker (CEH)
- EC-Council Certified Security Analyst (ECSA)
- Licensed Penetration Tester
- Certified in Risk and Information Systems Control
- CompTIA Advanced Security Practitioner (CASP)

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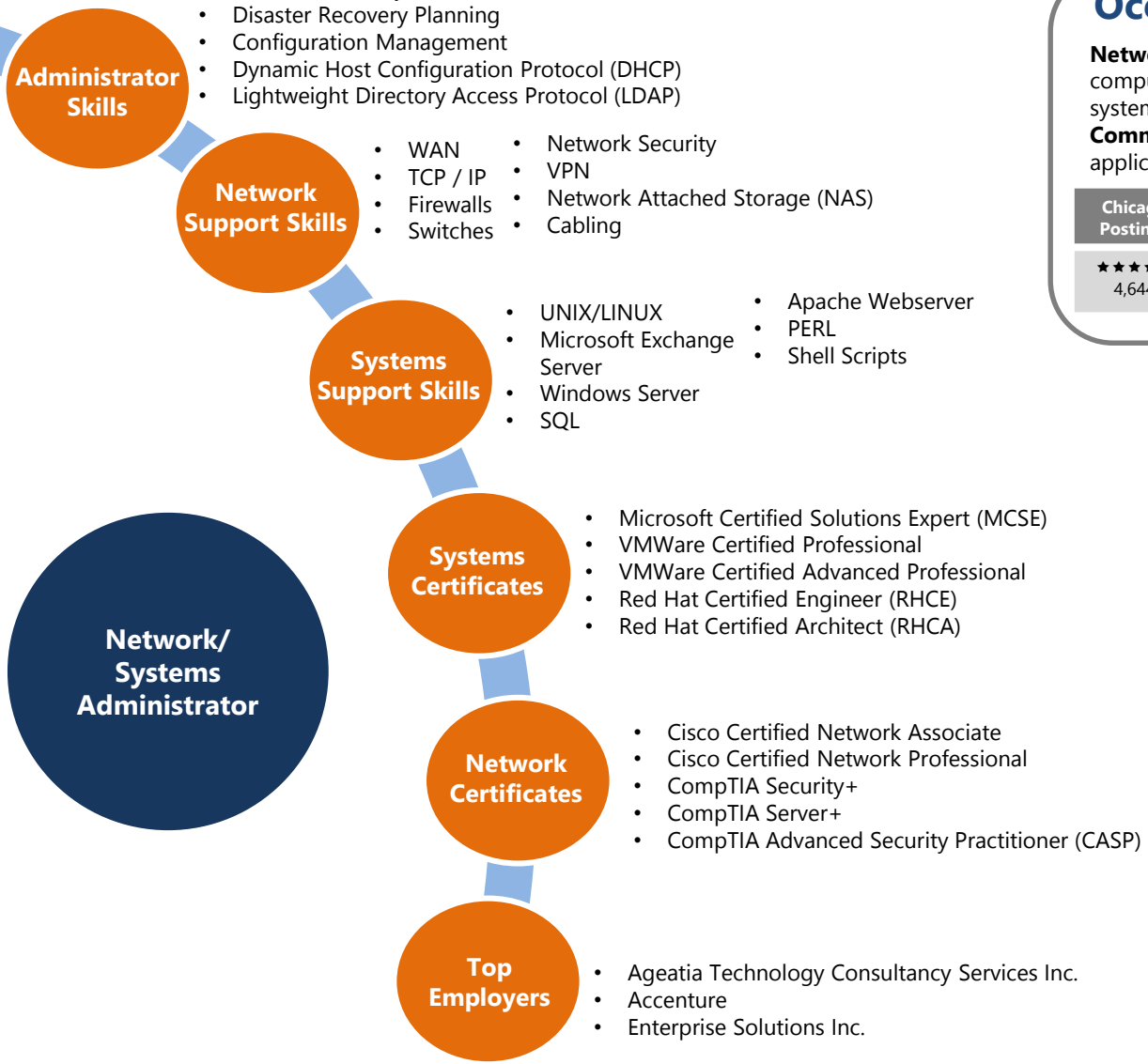
Network/Systems Administrator



Occupation Profile

Network/Systems Administrator: Maintain and administer computer networks and related computed environments and systems.

Common job titles include: IT systems administrator, applications systems administrator

Chicago Postings	Concentration in Chicago	% BA	% Entry Level	Mean Hourly Wage
★★★★★ 4,644	Average (LQ=1.12)	◑ 78%	◔ 20%	$$$$ $34.37

Hourly Wage

$	Below $15
$$	$15-$24
$$$	$24-$33
$$$$	Above $33

Posting Counts

★	Below 1,000
★★	1,000-2,000
★★★	2,000-3,000
★★★★	3,000-4,000
★★★★★	Above 4,000

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Network/Systems Administrator Transitions

Network / Systems Administrator

Technical Skills
- Domain Name System (DNS)
- Dynamic Host Configuration Protocol (DHCP)
- Network Attached Storage
- Solaris

Analysis Skills
- Network Modeling
- Network Analysis
- Business Processes
- Configuration Management
- Concept Development

Network/ Systems Engineer / Architect

Network Certificates
- Cisco Certified Network Professional (CCNP)
- Cisco Certified Network Expert (CCNE)

Systems Certificates
- Microsoft Certified Solutions Expert (MCSE)
- VMWare Certified Professional
  VMWare Certified Advanced Professional
- Red Hat Certified Engineer (RHCE)
- Red Hat Certified Architect (RHCA)

Network and Systems Engineering / Architecture Skills
- Defining Enterprise Security Requirements
- Defining Enterprise Coding Practices
- Design of Encryption Strategy
- Security Development Lifecycle
- Root Cause Analysis

Legal Compliance Skills
- Federal Information Security Management Act
- Health Information Portability and Accountability Act
- JAFAN Standards
- Federal Information Processing Standards
- Payment Card Industry Data Security Standard

SIEM Skills
- ArcSight
- McAfee

Encryption Skills
- RSA
- PKI
- Blue Coat Products
- F5 Products

Information Security Certifications
- Certified Information Systems Security Professional (CISSP)
- Certified Information Systems Manager (CISM)
- GIAC Forensics and Penetration Testing Certificates
- Certified Ethical Hacker (CEH)
- EC-Council Certified Security Analyst (ECSA)
- Licensed Penetration Tester
- Certified in Risk and Information Systems Control

Cyber Security Engineer / Architect

Advanced Network Certifications
- Cisco Certified Network Professional
- Cisco Certified Network Expert

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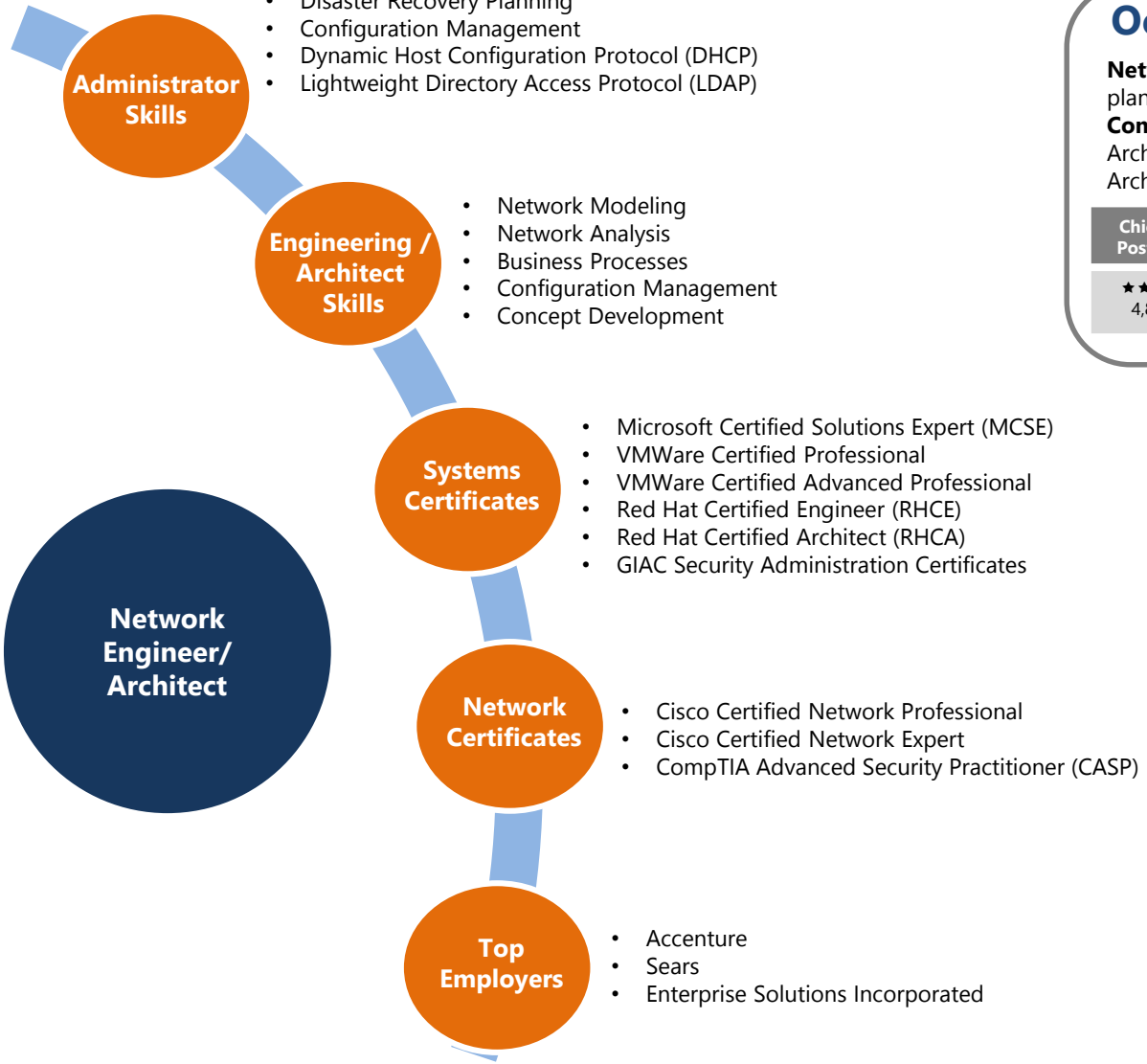
Network/Systems Engineer/Architect



Occupation Profile

Network Engineer/ Architect: Research, design, analyze and plan computer and information networks.
Common job titles include: Solutions Architect, Technical Architect, Network Architect, .Net Architect, Information Architect

Chicago Postings	Concentration in Chicago	% BA	% Entry Level	Median Hourly Wage
★★★★ 4,803	Very High (LQ=1.79)	82%	5%	$$$$ $50.05

Hourly Wage
$ Below $15
$$ $15-$24
$$$ $24-$33
$$$$ Above $33

Posting Counts
★ Below 1,000
★★ 1,000-2,000
★★★ 2,000-3,000
★★★★ 3,000-4,000
★★★★★ Above 4,000

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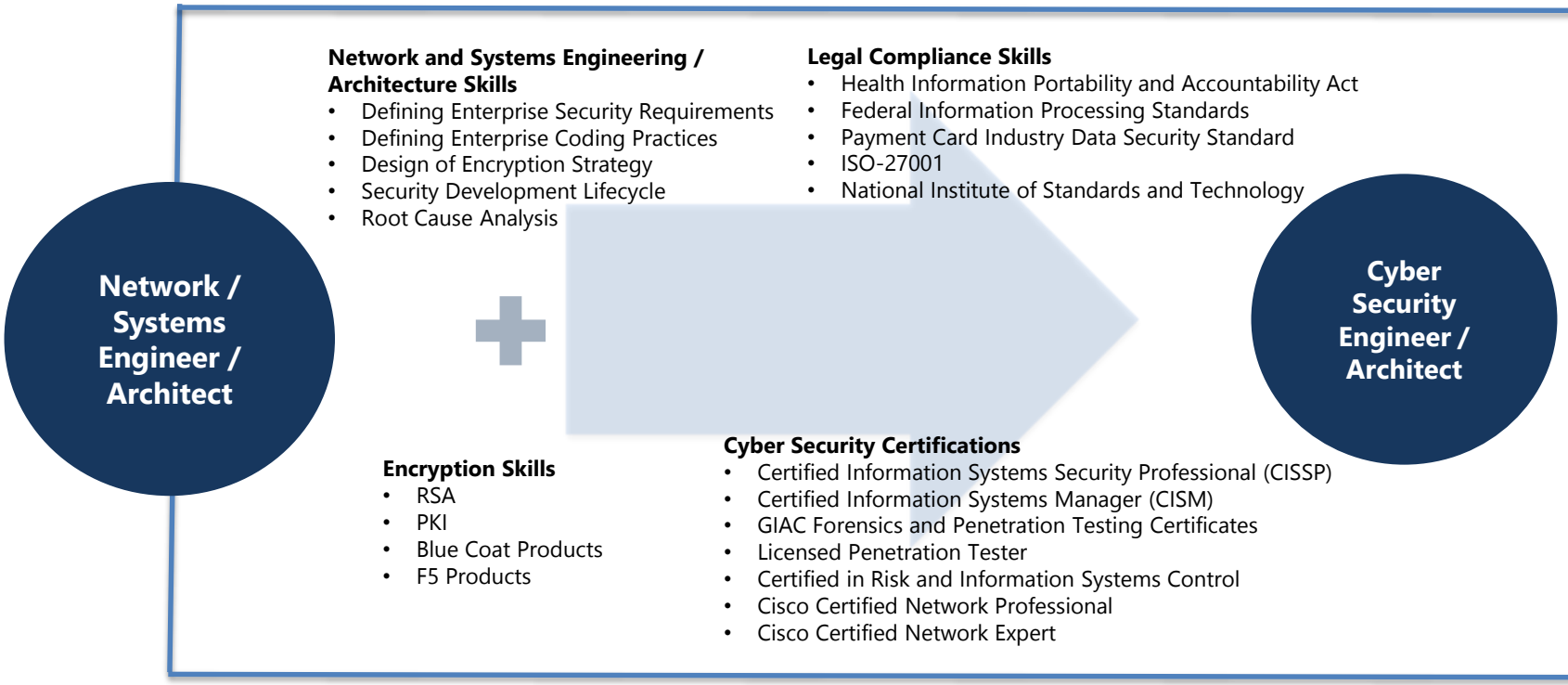
Network/Systems Engineer/Architect Transitions



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Career Ladder: Network, Systems & Cyber Security

Cyber Security Pathway

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Cyber/Information Security Analyst/Specialist

Cyber/ Information Security Analyst / Specialist

Cyber Security Skills
- Cryptography
- Asset Protection
- Risk Assessment
- Malware Analysis
- Secure Sockets Layers
- Penetration Testing
- Host Based Security Systems
- ArcSight
- McAfee

Security Audit Skills
- Management Information Systems
- Internal Auditing
- Technical Writing

Legal Compliance & Standards
- FISMA
- HIPAA
- JAFAN Standards
- FIPS
- PCI DSS

Network / Systems Skills
- Firewalls
- LINUX / UNIX
- Cisco Networks
- TCP / IP
- Switches
- VPN
- WAN
- ITIL

Cyber Security Certifications
- CompTIA Advanced Security Practitioner (CASP)
- Certified Information Systems Auditor (CISA)
- Certified Information Systems Security Professional (CISSP)
- Microsoft Certified Solutions Expert
- GIAC Forensics and Penetration Testing Certificates
- Certified Ethical Hacker (CEH)
- EC-Council Certified Security Analyst (ECSA)
- Licensed Penetration Tester
- Certified in Risk and Information Systems Control

Top Employers
- Oracle
- Enterprise Solutions Inc.
- General Electric Company

Occupation Profile

Cyber / IS Analyst / Specialist: Test, monitor and investigate the security of computer systems and networks for unwanted attacks.

Common job titles include: Cyber Security Analyst / Specialist, Network Security Analyst / Specialist, Information Security Analyst / Specialist

Chicago Postings	Concentration in Chicago	% BA	% Entry Level	Mean Hourly Wage
★★ 1,513	High (LQ=1.40)	84%	8%	$$$$ $43.58

Hourly Wage

$	Below $15
$$	$15-$24
$$$	$24-$33
$$$$	Above $33

Posting Counts

★	Below 1,000
★★	1,000-2,000
★★★	2,000-3,000
★★★★	3,000-4,000
★★★★★	Above 4,000

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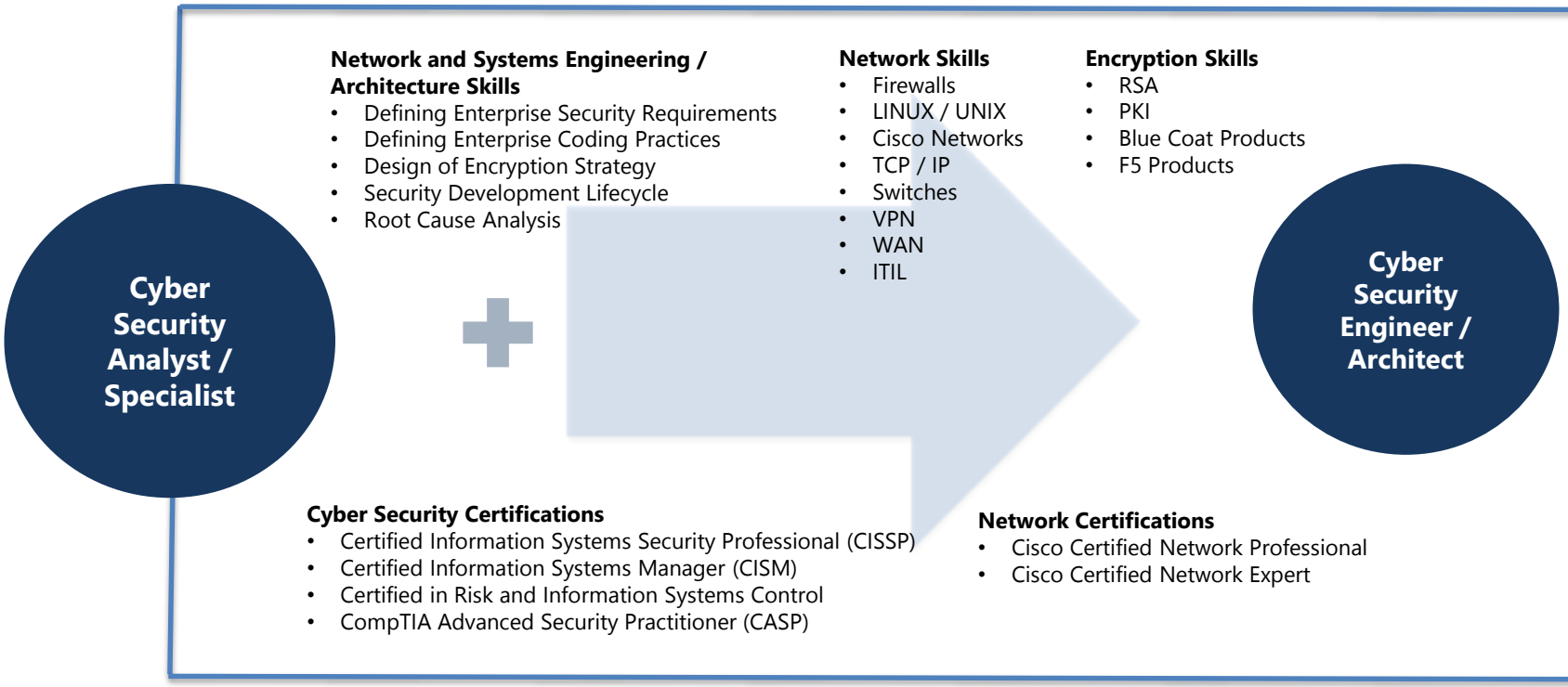
Cyber Security Analyst/Specialist Transition



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Cyber/Information Security Engineer/Architect

Cyber/ Information Security Engineer/ Architect

Engineering/ Architecture Skills
- Defining Enterprise Security Requirements
- Defining Enterprise Coding Practices
- Design of Encryption Strategy
- Security Development Lifecycle
- Root Cause Analysis

Encryption Skills
- RSA
- Public Key Infrastructure (PKI)
- Blue Coat Products
- F5 Products
- Sharkwire
- Splunk

Legal Compliance & Standards
- HIPPA
- ISO-27001
- PCI DSS
- FISMA
- NIST

Network/ Systems Skills
- Firewalls
- LINUX / UNIX
- Cisco Networks
- TCP / IP
- Switches
- VPN
- WAN
- ITIL

Cyber Security Certificates
- CompTIA Advanced Security Practitioner (CASP)
- Certified Information Systems Security Professional (CISSP)
- Certified Information Systems Manager (CISM)
- GIAC Forensics and Penetration Testing Certificates
- Licensed Penetration Tester
- Certified in Risk and Information Systems Control
- Cisco Certified Network Professional
- Cisco Certified Network Expert

Top Employers
- Dell
- Enterprise Solutions Incorporated
- PricewaterhouseCoopers

Occupation Profile

Cyber / IS Engineer/ Architect: Define, implement and update encryption and security requirements across enterprise IT systems and networks.
Common job titles include: Security Engineer, Network Security Engineer, Security Architect, Information Security Engineer, Cyber Security Engineer

Chicago Postings	Concentration in Chicago	% BA	% Entry Level	Median Hourly Wage
★ 921	High (LQ=1.43)	◕ 85%	○ <5%	$$$$ $54.69

Hourly Wage
$ Below $15
$$ $15-$24
$$$ $24-$33
$$$$ Above $33

Posting Counts
★ Below 1,000
★★ 1,000-2,000
★★★ 2,000-3,000
★★★★ 3,000-4,000
★★★★★ Above 4,000

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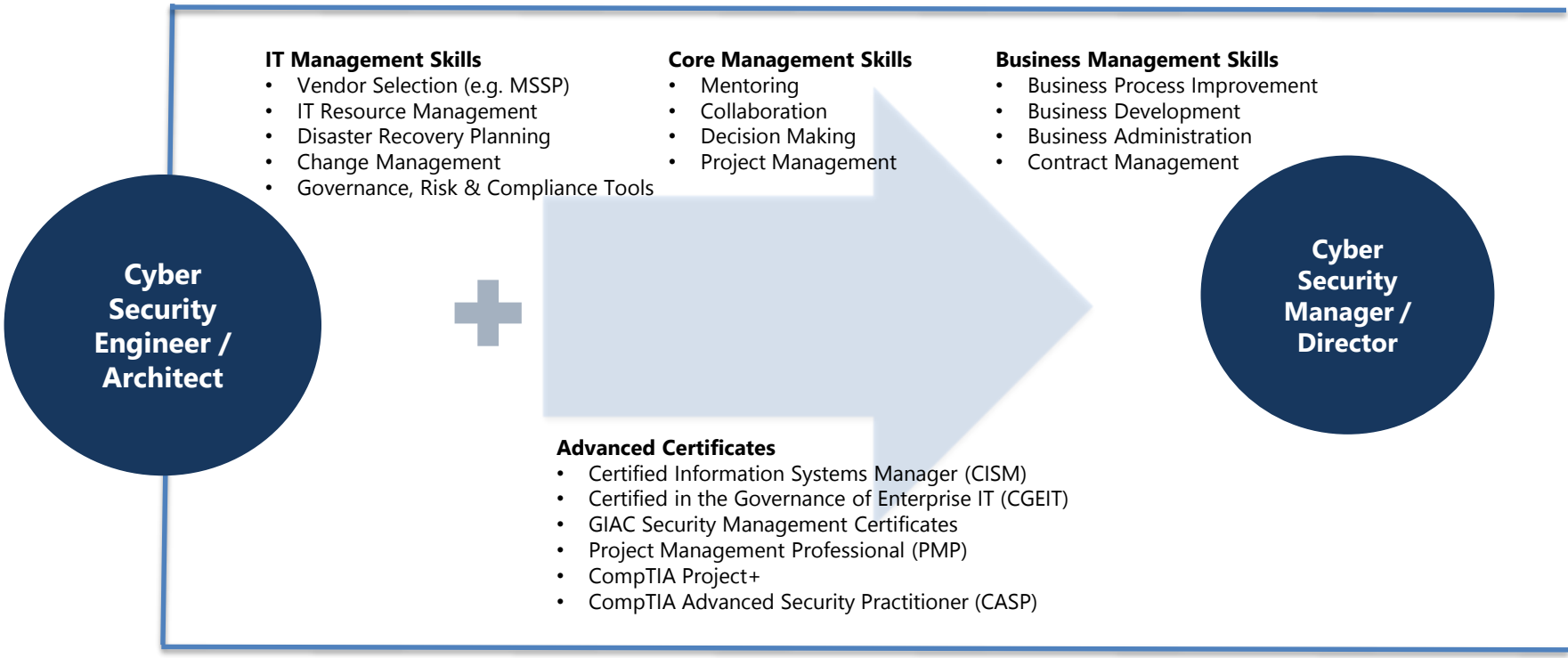
Cyber Security Engineer/Architect Transition



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Cyber/Information Security Manager/Director

Cyber/ Information Security Manager/ Director

IT Management Skills
- Vendor Selection (e.g. MSSP)
- IT Resource Management
- Disaster Recovery Planning
- Change Management
- Governance, Risk & Compliance Tools

Business Management Skills
- Business Process Improvement
- Business Development
- Business Administration
- Contract Management

Core Management Skills
- Mentoring
- Collaboration
- Decision Making
- Project Management

Legal Compliance & Standards
- Security / Risk Standards
  e.g. ISO-2701, PCI DSS, NIST, ITIL, COBIT
- Regulatory Compliance Models
  e.g. HIPAA, SOX, FDA, FERC/NERC

Advanced Security Certificates
- Certified Information Systems Manager (CISM)
- Certified in the Governance of Enterprise IT (CGEIT)
- GIAC Security Management Certificates
- Cisco Certified Network Expert
- Certified Cyber Forensics Professional (CCFP)
- Project Management Professional (PMP)
- CompTIA Project+
- CompTIA Advanced Security Practitioner (CASP)

Top Employers
- PricewaterhouseCoopers
- United States Cellular
- Deloitte Development LLC

Occupation Profile

Cyber / IS Manager / Director: Coordinate and manage IT team and projects to ensure network and systems security policies and processes are up to date and meet all regulatory and legal compliance.

Common job titles include: Information Security Manager, Security Manager, Information Protection Manager

Chicago Postings	Concentration in Chicago	% BA	% Entry Level	Median Hourly Wage
★ 281	Very High (LQ=1.68)	◕ 93%	○ <5%	$$$$ $50.60

Hourly Wage

$	Below $15
$$	$15-$24
$$$	$24-$33
$$$$	Above $33

Posting Counts

★	Below 1,000
★★	1,000-2,000
★★★	2,000-3,000
★★★★	3,000-4,000
★★★★★	Above 4,000

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Career Ladder: Web Development and Design

Web development and design is a large set of high-skill IT jobs. Designers are encouraged to add development skills to increase employment options as employers increasingly demand a mix of both skill sets.

Notes for Career Counselors:

- These occupations all require a Bachelor's degree, and **few are entry level** positions.
- Internships are a strong pathway into these occupations. See Intern employers in the appendix.
- A hybrid set of design and development skills are increasingly in demand by employers.
- Advancement in design roles reliant on design portfolio and experience.
- Web developers are in much higher demand than designers - web designers should add development skills.

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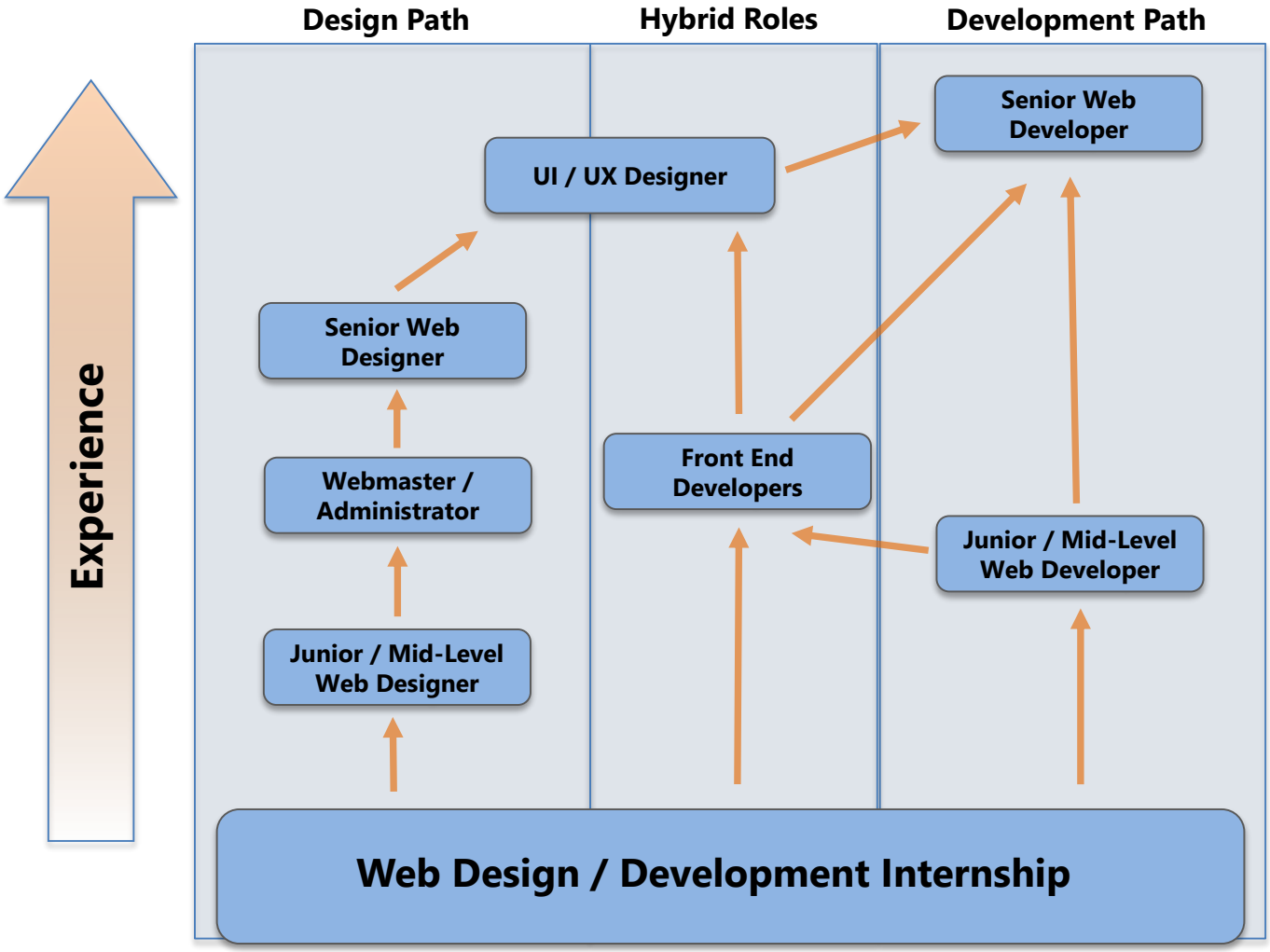
Web Development and Design Career Ladder



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Career Ladder: Web Development and Design

Design Pathway

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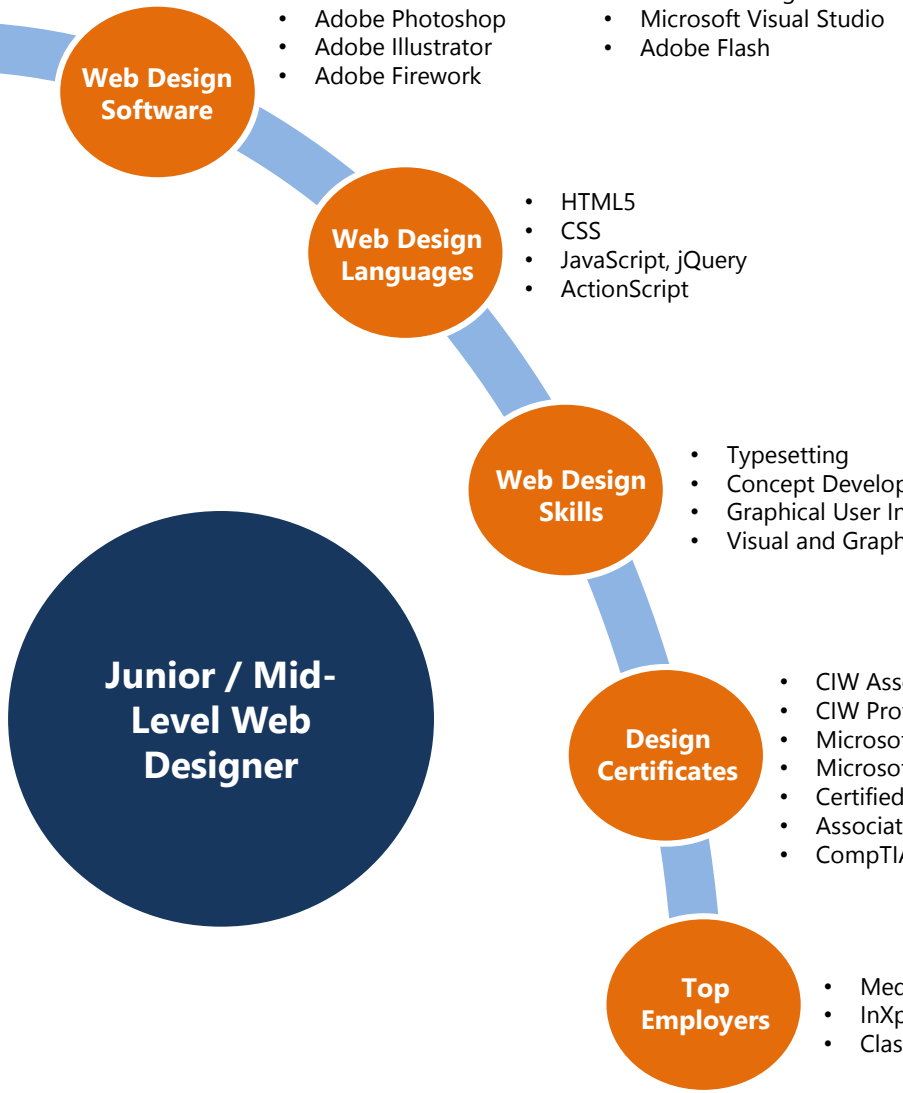
Junior/Mid-Level Web Designer



Occupation Profile

Junior / Mid-Level Web Designer: Create website's layout and integrate graphics, applications, and other content into the site.
Common job titles include: Junior Web Designer, Entry Level Front End Web Designer, Web Content Designer, UI Designer

Chicago Postings	Concentration in Chicago	% BA	% Entry Level	Median Hourly Wage
★ 153	High (LQ=1.37)	99%	12%	$$$$ $33.88

Hourly Wage

$	Below $15
$$	$15-$24
$$$	$24-$33
$$$$	Above $33

Posting Counts

★	Below 1,000
★★	1,000-2,000
★★★	2,000-3,000
★★★★	3,000-4,000
★★★★★	Above 4,000

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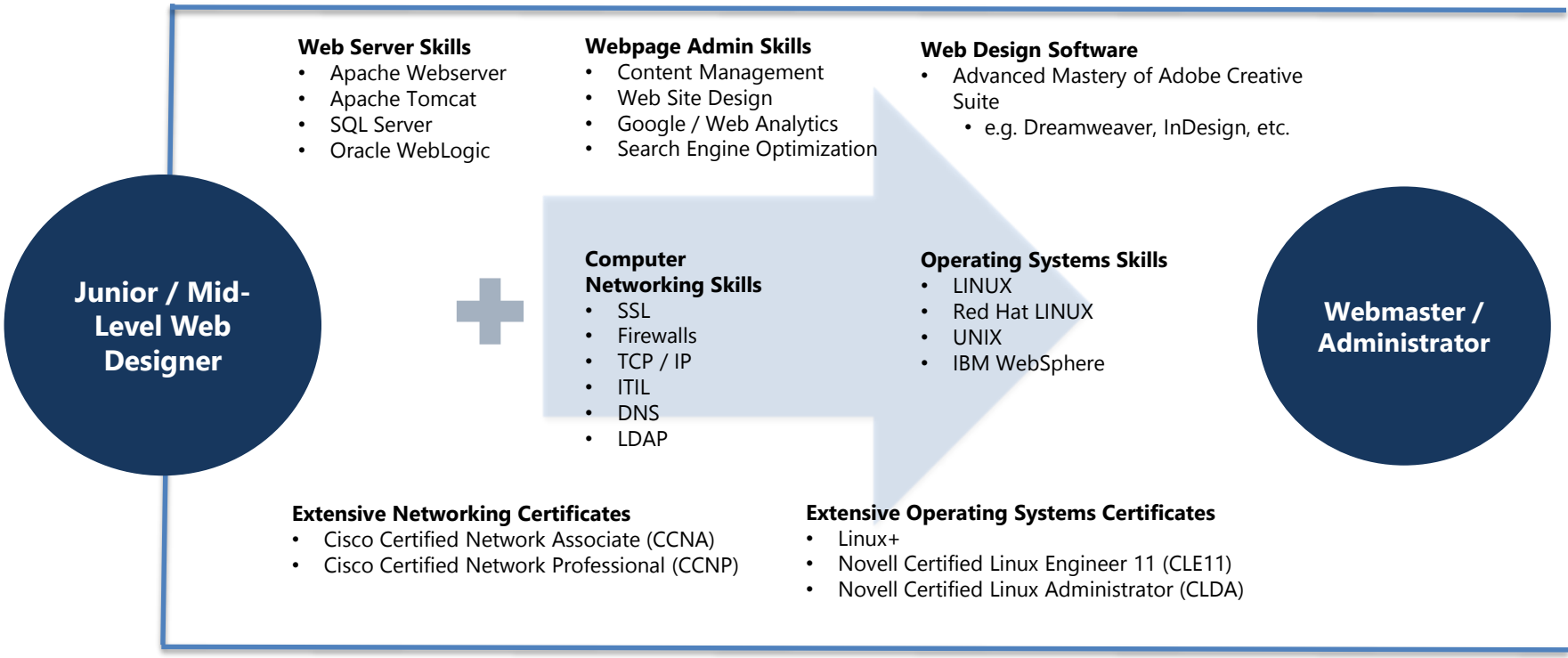
Junior/Mid-Level Web Designer Transitions



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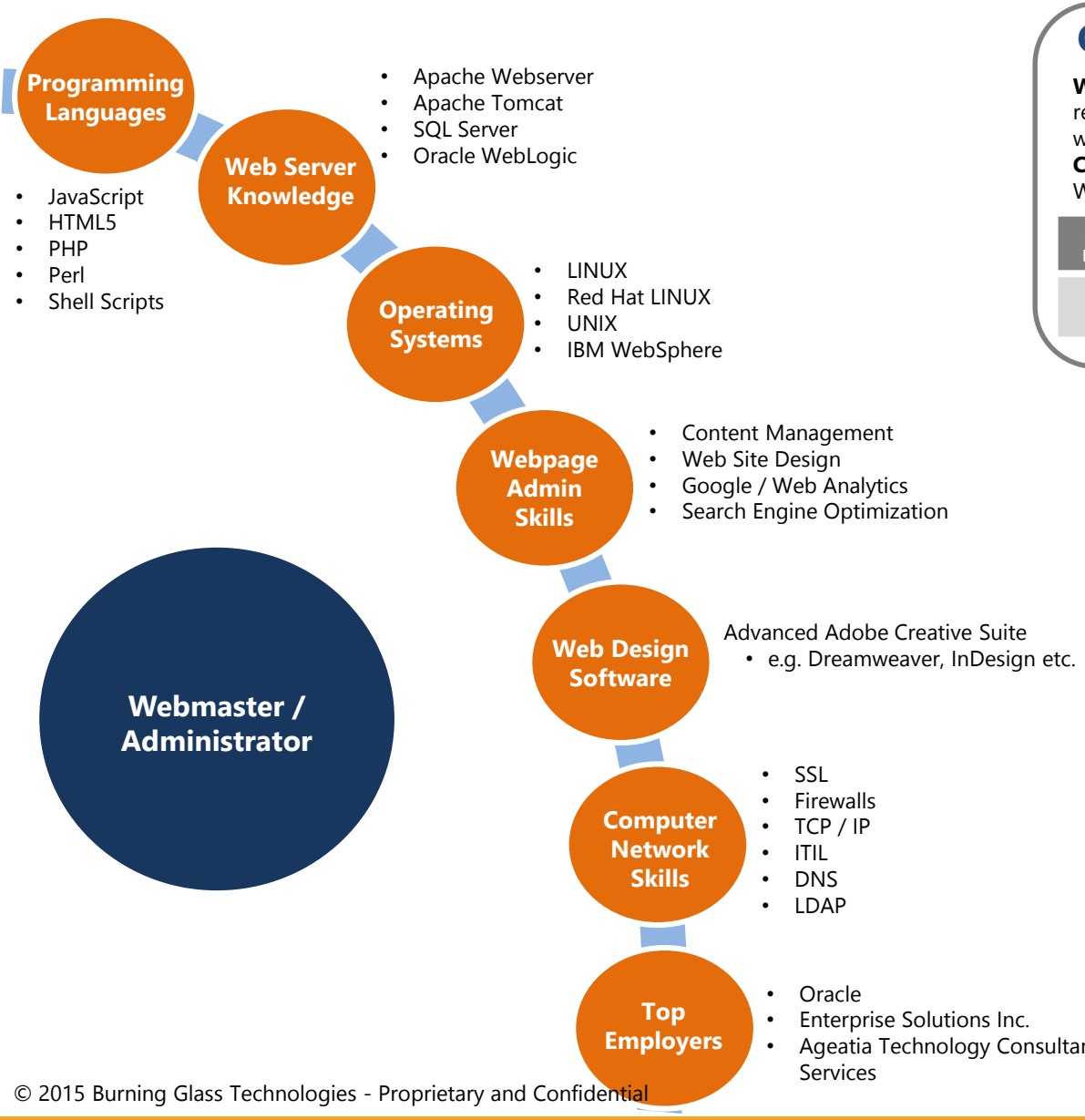
Webmaster/Administrator



Occupation Profile

Webmaster / Administrator: maintains websites with responsibility for web servers, hardware and software, analyzing web traffic and overall website operations.
Common job titles include: Web Administrator, Web Analyst, WebSphere Administrator, Web Manager, Web Master

Chicago Postings	Concentration in Chicago	% BA	% Entry Level	Median Hourly Wage
★ 390	Average (LQ=1.03)	95%	8%	$$$$ $42.17

Hourly Wage
$ Below $15
$$ $15-$24
$$$ $24-$33
$$$$ Above $33

Posting Counts
★ Below 1,000
★★ 1,000-2,000
★★★ 2,000-3,000
★★★★ 3,000-4,000
★★★★★ Above 4,000

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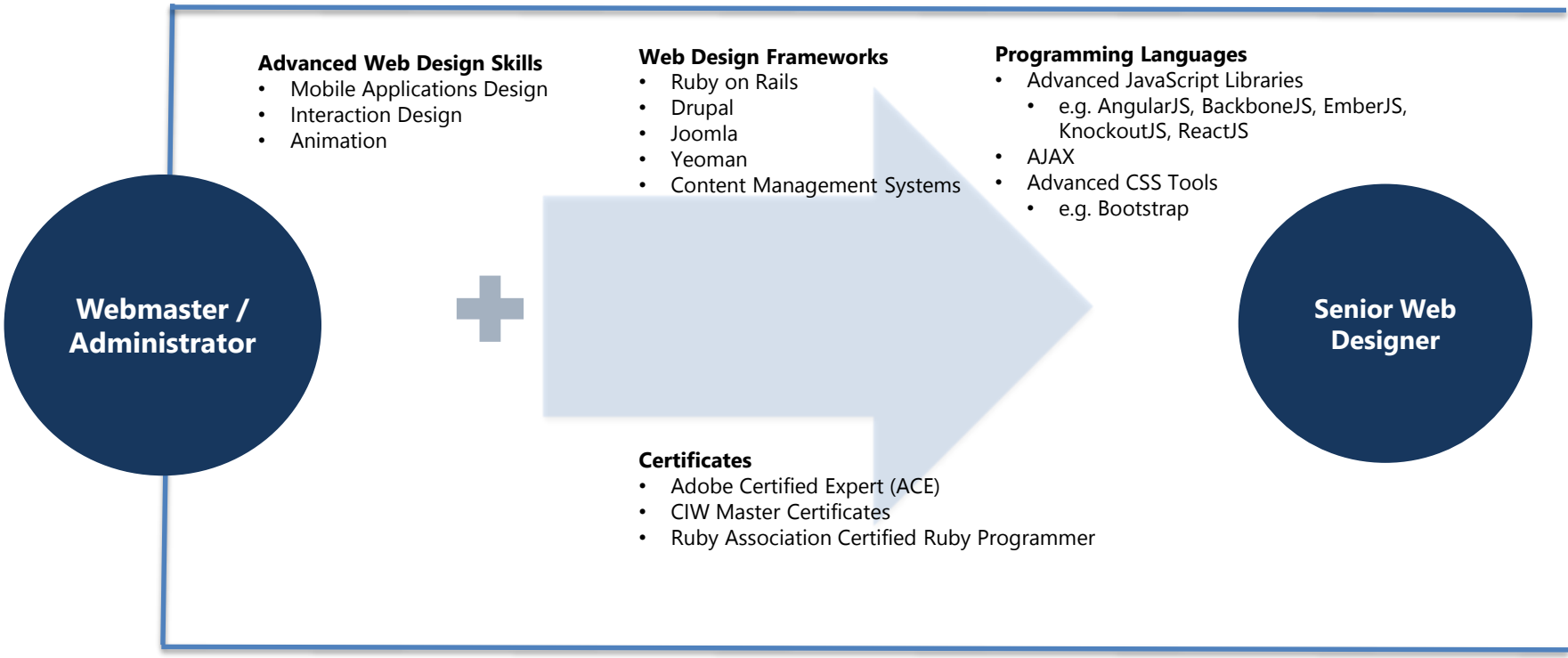
Webmaster/Administrator Transitions



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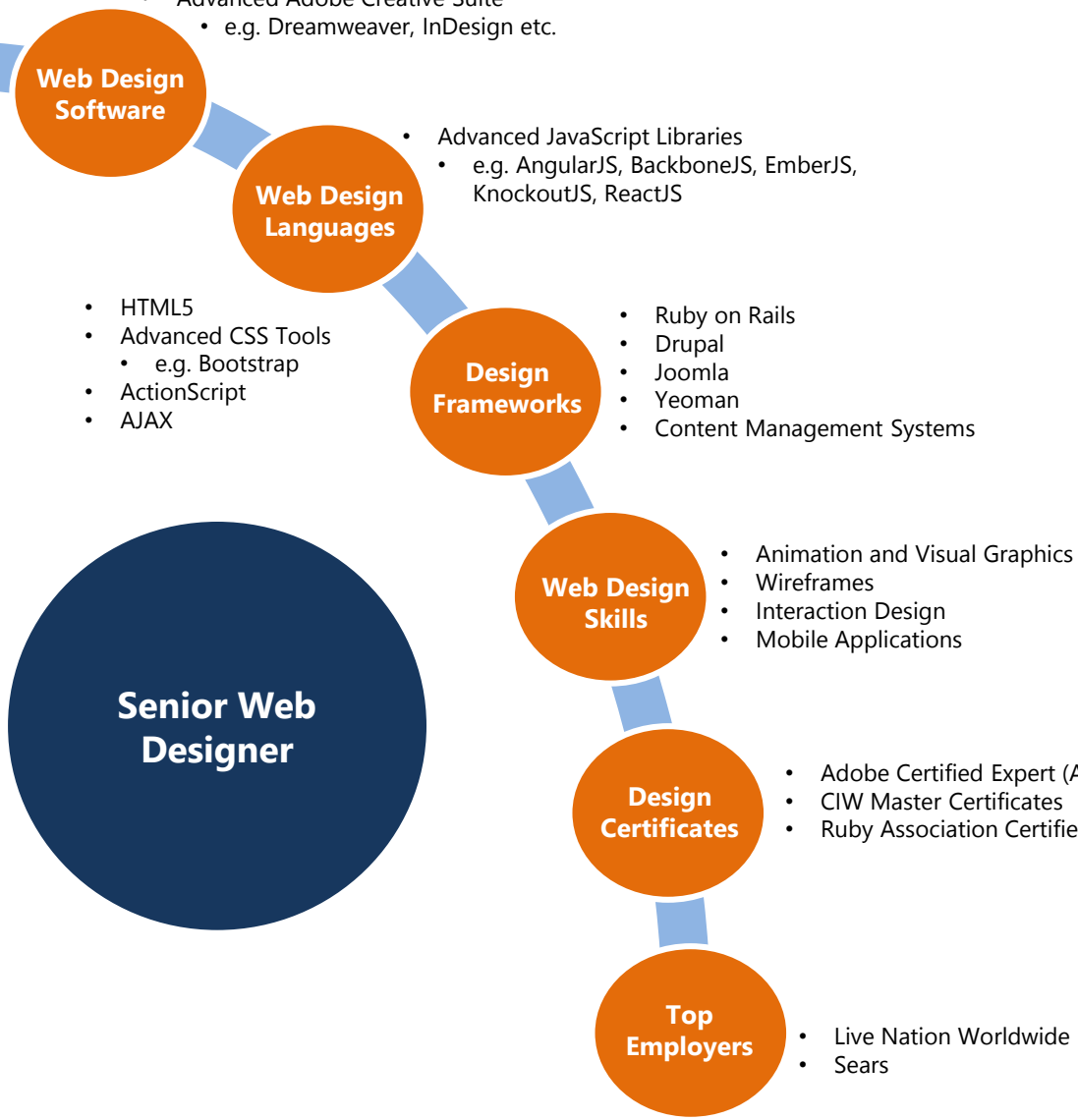
Senior Web Designer



Occupation Profile

Senior Web Designer: Create website's layout and integrate graphics, applications, and other content into the site.
Common job titles include: Senior Web Designer, Lead Web Designer, Mobile and Web Designer

Chicago Postings	Concentration in Chicago	% BA	% Entry Level	Median Hourly Wage
★ 131	Average (LQ=1.03)	99%	<5%	$$$$ $35.41

Hourly Wage

$	Below $15
$$	$15-$24
$$$	$24-$33
$$$$	Above $33

Posting Counts

★	Below 1,000
★★	1,000-2,000
★★★	2,000-3,000
★★★★	3,000-4,000
★★★★★	Above 4,000

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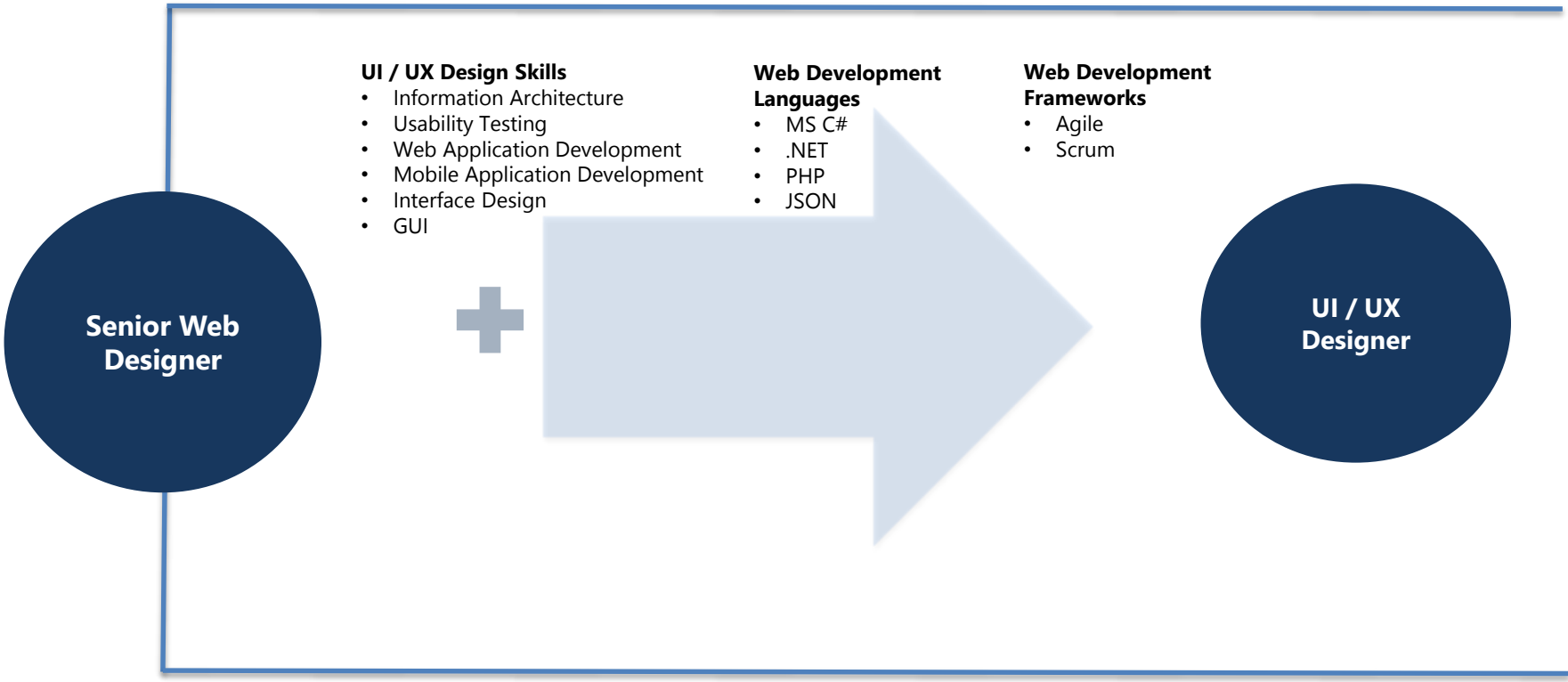
Senior Web Designer Transitions



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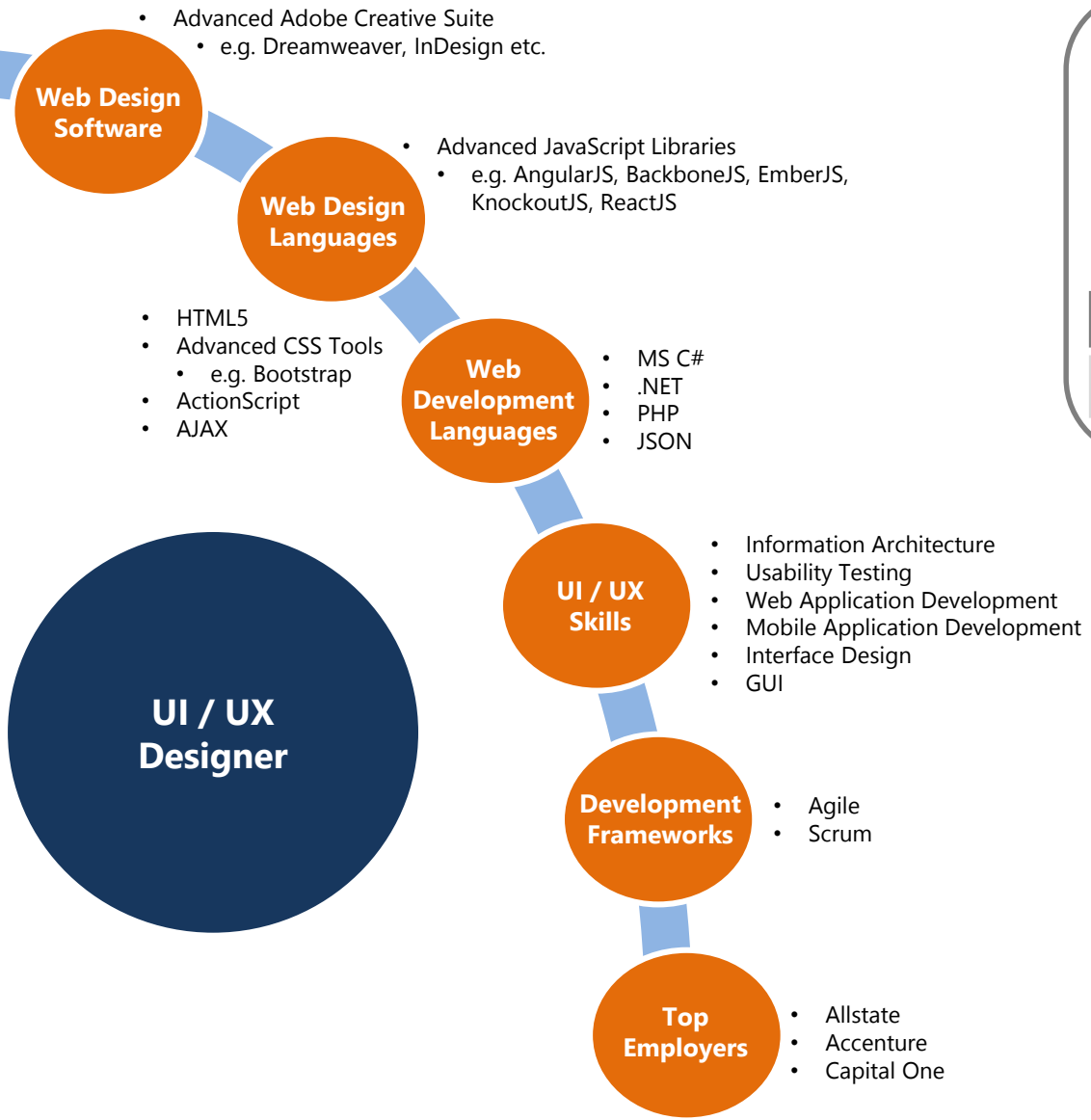
UI/UX Designer



Occupation Profile

UI /UX Designer: UX designers ensure that the product logically flows from one step to the next, leveraging user tests and tools create the best user experience. UI Designers orchestrate how a web page and it content are laid out, making sure the style and function of the site is intuitive.

Common job titles include: UI Designer, UX Designer, UX Architect, UI Architect, Interaction Designer, UX Specialist, UI Specialist

Chicago Postings	Concentration in Chicago	% BA	% Entry Level	Median Hourly Wage
★★ 1,160	High (LQ=1.40)	◕ 96%	○ <5%	$$$$ $45.30

Hourly Wage

$	Below $15
$$	$15-$24
$$$	$24-$33
$$$$	Above $33

Posting Counts

★	Below 1,000
★★	1,000-2,000
★★★	2,000-3,000
★★★★	3,000-4,000
★★★★★	Above 4,000

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Career Ladder: Web Development and Design

Development Pathway

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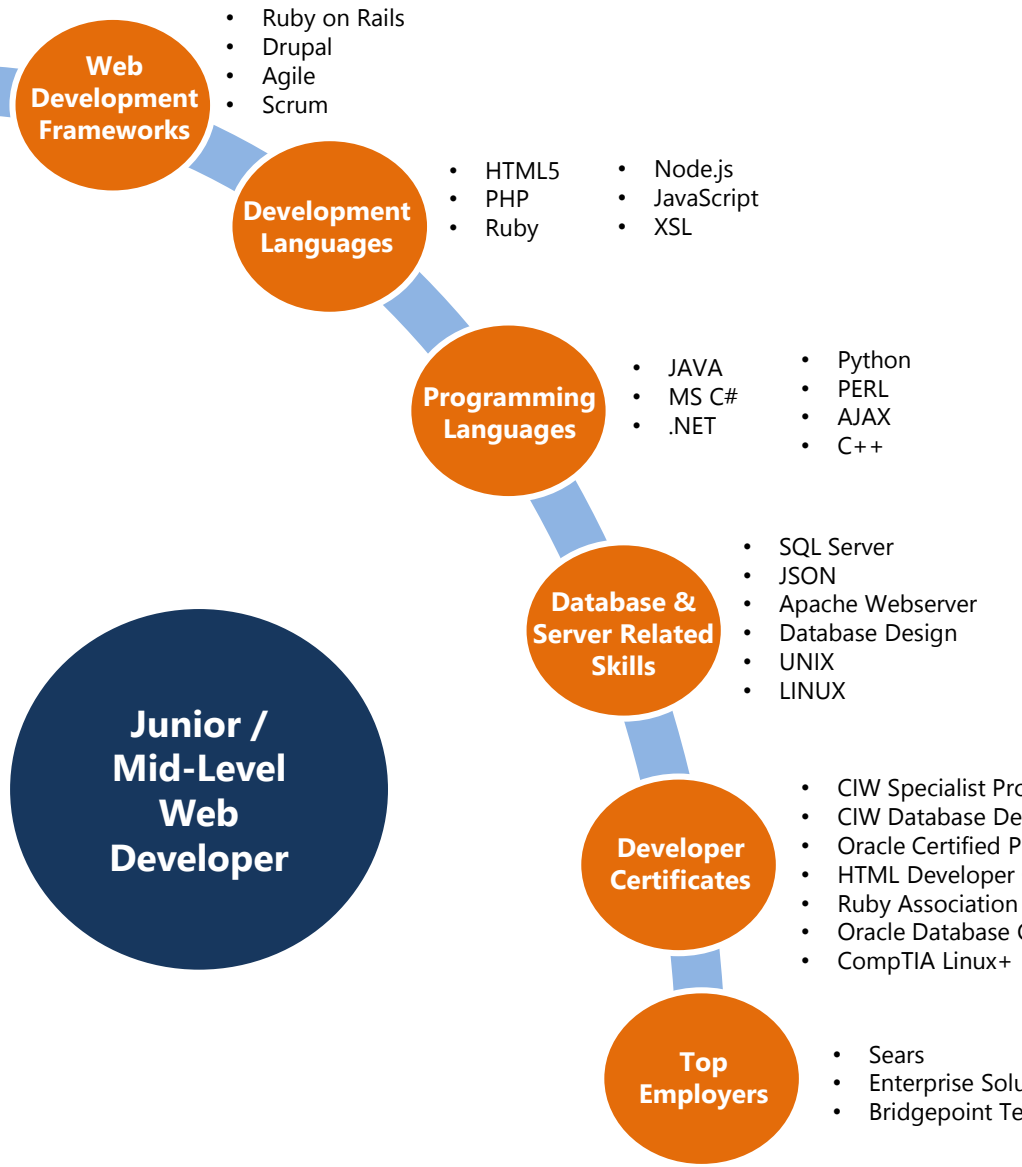
Junior/Mid-Level Web Developer



Occupation Profile

Junior / Mid-Level Web Developer: Develop, test, maintain and integrate websites and web applications.
Common job titles include: Junior Web/ Website Developer, Junior Php Developer, Junior .Net Web Developer, Entry Level Web Developer, Front End Developer

Chicago Postings	Concentration in Chicago	% BA	% Entry Level	Median Hourly Wage
★★ 1,643	Very High (LQ=1.7)	90%	16%	$$$$ $40.20

Hourly Wage
$ Below $15
$$ $15-$24
$$$ $24-$33
$$$$ Above $33

Posting Counts
★ Below 1,000
★★ 1,000-2,000
★★★ 2,000-3,000
★★★★ 3,000-4,000
★★★★★ Above 4,000

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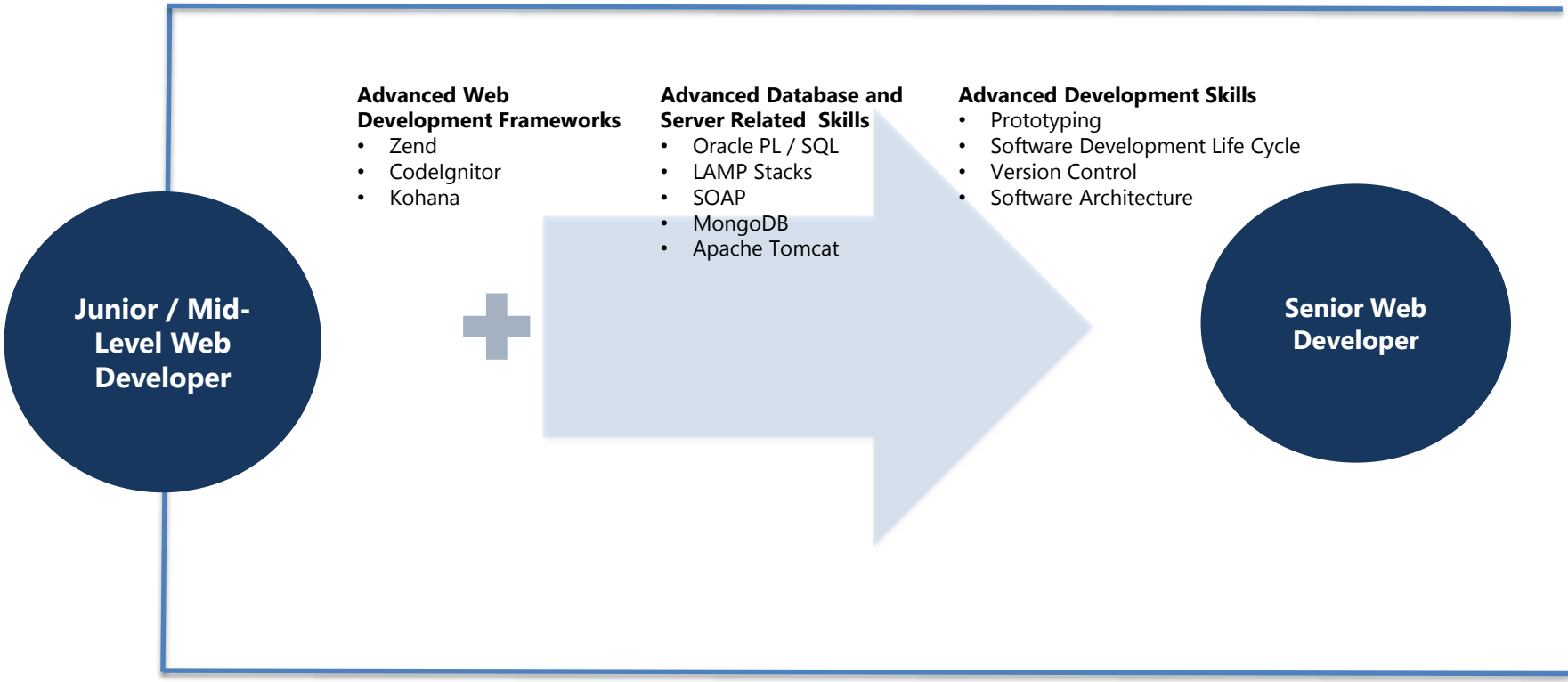
Junior/Mid Level Web Developer Transition



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Senior Web Developer

Senior Web Developer

Web Development Frameworks
- Ruby on Rails
- Drupal
- Agile
- Scrum
- Zend
- CodeIgnitor
- Kohana

Development Languages
- HTML5
- PHP
- Ruby
- Node.js
- JavaScript
- XSL

Programming Languages
- JAVA
- MS C#
- .NET
- Python
- PERL
- AJAX
- C++

Database & Server Related Skills
- Oracle PL / SQL
- LAMP Stacks
- SOAP
- MongoDB
- Apache Tomcat
- JSON
- Apache Webserver
- Database Design
- SQL Server

Advanced Development Skills
- Prototyping
- Software Development Life Cycle
- Version Control
- Content Management
- Software Architecture

Developer Certificates
- IBM Certified Solution Developer: WebSphere
- CIW Web Development Professional Certifications
- MCSE: Data Platform Certification
- CompTIA Project+

Top Employers
- Sears
- University of Chicago
- Accenture

Occupation Profile

Senior Web Developer: works alongside visual designers and front end developers to create standards, best practices, reusable code and quality assurance protocols.
Common job titles include: Senior Web Developer, Senior PHP Developer, Lead Web Developer, Web Developer III

Chicago Postings	Concentration in Chicago	% BA	% Entry Level	Median Hourly Wage
★ 609	Average (LQ=1.14)	● 100%	○ <5%	$$$$ $47.39

Hourly Wage
$ Below $15
$$ $15-$24
$$$ $24-$33
$$$$ Above $33

Posting Counts
★ Below 1,000
★★ 1,000-2,000
★★★ 2,000-3,000
★★★★ 3,000-4,000
★★★★★ Above 4,000

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Career Ladder: Data Mining and Database Design

Data Mining and Database Design are a large set of occupations, with more than 6,000 postings in 2014. These high demand, high paying jobs are good transition opportunities for experienced programmers.

Notes for Career Counselors:

- These jobs all require a Bachelor's degree and thorough understanding of statistical / modeling tools.
- **Data Analyst** jobs typically perform business intelligence functions, and rely on tools such as SQL.
- **Data Architects** create the databases, requiring understanding of related business operations.
- **Data Warehousing** roles are very specialized, combining information from multiple databases to improve analytics.
- Many require a business foundation for the application of database functions to enterprise operations.
- Certifications provide pathway to learn advanced database and SQL skills.

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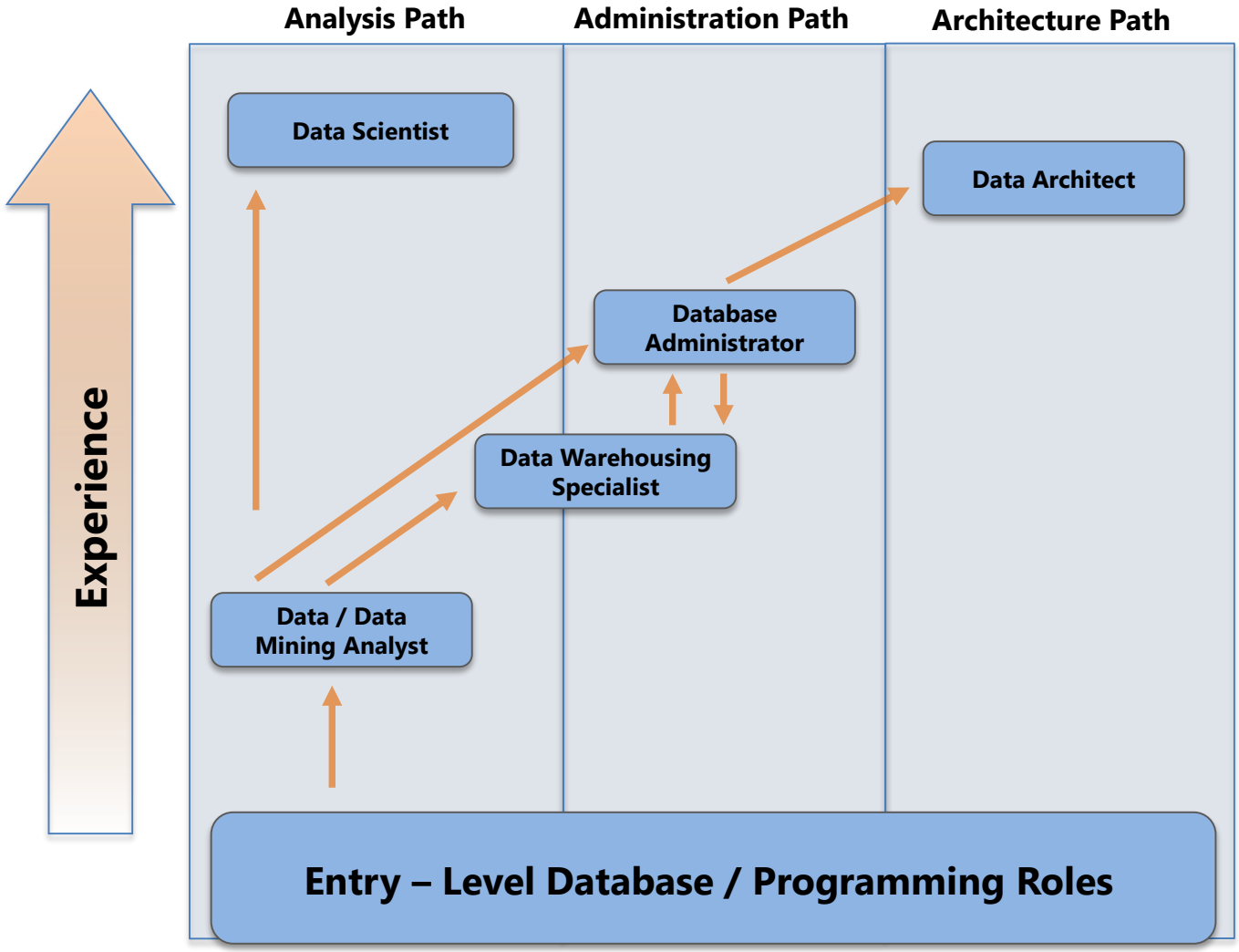
Data and Database Career Ladder



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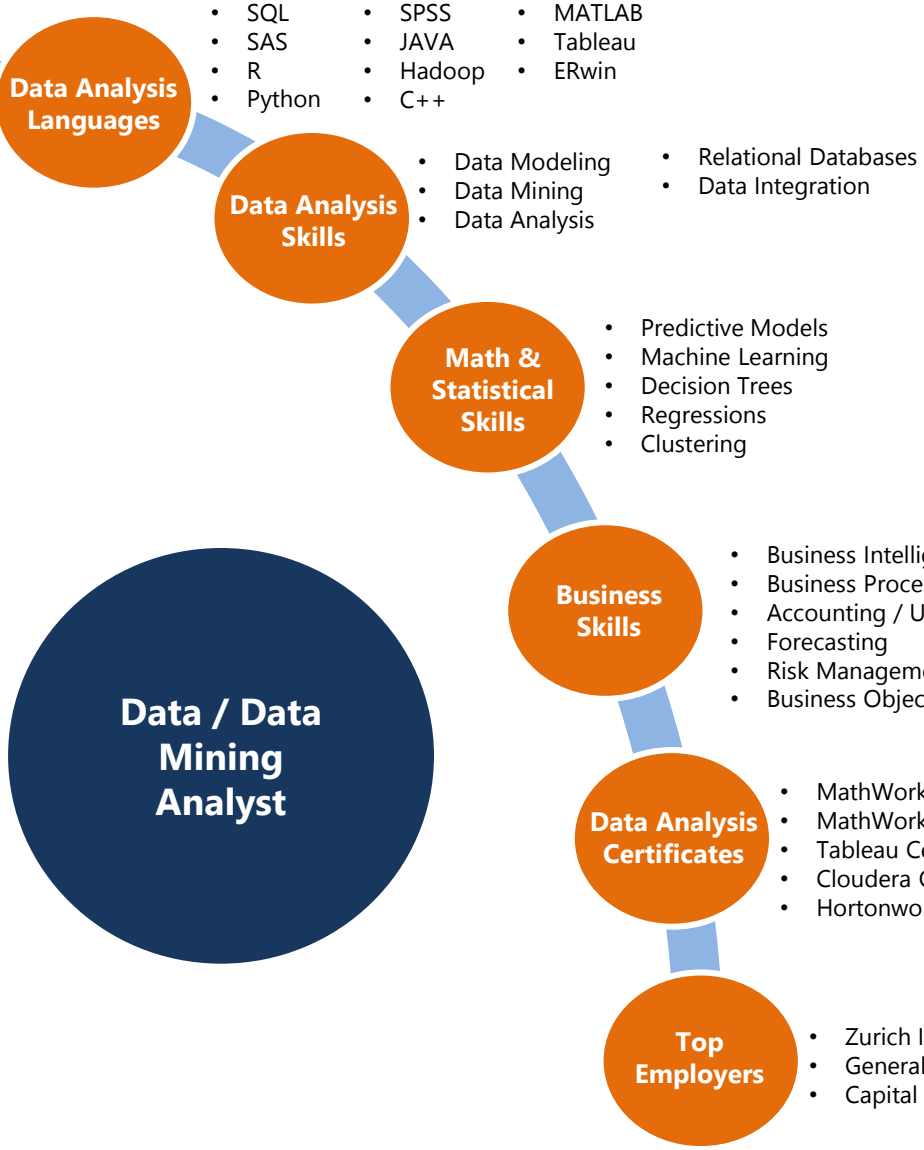
II Data/Data Mining Analyst



Occupation Profile

Data / Data Mining Analyst: leverage data analysis tools to document, analyze, manipulate, extract and aggregate large scale data sets.

Common job titles include: Data Analyst, BI Data Analyst, Senior Data Analyst, Data Modeler

Chicago Postings	Concentration in Chicago	% BA	% Entry Level	Median Hourly Wage
★★ 1,840	High (LQ=1.32)	93%	11%	$$$$ $38.83

Hourly Wage

$	Below $15
$$	$15-$24
$$$	$24-$33
$$$$	Above $33

Posting Counts

★	Below 1,000
★★	1,000-2,000
★★★	2,000-3,000
★★★★	3,000-4,000
★★★★★	Above 4,000

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Data/Data Mining Analyst Transitions

Data / Data Mining Analyst

Data Warehousing Skills
- Data Warehouse Architecture
- Data Warehouse Development
- Data Integration
- Data Extraction
- OLAP
- Systems Development Life Cycle
- Data Mart Design
- Batch Loading

Database Analysis Tools
- ETL Tools e.g. DataStage
- Cognos
- Informatica
- Teradata

Data Warehousing Specialist

Database Analysis Certificates
- Oracle Database 11g Data Warehousing Essentials
- TDWI Certified Business Intelligence Professional (CBIP)
- IBM Certified Developer – Cognos 10 BI Data Warehouses
- CompTIA Storage+

Database Admin Skills
- Database Management
- Data Modeling
- Disaster Recovery Planning
- Debugging
- Relational Databases
- Data Entry Relational Database Management Systems
- Technical Writing

Database Analysis Tools
- ETL Tools e.g. DataStage
- Cognos
- Informatica
- Teradata

Database Analysis Certificates
- Microsoft Certified Database Administrator (MCDBA)
- Oracle 11g
- MCSA: SQL Server
- MongoDB / NoSQL
- My SQL 5.6 Database Administrator
- CompTIA Storage+

Advanced SQL Skills
- Oracle PL/SQL
- SQL Server
- MS SQL
- MS SQL Server Integration Services
- SQL Server Reporting Services
- Transact SQL
- MySQL
- PostgreSQL

Database Administrator

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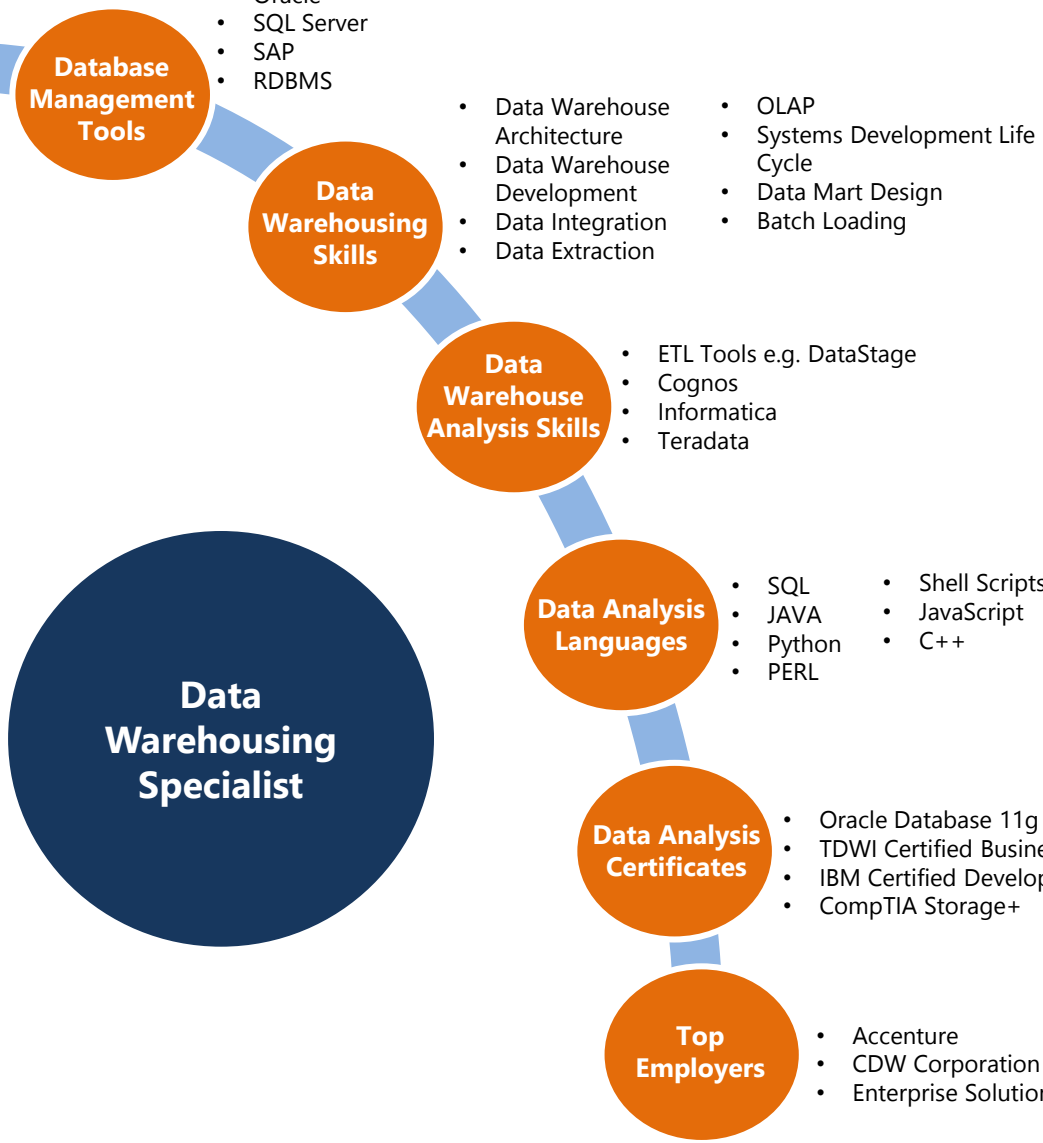
Data Warehousing Specialist



Occupation Profile

Data Warehousing Specialist: Design, implement, or operate comprehensive data warehouse systems to balance optimization of data access with batch loading and resource utilization factors, according to customer requirement.
Common job titles include: Data Warehouse Developer, Datastage Developer, Data Warehouse Analyst

Chicago Postings	Concentration in Chicago	% BA	% Entry Level	Median Hourly Wage
★★ 1,212	Very High (LQ=1.76)	93%	<5%%	$$$$ $45.26

Hourly Wage

$	Below $15
$$	$15-$24
$$$	$24-$33
$$$$	Above $33

Posting Counts

★	Below 1,000
★★	1,000-2,000
★★★	2,000-3,000
★★★★	3,000-4,000
★★★★★	Above 4,000

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Data Warehousing and Database Administrator Transitions

Data Warehousing Specialist

Data Warehousing Skills

- Data Warehouse Architecture
- Data Warehouse Development
- Data Extraction
- OLAP
- Data Mart Design
- RDBMS

Database Analysis Tools

- Cognos
- Informatica
- Teradata

Database Analysis Certificates

- Oracle Database 11g Data Warehousing Essentials
- TDWI Certified Business Intelligence Professional (CBIP)
- IBM Certified Developer – Cognos 10 BI Data Warehouses

Database Administrator

Database Admin Skills

- Database Management
- Debugging
- Data Entry Relational Database Management Systems
- Technical Writing

Advanced SQL Skills

- Oracle PL/SQL
- MS SQL Server Integration Services
- SQL Server Reporting Services
- Transact SQL
- MySQL
- PostgreSQL

Database Analysis Certificates

- Microsoft Certified Database Administrator (MCDBA)
- Oracle 11g
- MCSA: SQL Server
- MongoDB / NoSQL
- My SQL 5.6 Database Administrator

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Database Administrator

SQL Skills

- Oracle PL/SQL
- SQL Server
- MS SQL
- MS SQL Server Integration Services
- SQL Server Reporting Services
- Transact SQL
- MySQL
- PostgreSQL

Database Admin Skills

- Database Management
- Data Modeling e.g. ERwin
- Disaster Recovery Planning
- Debugging
- Relational Databases
- Technical Writing
- Systems Development Lifecycle

Database Analysis Skills

- ETL Tools e.g. DataStage
- Sybase

Data Analysis Languages

- JAVA
- Python
- PERL
- Shell Scripts
- C++

Data Analysis Certificates

- Microsoft Certified Database Administrator (MCDBA)
- Oracle 11g
- MCSA: SQL Server
- MongoDB / NoSQL
- My SQL 5.6 Database Administrator
- CompTIA Storage+

Top Employers

- Enterprise Solutions Inc.
- PricewaterhouseCoopers
- UPP

Occupation Profile

Database Administrator: develop and design database strategies, monitor systems and improve database performance and capacity. They plan for future expansion requirements and may also plan, co-ordinate and implement security measures to safeguard the database.

Common job titles include: Database Administrator, ETL Developer, SQL Developer, Database Developer

Chicago Postings	Concentration in Chicago	% BA	% Entry Level	Median Hourly Wage
★★★★ 4,436	High (LQ=1.47)	85%	10%	$$$$ $40.33

Hourly Wage

$	Below $15
$$	$15-$24
$$$	$24-$33
$$$$	Above $33

Posting Counts

★	Below 1,000
★★	1,000-2,000
★★★	2,000-3,000
★★★★	3,000-4,000
★★★★★	Above 4,000

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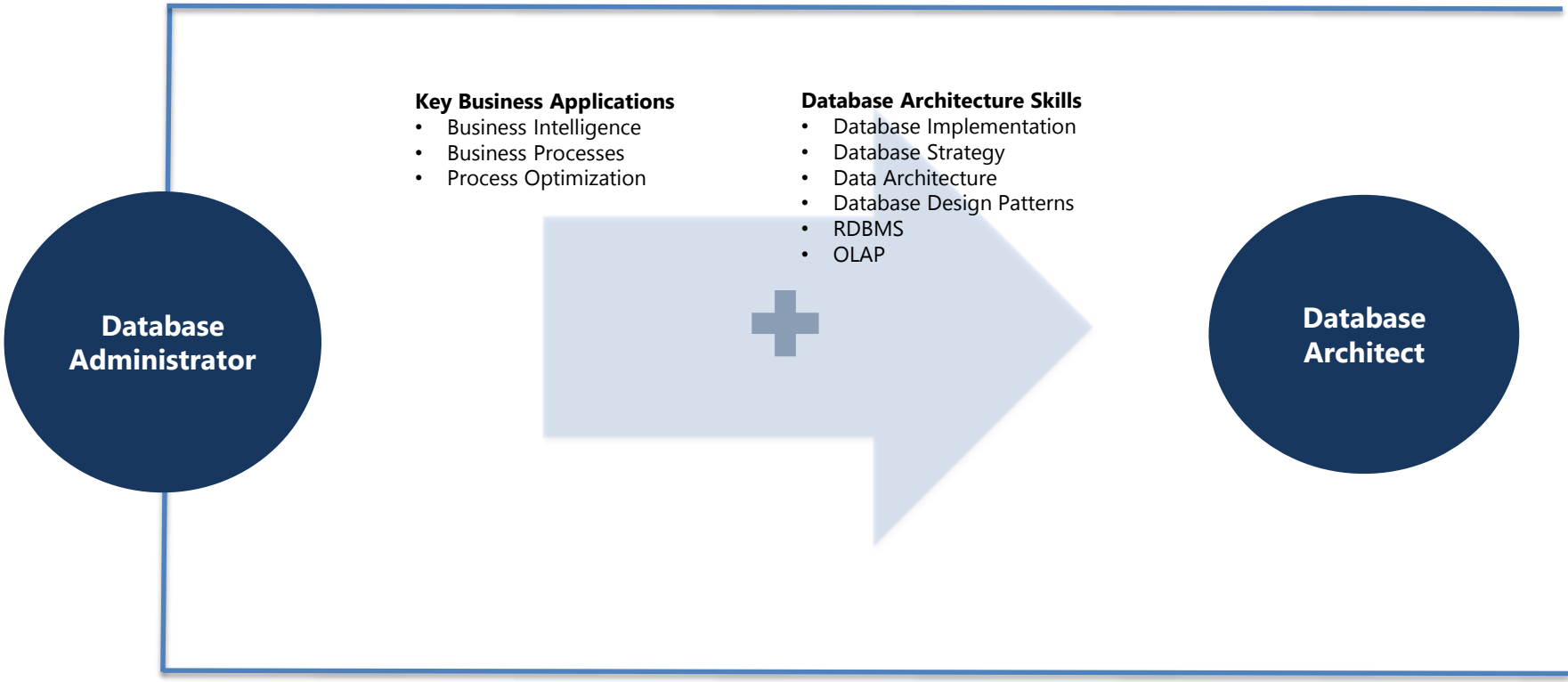
Database Administrator Transition



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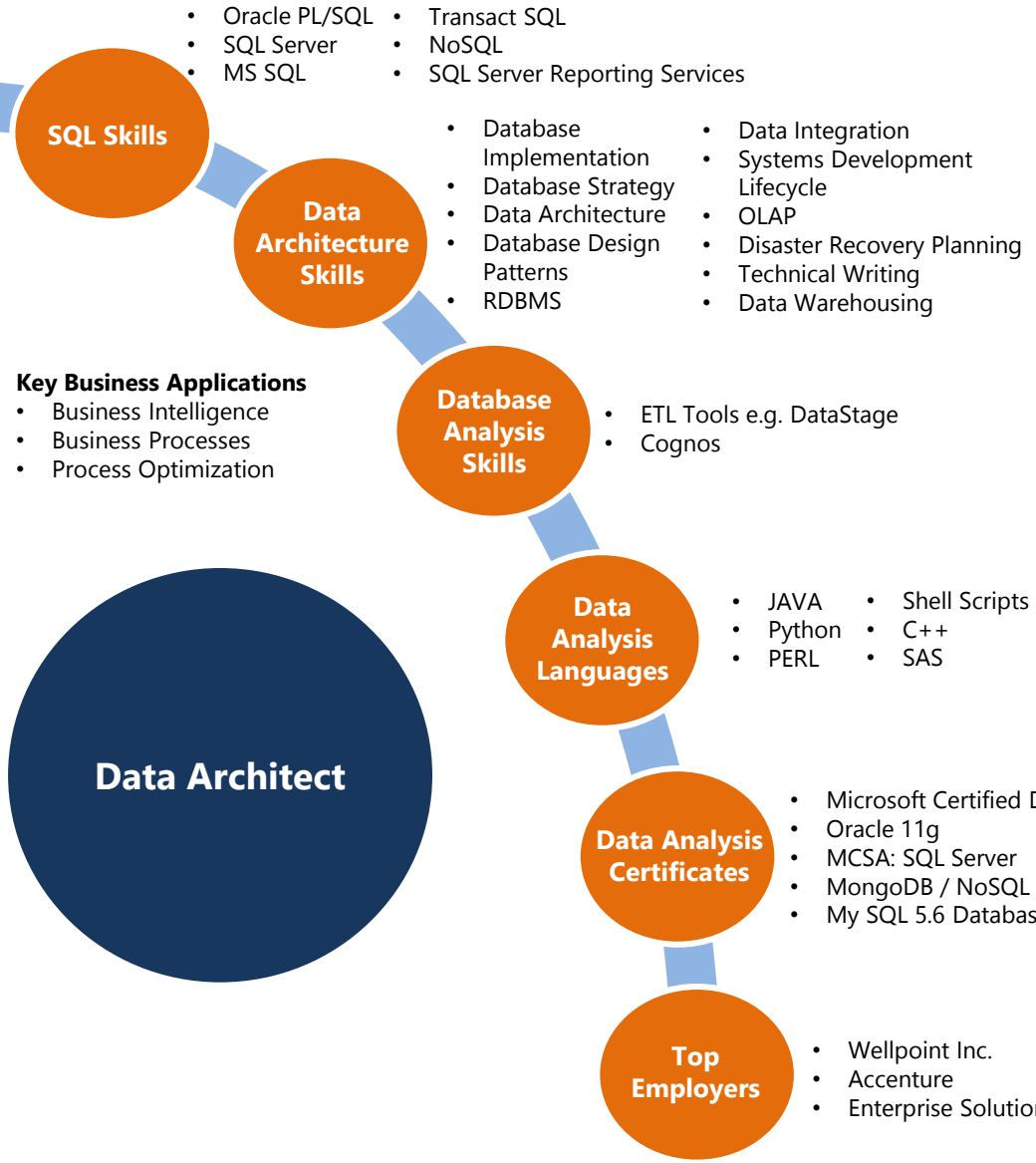
Data Architect



Key Business Applications
- Business Intelligence
- Business Processes
- Process Optimization

Occupation Profile

Data Architect: creates and manages large and expansive electronic databases to store and organize vast amounts of data in line with business and employee needs and operations.
Common job titles include: Data Architect, SQL Database Architect, Storage Architect, IT Infrastructure Architect

Chicago Postings	Concentration in Chicago	% BA	% Entry Level	Median Hourly Wage
★★ 1,321	Very High (LQ=1.69)	95%	6%	$$$$ $43.97

Hourly Wage
$ Below $15
$$ $15-$24
$$$ $24-$33
$$$$ Above $33

Posting Counts
★ Below 1,000
★★ 1,000-2,000
★★★ 2,000-3,000
★★★★ 3,000-4,000
★★★★★ Above 4,000

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Career Ladder: Software QA Testing and Development

Software testing and development opportunities are in lower demand than other high-skill IT occupations.

Notes for Career Counselors:

- Advancement is heavily reliant on skill development, knowledge of programming languages, and experience. Formal certifications are useful for career transitions, such as to database roles.
- BI is a strong gateway into high paying IT roles by building upon existing analytical experience, specifically in the finance or marketing fields.

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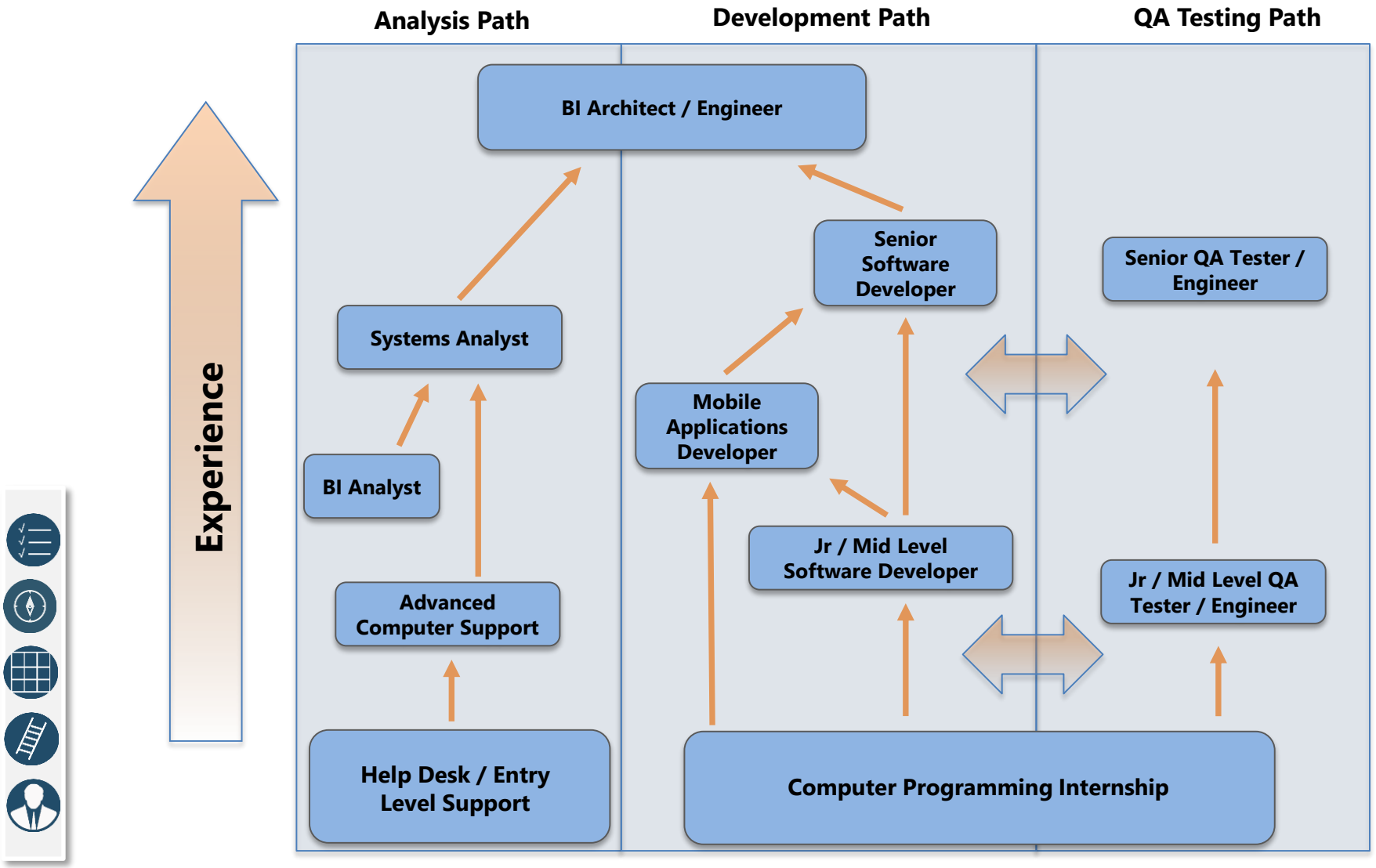
Software and Computer Applications Career Ladder



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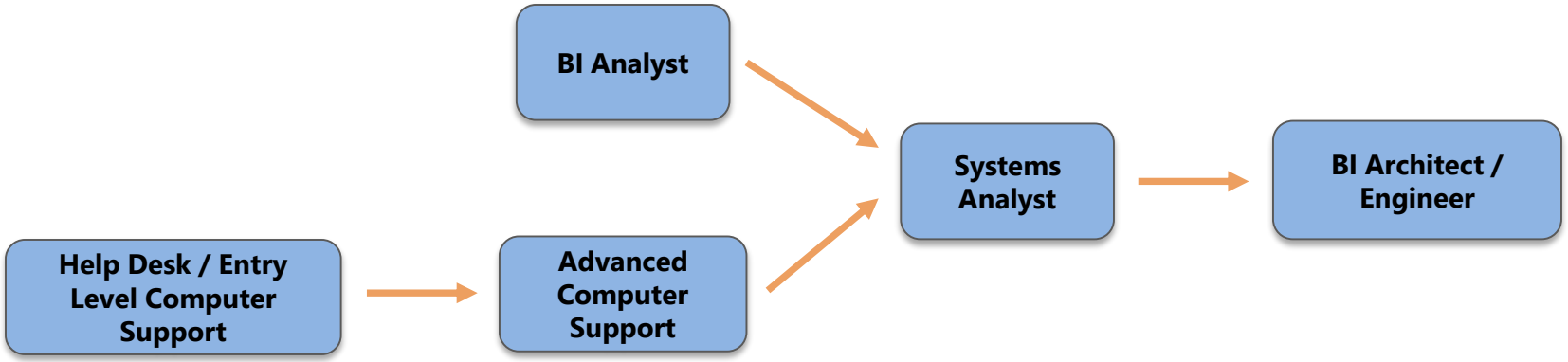
Career Ladder: Software and Computer Applications

Analysis Pathway



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Help Desk/Entry-Level Computer Support

Provides front-line support to personal computer users and addresses basic telecommunications and networking issues.

By far the largest middle-skill IT role, Help Desk roles provide an important entry point into the IT workforce and can serve as a stepping stone to more advanced technical roles. It requires a stronger customer service orientation than most other IT roles. Common job titles include: help desk support / specialist, technical support representative / specialist, and desktop support specialist.

Overview

Demand: ★★★★ (5,041)

Salary: **$$** ($49,352)

Location Quotient: **High** (1.24)

Entry Level: 47%

Degree Requirements*

Sub-BA	BA
49%	51%

Commonly Requested Certifications

A+ Technician
Network+
Microsoft Technology Associate
Internet and Computer Core Certification

Technical Skill Requirements

Help Desk
Computer Repair
Hardware and Software Installation
System and Network Configuration
Basic Troubleshooting
Microsoft Office Applications
VPN

Baseline Skill Requirements

Communication
↑ Customer Service
Writing
Problem Solving
Organization
Leadership
↑ Multi-Tasking
Project Management
Planning
Detail-Oriented

↑ = More commonly requested for computer support than other IT roles.

Hourly Wage	
$	Below $15
$$	$15-$24
$$$	$24-$33
$$$$	Above $33

Posting Counts	
★	Below 1,000
★★	1,000-2,000
★★★	2,000-3,000
★★★★	3,000-4,000
★★★★★	Above 4,000

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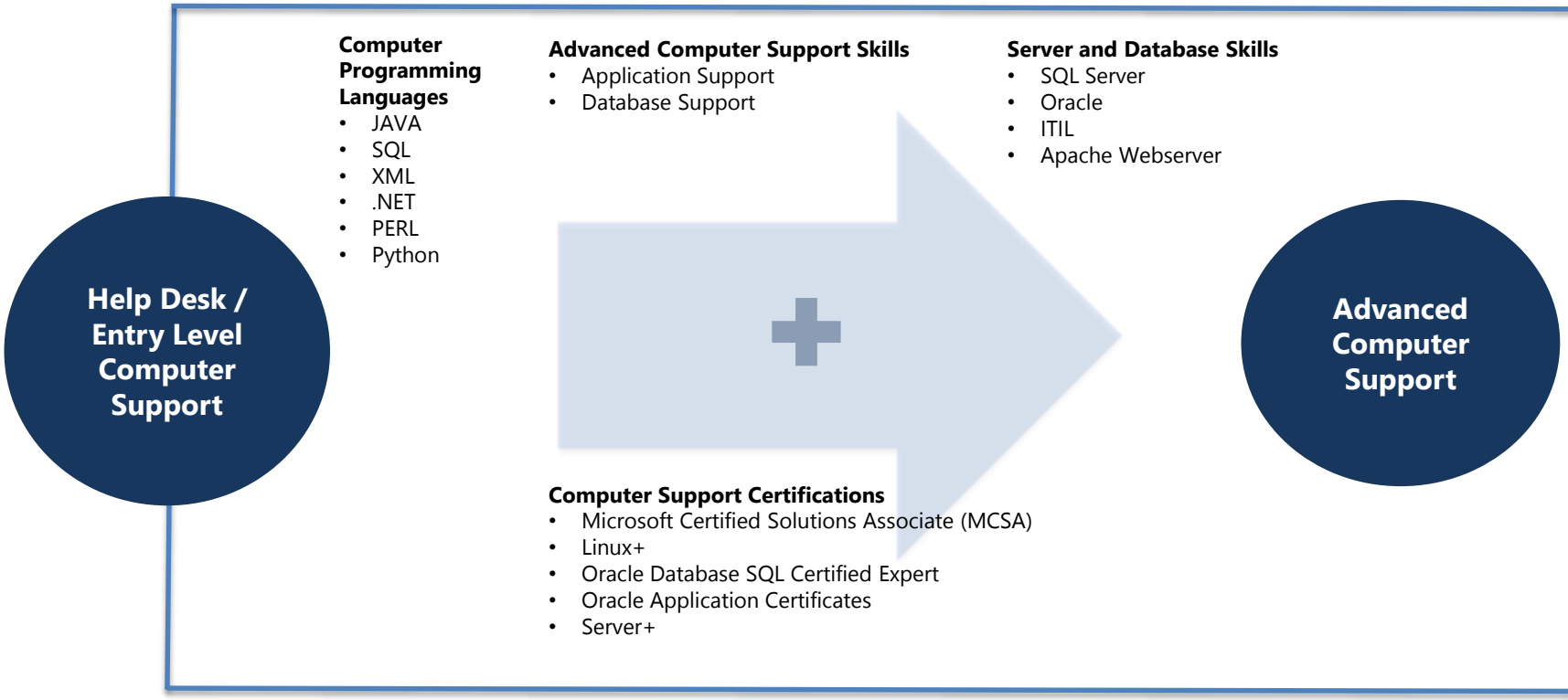
Help Desk/Entry Level Computer Support Transitions



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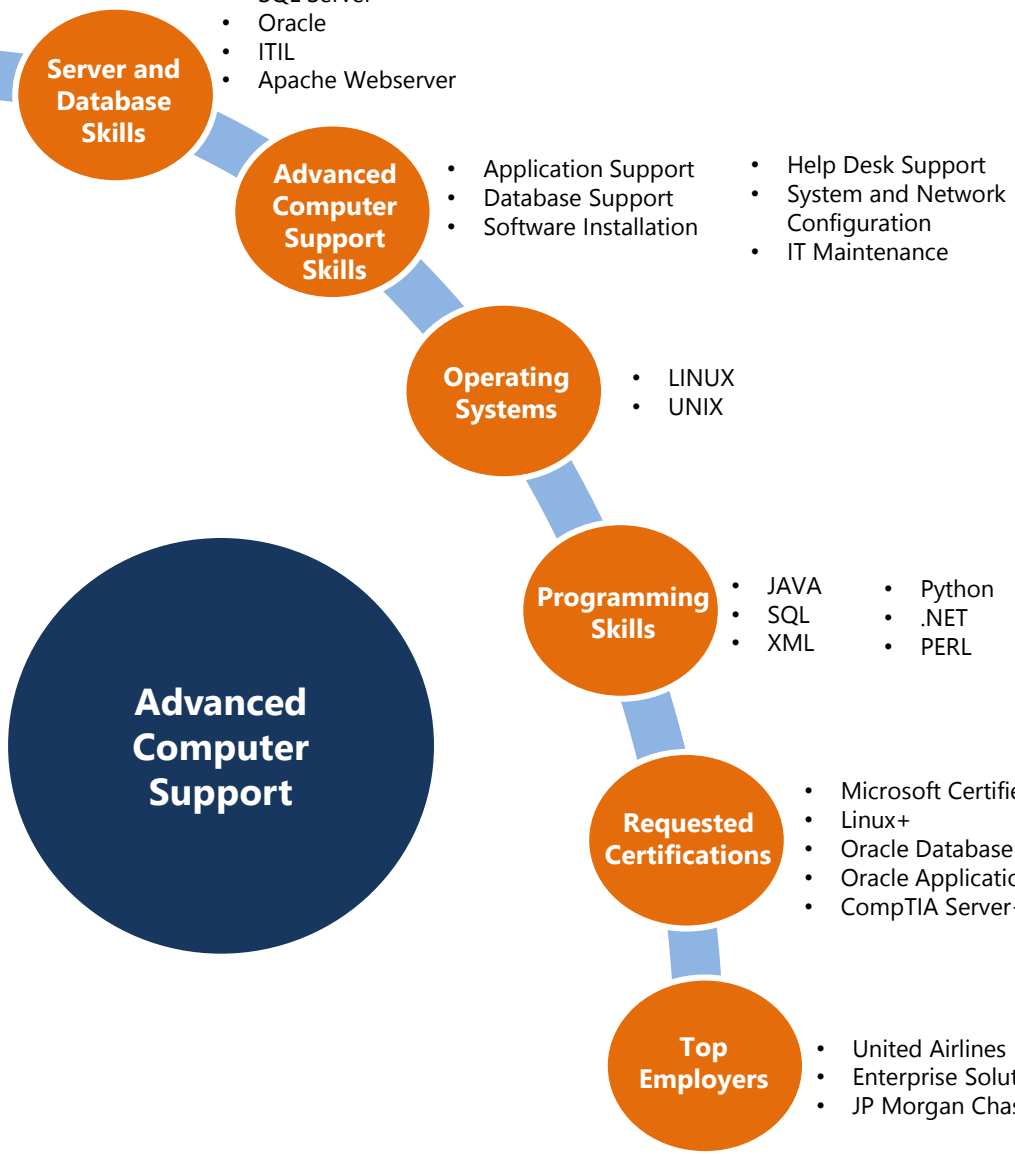
II Advanced Computer Support



Occupation Profile

Advanced Computer Support: Typically requires substantial programming knowledge and database skills and often requires a B.A.

Common job titles include: technical support engineer, application analyst, IT support analyst, solutions specialist

Chicago Postings	Concentration in Chicago	% BA	% Entry Level	Median Hourly Wage
★★ 1,708	High (LQ=1.39)	◕ 79%	◔ 33%	$$$$ $34.85

Hourly Wage

$	Below $15
$$	$15-$24
$$$	$24-$33
$$$$	Above $33

Posting Counts

★	Below 1,000
★★	1,000-2,000
★★★	2,000-3,000
★★★★	3,000-4,000
★★★★★	Above 4,000

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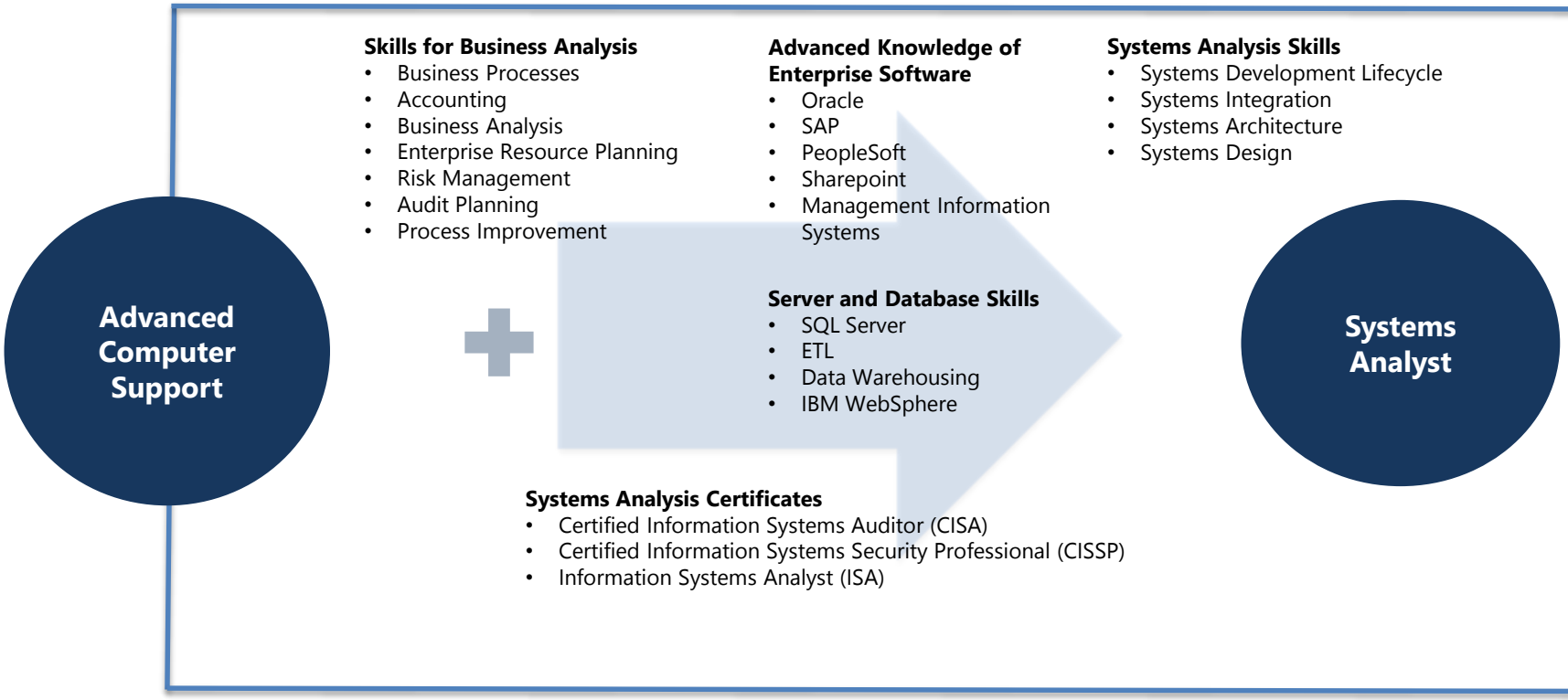
Advanced Computer Support Transitions



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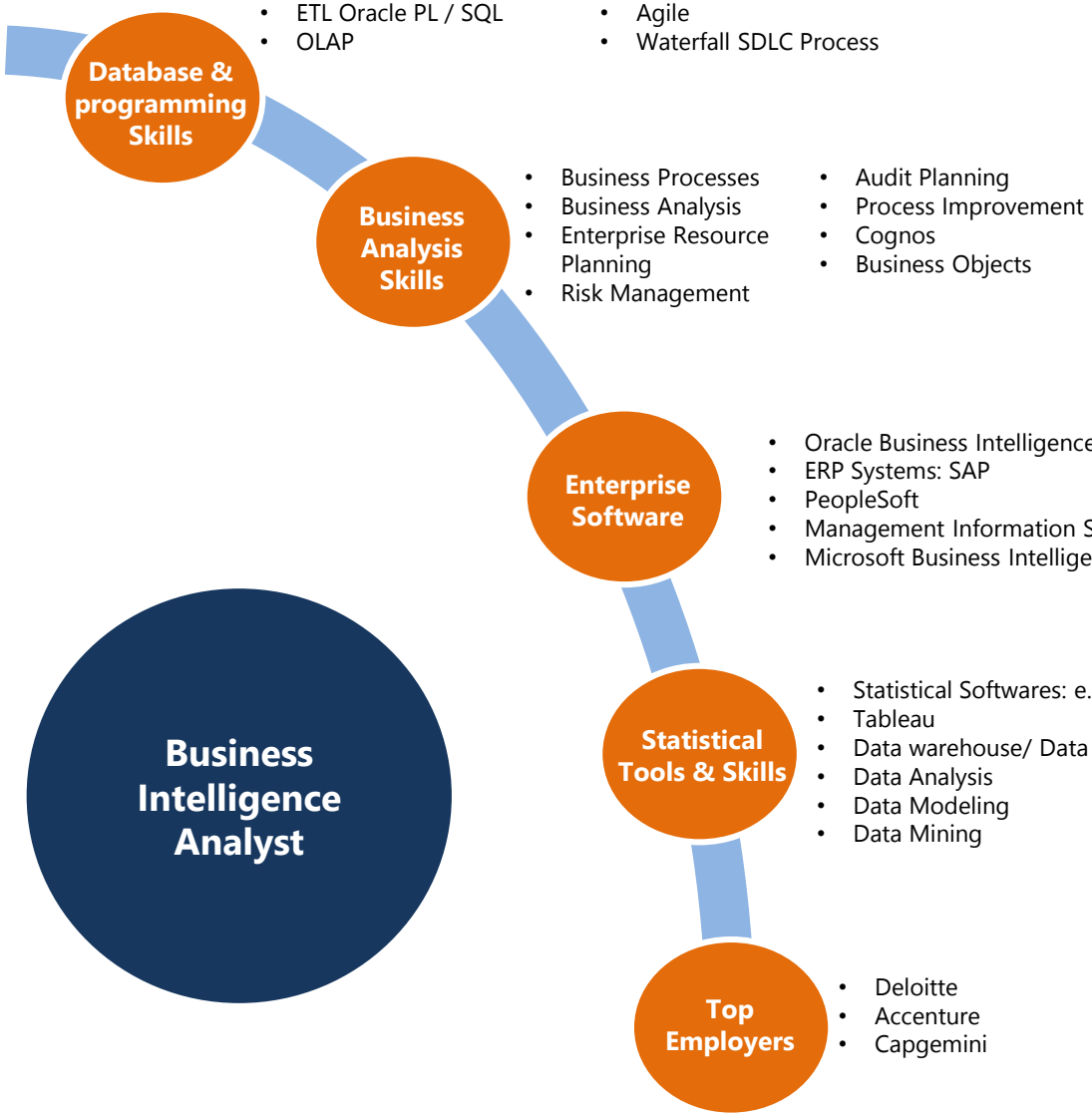
Business Intelligence Analyst



Occupation Profile

Business Intelligence Analyst: Provide business process, financial or market intelligence to guide managers to make informed business decisions by managing and querying data, producing metrics and generating reports.

Common job titles include: Business Systems Analyst, Business Analyst, Business Intelligence Analyst, IT Business Analyst, Technical Business Analyst, Business Consultant

Chicago Postings	Concentration in Chicago	% BA	% Entry Level	Median Hourly Wage
★★★★★ 4198	Very High (LQ=1.90)	97%	7%	$$$$ $46.16

Hourly Wage

$	Below $15
$$	$15-$24
$$$	$24-$33
$$$$	Above $33

Posting Counts

★	Below 1,000
★★	1,000-2,000
★★★	2,000-3,000
★★★★	3,000-4,000
★★★★★	Above 4,000

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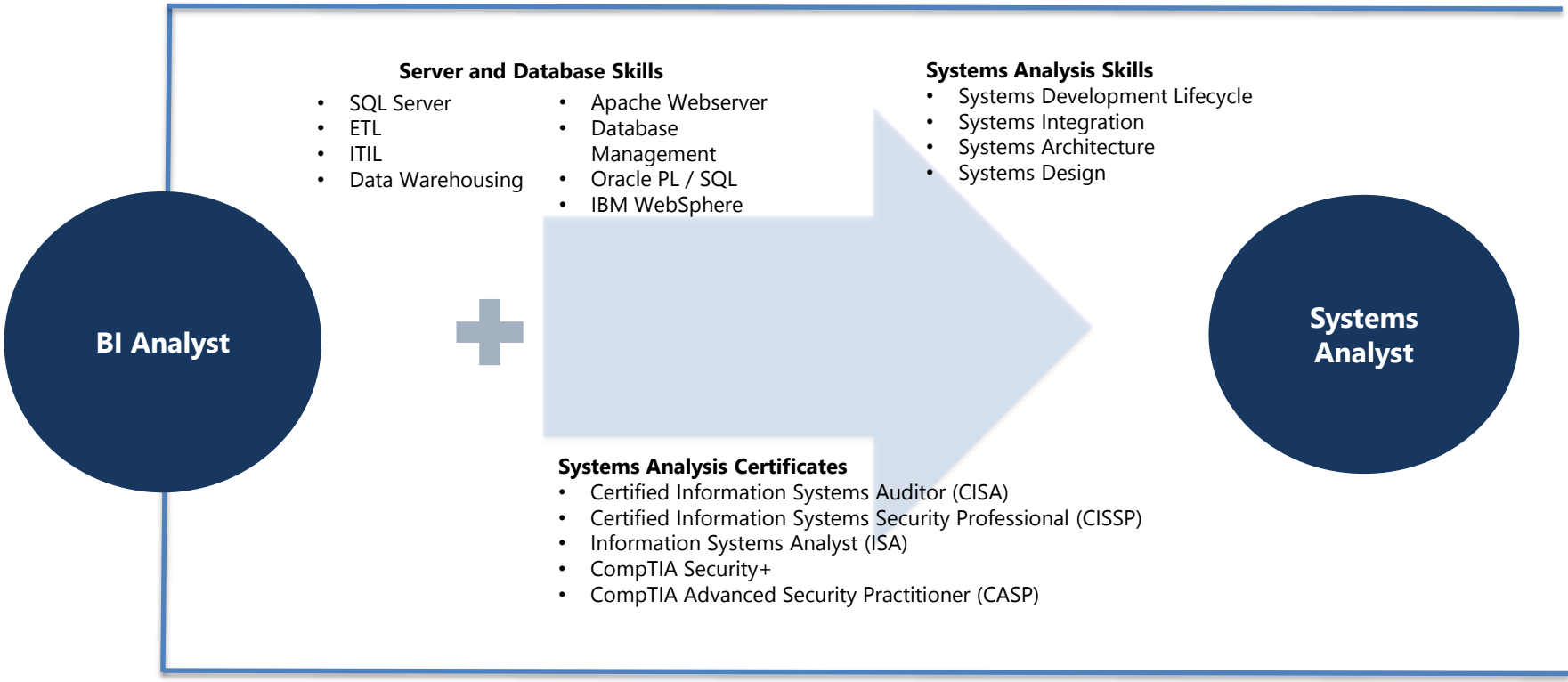
Advanced Computer Support Transitions



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Systems Analyst

Server and Database Skills
- SQL Server
- ITIL
- ETL
- Apache Webserver
- Database Management
- Data Warehousing
- Oracle PL / SQL
- IBM WebSphere

Business Analysis Skills
- Business Processes
- Accounting
- Business Analysis
- Risk Management
- Audit Planning
- Process Improvement
- Enterprise Resource Planning

Enterprise Software
- Oracle
- SAP
- PeopleSoft
- Management Information Systems

Programming Skills
- JAVA
- SQL
- XML
- Python
- .NET
- PERL
- C++
- SAS
- jQuery

Systems Analysis Skills
- Systems Development Lifecycle
- Systems Integration
- Systems Architecture
- Systems Design

Requested Certifications
- Certified Information Systems Auditor (CISA)
- Certified Information Systems Security Professional (CISSP)
- Project Management Certifications (PMP)
- Information Systems Analyst (ISA)
- CompTIA Security+
- CompTIA Advanced Security Practitioner (CASP)

Top Employers
- Accenture
- Sears
- Allstate

Occupation Profile

Systems Analyst: leverage IT analysis and design techniques to solve business and operational problems within an enterprise. Design systems to meet business goals and develop specifications for IT team to follow.

Common job titles include: Systems Analyst, Business Systems Analyst, Technical Analyst, IT Analyst, Technical Consultant

Chicago Postings	Concentration in Chicago	% BA	% Entry Level	Median Hourly Wage
★★★★★ 6,727	Very High (LQ=1.64)	94%	9%	$$$$ $42.14

Hourly Wage
$ Below $15
$$ $15-$24
$$$ $24-$33
$$$$ Above $33

Posting Counts
★ Below 1,000
★★ 1,000-2,000
★★★ 2,000-3,000
★★★★ 3,000-4,000
★★★★★ Above 4,000

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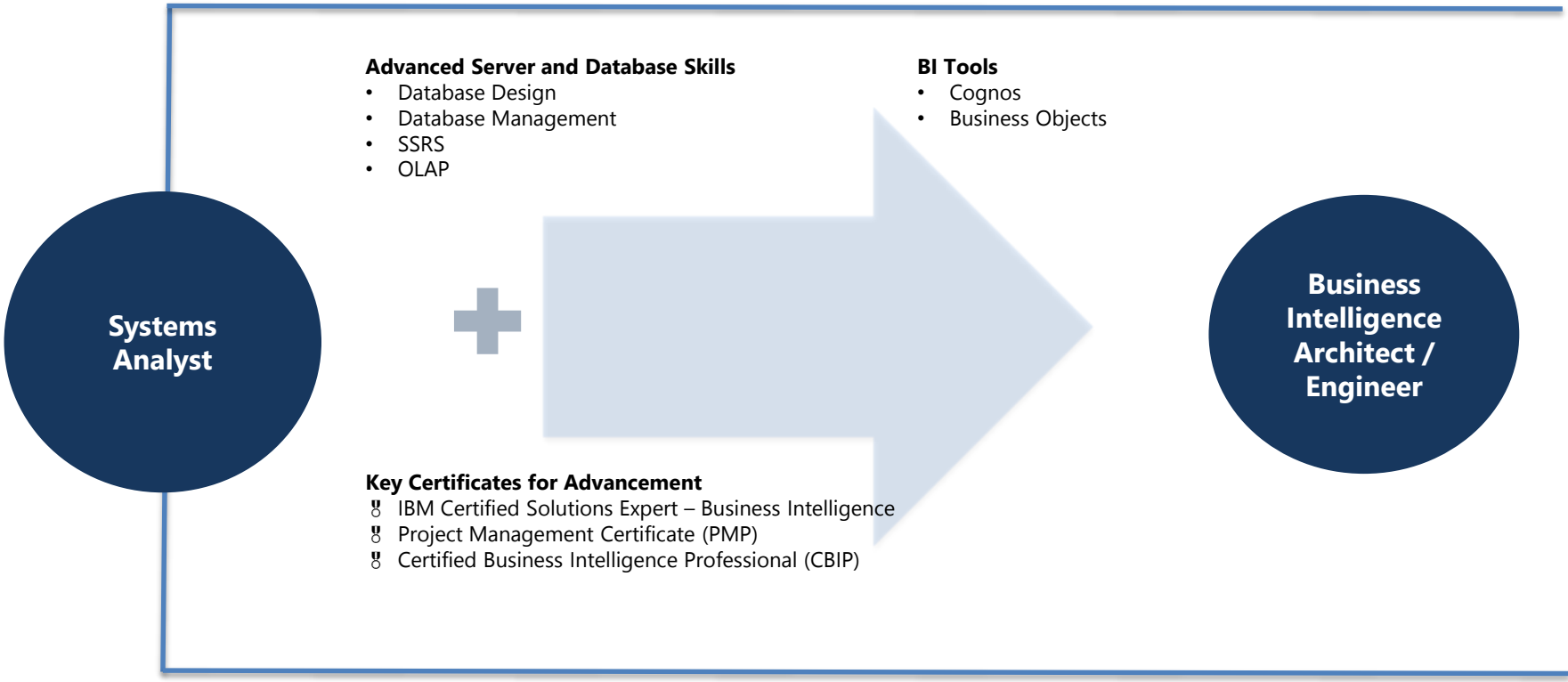
Help Desk/Entry Level Computer Support Transitions



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Business Intelligence Architect/Engineer

BI Intelligence Architect / Engineer

Server and Database Skills
- SQL Server
- ETL
- Database Design
- Apache Webserver
- Database Management
- Data Warehousing
- Oracle PL / SQL
- SSRS
- OLAP

Business Analysis Skills
- Business Processes
- Business Analysis
- Enterprise Resource Planning
- Risk Management
- Audit Planning
- Process Improvement
- Cognos
- Business Objects

Enterprise Software
- Oracle
- SAP
- PeopleSoft
- SharePoint
- Salesforce
- Management Information Systems

Programming Skills
- JAVA
- SQL
- XML
- Python
- .NET
- PERL
- C++
- SAS
- jQuery

Systems Analysis Skills
- Systems Development Lifecycle
- Systems / Data Integration
- Systems Architecture
- Systems Design

Requested Certifications
- IBM Certified Solutions Expert – Business Intelligence
- Project Management Certificate (PMP)
- Certified Business Intelligence Professional (CBIP)

Top Employers
- Accenture
- Sears
- Allstate

Occupation Profile

BI Architect / Engineer: builds the framework for organizing and integrating business intelligence systems for reporting and data analytics using information management systems and IT tools.

Common job titles include: Business Intelligence Developer, Oracle Developer, SharePoint Developer, CRM Developer, Business Intelligence Architect

Chicago Postings	Concentration in Chicago	% BA	% Entry Level	Median Hourly Wage
★★★ 2,637	Very High (LQ=1.64)	97%	<5%	$$$$ $52.16

Hourly Wage

$	Below $15
$$	$15-$24
$$$	$24-$33
$$$$	Above $33

Posting Counts

★	Below 1,000
★★	1,000-2,000
★★★	2,000-3,000
★★★★	3,000-4,000
★★★★★	Above 4,000

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Career Ladder: Software and Computer Applications

QA Testing Pathway

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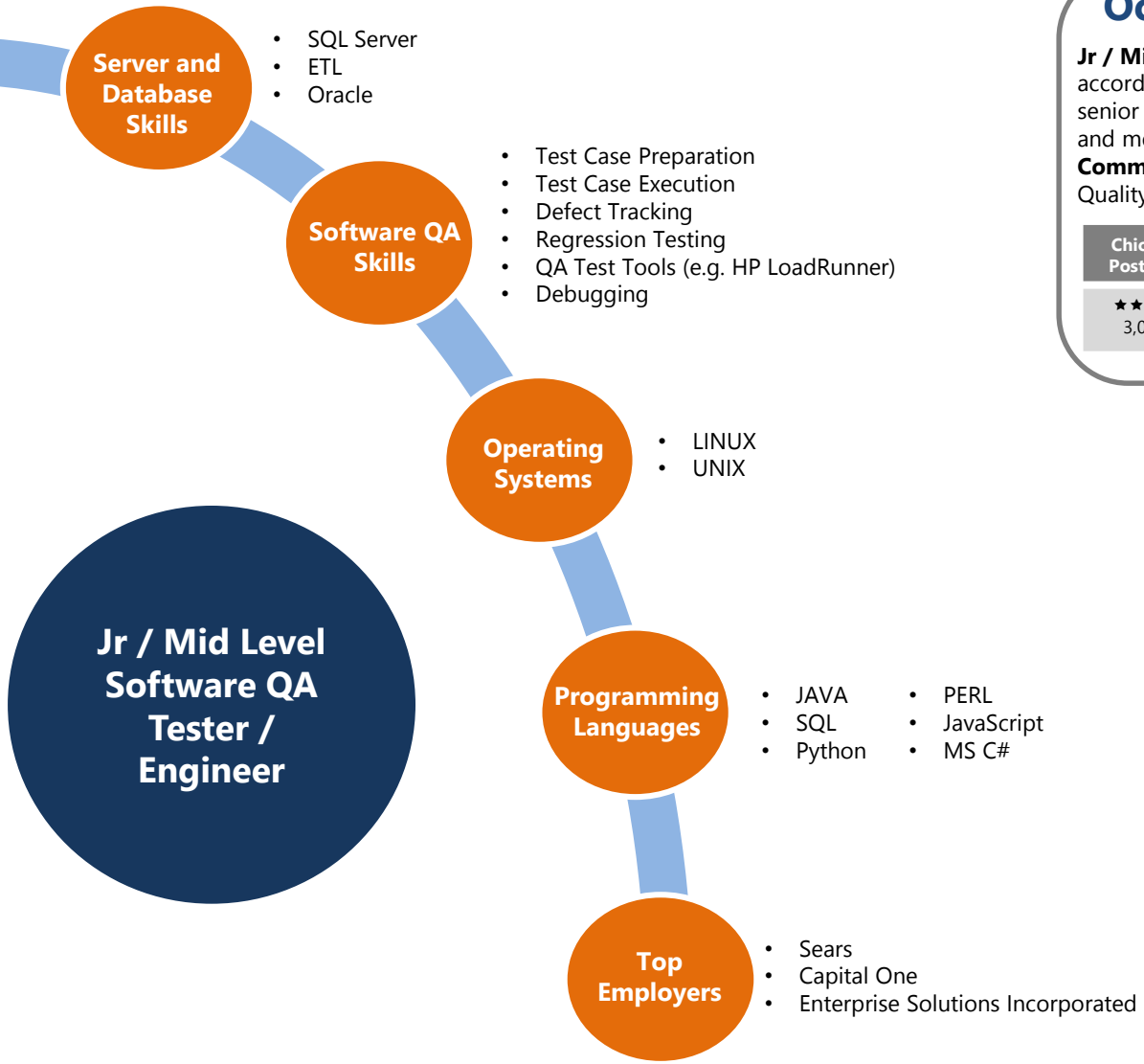
Jr/Mid Level Software QA Tester/Engineer



Occupation Profile

Jr / Mid Level Software QA Tester: evaluate software programs according to user requirements by preparing and executing under senior supervision, and tracking defects with QA tools, processes, and methodology.

Common job titles include: Junior Quality Assurance Analyst, Quality Assurance Analyst I, Entry Level Quality Assurance Tester

Chicago Postings	Concentration in Chicago	% BA	% Entry Level	Median Hourly Wage
★★★★ 3,029	High (LQ=1.39)	90%	42%	$$$$ $39.01

Hourly Wage

$	Below $15
$$	$15-$24
$$$	$24-$33
$$$$	Above $33

Posting Counts

★	Below 1,000
★★	1,000-2,000
★★★	2,000-3,000
★★★★	3,000-4,000
★★★★★	Above 4,000

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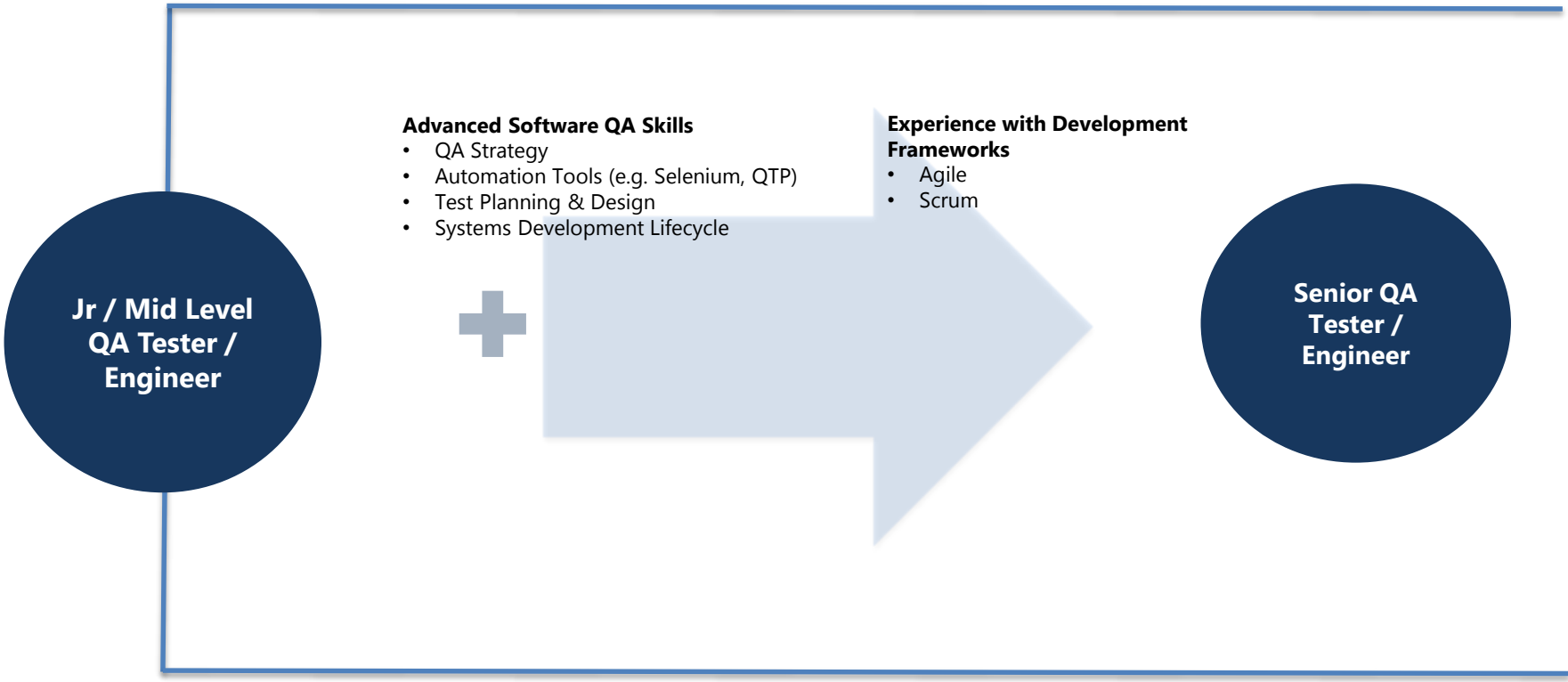
Jr/Mid Level QA Tester/Engineer Transition



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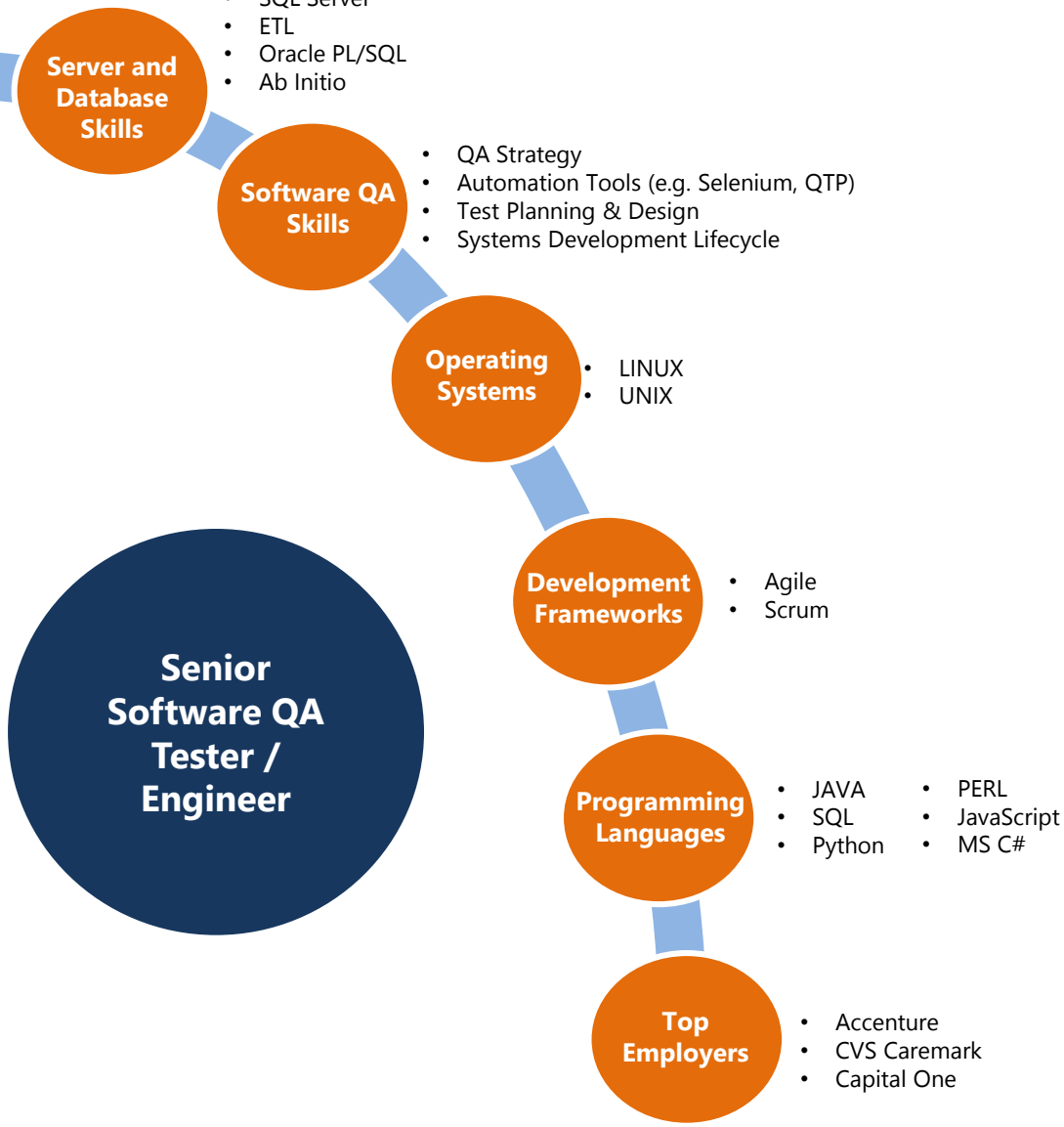
Senior Software QA Tester/Engineer



Occupation Profile

Senior Software QA Tester: understand testing goals, develop and deliver automated tests and tools, oversee other QA testers on test automation procedures, manage test progress/ status/ metrics reports, maintain and improve test framework.
Common job titles include: Software Test Engineer, Quality Assurance Engineer, Lead Quality Assurance Engineer, Automation Tester

Chicago Postings	Concentration in Chicago	% BA	% Entry Level	Median Hourly Wage
★★ 1,363	Average (LQ=1.15)	93%	<5%	$$$$ $45.80

Hourly Wage
$ Below $15
$$ $15-$24
$$$ $24-$33
$$$$ Above $33

Posting Counts
★ Below 1,000
★★ 1,000-2,000
★★★ 2,000-3,000
★★★★ 3,000-4,000
★★★★★ Above 4,000

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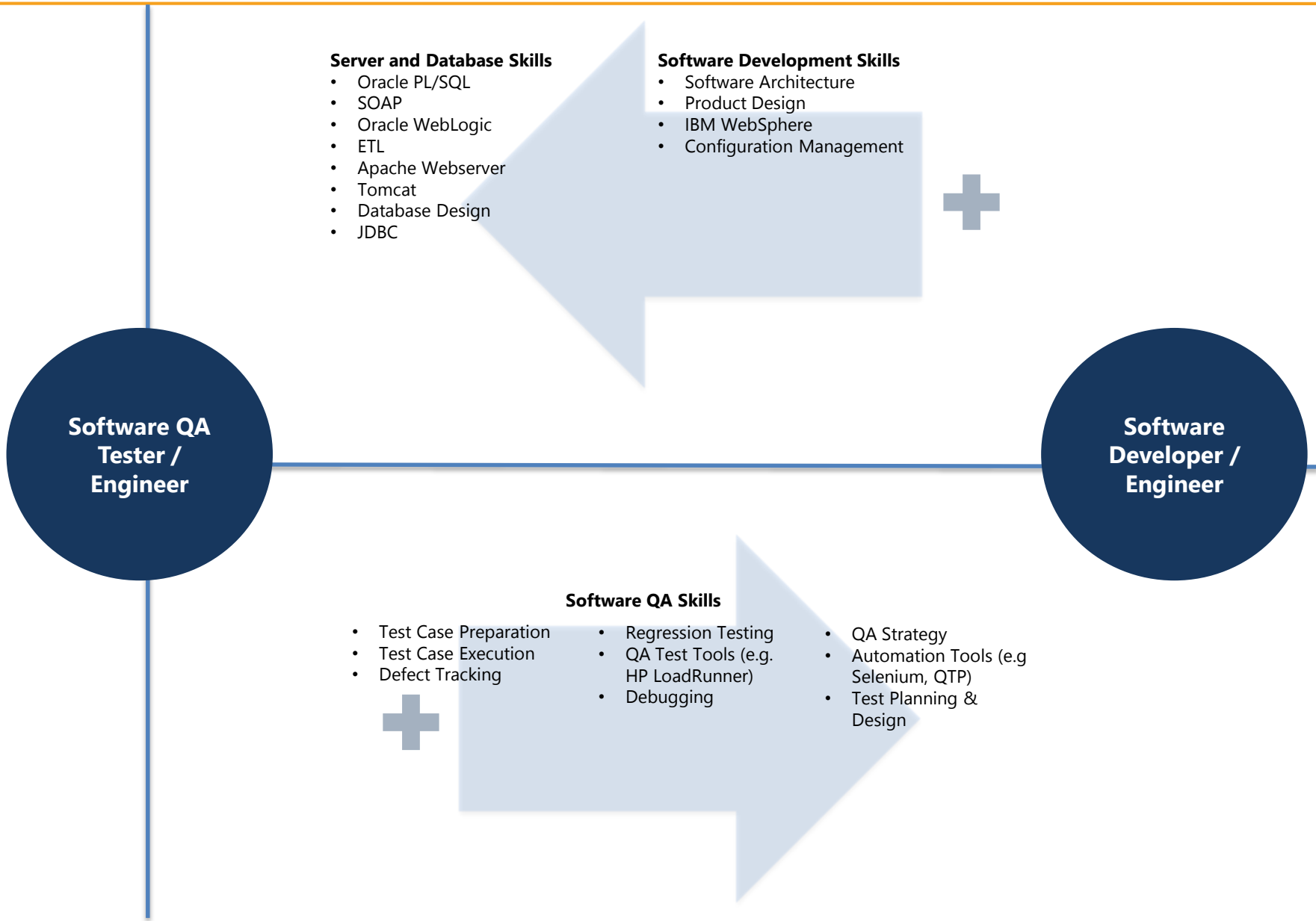
Software QA Tester and Developer Transitions



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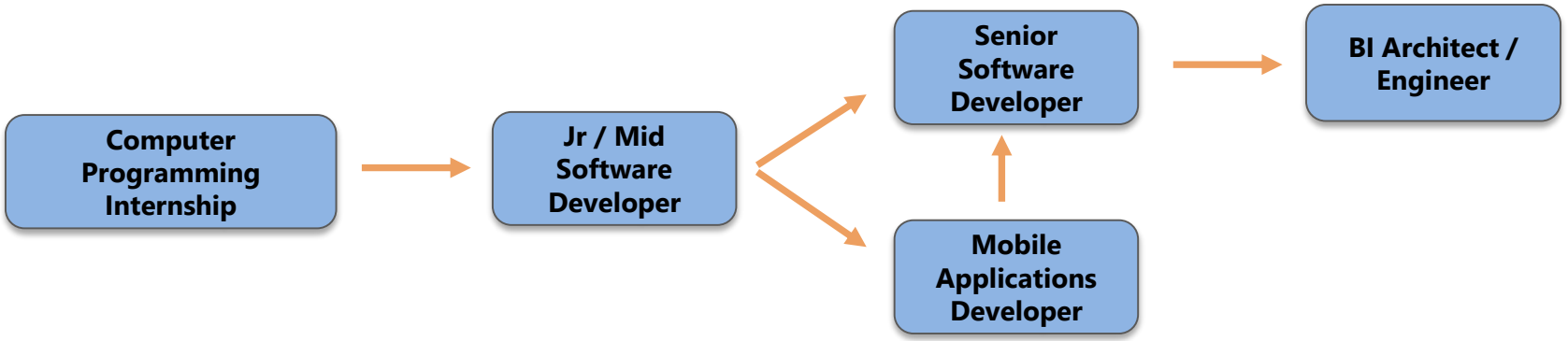
Career Ladder: Software and Computer Applications

Software Development Pathway



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Junior/Mid Level Software Developer/Engineer

Server and Database Skills
- SQL Server
- Oracle PL/SQL
- SOAP
- Relational Databases
- Apache Webserver
- Tomcat

Software Development Skills
- Debugging
- Development Support
- Technical Writing
- Web Application Development

Operating Systems
- LINUX
- UNIX

Development Frameworks
- Visual Studio
- Agile

Programming Languages
- JAVA
- SQL
- Python
- C++'
- PERL
- JavaScript
- MS C#
- Python
- PHP
- HTML5
- AJAX

Top Employers
- Accenture
- Capital One
- Sears

Occupation Profile

Junior/Mid Level Software Developer: understand development goals, develop and debug programming codes to enhance software/application, assist end users by troubleshooting problems.

Common job titles include: Junior Developer, Junior Applications Developer, Software Engineer I, Entry Level Developer

Chicago Postings	Concentration in Chicago	% BA	% Entry Level	Median Hourly Wage
★★★★★ 13,654	Very High (LQ=1.55)	91%	27%	$$$$ $45.60

Hourly Wage
$ Below $15
$$ $15-$24
$$$ $24-$33
$$$$ Above $33

Posting Counts
★ Below 1,000
★★ 1,000-2,000
★★★ 2,000-3,000
★★★★ 3,000-4,000
★★★★★ Above 4,000

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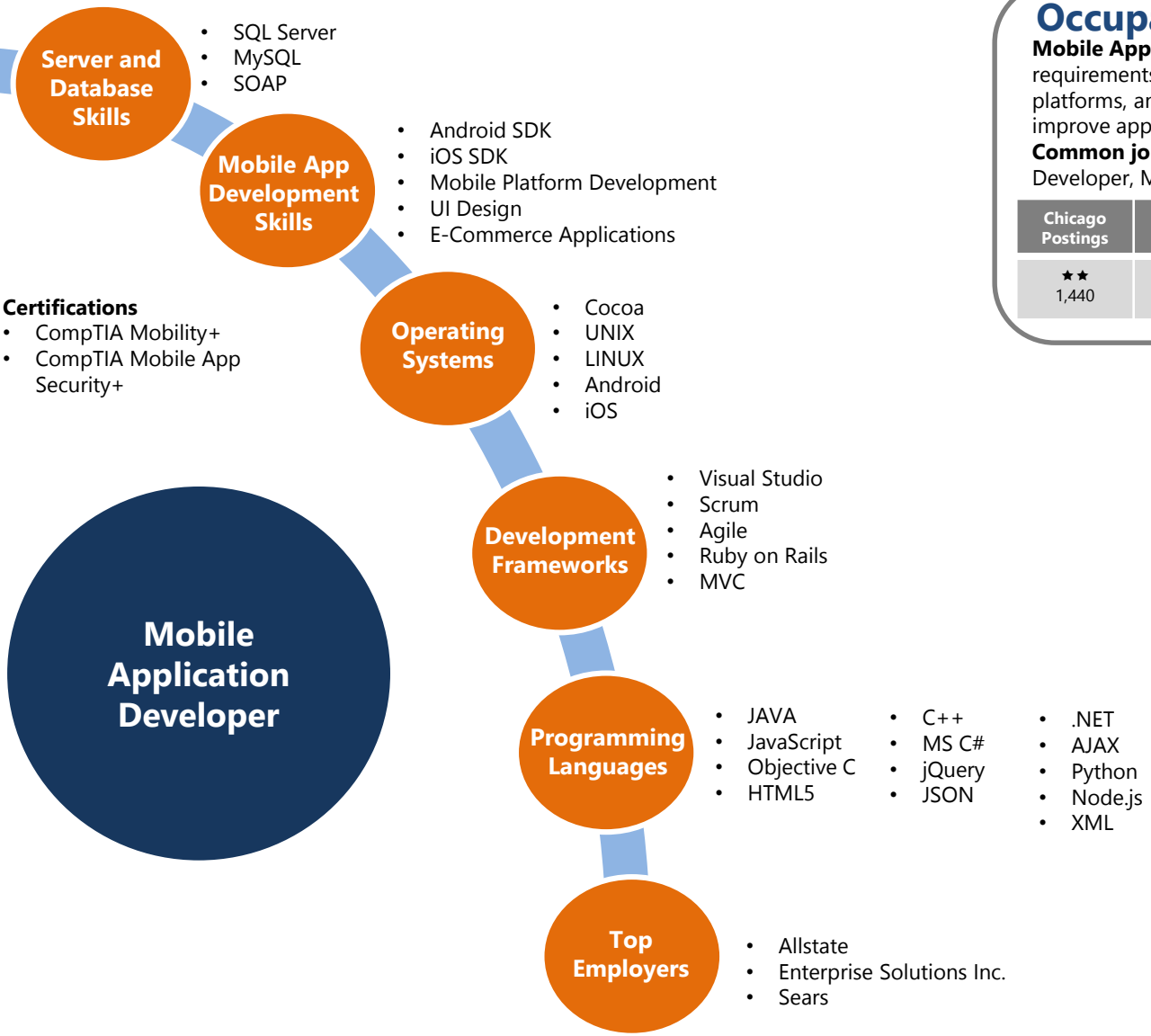
Mobile Application Developer



Certifications
- CompTIA Mobility+
- CompTIA Mobile App Security+

Occupation Profile

Mobile Application Developer: identify product and technical requirements, design and build applications for Android/ISO platforms, analyze and test the application, fix bugs and improve application performance.

Common job titles include: Mobile Developer, Android / iOS Developer, Mobile Architect

Chicago Postings	Concentration in Chicago	% BA	% Entry Level	Median Hourly Wage
★★ 1,440	Very High (LQ=1.57)	93%	<5%	$$$$ $48.85

Hourly Wage

$	Below $15
$$	$15-$24
$$$	$24-$33
$$$$	Above $33

Posting Counts

★	Below 1,000
★★	1,000-2,000
★★★	2,000-3,000
★★★★	3,000-4,000
★★★★★	Above 4,000

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Software Developer and Mobile Developer Transitions

Junior / Mid Level Software Developer / Engineer

Mobile Applications Developer

Mobile Development Skills
- Android SDK
- iOS SDK
- Mobile Platform Development
- UI Design
- E-Commerce Applications

Mobile OS Skills
- iOS
- Android
- Cocoa

Certifications
- CompTIA Mobility+
- CompTIA Mobile App Security+

Advanced Software Development Skills
- Software Architecture
- Systems Development Lifecycles
- Product Design
- Employee Management
- IBM WebSphere
- Testing Frameworks
- Configuration Management

Experience with Multiple Languages
- Javascript Libraries
- Servlets

Experience with Multiple Development Frameworks and Methodologies
- Visual Studio
- Agile
- Scrum
- Spring

Advanced Server and Database Skills
- Database Design
- Oracle WebLogic
- ETL
- JDBC

Senior Software Developer / Engineer

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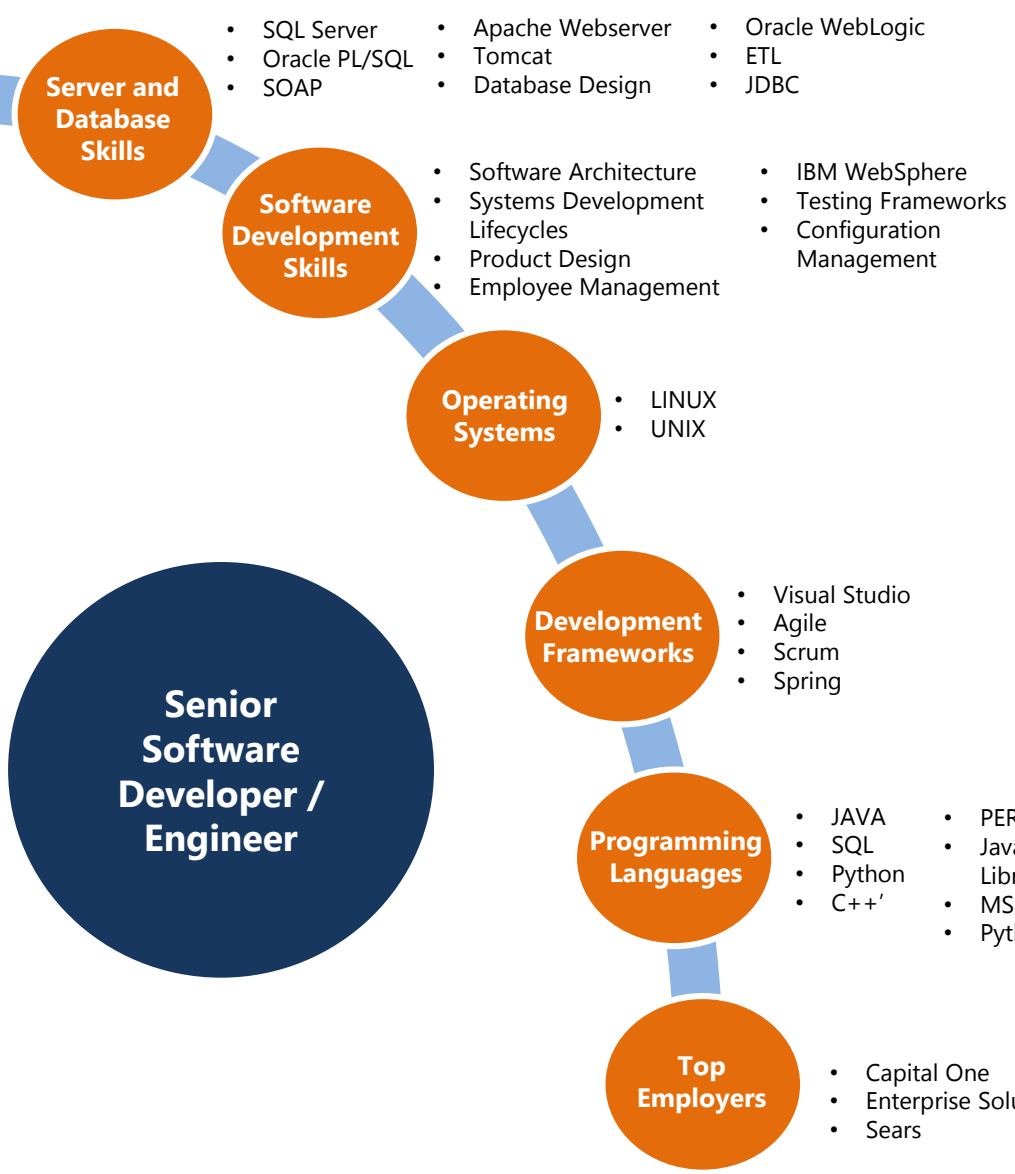
Senior Software Developer/Engineer



Occupation Profile

Senior Software Developer / Engineer: lead software development by providing senior development support, applying development lifecycles strategies, monitoring development process and delivering reports.
Common job titles include: Senior Software Developer / Engineer, Senior .NET / Java Developer, Senior Application Developer, Principal Developer, Team Lead

Chicago Postings	Concentration in Chicago	% BA	% Entry Level	Median Hourly Wage
★★★★★ 13,093	Very High (LQ=1.57	◕ 96%	○ <5%	$$$$ $52.59

Hourly Wage
$ Below $15
$$ $15-$24
$$$ $24-$33
$$$$ Above $33

Posting Counts
★ Below 1,000
★★ 1,000-2,000
★★★ 2,000-3,000
★★★★ 3,000-4,000
★★★★★ Above 4,000

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Occupation Profiles: IT Sales and Recruiting

Sales positions offer an entry into the IT field. These positions require a knowledge of IT more than technical skills.

- **Computer sales** positions provide opportunity for workers with limited professional or IT experience. These jobs offer baseline IT training, and will require simultaneous training to transition into help desk or development roles.
- **Business-to-Business IT Sales** positions require understanding of IT products and build off of customer service, sales and client facing experience. These roles are in demand, and well-paying. They are ideal for experienced professionals transitioning to the IT field.
- **IT Recruiter** roles are also a strong stepping stone for individuals without prior IT experience, but an existing set of transferable soft skills while gaining knowledge of IT products and services.

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Computer/IT Sales

Understand sales goals and customers' needs, deliver customer experience from sales to installation and after-sales services.

Computer/Technical Product Sales person are the ones who possess the knowledge of latest technology and devices. They also have basic computer skills as they are usually required to process customer transaction systems and help customers set up their devices, which prepare them for entry level IT roles. Common job titles include: sales consultant, retail sales associate, store associate, sales representative, customer service representative.

Overview

Demand: ★★★ (2,943)

Salary: $$$ ($56,430)

Degree Requirements*

Sub-BA	BA+
83%	17%

Specialized Skill Requirements

Retail Skills

- Retail Sales
- Store Management
- Description and Demonstration of Products
- Visual displays
- Inventory Management
- Customer Transaction Systems

Device Knowledge

- Stay up-to-date with devices and technology
- Device setup and installation

Baseline Skill Requirements

Customer Service
Communication
Organization
Multi-Tasking
File Management
Detail-Oriented
Listening
Self-Motivation
Telephone Skills
Problem Solving
Writing

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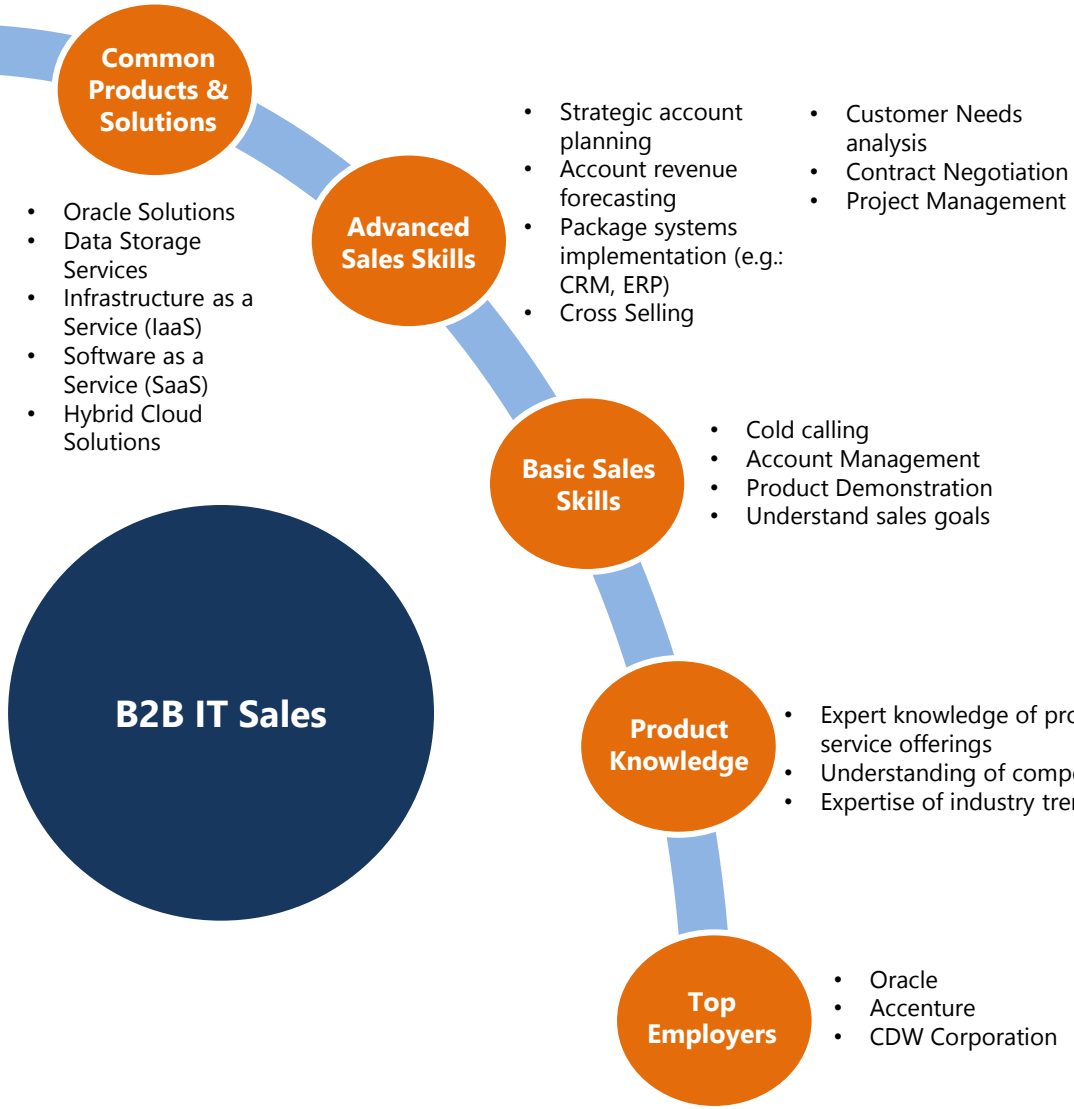
II B2B IT Sales



Occupation Profile

B2B IT Sales: Address clients business needs by applying industry and IT solutions specific knowledge and meet company sales goals.

Common job titles include: Account Manager, Sales Representative, Inside Sales Representative, Channel Sales Representative

Chicago Postings	Concentration in Chicago	% BA	% Entry Level	Median Hourly Wage
★★ 1,923	High (LQ=1.32)	89%	5%	$$$$ $38.83

Hourly Wage

$	Below $15
$$	$15-$24
$$$	$24-$33
$$$$	Above $33

Posting Counts

★	Below 1,000
★★	1,000-2,000
★★★	2,000-3,000
★★★★	3,000-4,000
★★★★★	Above 4,000

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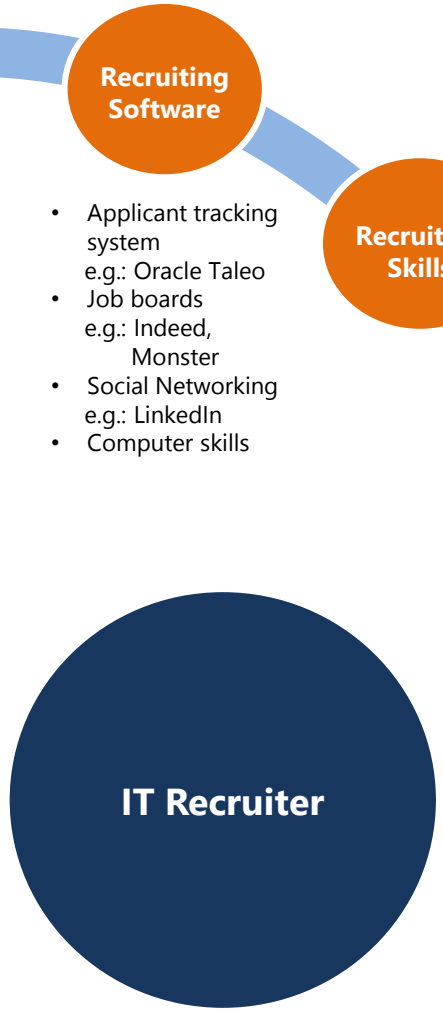
IT Recruiter



- Applicant tracking system
  e.g.: Oracle Taleo
- Job boards
  e.g.: Indeed, Monster
- Social Networking
  e.g.: LinkedIn
- Computer skills

- Resume screening
- Phone and face-to-face interviews
- Scheduling
- Offer process management (salary recommendations, offer letter generation and offer acceptance/ declines)
- Interpersonal and communication skills
- Negotiating skills
- Employment regulations and law (EEO, OFCCP)

- Research skills (verify candidate information and qualifications)
- Cold calling
- Skill matching
- Source candidates from relevant networks (online and internal databases, employee referrals)

- Conversation-level knowledge of IT domains
  e.g.: Operating systems, programming languages and tools, database servers
- Knowledge of the IT product development divisions and process
- Sound knowledge of latest IT skill trends

- Idea Solutions
- Enterprise Solutions Incorporated
- Allstate

Occupation Profile

IT Recruiter: Responsible for full lifecycle recruiting for IT positions, including building strong partnerships with hiring managers, develop strategic recruiting plans and job descriptions, sourcing, screening, interviewing and closing candidates.

Common job titles include: Technical Recruiter, Information Technology Recruiter, Human Recourses Administrator, Recruiting Specialist, Talent Acquisition Consultant

Chicago Postings	Concentration in Chicago	% BA	% Entry Level	Median Hourly Wage
★ 535	High (LQ=1.7)	84%	5%	$$$$ $37.12

Hourly Wage

$	Below $15
$$	$15-$24
$$$	$24-$33
$$$$	Above $33

Posting Counts

★	Below 1,000
★★	1,000-2,000
★★★	2,000-3,000
★★★★	3,000-4,000
★★★★★	Above 4,000

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Internships

Internships are important entry points to the IT labor market, especially for students in Bachelor's or Master's degree programs. The slides that follow present an overview of internship opportunities in 2014, based on skills requested and employers.

This section should be used primarily for developing employer relationships, potentially for on-the-job training and development of co-occurring training and work opportunities.

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Appendix: IT Internship Skills Demanded

IT Internship requested skills in Chicago area. All data reflect online job postings collected from 2014.

Skill Cluster	Demand	Skills Requested		
IT Support	**464**	• IT Support • Technical Support • Help Desk Support • Printer/Scanner Repair	• Software Installation • Network Hardware/Software Maintenance • Troubleshooting Technical Issues	• Hardware and Software Configuration • Computer Installation and Setup
Database and Data Warehousing	**452**	• SQL • PostgreSQL • MySQL • Oracle PL/SQL • MS SQL	• SQL Server • Big Data • Data Mining • Data Modeling	• Database Design • Data Collection • Database Administration • Database Management
Programming Languages	**436**	• JAVA • JavaScript • SAS • R • PERL	• Objective C • VBA • C++ • MS C# • Python	• COBOL • JSON • XML • Object Oriented Programming
Web Design	**321**	• Web Site Design • User Interface Design • Visual Studio	• Graphical User Interface • Dreamweaver	• Adobe Illustrator • Adobe Photoshop
Network Administration and Security	**150**	• VoIP • SSL • Cisco • Citrix • WAN	• Firewalls • Information Security • Network Security • Network Administration	• Network Engineering • System and Network Configuration • Systems Administration
Web Development	**105**	• HTML5 • Hypertext Preprocessor	• Ruby on Rails • AJAX • Agile Development	• Web Application Development • jQuery
Operating Systems	**51**	• Linux	• Unix	

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Appendix: Top IT Internship Employers

Top IT internship employers and their internship program fields in Chicago Area. All data reflect online job postings collected from 2014.

Employer	Demand	Internship Fields	
CME Group	**30**	• Data Science • Web Design • Technology Quality Assurance • Software/Application Development/Support	• Information and Network Security • Systems Engineering and Testing • Records and Information Management
Allstate	**29**	• Data Science • Business Analytics • Network Engineering	• Systems Analyst • Information and Network Security • Application Development/Support
Motorola Inc.	**22**	• Systems Engineer • Software/Application Development/Support	• Data Science • Machine Learning
Nokia	**17**	• Systems Verification Engineer • Software/Application Development/Support	• Data Science
Health Care Service Corporation	**16**	• Web Support • Database Management	• Data Science • Information and Network Security
Mesirow Financial	**12**	• Network Engineering • Software/Application Development/Support	• Quality Assurance Developer • Strategies Quantitative Research
Alcatel-Lucent	**11**	• Network Engineering • Software/Application Development/Support	• Test Engineer • Web Development
Devry University	**11**	• Information and Network Security • Software/Application Development/Support	• Software Testing • Systems Administration
Tribune Company	**11**	• Web Development • Software/Application Development/Support	• Information Systems • SEO Search Engine Optimization
Options Clearing Corporation	**9**	• Business/Systems Analyst • Software/Application Development/Support	• Systems Administration • Quality Assurance Analyst
RR Donnelley	**9**	• Network Engineering • Software/Application Development/Support	• Web Development

*Other internship employers: Advocate Health Care, Transmarket Group Incorporated, AT&T, Automatic Data Processing Incorporated, CVS Caremark, Leo Burnett Company, Northrop Grumman, Panduit, Accenture, Ace Hardware, Capital One, Classified Ventures, Douglas Shaw& Associates, Enova Corporation, Groupon, Morningstar, Siemens

Employers

This section includes top IT employers, based on 2014 job postings.

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Top Employers by County (1/7)

Top IT employers with top occupations in demand by counties in Chicago area. All data reflect online job postings collected from 2014.

Cook County

Employer	Total Demand	Top Occupation 1	Demand	Top Occupation 2	Demand	Top Occupation 3	Demand
Accenture	**1309**	Systems Analyst	259	Software Developer/Engineer	248	Business Intelligence Analyst	124
Sears	**885**	Software Developer/Engineer	343	Systems Analyst	103	Network Engineer/Architect	87
Allstate	**633**	Software Developer/Engineer	189	Systems Analyst	64	Network Engineer/Architect	52
PricewaterhouseCoopers	**515**	Chief Information Officer/Director of IT	115	IT Project Manager	67	Business Intelligence Analyst	62
Deloitte Development LLC	**498**	Business Intelligence Analyst	125	Chief Information Officer/Director of IT	62	IT Project Manager	53
General Electric Company	**342**	Software Developer/Engineer	72	Systems Analyst	37	Business Intelligence Analyst	32
Motorola Inc.	**320**	Software Developer/Engineer	118	Computer Systems Engineer/Architect	42	Network Engineer/Architect	35
Dell	**292**	Software Developer/Engineer	65	Cyber/Information Security Engineer/Analyst	64	Technical Sales Representative	32
Capital One	**287**	Software Developer/Engineer	154	Systems Analyst	21	Software QA Engineer/Tester	21
JP Morgan Chase Company	**264**	Software Developer/Engineer	122	Systems Analyst	23	Computer Support Specialist	17

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Top Employers by County (2/7)

DuPage County

Employer	Total Demand	Top Occupation 1	Demand	Top Occupation 2	Demand	Top Occupation 3	Demand
Enterprise Solutions Incorporated	**1003**	Software Developer/Engineer	261	Computer Support Specialist	98	Network Engineer/Architect	80
Upp Technology	**346**	Software Developer/Engineer	72	Systems Analyst	37	Database Administrator	33
Oracle	**118**	Software Developer/Engineer	24	Systems Analyst	20	Cyber/Information Security Engineer/Analyst	12
Sentinel Technologies Incorporated	**113**	Software Developer/Engineer	24	Computer Support Specialist	21	Network Engineer/Architect	19
Resourcis	**112**	Software Developer/Engineer	30	Business Intelligence Analyst	24	Network Engineer/Architect	17
Navistar	**108**	Software Developer/Engineer	25	Systems Analyst	16	Cyber/Information Security Engineer/Analyst	13
Gogo	**106**	Software Developer/Engineer	31	Network/Systems Support Specialist	15	Computer Systems Engineer/Architect	10
Advocate Health Care	**97**	Systems Analyst	35	Data/Data Mining Analyst	16	Database Administrator	8
United States Cellular	**92**	Chief Information Officer/Director of IT	11	Cyber/Information Security Engineer/Analyst	11	Software Developer/Engineer	10
Ageatia Technology Consultancy Services	**88**	Software Developer/Engineer	40	Network/Systems Administrator	9	Systems Analyst	7

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Top Employers by County (3/7)

Kane County

Employer	Total Demand	Top Occupation 1	Demand	Top Occupation 2	Demand	Top Occupation 3	Demand
Fermilab	**25**	Software Developer/Engineer	6	Database Administrator	3	Network/Systems Administrator	3
Waubonsee Community College	**22**	Software Developer/Engineer	6	Computer Support Specialist	3	Web Developer	2
JP Morgan Chase Company	**17**	Systems Analyst	6	Computer Support Specialist	4	Data Architect	4
RR Donnelley	**16**	Software Developer/Engineer	5	IT Project Manager	2	Database Administrator	2
Grand Victoria Casino	**9**	Systems Analyst	3	Network/Systems Support Specialist	2	Data/Data Mining Analyst	2
Omron Corporation	**7**	Software Developer/Engineer	4	Database Administrator	1	Computer Support Specialist	1
Federal Signal Corporation	**7**	Network/Systems Administrator	2	Graphic Designer/Desktop Publisher	2	Computer Support Specialist	1
Illinois School District U-46	**6**	Systems Analyst	2	Software Developer/Engineer	2	Web Designer	1
The Nielsen Company	**6**	Database Administrator	6				
Sungard Data Systems Incorporated	**6**	Software Developer/Engineer	4	Computer Systems Engineer/Architect	1	Network Engineer/Architect	1

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Top Employers by County (4/7)

Lake County

Employer	Total Demand	Top Occupation 1	Demand	Top Occupation 2	Demand	Top Occupation 3	Demand
CDW Corporation	**306**	Software Developer/Engineer	87	Network Engineer/Architect	38	Computer Support Specialist	33
Walgreen Co.	**267**	Systems Analyst	38	Software Developer/Engineer	37	IT Project Manager	34
Aon	**221**	Software Developer/Engineer	57	Systems Analyst	46	IT Project Manager	20
CVS Caremark	**159**	Software Developer/Engineer	55	Software QA Engineer/Tester	28	Systems Analyst	24
Baxter International Incorporated	**135**	Systems Analyst	22	Software Developer/Engineer	16	Software QA Engineer/Tester	15
Diverse Lynx	**132**	Software Developer/Engineer	44	Network/Systems Administrator	12	Network Engineer/Architect	11
Wellpoint Incorporated	**119**	Software Developer/Engineer	46	Data Architect	26	Database Administrator	12
Oracle	**107**	Software Developer/Engineer	21	Systems Analyst	19	Computer Support Specialist	10
KellyMitchell Group	**98**	Systems Analyst	18	Computer Support Specialist	17	Software Developer/Engineer	14
Capital One	**93**	Software Developer/Engineer	53	Software QA Engineer/Tester	14	Computer Support Specialist	11

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Top Employers by County (5/7)

McHenry County

Employer	Total Demand	Top Occupation 1	Demand	Top Occupation 2	Demand	Top Occupation 3	Demand
Capital One	**194**	Software Developer/Engineer	77	Systems Analyst	20	Software QA Engineer/Tester	20
Bon Secours Health System Incorporated	**35**	Software Developer/Engineer	9	Systems Analyst	7	Network/Systems Support Specialist	4
IBM	**30**	Software Developer/Engineer	10	Network/Systems Administrator	4	Systems Analyst	3
Verint Systems Incorporated	**30**	Software Developer/Engineer	13	Computer Support Specialist	3	Software QA Engineer/Tester	3
ICF International	**28**	Software Developer/Engineer	7	Systems Analyst	5	Web Developer	3
CarMax	**23**	Systems Analyst	7	Software Developer/Engineer	3	UI/UX Designer	3
Alcatel-Lucent	**20**	Software Developer/Engineer	5	Network/Systems Administrator	3	Data Warehousing Specialist	3
Bank of America	**18**	Computer Systems Engineer/Architect	4	Software Developer/Engineer	3	Systems Analyst	2
Federal Reserve Bank	**16**	Software Developer/Engineer	5	Network/Systems Support Specialist	3	Cyber/Information Security Engineer/Analyst	3
Resourcis	**14**	Systems Analyst	4	Data Warehousing Specialist	4	Business Intelligence Analyst	4

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Top Employers by County (6/7)

Will County

Employer	Total Demand	Top Occupation 1	Demand	Top Occupation 2	Demand	Top Occupation 3	Demand
Ulta Salon, Cosmetics & Fragrance, Inc	**55**	Systems Analyst	34	Network Engineer/Architect	29	IT Project Manager	17
Presence Health	**29**	Software Developer/Engineer	10	Network Engineer/Architect	6	Web Developer	4
RR Donnelley	**18**	Software Developer/Engineer	7	Computer Support Specialist	5	Network Engineer/Architect	3
Lewis University	**14**	Database Administrator	4	Network/Systems Administrator	4	Cyber/Information Security Engineer/Analyst	3
COTG	**13**	Computer Support Specialist	5	Web Developer	3	Database Administrator	2
Provena Health	**13**	Software Developer/Engineer	4	Network Engineer/Architect	3	Computer Support Specialist	2
Resource 1	**10**	Software Developer/Engineer	5	Network/Systems Administrator	4	Database Administrator	1
Joliet Junior College	**10**	Computer Support Specialist	4	Software Developer/Engineer	2	Web Developer	2

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Top Employers by County (7/7)

Winnebago County

Employer	Total Demand	Top Occupation 1	Demand	Top Occupation 2	Demand	Top Occupation 3	Demand
UTC Aerospace Systems	**183**	Software Developer/Engineer	75	Computer Systems Engineer/Architect	56	Software QA Engineer/Tester	22
Rockford Public School District 205	**36**	Systems Analyst	21	Software Developer/Engineer	7	Computer Support Specialist	4
Sikorsky	**32**	Computer Systems Engineer/Architect	12	Software Developer/Engineer	11	Systems Analyst	4
Hamilton Sundstrand	**28**	Software Developer/Engineer	13	Software QA Engineer/Tester	7	Computer Systems Engineer/Architect	4
Ageatia Technology Consultancy Services	**25**	Software Developer/Engineer	8	Systems Analyst	3	Network/Systems Administrator	3
Idea Solutions	**24**	Software Developer/Engineer	9	Network/Systems Administrator	4	Systems Analyst	3
Rockford Health System	**18**	Computer Support Specialist	4	Data/Data Mining Analyst	2	Systems Analyst	2
Public Safety Solutions, Inc.	**14**	Computer Support Specialist	4	Software Developer/Engineer	3	Software QA Engineer/Tester	2
Ingenium Technologies	**14**	Software Developer/Engineer	8	Computer Systems Engineer/Architect	2	Data Architect	2

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Appendix

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Methodology

All jobs data in this report are drawn from Burning Glass's database of online job postings, which includes nearly 100 million worldwide postings collected since 2007. Each day, Burning Glass visits over 40,000 online jobs sites to collect postings. Using advanced text analytics, over 70 data fields are extracted from each posting including job title, occupation, employer, industry, required skills and credentials and salary. Postings are then deduplicated and placed in a database for further analysis.

IT occupation postings were identified and split into the categories included by finding and flagging the titles, skills, credentials, keywords, and employers that typify postings in each IT category.

About the Data
All job postings and data reflect Cook County, DuPage County, Kane County, Lake County, McHenry County, Will County and Winnebago County, Chicago area, IL, from 2014.

- **Demand (Total postings)** reflect the number of jobs posted in Cook County, DuPage County, Kane County, Lake County, McHenry County, Will County and Winnebago County, Chicago area, IL, from 2014. Source: Burning Glass Technologies.
- **Location Quotients (LQ)** calculate the ratio of postings to employment in the above 7 counties compared to the national ratio as a benchmark to reflect the concentration of job openings in this area.
- **Bachelor's Attainment** indicates the percentage of postings that call for a bachelor's degree or higher.
- **Entry Level Data** indicates the percentage of postings that call for less or equal to three year work experience.

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About Burning Glass

Burning Glass's tools and data are playing a growing role in informing the global conversation on education and the workforce by providing researchers, policy makers, educators, and employers with detailed real-time awareness into skill gaps and labor market demand. Burning Glass's job seeker applications power several government workforce systems and have been shown to have substantive impact on reemployment outcomes and on labor market literacy.

Burning Glass is proud to serve a client base that spans six continents, including education institutions, government workforce agencies, academic research centers, global recruitment and staffing agencies, major employers, and leading job boards.

For More Information

Dan Restuccia
Chief Analytics Officer
t +1 (617) 227-4800
drestuccia©burning-glass.com
www.burning-glass.com

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