Data Warehousing Specialist

Objectives

After completing this reading, you will be able to:

- Describe the Data Warehousing Specialist role
- Provide opportunity estimates for the Data Warehousing Specialist role
- Indicate alternative job titles for the Data Warehousing Specialist role
- List tasks performed, and skills required for the Data Warehousing Specialist role
- Describe career progression paths for the Data Warehousing Specialist role

Description of the Data Warehousing Specialist role

Data Warehousing Specialists design, model, and implement corporate data warehousing activities, program and configure warehouses of databases, and provide support to data warehouse users.
The tasks for this specialist role are focussed on data warehousing and form a significant subset of the wider Data Engineering role.

Opportunity estimates for the Data Warehousing Specialist role

According to careeronestop.org, an organization sponsored by the U.S. Department of Labour, the future is bright for Data Warehouse Specialists and very similar or related roles, such as Data Architects and Database Administrators. The expected growth rate of opportunities in these fields is higher than the average, and is expected to average about 8 to 10 percent per year over the next decade. Approximately 13,900 openings are expected to emerge each year in the U.S. alone.

According to salary.com, the median salary for a Data Warehouse Specialist in the US is $110,168.

Data Warehousing Specialist alternative job titles

Just like the role of Data Engineer, the Data Warehousing Specialist role is quite fluid and can vary considerably. In fact, the Data Warehousing Specialist is a particluar kind of Data Engineer, more tightly focused on the data warehousing aspects of the broader discipline. Accordingly, searching online job postings for this particular role returns many other closely related positions, including:

- Data Warehouse Specialist
- Data Warehouse Engineer
- Data Warehouse Solution Architect
- Data Warehousing/ETL Solution Specialist
- Data Warehouse Architect
- Data Architect, Data Warehousing & MPP
- Data Warehouse Analyst
- Data Warehouse Administrator
- Data Warehousing Development Specialist

Tasks performed by Data Warehousing Specialists

As a specialization within the broader field of Data Engineering, Data Warehousing Specialists may be responsible for many kinds of tasks. These tasks may include any of the following:

- Developing processes, procedures, and software applications for enterprise data management
- Analyzing and improving data warehousing processes for efficiency, accuracy, usability, or security
- Designing, modelling, or implementing corporate data warehousing activities
- Developing or maintaining standards, such as organization, structure, or nomenclature, for the design of data warehouse elements, such as data architectures, models, tools, and databases
- Providing or coordinating troubleshooting support for data warehouses
- Writing or modifying programs to meet customer requirements
- Creating documentation such as metadata and diagrams of entity relationships, business processes, and process flow
- Designing, implementing, or operating comprehensive data warehouse systems to balance optimization of data access with batch loading and resource utilization factors, according to customer requirements
- Performing system analysis, data analysis or programming, using a variety of computer languages and procedures
- Reviewing designs, code, test plans, or documentation to ensure quality
- Creating plans, test files, and scripts for data warehouse testing, ranging from unit to integration testing
- Implementing business rules via stored procedures, middleware, or other technologies
- Supporting users of the data warehouse

Soft skills required for the Data Warehousing Specialist role

- Critical thinking - Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions, or approaches to problems
- Complex problem solving - Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions
- Decision making - Assessing the costs and benefits of a variety of optional solutions, and choosing the most appropriate solution
- Systems evaluation - Identifying and evaluating system performance measures, and actions needed to improve or correct poor performance
- Active learning - Understanding the implications of new information or technologies for both current and future problem-solving and decision-making
- Communicating effectively

Technical Skills required for the Data Warehousing Specialist role

Specialized knowledge

- Programming - writing computer programs for various purposes
- Systems analysis - determining how a business system works, and understanding how changes in conditions may affect outcomes
- Data architecture - understanding the models, the policies, rules or standards that govern which data is collected, how data is stored, arranged, and integrated, and how to put data to use in data systems
- Data management and analysis - securely collecting, storing, and analyzing data
- Data pipelines - building and maintaining data pipelines
- Business intelligence - data warehousing; extract, transform, and load (ETL); and data mapping
- Database normalization - data integrity and normalization
- Data storage structures - especially relational databases
- Data migration - ETL of data from one system to another
- Metadata management and metadata standards
- Data integration platforms
- Overview of the Data Engineering Ecosystem
- Cloud data - building scalable cloud data infrastructure
- Database administration, including Big Data administration
- Data acquisition and transformation - Digitizing data for display, analysis, and storage
- Data lakes, data marts, data reservoirs
- IoT - Integrating data from various connected devices and systems in IoT using data pipelines
- Building event streaming pipelines

Law & Government

- Acts & Regulations - knowledge of laws, regulations, requirements and ethical issues related to the access and use of information, for example intellectual capital, personally identifiable information, and customer data

Software and IT skills

- Cloud computing and cloud platforms: Amazon Web Services (AWS), Microsoft Azure, SpringCloud, GCS (Google Cloud Storage)
- Data warehouse tools: Snowflake, Data Bricks, BigQuery, Redshift, Db2
- Data pipeline tools: Apache Kafka, Apache Airflow, Luigi
- Big data tools: Apache Hadoop, Apache Spark, Apache Hive
- Operating systems: UNIX, Linux
- Programming languages: SQL, Bash, Python, R, Java, C++
- Databases - Cassandra, Microsoft SQL Server, MySQL, PostgreSQL, Amazon DynamoDB, Apache Solr, IBM Db2, MongoDB, neo4j, Oracle PL/SQL, PostgreSQL
- Metadata management software - CA Erwin Data Modeler; Oracle Warehouse Builder; SAS Data Integration Server; Talend Data Fabric; Alation Data Catalog, SAP Information Steward, Azure Data Catalog, IBM Watson Knowledge Catalog, Oracle Enterprise Metadata Management (OEMM), Adaptive Metadata Manager, Unifi Data Catalog, data.world, and Informatica Enterprise Data Catalog
- Agile software development methodologies
- Version control - Git
- Modelling and API development
- Business intelligence and data analysis software - IBM Cognos Impromptu, MicroStrategy, Microsoft Power BI, Google Analytics, InsightSquared, Oracle Business Intelligence Enterprise Edition, Qlik Tech QlikView, Sisense, Tableau, Dundas BI, SAS Analytics, Domo, SAP Lumira

Pathways to becoming a Data Warehouse Specialist

There are many possible paths to becoming a Data Warehousing Specialist. Most practitioners have a minimum of a Bachelor's Degree in a mathematical or computational field such as Computer Science, Computer Engineering or the Mathematical Sciences. However, many practitioners instead have a Technology or Technical Diploma in a Computational or Information Technology discipline. Combining this educational background with some hands-on experience with application development and use of software for managing databases and metadata is a good way to prepare for the role.

Career progression

The career progression of a Data Warehouse Specialist might take a direct path, such as starting at the Junior or Associate Data Warehouse Specialist role, and evolving over time through the Data Warehouse Specialist, Senior Data Warehouse Specialist, Lead Data Warehouse Specialist, and Principal Data Warehouse Specialist roles. Having said that, the path of progression is by no means unique.

Since the Data Warehouse Specialist role is simply a Data Engineering role with an emphasis on Data Warehousing, you will most likely find yourself shifting between specializations within the Data Engineering world, depending on your interests and abilities as well as the needs of the teams you find yourself working with.

On smaller teams you may need to participate day-to-day in many or all stages of the data engineering lifecycle. Working with larger teams, you will naturally find some combination of a smaller niche and career progression as the best fit. No matter your path, in order to progress throughout your career as an engineer, you will always need to be learning about and making use of emerging tools and technologies. This continuous learning will also inform you as you discover your path.

Summary

In this reading, you learned that:

- The Data Warehousing Specialist is a particluar kind of Data Engineer, more tightly focused on the data warehousing aspects of the broader discipline
- Data Warehousing Specialists design, model, and implement corporate data warehousing activities, program and configure warehouses of databases, and provide support to data warehouse users
- Data Warehousing Specialists require specialized knowledge of data architecture - understanding the models, the policies, rules or standards that govern which data is collected, how data is stored, arranged, and integrated, and how to put data to use in data systems
- Soft skills required for the data warehousing specialist role include complex problem solving and active learning
- No matter your path, in order to progress throughout your career as an engineer, you will always need to be learning about and making use of emerging tools and technologies