Mcse analyisis 14810

Job Task MCSE Analysis: Report to Participants

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June 1999

Overview and Summary

In preparation for new MCSE examinations, between February 19th and March 16th of 1999 more than 2, 800 computer professionals completed a survey via the web. The purpose of the survey was a job analysis--a description of the on-the-job activities necessary for positions that MCSEs fill. Both employment tests and certifications must be based on job analyses .

Because of the rapidly evolving nature of the workplace, especially in the technology area, the job analysis did not follow traditional procedures that enumerate lists of specific behaviors. Rather, working with a group of subject matter experts , the job analysis was based on the Job Task Matrix shown in Figure 1. This matrix combined six job duties and eight technical areas. Survey respondents rated the importance, difficulty and frequency of each combination of job duty and technical area. Contextual information was also gathered on work environment and professional background.

Some 2, 829 computer professionals from 86 countries participated in this study. Fifty-four percent worked mostly in the United States. Two-thirds of respondents were MCSEs and half of these were MCSE +Is. Respondents reported spending an average of 93% of their time on the job duties included

in the study. This finding confirms the comprehensiveness of the Job Task Matrix

Respondents rated job tasks (individual cells in the Job Task Matrix) as Moderately to Very Important, as Moderately Difficult, and as done Monthly to Weekly. The high importance assigned to all job tasks further supports the comprehensiveness of the study.

The technical areas of Security, Reliability & Availability and Network Infrastructure received the highest importance ratings. The areas of Resources, Hardware Devices & Drivers and Desktop Computing Environment were judged to be less difficult than the other technical areas. Interoperability was the technical area encountered least frequently.

The job duty of Troubleshooting was the most important, and this duty along with Analysis and Design were the most difficult. Job duties in the areas of Management, Monitoring & Optimization and Troubleshooting were encountered most frequently.

The emphasis assigned to specific job tasks in the certification process should parallel the ratings assigned by respondents to this survey.

Methodology

Job Task Matrix & Rating Scales

The core of the job analysis was the Job Task Matrix that crossed six job duties with eight technical areas . Figure 1 presents the matrix and Table 1 defines the technical areas. Each cell of the matrix represents a specific task

that subject-matter experts identified as part of the job of an MCSE. Examples of specific job tasks for first row of Figure 1 were:

-Analyze the business requirements for the system architecture.

-Design a system architecture solution that meets business requirements.

-Deploy, install, and configure the components of the system architecture.

-Manage the components of the system architecture on an ongoing basis.

-Monitor and optimize the components of the system architecture.

-Diagnose and resolve problems regarding the components of the system architecture.

Using 5-point scales, survey respondents rated each cell in Figure 1: (a) on the " importance of the job task [matrix cell] for successfully performing [their] job;" (b) on the " difficulty in becoming proficient at the job task;" and (c) on the frequency of performing the tasks . Order of presentation of the technical areas was randomized for each respondent. The order of job duties was fixed.

Job Duty®? Technical Areas Analysis Design Deploy, Install & Configure Manage Monitor & Optimize Troubleshoot, Repair & Restore

System Architecture

Security

Network Infrastructure

Resources

Desktop Computing Environment

Hardware Devices & Drivers

Reliability & Availability

Interoperability

Figure 1. MCSE Job Task Matrix

Work Place, Product Support and Demographic Questions

To understand the context of responses to the job analysis questions, the survey asked questions about respondents' work environment, product support and professional background. Table 2 summarizes these questions.

Table 1. Technical Area Definitions for Job Task Matrix

Technical Area Labels Definition

System Architecture Unified directory services such as Active Directory and Windows NT domains. Connectivity between and within systems, system components, and applications. Examples include Exchange Server connectors and SMS senders. Data replication such as directory replication and database replication.

Security Controlling access to resources; Auditing access to resources; Authentication; Encryption.

Network Infrastructure Network topology; Routing; IP addressing; Name resolution such as WINS and DNS; Virtual private networks; Remote access; Telephony solutions.

Resources Printers; Files and folders; Applications; Web sites; Databases.

Desktop Computing Environment Centralized management of the user desktop environment; Profiles; Policies; Scripts; Local system configuration.

Hardware Devices & Drivers Storage devices; I/O devices such as printers and scanners; Server computers; Client computers.

Reliability & Availability Hardware and software components that provide:; Fault tolerance; Load balancing; Disaster recovery methods such as backup and restore.

Interoperability Communication and data transfer between Microsoft and non-Microsoft products and systems.

Table 2. Work Place and Demographic Question Areas

Question Area

Primary job responsibilities

Primary computing environment

--Size

--Complexity

Demographics

--Professional Certifications

--Time as a Computer Professional

--Company a MS Solution Provider

--Country worked in most of timeResults

Respondent Characteristics

Respondents were solicited in two stages. During the first week of the three-week study period, notices of the study and its URL were posted on appropriate electronic, professional bulletin boards. Approximately 150 computer professionals completed the survey during the first week. During the second week of the study period, emails were sent to more than 20, 000 addresses from a computer professional database maintained by Microsoft. Approximately 2, 700 computer professionals responded to the survey during the second and third weeks. The final sample included 2, 829 protocols .

Because of the mobility of computer professionals and fluidity of email addresses, a precise assessment of the response rate for the survey cannot be made. As is revealed below, the size and diversity of respondents to this survey make it one of the most comprehensive examinations of the work characteristics of computer professionals ever reported.

Completed surveys were received from 2, 829 computer professionals.

Respondents had been computer professionals for a median of 5 to 7 years;

67% were MCSEs and half of these were MCSE+Is. Forty-four percent of

respondents worked for Microsoft Solution Providers and 54% worked most

of the time in the United States. Respondents from outside the United States

(46%) came from 85 countries around the world. Figure 2 presents the work

location of all respondents.

Computing Environment

Answers to computing environment questions showed that respondents'

primary computing environment: (a) had between 100-499 users; (b)

included between 5-25 locations; and (c) had between 6-20 servers. Eighty

three percent of respondents had servers at each location and 71% had 2 or

more domains as part of directory services.

Figures 3-5 show characteristics of respondents' primary computing

environment, connectivity needs and network services and applications that

were part of the information system. In the majority of computing

environments: (a) web servers were connected to the Internet; (b) web sites

were secured; (c) business operation solutions were used to streamline

business processes; and (d) files and web sites were indexed. Connectivity

needs were mainly: (a) connecting corporate networks to the Internet; (b)

connecting individual users at remote locations to corporate networks; and

(c) connecting offices at remote locations to corporate networks. Most of the

network services and applications investigated were included in

respondents' information systems.

Results

Respondent Characteristics

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Job Responsibilities

Figure 6 presents the primary job responsibilities of respondents. The most frequent responses were: " deploy, monitor, administer, and optimize an information system," and " create strategies, plans, or designs for the information system of an entire organization, subsidiary, or division."

Ratings of Job Task Matrix Cells

Table 3 presents the average importance, difficulty and frequency ratings for each cell in the Job Task Matrix . Figure 7 presents the average ratings for the technical areas and Figure 8 presents the average ratings for job duties. Overall, the job tasks (individual cells in the Job Task Matrix) were judged as Moderately to Very Important, as Moderately Difficult, and were done Monthly to Weekly. The high importance assigned to all job tasks supports the comprehensiveness of this study.

Figure 7 shows that the technical areas of Security, Reliability & Availability and Network Infrastructure all received a rating of Very Important. The areas of Resources, Hardware Devices & Drivers and Desktop Computing Environment were judged to be less difficult than the other technical areas. Interoperability was the technical area encountered least frequently.

Figure 8 shows that the job duty of Troubleshooting was the most important, and this duty along with Analysis and Design were the most difficult. Job duties in the areas of Management, Monitoring & Optimization and Troubleshooting were encountered most frequently.

Bibliography

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Word Count: 1803