**Module 6: Essay Paper**

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**Chapter 9**

1. **Describe Application Outsourcing.**

Application Outsourcing is a service where an organization contracts an external service provider to handle the deployment, management, and enhancement of either a packaged or customized software application. This process allows companies to leverage the expertise and resources of external providers, focusing on their core business functions. Application Outsourcing covers a range of activities aimed at managing the software application or a set of applications, ensuring their smooth operation and performance. Contractual service-level agreements (SLAs) are established at the application level, detailing responsibilities such as ensuring application availability, maintaining application performance, and implementing application enhancements. These SLAs define the expectations and standards that the service provider must meet while managing the application. There are different types of application outsourcers, categorized based on the type of application being outsourced (whether proprietary or packaged) and the configuration or service provision (ranging from one-to-one or one-to-many). For instance:

* Data center service providers offer application-hosting services and support to different divisions within an organization and are typically managed internally.
* Application maintenance service providers deliver hosting, maintenance, and support of custom-developed applications directly at the enterprise’s site.

Application service providers handle operations and maintenance for both packaged and custom-developed applications, offering services to various enterprises using shared outsourcing infrastructure. Private application service providers manage operations and maintenance of custom applications, serving a particular ecosystem of enterprises involved in a specific area of business. Organizations opt for application outsourcing to free up internal resources, offload complex tasks, gain access to world-class IT expertise, and reduce operational costs. This approach enables them to adapt to the rapidly changing technological environment and obtain the necessary support on an as-needed basis. (Guide to Cloud Computing for Business and Technology Managers, 2015, pp. 229-231)

2. **The equivalent of MapReduce idea in AWS is Amazon EMR (previously known as Amazon Elastic MapReduce) which is an Amazon Web Services (AWS) tool. Google new version is Flume (for the processing pipeline definition) and MillWheel (for the real-time dataflow orchestration). What made MapReduce unique in processing data?**

MapReduce is unique in its ability to efficiently process large-scale data using a parallel and distributed computing model inspired by functional programming concepts. It splits tasks into smaller chunks, executing them concurrently across multiple nodes, which allows for high scalability and efficiency. The two-phase process, consisting of the "Map" and "Reduce" functions, enables data to be processed independently by dividing it into key-value pairs during the Map phase and then consolidating these pairs in the Reduce phase. This design harnesses the power of parallelism without requiring developers to manage the complexities of distributed computing. Additionally, MapReduce's fault-tolerant nature allows it to redistribute tasks to other nodes if failures occur, ensuring seamless data processing. It also optimizes data locality by processing data on the nodes where it is stored, reducing transfer times and improving performance. These features make MapReduce exceptionally effective for handling large, unstructured data sets and have influenced the development of modern data processing systems like Amazon EMR, Flume, and MillWheel. (Guide to Cloud Computing for Business and Technology Managers, 2015, pp. 251-259)

# References

Guide to Cloud Computing for Business and Technology Managers. (2015). In V. Kale, *Guide to Cloud Computing for Business and Technology Managers.* Boca Raton, FL: CRC Press.