Chapter 5 Review Questions

**1. What is the difference between architecture and an infrastructure?**

Architecture is like the blueprint of how everything will look, while the infrastructure is the implementation of the architecture.

**2. What are the four attributes of a distributed system?**

* Where the processing is done: The goal is to move the appropriate processing as close to the user as possible and let other machines handle work they do best
* How processors and other devices are interconnected: The important thing here is to have at least one alternate route in case one node goes down
* Where the information is stored: Two ways to do it, one to divide the database and distribute its portions throughout a system without duplicating data, the other way is to store same data at several locations with one site containing the master file
* What rules or standards are used: the distributed system needs rules of how units communicate between them, and levels of security

**3. What does open source mean?**

Open source means that the source code can be obtained and modified by anyone.

**4. List and briefly explain questions that should be asked when deciding whether to distribute computing responsibilities**

* Are the operations Interdependent? : When one operation needs to know what the other is doing. In this case operations must be centrally coordinate to synchronize their operation
* Are the businesses really homogeneous? : if the operations truly have a lot in common, i.e. Fast food business, they are homogenous, then they need planning, software development and hardware selection should be centralized
* Does the corporate Culture support Decentralization? : Even if units are not homogeneous or interdependent their corporate culture might dictate that some functions be centralize. i.e. a large company that could be distributed may choose to centralize finance, HR, and systems planning, so they can easily move people and reuse systems

**5. What are the components of the guiding framework for distributed systems as provided by Stefferud, Farber, and Dement?**

* Processors
* Networks
* Services
* Standards

**6. Give seven examples of system structures that can be called distributed**

1. Host-based Hierarchy: it’s a Master-slave architecture
2. Decentralized Stand-Alone Systems: they form “Islands of computing”
3. Peer-to-Peer LAN-Based Systems: Not hierarchy or “superior” computer
4. Hybrid Enterprise-wide Systems: A combination hierarchy which uses LANs, WANs and the Internet (mainframe connected to a few departmental level LANs via WANs).
5. Client-Server Systems: Splits computer work between a client and a server, a client makes a request and a server answers it
6. Internet-Based Computing: it’s like an extension of the client-server but via internet, the internet becomes the server.
7. Web Services: Has software modules that have URL, so they can be called upon to perform their function (as a service)

**7. What are Gartner’s five types of client-server systems? Which two did the aerospace company choose and why?**

1. Distributed Man-Machine interface: puts all the data, all the app software and some of the presentation software on a server, only part of the HCI is on the client
2. Remote Man-Machine interface: puts all the software on the client, but leaves the applications and information on the remote servers
3. Distributed Business Applications: puts all the software on the client, all data on the server, and splits the application software between client and server
4. Remote Information management: places all software on the client, leaving only data and info management software on the server
5. Distributed Database: places all presentation and application software as well as some of the data on the client, the remaining data are on the server

They used the Distributed application code on clients and the Remote management on data servers; they did this to minimize total costs.

**8. What are server-based computing and peer-to-peer computing?**

In a server-based computing computers connect to the server (internet) when the need to perform a task. In a peer-to-peer computing, tasks are distributed over a wide number of computers (peers) connected to the internet.

**9. According to Rifkin, what is the Napster dispute really about?**

He says that Napster’s dispute goes to the heart of two economies: the “old” economy made up of buyers and sellers and the “e-economy” that has clients and servers

**10. What are the six standards underlying Web Services?**

* Three software standards

1. XML (eXtended Markup Language)
2. WSDL (Web Services Definition Language)
3. UDDI (Universal Discovery, Description, and Integration)

* Three communication standards

1. SOAP (Simple Object Access Protocol)
2. HTTP (HyperText Transfer Protocol)
3. TCP/IP (Transmission Control Protocol/ Internet Protocol

**11. Describe the rows and columns in Figure 5-9.**

Rows:

* Planner: plans the objectives/scope (contextual)
* Owner: Enterprise model (conceptual)
* Designer: System model (logical)
* Builder: Technology model (physical)
* Subcontractor: Detailed representation (out-of-context)
* Functioning system: the finished framework architecture

Columns:

* Data: What is it made of?
* Function: How does it work?
* Network: Where are the components located?
* People: Who is involved?
* Time: When is due?
* Motivation: Why this?

**12. What benefits has FMC received from having defined a “tomorrow” architecture?**

The benefit was that everyone now was on the same page so they have fewer next-minute battles, also having a defined “tomorrow” architecture makes standard setting easier

**13. What are the four layers of IT infrastructure, according to Weill and Broadbent?**

1. IT Components: Consist of technology components like computer, printers, DBMS, OS, etc
2. Human IT Infrastructure: Consist of experts knowledge, skill, experience and standards
3. Shared IT Services: It’s the business view of the IT infrastructure, and presents it as a set of services that users can draw upon and share to conduct business
4. Shared and Standard IT Applications: Are at the top of the IT infrastructure, change less regularly than fast changing local apps, include stable applications as accounting, budgeting, and HR

**14. In what three ways can companies view an IT infrastructure?**

1. Economies of Scale (utility) : Necessary and unavoidable service that must be provided by IS
2. Support for business programs (dependent): Ties infrastructure investments to specific business programs
3. Flexibility to meet changes in the marketplace (enabling): Develops and continually modifies its infrastructure in co-alignment with its business strategy