

Classroom Preparation Activity Responses

November 29, 2000

Client Server Architecture.

Question #1: Consider the file server architecture discussed in the book and in class . Please (a) describe the architecture in 1-2 sentences, (b) cite one strength of this architecture, and (c) one weakness/limitatin of this architecture.

Respondant 1: (a)the file server manage the file operations of the client PCs attached to it and acts as a shared data storage device.

(b)the strength is that it offers a large hard disk for every client PC.

(c)one limitation is that DBMS copies running in each PC must manage the shared database integrity.

Respondant 2: a)Server is responsible for storing files while client is responsible for everything else

b)Data security checks and file and record locking are initiated at the client PCs in this environment.

c) High network traffic load

Respondant 3: In file server architecture, the data is delivered to all the client's workstations with LAN, and the clients can present logics on the data as they desire.

Strength: The file server uses less memory because it does not run any applications.

Weakness: Each client's workstation must devote large memory to run the full version of the DBMS.

Respondant 4: The file architecture system is where all the data manipulation occurs at the work stations where data are requested. Each of the client pc's is connected to a LAN. (B) A strength of this design is users are allowed to share resources, such as data files and

peripheral devices (C) A limitation of this architecture is that a complete version of the DBMS must be on each of the client workstations. This takes up alot of memory

Respondant 5: (a) In a file server architecture, the server is responsible for storing files, and the client is responsible for I/O, processing and many DBMS functions.

(b) It is easy to implement and the cost is low.

(c) Considerable data movement is generated through the network.

Respondant 6: (a)File server architecture is an environment where a device called the file server is used to manage file operations and act as a storage. This file operations is mostly performed by workstations on LAN that share this file server.

(b)This architecture has all of its data management function controlled by the clients themselves.

(c)Each of the client has to be a powerful PC since most of the processing is done at the client workstation. The more RAM power it has, the more data that can reside in the client workstation.

Respondant 7: The first client/server architecture. The server only stores files while the client does everything else.

Strength-the server acts like an extra hard disk

Weakness-lots of traffic going on across the network.

Respondant 8: (a) A server stores files and the client is responsible for everything else.

(b) Queries happen on the clients computer so you can manipulate data anyway you want.

(c) Large amounts of data are being moved and this can be a burden on your PC.

Respondant 9: a). File server architecture is usually for smaller user groups since the server manages all the file applications shared on PCs. Data in this case are stored at client pcs, so id authorization checking and similar applications are conducted on the PC. Since the server manages all the file applications for many computers, the network traffic is heavy, and the server needs high computational power.

b).One strength is that all the client have access to the server as if the server is an extra harddisk.

c).One weakness is that each client must devote memory for the application to a full version of DBMS. Therefore, you have less momory to run additional application on your PC.

Respondant 10: (a) A file server architecture consists of several clients which are connected to a LAN in order to access data from a common shared location. There is one database located on the server but there can be many concurrently running copies of the DBMS on the clients' computers (most of the processing occurs on the client).

(b) Strength - file server is not very busy.

(c) Weakness - each client workstation must devote memory to a full version of the DBMS.

Respondant 11: a) device that manages file operaions and is hsared by each of the client PCs. It acts as an additional hard disk.

b) multiple copies of DBMS

c) memory space

Respondant 12: a) File server architecture contains two levels of hardware: the server and the clients. The server is where files are stored and the client (a workstation or PC) is responsible of the I/O and processing.

b) This architecture would enable users to read and write to files on the server from any computer connected in the network.

c) Large blocks of data are passed through the network causing congestion.

Respondant 13: The client computers are connected with local network to the file server, which works as a additional harddrive, except that all clients have access to the same drive.

Doesn't require much computing power at the server.

Simultaneous use of files may create problems.

Respondant 14: There is one database stored in one server that is called file server. Each client uses data from the database by processing all data manipulation at its own PC.

The weakness is the client PC need to be more powerful to manage extensive data manipulation.

The strength is the file server doesn't need to be powerful because it is just the place to store the data.

Respondant 15: Server is responsible for sorting files, client is responsible for everything else.

Benefits-all data manipulation done at one's own PC.

Weaknesses-memory must be devoted to full version of DBMS.

Respondant 16: a) A file server is a device that manages file operations and is shared by each of the client PCs attached to the LAN. Data are stored in client's PC and are processed in client's PC.

b) All data manipulations are performed at the client PCs. not at the file server.

c) Heavy network congestion due to large blocks of data transfered.

Respondant 17: a.)A file server is a device that manages file operations and is shared by each of the client PCs attached to the LAN. Each of these file servers acts as an additional hard disk for each of the client PCs.

b.)Strength-you may have more than one file servers attached to the LAN which means you can have a large amount of additional hard disk space if needed.

c.)Weakness-a client PC is responsible for processing, including presentation logic, extensive application logic and business rules logic, and many DBMS functions.

Respondant 18: a)For a file server architecture, all the files and data are stored on the server. The client is responsible for everything else in using the database.

b)Cheap and easy to maintain (server side)

c)need extensive memory and processing on client side.

Respondant 19: (a) Clients and the file server are connected by a LAN. The file server stores the data that is requested by the clients and an entire file of data is returned to the clients as well as a lock status.

(b) All data manipulation is done at the clients' PCs and not at the file server.

(c) Considerable data movement is generated across the network.

Respondant 20: a)In this architecture, the server is responsible does not help to do anything as most of the functions are completed at the user level. It only stores the data.

b)The server is not complicated ; it does not require much maintenance.

c) It is difficult to ensure the database integrity. Every user has a version of the database.

Question #2: Consider the database server architecture discussed in the book and in class. Please (a) describe the architecture in 1-2 sentences, (b) cite one strength of this architecture, and (c) one weakness/limitation of this architecture.

Respondant 1: (a) database server is responsible for database storage, access and processing, the client workstation is responsible for managing the user interface, including presentation logic, data processing logic, business rules logic.

(b) one strength is user authorization, integrity checking, data dictionary maintenance, and query and update processing are all performed in one location.

(c) one weakness is that the scalability and technical flexibility is not enough.

Respondant 2: Server contains database and software for interacting with data while Client is responsible for special application programs and for i/o

b) Departmental applications, supporting a relatively small number of users. Successful where transaction volumes are low, immediate availability is not critical and security is not of the highest concern.

c) Upgrades to an application will require that each client be upgraded separately.

Respondant 3: In database server architecture, the database is used for data storage, access and processing while the client's workstations is responsible for user interface of the logics.

Strength: The database server had organized the database already and the client's workstations does not need to use much applications to access the database. With less data are sent across the LAN, the communication load is reduced.

Weakness: The database server can only support several clients' workstations. Massive access is not available.

Respondant 4: The architecture of the database server is where the clients workstation is responsible for database storage, access and processing in a client/ server environment. (B) A strength of this architecture is that LAN traffic is reduced. (C) A weakness of this architecture is that each client must have the applications at their location to use the system.

Respondant 5: (a) In a database server architecture, the database server is responsible for database storage, access and processing (the function of DBMS), and the client is responsible for I/O and application logic.

(b) Only those records that match the requested criteria are transmitted to the client station, so the communication load is reduced.

(c) Each client must be loaded with the applications that will be used at that location.

Respondant 6: (a) It is an improved architecture where its function, besides data storage, is responsible for access and processing as well. The DBMS is located here.

(b) Since the DBMS is now placed at the server, there is a reduction in data traffic because of the fact that clients are only receiving the exact data that they requested.

(c) The use of storing procedure reduces portability and provides the need to rewrite the stored procedures when changing DBMS.

Respondant 7: Often called a two-tier client/server environment. The server contains database and software for interacting with the data while the client contains application programs and input/output.

Strength-performance increases and traffic decreases

Weakness-Time consuming

Respondant 8: (a) Server contains data and DBMS while client is responsible for I/O and Application programs.

(b) Network traffic decreases since processing is at server.

(c) Each client must be loaded with applications that will be used at that location.

Respondant 9: a). Database architecture is that the server handles database storage, access, and processing. The PCs in this case handle the user applications, logical and data processing, user interface.

b). One strength of this architecture is that there will be significantly reduced traffic load on the network.

Furthermore, since all data is stored on the database server, user authentication can be conducted on the server.

c). It will be very difficult to program and create database applications because it is very sophisticated for normal people. Furthermore, it will be tedious when you decide to upgrade an application because you have to physically change the application on all the clients.

Respondant 10: (a). The database server architecture maintains the database on the database server where it is accessed and processed; the client station is just responsible for managing the user interface. Only selected data is requested from the database server to any particular client.

(b) Strength - Communication load is significantly reduced.

(c) Weakness - Security is still a concern.

Respondant 11: a) A computer responsible for database storage, access, and processing in a client/server environment.

b) Reduce in LAN traffic

c) Difficult to change the DBMSs

Respondant 12: a) A database server architecture is similar to the file server such that it has 2 tiers: a server and the clients. The server is responsible for the storage, access, and processing. The client is responsible for the I/O.

b) The database is on the server rather than on the clients.

c) Scalability and security limitations.

Respondant 13: a) The DB server is responsible for all data processing and client computers only take care how the data is presented.

b) No data is stored to clients.

c) Clients still need special applications.

Respondant 14: The database server is responsible for database storage, access, and processing, while the client workstation is responsible for managing the user interface.

The strength is LAN traffic is reduced because only records that match the requested criteria are submitted to the client station, rather than entire data in the file server architecture.

The weakness is each client must be loaded with the application that will be used at that location. Thus, upgrades to an application will require that each client be upgraded separately.

Respondant 15: Server contains database and software for interacting with data. Client is responsible for special application programs and for I/O.

Benefits-improved SQL performance and data integrity

Weakness- very time consuming

Respondant 16: a) Database server performs database storage, access, and processing while the client workstation manages the user interface, including presentation logic, data processing logic, and business rules logic.

b) Database can be tuned to optimize database performance since database is stored on the server.

c) Supports relatively small number of users.

Respondant 17: a.)The database server architecture is an improvement upon the client/server architectures, where the client workstation is responsible for managing the user interface, including presentation logic, data processing logic, and business rules logic, and the database server is responsible for database storage, access, and processing.
b.)Strength-LAN traffic is reduced, because only those records that match the requested criteria are transmitted to the client station, rather than the entire data files.
c.)Limitation-database server supports a relatively small number of users, where transaction volumes are low, immediate availability is not critical and security is not of the highest concern.

Respondant 18: a)Similar to the file server architecture, but the DBMS is now on server side. The database server is responsible for storage, access, and processing.

b)only the server needs the processing power, instead of all client computers.

c)Expensive to upgrade, as all client computers have to be upgraded with new applications each time the DBMS on the server is upgraded.

Respondant 19: (a) Clients and the database server are connected by a LAN. However, the database server returns only selected data to clients who request data.

(b) Only the database server requires processing power adequate to handle the database, and the database is stored on the server, not on the clients.

(c) Writing stored procedures takes more time than using Visual Basic or Powerbuilder to create an application.

Respondant 20: a) The server contains the DBMS and the database. The data processing is available on the server.

b) The network communications are less loaded.

c)It might be useful only for a limited number of users. The security is not well handled here for instance.

Question #3: Consider the three-tiered server architecture discussed in the book and in class. Please (a) describe the architecture in 1-2 sentences, (b) cite one strength of this architecture, and (c) one weakness/limitation of this architecture.

Respondant 1: (a) one server hold the application programs and a local database while another server hold the enterprise database.

(b) one strength is technological flexibility.

(c) one limitation is high short-term costs.

Respondant 2: a) A client/ server configuration that includes three layers: a client layer which is responsible for I/O and two server layers: one to manage data and the other to handle application between user and data.

b) technological flexibility

c) High short-term cost

Respondant 3: In three-tier architecture, there are three layers: client layer, application layer and database layer. The application server and database server process and store database while the clients' workstations require little applications to access the database through the LAN.

Strength: It improves customer service because clients can access the same database with multiple interfaces.

Weakness: It requires more time and money to develop this architecture because it is new and complicated to configure.

Respondant 4: The three tiered server architecture includes a client and two servers. There is a application server and a database server. (B) A strength of this architecture is that business needs are better matched because they are more specified. (C) A weakness of this architecture is that the short term costs are high. More programming is needed to accomplish the split of the process component and the presentation component.

Respondant 5: (a) In a three-tier architecture, there is another server between the client and the server. The client is responsible for I/O, the new server is responsible for handling applications, the third-tier server is responsible for managing data.

(b) It is flexible to change DBMS engines with a three-tier architecture.

(c) The short-term costs are higher.

Respondant 6: (a) This is an architecture that has an extra server in addition to the database server architecture. The extra server could be used to store applications, or enterprise database.

(b) When upgrading the application programs, it only needs to be done at the application server instead of at every client workstations. It provides technology flexibility.

(c) There might be a high a switching cost to upgrade.

Respondant 7: In a three tiered client/server architecture there are two servers, one for storing data and one for performing applications and the client only has to get input/output.

Strength-fast and efficient

Weakness-Expensive to implement

Respondant 8: (a) The client takes care of I/O. There are two servers. One for data and one for applications between user and data.

(b) Low long term costs.

(c) High short term costs.

Respondant 9: a). A three-tier server architecture includes both the file server and the database server working at the same time. It architecture has both the advantages of file server and database server architecture, in addition, it is easy to maintain and update the application programs used because you can update a program just once from the file server.

b). One strength is that programs can be easily reconfigured, maintained, and updated.

c). Disadvantages are that it will require some complex training to master, and there will be a high short-term cost since you have to buy both the database server and the file server.

Respondant 10: (a) Three-tiered server architecture consists of clients connected to a LAN which can access an application server and a database server. The application server can be thought of as the "middle-man" which can perform any number of services for the client. Most of the processing in this type of architecture occurs on the servers and therefore a three-tiered server architecture is best in larger environments.

(b) Strength - The middle tier (application server) allows for more technological flexibility.

(c) Weakness - Since three-tiered server architecture are relatively new, training programs are not well developed.

Respondant 11: a) A client/server configuration that includes 3 layers: (client, and two server).

b) Lower long-term costs

c) High short-term costs

Respondant 12: a) Considered 3-tier because it involves the clients and 2 servers: a file and a database server.

b) Divides the processing. Best of both worlds.

c) Lack of tools to manage middle tier services.

Respondant 13: a) Three layers in this system are - clients, application server and database server. Clients use the applications from the application server.

b) The applications have to be updated only to the server and not all the clients.

c) Because of the complexity of the system there are more training and implementation costs.

Respondant 14: The three-tier architecture includes another server in addition to the client and database server to be used for different purpose such as an application server, or hold different data in the database.

Since most business processing occurs in the application server rather than on the client workstation or database server, using the middle tier can reduce cost, as can substitution of modules within an application rather than an entire application.

Implementing a three-tier architecture requires the presentation component be split from the process component and it builds higher cost.

Respondant 15: Two servers: one to manage data, one to handle applications between user and data.

benefits: scalability and lower long term costs

Respondant 16: a) Addition of another layer to the client and database server layers. Additional server being application server or local database.

b) Easier portability of the application code to other platforms, and less reliance on proprietary languages.

c) There are few standards for transaction processing monitors.

Respondant 17: a.)The three-tier architecture includes another server layer in addition to the client and database server layers previously mentioned.

b.)Strength-the additional server may be used for different purposes. Application programs may reside on the additional server, as well as a local database while another server holds the enterprise database.

c.)Limitation-because three-tier architectures are relatively new, tools for implementing them are not yet well developed and training programs are not yet widely available.

Respondant 18: a)The server side is now separated into two units. One acting as the database server, and the other acting as the application server. The client is only responsible for I/O.

b)Technological flexibility-easier and cheaper to upgrade the DBMS.

c)Expensive to implement. Especially the application server, which needs a lot of processing power to accommodate all the clients.

Respondant 19: (a) Client/server configuration that includes three layers: a client layer and two server layers. While the nature of the server layers differs, a common configuration is an application server.

(b) Multiple interfaces on different clients can access the same business process.

(c) Few people have had experience building three-tier systems.

Respondant 20: a) It is a database server configuration with another server added next to the database server. Usually, this added server will manage the applications.

b) It is the most flexible configuration. Small changes are easy (just by changing modules or procedures).

c) We need a very powerful server in this case.

Question #4: Consider the mainframe architecture discussed in the book. In your own words, describe how this architecture relates to the three client-server architectures discussed in class.

Respondant 1: the mainframe architecture handles with the very large databases, which is mission critical while the three client-server architectures are used to develop the less mission-critical, frequently work-group-level systems.

Respondant 2: Each organization needs to achieve a balance between mainframe and client/server platforms, between centralized and distributed solutions. Data that do not need to be moved often can be centralized on a mainframe. Data to which users need frequent access, complex graphics and the user interface should be kept close to the user's workstation.

Respondant 3: The mainframe acts as a server where critical systems are stored. It acts as a lone server where clients can directly access data. It does not share data among the client's workstations.

Respondant 4: The mainframe architecture had mission critical systems residing on them from a decade ago, remain mainframe systems. Less mission critical systems have been developed using the client/server architecture. The move to mainframe systems to client server systems has been very challenging. When these mission critical systems are converted to distributed systems managing becomes much more complicated. Problems include code available through the server, code conflicts, and resources available.

Respondant 5: The mainframe architecture is a centralized environment, different from the three client-server architectures, which is a distributed environment.

Respondant 6: Mainframe architecture has the same purpose as the client-server architecture. The difference is that mainframe is used more for the mission-critical systems. Also, mainframe uses a centralized data processing environment, where client-server architectures use a distributed environment.

Respondant 7: The mainframe is combining the client and server into one station. It's like the three client-server because all the client has to do is input data and get data out.

Respondant 8: The mainframe architecture is used for mission-critical. It is related to the client/server types because this is kind of the original version. Many people are trying to push away from the mainframe style. This has been difficult because you need workable software, effective performance management, and many others.

Respondant 9: The mainframe architecture is more mission oriented. It accomplishes its programmed missions. The other three client-server architectures differ than mainframe architecture in that the mainframe only supports a limited number of tasks. The other three architectures have more freedom to what the system can perform.

Respondant 10: The role of the mainframe is similar to the database server in the three client-server architectures. The mainframe is still used to store "mission-critical" applications and systems since the movement of such critical materials could be dangerous.

Respondant 11: Each architecture is an alternative for the mainframe architecture.

Respondant 12: These are many PCs linked together to enable simultaneous processing. Has characteristics of a client/server architecture.

Respondant 13:

Respondant 14: Data that do not need to be moved often can be centralized on a mainframe. Data which users need frequent access, complex graphics, and the user interface should be kept close to the users' workstations.

Respondant 15: Mainframes are the residents of mission-critical systems.

Benefits—all data and programs are in a localized area.

Weaknesses-lots of software distribution problems, very complex, hard to transfer information.

Respondant 16: Mainframes are mission critical systems, whereas it only accomplishes programmed tasks. However, the trend is to move the mission critical systems to client/server architectures that are more effective computing in more distributed environment.

Respondant 17: The mainframe handles the larger scale issues, "mission-critical" systems. The mainframe handles the applications that are too complicated when they are converted to distributed systems. Such as, performance management and tuning of production systems, established troubleshooting procedure, and proactive code management.

Respondant 18: Th mainframe server acts as both the application server and the database server. It contains files and data, application, and DBMS. Clients are only responsible for I/O. In a way, it is similar to the three-tier architecture, except that there's only a two-way relationship between the mainframe and the clients.

Respondant 19: ?

Respondant 20: I do not see many relationships between both. The three client server architecture need a high-capacity "device" to handle the DBMS, the data and the application. It is also the case for the mainframe where are located the mission-critical systems. The client server architecture is supposed to undertake in the future the current mission of the mainframe. Otherwise these systems are really different. The client server is not a centralized system as the mainframe and its environment is more complex.

Question #5: Muddiest Point: Based on what we have covered thus far, what would describe as your "muddiest point"?

Mainframe concerns

- Respondent: The role of mainframe.
- Respondent: Mainframe architecture is still a little hard to understand.
- Respondent: I don't quite understand the difference between the mainframe and the client-server.
- Respondent: How are mainframes actually used today and integrated with client/server architectures if at all?

Three Tier Architecture and "Application" Server

- Respondent: Perhaps little more elaboration on three-tier architecture would be helpful.
- Respondent: I don't think I am completely clear on what the application part is exactly.
- Respondent: I did not really understand the 3 application logic components. Are they basic features? goals? Moreover what do "application" and "application logic" mean exactly in this chapter?
- Respondent: I'm not quite sure what's the difference between 'DBMS' and 'applications'. Are they the same thing?

Tie to Projects

- Respondent: How would we (if we needed to) apply this to our group projects? How would we determine what kind of architecture our system would need?
- Respondent: How to apply the knowledge of information system architecture into our project?

Selection

- Respondent: Where each one would be used and the reasons why.
- Respondent: I'm wondering what other types of architectures are effective. The 3 tier seems to be most flexible from these three.
- Respondent: If budget is not a constraint, but you don't have a qualified MIS, is it feasible to move from a database architecture to a 3-tier architecture? Assuming you will be outsourcing your IS maintenance?

General Resources Available

- Respondent: I find that all of this is a bit confusing. I am not familiar with the material or the vocabulary and I do not feel that the book provides good definitions..

SQL Related

- Respondent: my muddiest point is about the select, design and use the indexes in the physical design.
- Respondent: Learning SQL

No Response

- Respondent: ?
- Respondent:
- Respondent:
- Respondent: