12 Case studies.
Case studies #5, #6, #7, #8, #9, and #10 are the older ones and are used frequently.
Case studies #1, #2, #3, #4 are newer. These rarely used.
Case studies #11 and #12 are the newest. They are used frequently.

Case Study No: 1

CONTOSO, LTD

Background
Contoso, Ltd is a military and aerospace research company that has approximately 16,000 employees. You have been asked to provide consulting services for the design and implementation of the company's enterprise Active Directory.

The company's primary business since 1953 has been military research. However, in 1997 the company purchased an aerospace company and added aerospace research to its business. Although the corporate offices for both companies have been consolidated, a separation between divisions still exists. There are separate chief information officers (CIOs) for the military and aerospace divisions. The two CIOs report to the chief executive officer (CEO) of Contoso, Ltd., and have equal authority. The CIOs have complete autonomy in most areas of IT. Each CIO has his own budget.

The CIOs have agreed to consolidate their efforts in some areas. The military division CIO is responsible for providing IT services to corporate departments such as human resources and accounting. The military division CIO is also responsible for providing an enterprise wide messaging infrastructure. The military division incurs all costs for supporting and maintaining the messaging infrastructure. A fee for each mailbox is assigned and internally charged against the aerospace budget on a quarterly basis. In return, the military division CIO provides a guaranteed uptime of 99 percent to the aerospace.

The headquarters office for Contoso, Ltd., is located in New York. Approximately 3,700 employees work at headquarters. Executives from both divisions work in the headquarters office. Contoso, Ltd., also has locations i the following cities:

Military Division:
- Boston (2,500 users)
- Atlanta (1,300 users)

Aerospace Division

- Seattle (5,800 users)
- San Francisco (1,200 users)
- San Diego (700 users)

Existing Environment:

Contoso, Ltd., has a single registered domain name of Contoso.com hosted on a UNIX DNS server. Currently, the A (host) records for all UNIX-based devices and web servers are statically registered on the DNS server.

The military division currently provides e-mail services to the entire company.

WAN Architect Interview

I manage the entire WAN. Atlanta, Boston, and Seattle have T1 lines to New York. San Francisco and San Diego have T1 lines to Seattle. There is a 56-Kbps connection between San Francisco and San Diego for redundancy. We have a single connection to the Internet in New York. A firewall provides protection between our network and the Internet connection. All of my WAN equipment is stored in secure data centers in each location

Aerospace Division CIO Interview

We currently outsource our messages application to the military division. They have guaranteed us an uptime of 99 percent, but it seems like e-mail is always down. My primary network administration team is located in Seattle. There are technical people in each location to provide on-site support for users in my division.

Business Requirements

Military Division CIO Interview

We have had many problems in the past maintaining a stable messaging infrastructure. We plan to migrate to Microsoft Exchange 2000 to take advantage of the clustering technologies provided. We hope to be able to provide a service level of 99.995 percent after the migration is complete.

Aerospace Division CIO Interview

My responsibly is to the users in the aerospace division. I cannot afford to depend on another division to provide my network operating system (NOS) services. I have been told that I must continue to outsource our e-mail services to the military division. I have been assured that e-mail services will be upgraded soon to increase reliability and that I will gain control over my users' mailboxes

My office is in New York and I want to ensure that I have the fastest possible logon speed.

Aerospace Division IT Manager Interview

Because the military division domain contains the corporate departments, we must have access to resources in the military division domain. One important application that we must be able to access at all times is a Microsoft SQL server database located in New York. There are currently no resources that the military division needs to access in our domain. All of our user and client computer accounts, including those of our CIO, will be located in our domain. One problem that we have had several times in the past is that the UNIX DNS server has gone offline. When that happened, we were not able to access many of these important resources.

We plan to store some sensitive information, such as employee payroll numbers, in Active Directory. We want to limit view access of this type of information to specific individuals. We plan to limit view access for all objects to Active Directory to authenticated users only. We also plan to create groups that will have view access to this sensitive information.

Technical Requirements

Both CIOs have already agreed to the following design decisions. There will be two forests in the Contoso, Ltd., enterprise. One forest will contain the military division and the other will contain the aerospace division. Both of these forests will contain an empty root domain. A joint budget has already been allocated, and your consulting company will be providing the Active Directory design for both divisions. A metadirectory synchronization program will be installed in New York.

Aerospace Division IT Manager Interview

The military division has agreed to allow us to manage certain properties of our e-mail accounts directly. I will be creating two accounts in my root domain for this purpose. These two accounts will be allowed to modify these certain mailbox properties.

Military Division IT Manager Interview

Currently, a local site administrator is responsible for managing all user and computer accounts for each site. With the implementation of Active Directory, we will be changing the way we administer accounts. The existing site administrators will continue to manage resources. However, new teams for each department will be created in New York. These new department-based teams will manage the user accounts in each department.

Redundancy of our root domain controllers is extremely important to me. I want to ensure that if there is a disaster, we have an off-site copy of this root domain. A network file share located in New York contains all human resources documents for the entire company. We will need to provide access to these documents to everyone. We also have human resources staff located in Seattle who will need to update these documents. Because the documents are large, we want to provide local copies of the documents in Seattle. We currently plan to use DFS and to replicate this share to a DFS server in the aerospace domain. I am concerned about how we will be able to provide a single directory to our e-mail users.

QUESTIONS CONTOSO, LTD.

QUESTION NO: 1
Which factor or factors in the company's forest design decision will increase the administrative overhead of managing its enterprise NOS environment? (Choose all that apply)

A. Providing a single enterprise directory
B. Duplication in planning teams for directory deployment
C. Directory management duplication
D. Complexity relating to the separation of users and resources in different forests
E. Initiation of separate design processes

Answer: C, D
Explanation:
Since there will be no automatic replication between forests internal to Active Directory, an outside package is required to keep the forests in sync. This will be done by using a metadirectory synchronization package. Even in this situation, some care must be taken when running multiple forests. The complexity of users and resources in the different forests relate to having to establish and maintain trusts between various domains. There may even be more issues to deal with since Contoso expects to make changes to and add to the Active Directory Schema.

Incorrect Answers:
A: There really isn't a single ente rprise directory, since each forest will have its own separate enterprise directory, and keeping them synchronized can only be done by a 3rd party package.
B: Planning and initial implementation is a one time up front action. This in itself does not add to the administrative overhead since it is not ongoing. It is overhead, but extra overhead to design and implement the system which is the cost of conversion.
E: Having separate design processes, one for each forest is also the overhead of system implementation/conversion, and is a one-time cost. It would not be considered administration overhead since it is not ongoing. When we talk about administration overhead, we are talking about ongoing maintenance of the system.

QUESTION NO: 2
Which technical factor or factors influenced the company's forest design decision? (Choose all that apply)

A. Network Address Translation (NAT) devices are separating domain controllers

B. None: the decision was not influenced by technical factors
C. Bandwidth is not sufficient to support a single forest
D. Firewalls are separating the domain controllers
E. The company wants to eliminate trusts between domains
F. DNS service cannot resolve name throughout the forest

Answer: B
Explanation:
Let's look at the early part of the case study, specifically: "However, in 1997 the company purchased an aerospace company and added aerospace research to its business. Although the corporate offices for both companies have been consolidated, a separation between divisions still exists. There are separate chief information officers (CIOs) for the military and aerospace divisions. The two CIOs report to the chief executive officer (CEO) of Contoso, Ltd., and have equal authority. The CIOs have complete autonomy in most areas of IT. Each CIO has his own budget."

Nowhere in the case study have any technical excuses been offered. The case study states: "Both CIOs have already agreed to the following design decisions. There will be two forests in the Contoso, Ltd., enterprise." without any reason. However, it is obvious that from day one of the acquisition, the IT departments had never been combined, and continued to operate as separate and distinct entities. So, from the information provided, it appears that the reason for two forests is based on keeping the status quo on the current corporate culture.

Incorrect Answers:
A: There has not been any specific information that NAT was being used, and if it were added to the network, would not justify the breakdown into two forests.
C: The forest design is not based on bandwidth requirements. A single forest can handle a bandwidth issue by using multiple sites.
D: The only firewall mentioned was the Internet connection. If firewalls were placed between domain controllers, it would not make a difference on how many forests were made. With proper configuration, one forest would work fine.
E: This was not provided as a technical requirement. However, even though by default two way transitive trusts exists between domains in the same forest, they can be changed. Based on the original configuration, we will need to maintain some of the trusts, and having two forests actually make the administration more complex.
F: There should be no DNS issues, as long as the Unix DNS server can support SRV records, and optionally dynamic updates. The number of forests selected will work fine with DNS, whether it be one forest with two domains or two forests with one domain.

QUESTION NO: 3

You need to create a trust design for Contoso, Ltd. Which trust relationship or relationships should you create?

A. Two-way transitive trust between the military division forest root domain and the aerospace division child domain
B. Two-way transitive trust between the military division child domain and the aerospace division child domain
C. One-way trust where the military division forest root domain trusts the aerospace division child domain
D. One-way trust where the military division child domain trusts the aerospace division child domain
E. One-way trust where the military division child domain trusts the aerospace division root domain

F. One-way trust where the military division forest root domain trusts the military division child domain
G. One-way trust where the military division child domain trusts the military division child domain

Answer: D, E
Explanation:
Let's see that the aerospace IT Di vision Manager said: "Because the military division domain contains the corporate departments, we must have access to resources in the military division domain. One important application that we must be able to access at all times is a Microsoft SQL server database located in New York. There are currently no resources that the military division needs to access in our domain. All of our user and client computer accounts, including those of our CIO, will be located in our domain."

This says that Aerospace users need resources in the Military domain, but user accounts will remain in aerospace domain, so we need Military to trust Aerospace. Military does not access resources in Aerospace, so no trust needed where Aerospace trusts Military.

So, to recap, we need a one-way trust where military trusts aerospace. However, since inter-forest trusts are NOT transitive, we must link the actual child domains where the accounts and resources reside.

Now, let's look again at a different Aerospace Division IT Manager statement: "The military division has agreed to allow us to manage certain properties of our e-mail accounts directly. I will be creating two accounts in my root domain for this purpose. These two accounts will be allowed to modify these certain mailbox properties". Since the mailbox properties for Exchange 2000 will reside in the Military Forest, we will also require a trust relationship between the Aerospace Forest root and the Military child. It is one-way, again Military trusts Aerospace, but it is Military child that trusts Aerospace root.

Incorrect Answers:

A: Since the military and aerospace domains will be in different forests, you cannot have transitive trusts And there is also no two-way trust; to get a two-way trust, you would need to implement two one-way trusts, one in each direction.

B: Since the military and aerospace domains will be in different forests, you cannot have transitive trusts And there is also no two-way trust; to get a two-way trust, you would need to implement two one-way trusts, one in each direction.

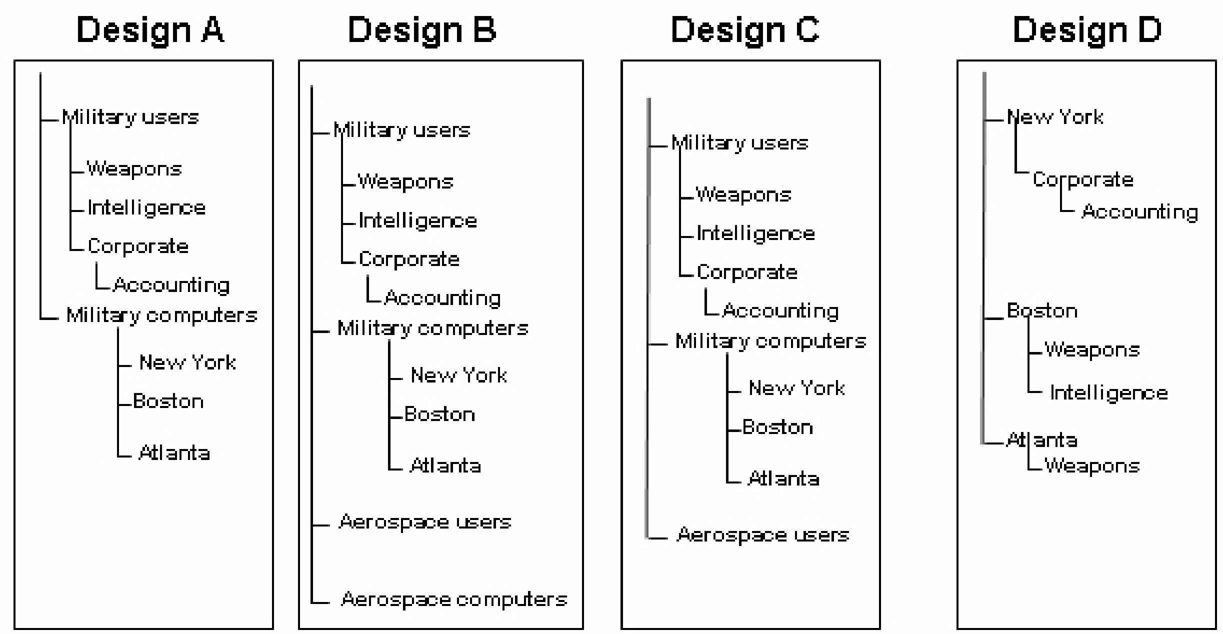
C: This is another issue of not having transitive trusts between forests. If I point to the root domain, and not the child domain, the trust will not traverse through the root to the child. The trusts must be between the actual two domains, in this case a child-child connection.

F: Having a trust between the Military child & Military root is actually redundant, since both domains are in the same forest and already trust each other in an implied transitive two-way trust. Adding this trust does not add anything of value to make the solution work.

G: This isn't even valid to have a domain trust itself?

QUESTION NO: 4

You need to create an Organizational unit design for the military division Contoso, Ltd. Design options are shown in the exhibit.



Which design should you use?

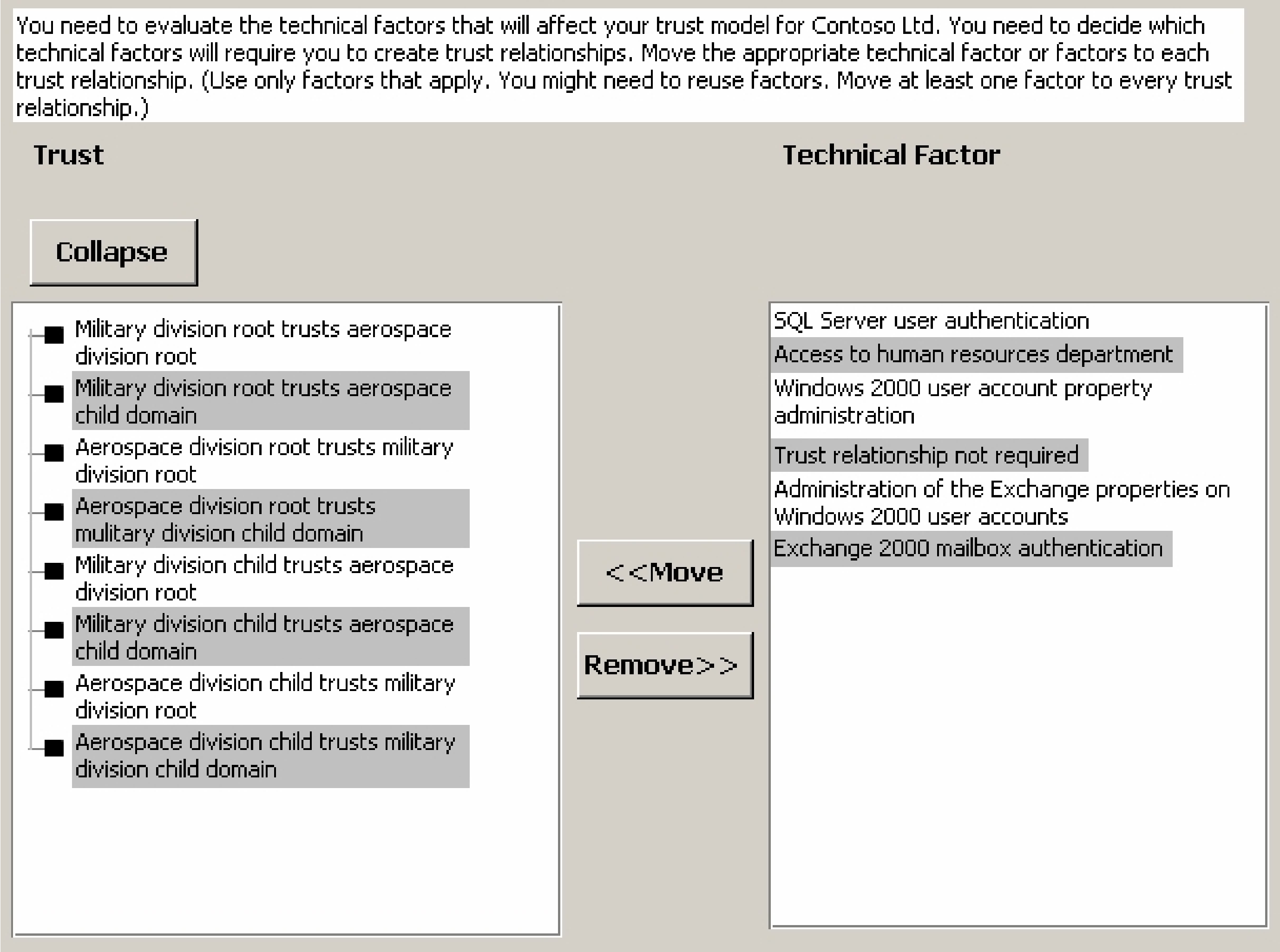
A. Design A
B. Design B
C. Design C
D. Design D

Answer: A
Explanation:
Let’s look at what the mi litary IT Division Manager said: “Currently, a local site administrator is responsible for managing all user and computer accounts for each site. With the implementation of Active Directory, we will be changing the way we administer accounts. The existing site administrators will continue to manage resources. However, new teams for each department will be created in New York. These new department-based teams will manage the user accounts in each department.”

The existing site managers will manage resources, so we need to make the computers, a resource, a separate OU for each site. This allows us to delegate each site administrator to their respective site OU for resources. Since user management will be centralized, we only need a user OU for all users, regardless of site.

Incorrect Answers:
B, C: The Aerospace users and computers would not be specified in the Military Forest.
D: This OU configuration makes delegation of computer resources to the local site admin difficult.

QUESTION NO: 5

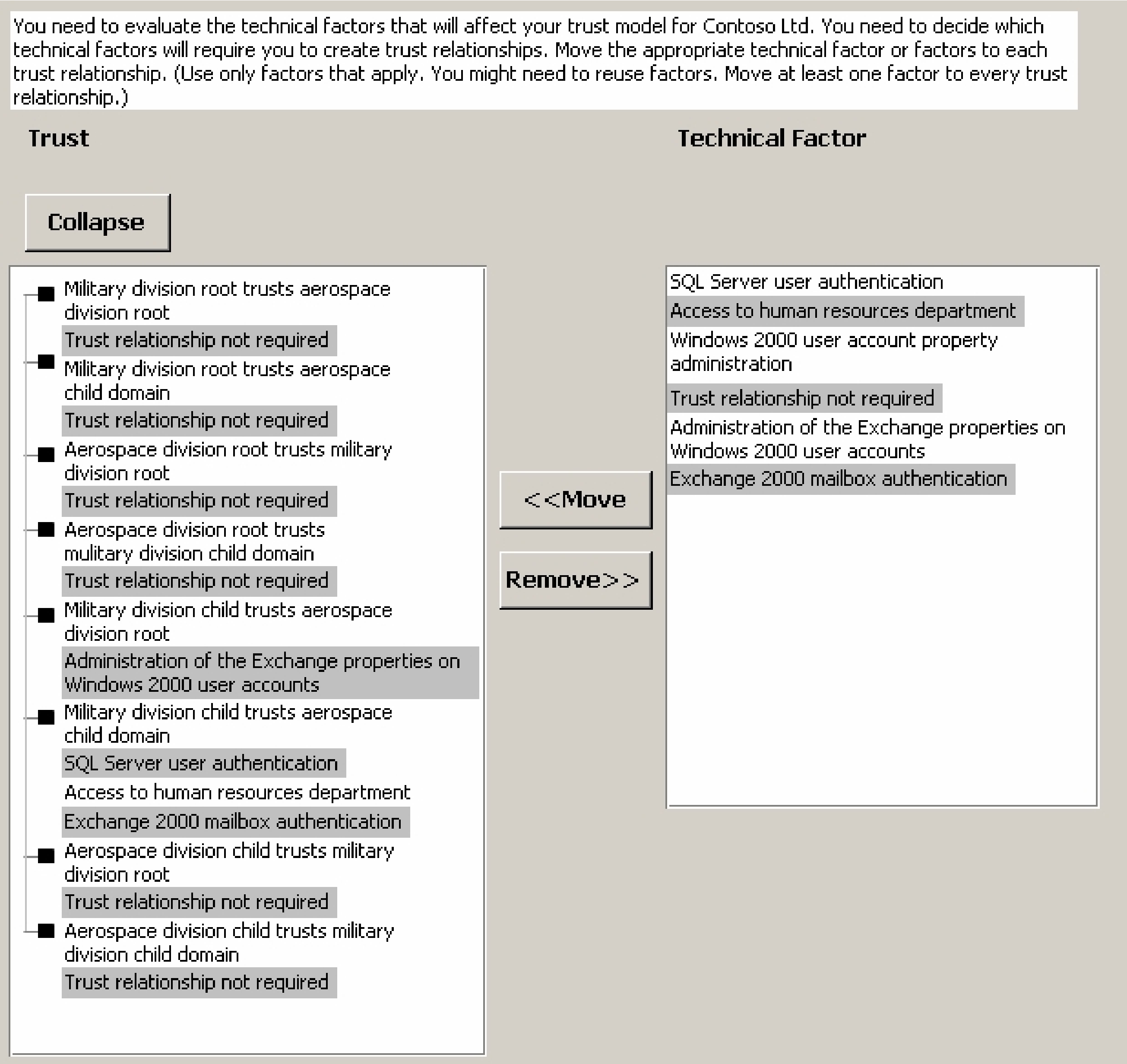


You need to evaluate the technical factors that will affect your trust model for Contoso Ltd. You need to decide which technical factors will require you to create trust relationships. Move the appropriate technical factor or factors to each trust relationship. (Use only factors that apply. You might need to reuse factors. Move at least one factor to every trust relationship.)

- ■ Military division root trusts aerospace division root
- ■ Military division root trusts aerospace child domain
- ■ Aerospace division root trusts military division root
- ■ Aerospace division root trusts mulitary division child domain
- ■ Military division child trusts aerospace division root
- ■ Military division child trusts aerospace child domain
- ■ Aerospace division child trusts military division root
- ■ Aerospace division child trusts military division child domain

- SQL Server user authentication
- Access to human resources department
- Windows 2000 user account property administration
- Trust relationship not required
- Administration of the Exchange properties on Windows 2000 user accounts
- Exchange 2000 mailbox authentication

Answer:



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Trust

- Military division root trusts aerospace division root
  - Trust relationship not required
- Military division root trusts aerospace child domain
  - Trust relationship not required
- Aerospace division root trusts military division root
  - Trust relationship not required
- Aerospace division root trusts mulitary division child domain
  - Trust relationship not required
- Military division child trusts aerospace division root
  - Administration of the Exchange properties on Windows 2000 user accounts
- Military division child trusts aerospace child domain
  - SQL Server user authentication
  - Access to human resources department
  - Exchange 2000 mailbox authentication
- Aerospace division child trusts military division root
  - Trust relationship not required
- Aerospace division child trusts military division child domain
  - Trust relationship not required

Technical Factor

- SQL Server user authentication
- Access to human resources department
- Windows 2000 user account property administration
- Trust relationship not required
- Administration of the Exchange properties on Windows 2000 user accounts
- Exchange 2000 mailbox authentication

QUESTION NO: 6

What are the technical ramifications of the company's forest design decision? (Choose all that apply)

A. Authentication between the military and aerospace division will no longer be provided by Kerberos

B. There will be no native global catalog of objects between the military and aerospace divisions

C. The military and aerospace divisions will not be able to share resources

D. A user will not be able to log on to that user’s client comp uter by using an e-mail style user principal name (UPN)

E. There will be no automatic transitive trusts between the military and aerospace divisions

Answer: A, B, E
Explanation:
Kerberos operates within a forest, but tickets are not generated for inter-forest authentication. Global catalogs are not shared between forests, each Global Catalog will be unique and only carry information for its forest. Since the military and aerospace domains are in different forests, only explicit (by hand) trusts can be established, and those trusts are similar to the old Windows NT trust relationships.

Incorrect Answers:
C: Resource sharing will be possible, since trusts can be established, it is just that the trusts are not automatic.
D: The user should still be able to access their computer using a UPN.

QUESTION NO: 7
You need to create a domain name structure for Contoso, Ltd. Which domain names should you use? (Each correct Answer: **presents part of the solution. Choose two)**

A. mil.contoso.com
military.mil.contoso.com
B. adm.contoso.com
military.adm.contoso.com
C. adm.contoso.com
military.adm.contoso.com
email.adm.contoso.com
D. aerospace.local
corp.aerospace.local
E. mil.contoso.com
military.mil.contoso.com
email.mil.contoso.com
F. aero.contoso.com
aerospace.aero.contoso.com
G. military.local
corp.military.local

Answer: A, F
Explanation:
A: This provides a root domain and child domain for military.
F: This provides a root domain and child domain for aerospace.

Incorrect Answers:

B: Actually this is a little arbitrary, but I picked mil instead of adm since even through the corporate administration is in the military forest, it is not pure administration. Using mil vs. adm appears to be a little more generic.

C: The e-mail domain throws this off. The e-mail domain is the Exchange Server 2000 mail domain, which is internal to Exchange Server, and not a Windows 2000 Domain within the forest.

D, G: As an **Answer**: pair, this would have been an alternate choice. It would be better than the A, F choice in that there would be one less level in the domain name. Local is usually used to isolate the internal domain names form the external domain names. Although this isolation was the original naming recommendation by Microsoft, Microsoft has backed off of the recommendation that these names (internal vs. external) be different. This decision was based on the problems encountered by having the names different as well as the confusion this causes. Also, there is nothing in the case study that leans us towards isolation of the domain naming structure.

E: The e-mail domain throws this off. The e-mail domain is the Exchange Server 2000 mail domain, which is internal to Exchange Server, and not a Windows 2000 Domain within the forest.

QUESTION NO: 8

What are the two most important business considerations for the company's forest design decision? (Each correct Answer: part of the solution. Choose two)

A. The possibility that domain controller will be located in unsafe physical locations
B. Security concerns between divisions
C. The hosting of Exchange 2000 by the military division
D. Accountability for quality of service
E. The lack of central IT authority

Answer: D, E

Explanation:

There have been some problems with uptime. Now even though the uptime issues that were mentioned only related to e-mail, we have to be safe to assume that there is some mistrust between the two entities as to whether service levels can be reached and maintained. The two entities each have a central IT staff (or will have), but there is no CENTRAL IT staff for Contoso, Ltd that services everyone. The two divisions have always been autonomous, and it looks like the Windows 2000 Active Directory conversion isn't going to change that part of the corporate culture.

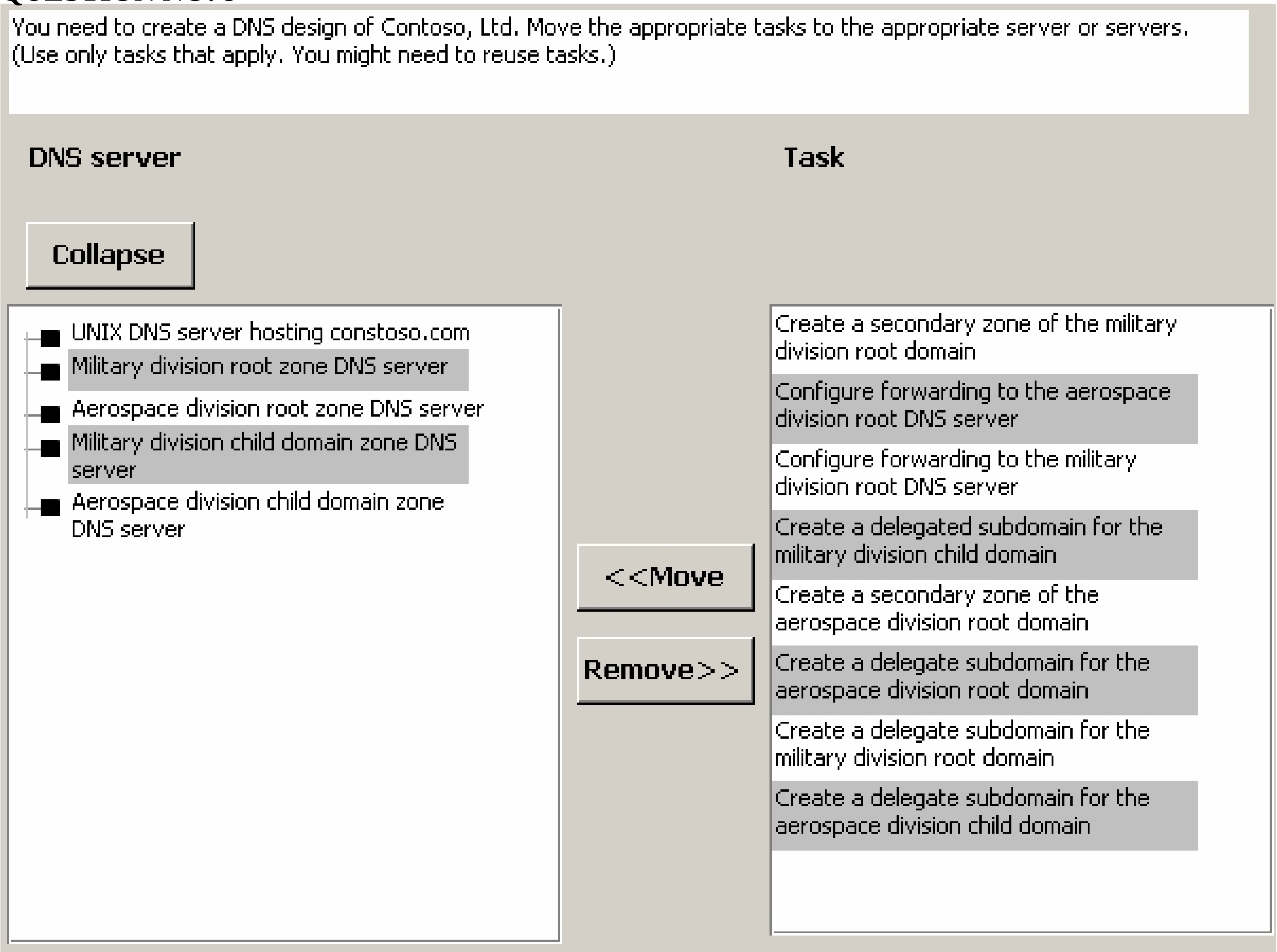
Incorrect Answers:

A: Issues about physical security of the domain controllers can be handled in a single forest environment, without having to split into multiple forests.

B: Security issues can be addressed by having multiple domains. The only time the security concerns may be of issue is when the Enterprise Admin function has to be invoked to perform some operation. Then, there would be an issue of who owns the root domain.

C: Multiple forests make the administration of Exchange 2000 more difficult, so using multiple forests isn't really a benefit for anyone.

QUESTION NO: 9



You need to create a DNS design of Contoso, Ltd. Move the appropriate tasks to the appropriate server or servers. (Use only tasks that apply. You might need to reuse tasks.)

DNS server

- UNIX DNS server hosting constoso.com
- Military division root zone DNS server
- Aerospace division root zone DNS server
- Military division child domain zone DNS server
- Aerospace division child domain zone DNS server

Task

- Create a secondary zone of the military division root domain
- Configure forwarding to the aerospace division root DNS server
- Configure forwarding to the military division root DNS server
- Create a delegated subdomain for the military division child domain
- Create a secondary zone of the aerospace division root domain
- Create a delegate subdomain for the aerospace division root domain
- Create a delegate subdomain for the military division root domain
- Create a delegate subdomain for the aerospace division child domain