Architect Project Profile – Level 1 – Example – Financial Organisation – GTS Europe candidate

NOTE: This content is taken from an authentic approved project profile from a GTS candidate in Europe. Client and some other details have been changed or removed. This is a reference for illustration purposes only. Some SME Reviewer observations have been included to highlight response strengths. Candidates should write in their own style and review their application with their mentor prior to submission. Refer to the Architect Resource Centre wiki for more information on project profile criteria and guidance. The certification application from this candidate is available in the candidate guidance documents section on the wiki.

L1 (Experienced) – The Candidate is able to perform with assistance/supervision, with a wide range of appropriate skills, as a contributing architect. **Applied**, performs with supervision or mentoring.

Business Opportunity or Problem

Your description for this section should address the following:

1. Describe the nature of the engagement in terms of the business problem the client had, including the scope and complexity of the problem
2. Describe the scope and complexity of the problem in terms of phases of development or in terms of size (number of processes, client environment, number of modules, etc.).
3. Describe the client sponsors for the project including their titles.
4. Describe your relationship and communications with client sponsors and management.

Describe the client's business opportunity or their problem in the context of your geography.

RESPONSE:

The client is a financial organisation and an IBM Strategic Outsourcing account. As part of the IBM transformation contract there was a requirement to hardware and software refresh the client's file shares (cifs/SMB) service. The client's file servers consisted of a mix of physical and virtual Window operating system file servers supporting an end user population of 12,000 users, consisting of approximately 160TB of unstructured data which was a mix of end user personal data and departmental data. Over 80% of this data was presented across four Windows 2003 physical clusters. The remaining data was presented across two Windows 2008 physical clusters and approximately 7 Windows 2003 virtual machines acting as file servers. The physical clusters had been allowed to grow unchecked over the previous five years with the result that the physical file clusters were no longer fit for purpose as the number of clustered resources now exceeded the maximum capacity that the physical clusters were sized for. This resulted in on-going service availability and performance issues which was impacting IBMs ability to meet service SLAs for the overall file service. This increase in data hosted on the file servers and the increase the number of small files that needed to be backed up was impacting available capacity for the TSM solution and impacting backup SLAs as file server backups were not completing within agreed backup time windows.

Given the stability and performance issues which was resulting in file server outages the client was instructing IBM to just replace the existing file servers with new hardware and the latest

Windows operating system available. The client was only concerned with addressing the on-going service outages instead of ensuring that the best solution was presented which would address the current availability, performance and capacity issues but would also provide the functionality and flexibility to meet the long term needs of the client. The fact that approximately 65% of all data in scope which consisted of home directory data for 9,000 end users was hosted on only two Windows 2003 physical file clusters was magnifying the service impact when these clusters were unavailable. Given the on-going server issues there was pressure from the client and the IBM support competencies to provide a solution that could be delivered in the shortest time frame instead of allowing the design phase to assess all options available and provide a design that best meets the clients existing and future business requirements.

The primary project sponsor was the head of Infrastructure operations who owned the Windows cifs/SMB file share service and was responsible for the delivery of file share services to all business units. The other client stakeholders who were very closely involved in the design phase were the clients Infrastructure Architecture team and the client's Strategic Architecture and Innovation team. I worked closely with the client's architecture teams to ensure that they were fully engaged and continuously involved as the solution progressed through the design phase.

The IBM architecture team is based on the client site which allowed for strong relationships to be built between the client stakeholder teams. I worked closely with the head of Infrastructure operations and the client infrastructure architecture team through all stages of the design, from collection and defining of business requirements, to the presentation of the NetApp filer based solution to obtaining approval from these stakeholders before presenting the solution to the clients Technical Design Authority for approval to proceed. This strong working relationship ensured that the client's infrastructure architecture team were fully engaged in all stages of the design and acted as advocates for the solution IBM proposed once they understood the business benefits that a NetApp filer solution could deliver for the client.

SME Comment: Good understanding of the business problem and clear that this was applied to
provide a solution
Vision / advice highlighted in the write up and answer based upon selecting this solution for the client rather than refresh the status quo

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Solution

Briefly describe the solution you implemented, deliverables prepared, technology used, etc. Your description should address the following:

1. Describe the solution you developed and the expected benefit for the client. Include how the benefits were shown to the client including the expected benefits from a successful implementation.
2. Describe how the solution addressed key functional and non-functional requirements.
3. Describe any standards or industry direction you took in the development of the solution.
4. Describe your role in the engagement and your specific tasks, responsibilities, and accomplishments, including your role in planning the effort, tracking progress and reporting to the IBM and Client project management. You should be able to show how you performed as a lead technical resource in the architectural design, development, implementation *and/or* management of the project.
5. Summarize the key technical decisions you made, the reasons for the decisions, and the alternatives that were considered. Ensure you describe how your mitigated risk to maximize client value.
6. Describe the major problems or obstacles you encountered, and the actions you took to overcome them.

Describe the solution you implemented, deliverables prepared, technology used, etc.

RESPONSE:

As the IBM lead architect, I developed a solution based on NetApp filer technology. The solution was based on a NetApp OnTap 9.1 cluster deployed in two data centres. Each cluster consisted of a high availability pair of FAS8080 and FAS8040 controllers. The FAS8080 controllers hosted Storage Virtual Machines (SVM) presenting the production cifs shares and replicated to the FAS8040 controller in the secondary data centre to provide a service continuity solution in the event that production SVMs were offline. The FAS8040s also acted as the disk backup solution which removed the need to use TSM to backup data to tape. The benefits of the NetApp solution where demonstrated to the client through a series of engagements which ranged from:

- Providing documentation to the client on NetApp features and functionality
- Arranging workshops with the key stakeholders and NetApp pre-sales team, where the NetApp pre-sales team presented the NetApp solution, addressed any questions the client had on the technology and gave real world examples of how other financial organisations have implemented NetApp technology and the business benefits realised

Functional requirements delivered:

(i) Data deduplication and compression realised a storage capacity saving of approximately 34% compared to the Microsoft solution

(ii) Disk based backup – Removed the need to backup to tape and provided a quicker response time for files that needed to be recovered

Non-functional requirements delivered:

(i) Availability – FAS Controllers implemented as high availability two node pairs in each data centre providing fully redundant FAS8080 and FAS8040 controllers in each data centre. SnapMirror provided data replication between datacentres and provided the ability to failover data shares in the event of a failure of an active data share

(ii) Performance –FAS8080 controllers are the top enterprise level FAS controllers available and were sized to meet existing performance requirements but also provided the ability to scale to meet future business growth

The solution I proposed aligned to the IBM Storage Strategy which is to use NetApp OnTap technology to deliver file services solutions. By proposing an IBM strategic solution this allowed me to leverage the resources available within IBM and NetApp to develop the solution.

I was the lead IBM infrastructure architect with my responsibility being to progress the solution through all phases from initial design through to delivering into production. I managed all engagements with the client, NetApp architect and sales team to agree the design and bill on material to allow for commercial approval to be received from the IBM chief architect and DPE. I also was responsible for ensuring that a low-level design was completed. This involved me working with the IBM NetApp team and a NetApp service delivery partner to ensure that the low-level design was completed and aligned to client requirements.

The key architectural decisions were:

(i) The decision to implement NetApp OnTap instead of Microsoft Windows OS servers to provide the file service functionality. To obtain client approval I presented a comparison of both NetApp and Microsoft based solutions to demonstrate the added value that the NetApp solution delivered.

(ii) NetApp High Availability - While a NetApp MetroCluster was reviewed it was agreed that a NetApp OnTap cluster solution would meet the availability and recovery time objective for file services.

A key obstacle was convincing the client that a NetApp based solution was the correct decision to make. This required me to take the client through the NetApp journey and demonstrate that the NetApp solution was a superior solution, provided the client with increased functionality and flexibility and was a solution that IBM could deliver. No NetApp resources on the IBM SO account which I flagged to senior management to ensure that this issue was registered and addressed early.

SME Comment: Various aspects of the solution discussed which highlight the different technologies / architectures in place

Write up covers the key functional and non functional requirements and explanations of how the solution addresses all of these

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Result

Assess the overall success or failure of the project from the standpoint of:

1. Client Satisfaction
2. Quality of deliverables
3. Performance of the IBM team
4. Progression of the opportunity
5. KPIs delivered on
6. Sales results and/or software burn down
7. Next steps

Briefly describe the overall success of the project

RESPONSE:

Yes, the project was a success meeting the key objectives of the client which was to deliver a stable file services solution that was not impacted by service outages, capacity constraints or performance issues. The NetApp based solution addressed the service and SLA issues being experienced by the existing Windows based solution.

NetApp duplication and compression has delivered a 34% reduction in the amount of storage the client requires which has reduced the monthly storage consumption cost for the client.

Given the success of the NetApp solution the client has updated its Enterprise standards which now states that NetApp is the strategic solution for the delivery of all file share requirements. This includes application file shares which have a higher availability requirement than end user or department data.

The delivery of the NetApp solution met all IBM and client standards as the solution progressed through all phases of implementation, such as security solution review, non-functional testing, user accept testing and service introduction. To exit each stage, the solution had to meet certain criteria to move to the next stage. This ensured the quality of the deliverables was maintained the whole way through the project. This provided the client with a high level of confidence in the solution that was being delivered.

Multiple different IBM team based onshore, near shore and offshore were involved in the delivery of this solution. While this was a new technology on the client account with a steep learning curve for the account strategy outsourcing team, they were eager to engage as they recognised the benefits the solution would deliver in addressing the on-going service availability issues of the existing Windows operating system based solution. I ensured that the account teams where fully engaged in the process from the start where they input into the creation of the low-level design with the NetApp SMEs that were brought on-board for the build and configuration phase. I provided direction where required if a decision needed to be made or where challenges were raised by the customer such as during the security solution review when the client was requesting additional information to ensure that the solution would adhere to their security standards and not introduce control gaps for the delivery of file services.

The NetApp platform also provided the opportunity for it to provide NFS file system to UNIX platform systems. The client had a requirement for an NFS file system to provide a long-term file repository for application log files. The NetApp platform was presented as the solution to deliver this NFS file system removing the need to deliver a dedicated AIX LPAR to host his file system.

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The solution ensured that KPIs relating to availability of the file service was meet and removes the SLA penalties that IBM had been incurring. Another KPI meet was the removing of backups from TSM and the impact failed backup was having on the overall account backup KPI.

With NetApp now the strategic platform for file services the client has engaged IBM to deliver a NetApp Metrocluster solution that will provide an Active/Active dual datacentre file service hosting application data shares for payment processing and customer facing applications that have a five 9's availability requirement.

From an IBM perspective the NetApp solution has allowed for the file data to be moved off enterprise SAN IBM XIV storage frames to a more cost-effective network attached storage solution. By implementing a disk-based backup approach this has removed approximately 150TB of data from the TSM solution, freeing up capacity and ensuring that the TSM solution does not need to be expanded to meet the increasing data share capacity requirements.

SME Comment: Solution was successfully delivered; the client has seen the benefits and is currently mid-way through data migrations. Various test rounds have validated that the requirements have been met.

Architectural Thinking

Describe how you used Architectural Thinking by apply sound, creative, and innovative architectural thinking to enhance and expand implementation of architectural principles, practices, and concepts to meet the business intent or the delivery of solutions. Apply strategic architectural thinking to mission, strategy, and vision in ways that deliver positive impact and results to the business. Provide break-through architectural thinking to the innovative application of information technology to deliver greater business value.

L1: Experienced

RESPONSE:

I used my Architectural Thinking skills to ensure that the requirements and qualities of the solution were clearly documented and agreed with the client. This involved me scheduling multiple sessions with the client to understand the service delivery and operation issues with the existing Windows 2003 servers. During this requirement gathering phase the client highlighted issues such as:

- Availability – Due to the age of the physical hardware and fact that the servers were not sized to meet the current workload this was directly impacting the availability of file services
- Maintainability – Due to unchecked growth of data hosted on these servers was directly impacting the ability of the IBM team to ensure that SLAs for file servers was maintained and increased the amount of effort required for IBM to maintain this service

I documented all these requirements and got the client to sign off on the requirements. This also allowed me to identify key functional requirements that the client was looking for the solution to delivery such as deduplication, compression and a disk-based backup solution.

By keeping myself up to date on the IBM Storage Strategic Solutions I was able to identify that assets already existed which could be used to provide the file services solution. This allowed me to engage NetApp expertise within IBM and directly with NetApp. By using existing assets this allowed me to present a solution to the client that was innovative and showed the forward thinking that IBM can

bring to improving the delivery of core services. The client was very receptive to the NetApp based solution once the benefits that the solution could delivery was explained. The client also acknowledged that while IBM could have responded with a solution based on the client requirement for a Microsoft OS based solution by presenting the NetApp solution this demonstrated that IBM was looking to deliver the best solution for the client and meeting it commitment as an innovative partner to their business.
I also applied my Architectural Skills to ensure that the key architectural decisions were addressed by both client and IBM stakeholder. I used a series of workshops with the key stakeholders to discuss and review these decisions. This allowed for open and robust discussions to be held to ensure that all stakeholders provided input and where assumptions, motivations and justifications for decisions could be agreed. Once a decision was agreed I documented each Architectural Decision and circulated to all stakeholders for approval. These approved architectural decisions were a key artefact that were continuously referenced as the NetApp solution progressed through the build and service introduction phases.

Architectural Methods

Describe how you used Architectural Methods by following processes, techniques, and guidelines to produce deliverables that communicate their designs, which instruct the various downstream resources in the assembly and operation of that given a work effort, adapt, apply, and enforce the use of a method that meets the method recognition criteria documented on the Open CA website to successfully create architectural work products that meet the requirements of the work effort. Candidates are not required to have used more than one recognized method. IBM Certified Architects must demonstrate the ability to adapt and follow a recognized method to help ensure repeatability of delivery and success. The use of methods usually requires selection of work products and processes (adaptation). Methods are seldom adopted without change.

L1: Experienced

RESPONSE:
I used the Team Solution Design to develop the solution. The Team Solution Design is the methodology used on this account by all architects and solution development teams. I progressed the solution through all three phases of Team Solution Design from:

1. Plan – Where I ensured the clients requirements were defined and the qualities the solution needed to deliver for the client
2. Solution Design – Where I assessed all options available and ensured that the NetApp design was the best solution for the client and could be delivered by IBM
3. Implementation – Where I was directly involved in the delivery of the solution and ensured that the NetApp solution delivered the enhanced value and functionality that has been outlined to the client

The consistent use of Team Solution Design on the account provided a clear framework for developing solutions which all IBM competencies involved in the design and implementation phases were familiar with. The use of the Team Solution Design allowed for the creation of multiple artefacts that were used and referenced as the solution progressed through the three phases of the Team Solution Design method.

Architecture Overview (ART 0512)
I used the architecture overview work product to outline the high-level solution design. This allowed me to document the overall solution, so the client could understand the solution being delivered and ensure that the proposed solution meet their requirements. The documented high-level

solution was an important artefact that was used repeatedly throughout all phases of the solution delivery to bring new delivery team members up to speed quickly on the solution and the various components they would be required to deliver.

Architectural Decisions (ART 0513)
I used architectural decisions to document the key decisions that needed to be made for this project. Given that this project would result in a strategic change in the platform which the client used to host file services I knew it critical to the overall success of the project to ensure that there was a full document trail of all the key decisions that were made. Documenting the architectural decisions served two key purposes:

1. Ensured that all inputs from the key decision makers in defining and approving the design was captured, documented and signed off by all stakeholders
2. Signed off architectural decisions was a key artefact that was continually references as the solution progress through the various stages of build, testing and introduction into production when questions were raised by new teams joining the project and questioning why particular decisions were made

The use of Team Solution Design also allowed me to provide input and direction to the IBM project manager assigned to the deliver the project. By applying the same methodology used to deliver previous projects this allow me to highlight the key milestones that the project manager needed to track as the solution progressed through the phases of Team Solution Design. An area that I highlighted to the IBM project manager was the delivery and support phase and that a NetApp support model did not currently exist. By flagging the lack of a support model earlier in the project lifecycle this allowed the IBM project manager to capture this as an issue that could impact the overall success of delivering the NetApp solution.

SME Comment: Attached documentation highlights architecture decisions and also architecture overview diagram.

Discussion also covered the benchmarking done of the existing estate to support the sizing of the new NetApp solution.

Risk management is covered in good detail in the write up. Mediation was highlighted for the overall direction of the project - convincing the client to move from Windows to NetApp.

Team SD Method was used throughout

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Risk Management

Describe how you used risk management techniques to identify the elements of a project that put the integrity of the architecture at risk and managed those elements to the successful completion of the project. Given a project plan, identify those elements of the plan that put the integrity of any aspects of the plan/timeline at ris Manage those elements through to completion as agreed by the client/project manager. IBM Certified professionals must be able to work closely with clients/project managers and address issues in project plans th put their work at risk. They must be able communicate the likelihood and impact of architectural risks and con to an agreement with clients/project managers.
L1: Experienced

RESPONSE:

A risk I identified was that the level of integration between file shares in scope for migration and business applications was not documented. This level of integration ranged from overnight batch processes writing to Windows cifs file shares, to applications running on UNIX systems using hard coded IP addresses to map Windows cifs network shares.

I highlighted this risk to the client and scheduled multiple workshops with the client to discuss the level of application integration and the impact this could have on the amount of time required to migrate all data in scope to NetApp. The focus for these workshops was to agree the low-level design regarding network presentation while ensuring that application constraints were addressed. These workshops allowed the client to understand the complexity involved in the data migration phase and the constraints application dependencies would have on how NetApp presented the data shares. I also used these sessions to get agreement from the client that they were responsible for completing an assessment of all data shares to document all application dependencies. The client accepted that this level of detail was required to understand the potential impact to existing business applications and processes if existing Windows cifs file share details such as UNC path and IP addresses were changed.

This also allowed the IBM project manager to document and track the risk that unknown application dependencies would have on the dates agreed to deliver the project and complete data migration. To address this risk, it was agreed that existing UNC paths would be retained post data migration to NetApp.

The other key risk was the lack of a NetApp support model on the account. I documented this as a risk during the design phase. I ensured that this risk was tracked on the project risk register and that the IBM project manager gave this risk the attention it required. As it would take several months to get a NetApp support model in place it was important that these tasks started as soon as the design was approved by the client. As the client was aware that the NetApp support model needed to be created it was important to show to the client that the lack of a NetApp support model was not going to delay the NetApp solution from going into production. I worked with the IBM project manager and the IBM SIL with responsibility for file services to create the NetApp support model. The NetApp support model required the on-boarding of a NetApp support team based in Poland.

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SME Comment: Attached documentation highlights architecture decisions and also architecture overview diagram. Discussion also covered the benchmarking done of the existing estate to support the sizing of the new NetApp solution. Risk management is covered in good detail in the write up. Mediation was highlighted for the overall direction of the project - convincing the client to move from Windows to NetApp. Team SD Method was used throughout

Lesson Learned

Your description should address the following questions:
What might you have done differently on this project?
What lessons did you learn from this experience?
How did this change your behavior or decisions on subsequent engagements? Consider the entire solution lifecycle from strategy, design, implementation and management through to completion.

Describe lessons learned throughout the entire solution lifecycle from strategy, design, implementation and management through to completion.

RESPONSE:

1. Given that the NetApp technology was new to the account this meant that there was limited knowledge within the IBM SO team and on the client side regarding the overall solution.
    a. While the RAID log for the design identified this as a potential issue which might increase the implementation and delivery time for the solution this was not given that attention or focus it required. The assumption was made that the existing SO model and client technical standards where sufficient to allow the NetApp file solution to be delivered.
    b. In hindsight these items should have been given higher priorities by both the client and IBM. For example, no technical specification existed for NetApp. As a result, the client had to work in conjunction with IBM to create a technical specification. This delayed the project as the client had no expertise in NetApp technology and was attempting to apply technical specifications that were not appropriate. IBM was able to provide an existing N-Series technical specification, but this was out of date and needed to be updated to ensure it was relevant to NetApp OnTap v9.1
    c. All these items resulted in delays to the delivery of the project. While all these items were addressed and overcome they resulted in the delivering date being pushed out. By raising these items as risks at the design phase it would have highlighted to senior management on both the IBM and client side that resources needed to be assigned to address these items in advance of the NetApp implementation team engaging these teams.

2. The amount of time required to on-board a new technology on to an existing account. With no expertise existing on the account from both the client and IBM side this significantly increased the amount of time required to work through the various stages of delivering a new solution into production.
    a. I learned that the client is prepared to listen to alternative solutions being recommended by IBM. In this case IBM was able to outline clearly and concisely to the client the technology and business benefits that a NetApp file solution could deliver over a traditional Microsoft Windows OS based solution for presenting cifs

shares. The client response to the NetApp proposal also showed that the client valued IBM coming to them with innovative and relevant solutions that meet their business needs.

3. I learned that for the success of a project of this size it is critical to get the key decision makers from both IBM and client on side from an early stage in the solution. This involved me engaging directly with the client owner of file share services early in the design phase once it was clear that NetApp was a viable solution. I constantly kept the IBM chief architect updated on the design and ensured he was directly involved in the early stages of the design with NetApp to ensure that he was confident that NetApp was an appropriate solution, that it was a solution that the client would be interested in assessing and that it aligned to the IBM strategy for deliver file server solution on SO accounts.
    a. I also learned the importance of keeping a clear line of communications open with the client infrastructure architecture team who I worked with directly on the project. Once the client infrastructure architecture team was on-board with the NetApp solution they became advocates for the NetApp solution. This was particularly important in supporting IBM as the NetApp solution progressed through the various client stages for service introduction from Security change solution review, non-functional testing to service introduction.
    b.

SME Comment: Good observations and the interview confirmed the major lessons identified and how they are being applied to the follow-on work with the client