SAS® FORUM
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Designing Optimum SAS Architectures

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Agenda

- What is an architecture?
- What is a SAS architecture?
- Requirements
- Building blocks – jigsaw or lego?
- GCSE Computer Science revision [test to follow]
- Recipes & choosing your dish
- Some key points
- Questions?

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Warning!

This presentation contains analogies (and maybe the odd idiom) and a few generalisations.

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What is architecture?

"the fundamental organization of a system, embodied in its components, their relationships to each other and the environment, and the principles governing its design and evolution." [ANSI/IEEE Standard 1471-2000]

"formal description of a system, or a detailed plan of the system at component level to guide its implementation", or

"the structure of components, their interrelationships, and the principles and guidelines governing their design and evolution over time."

[TOGAF]

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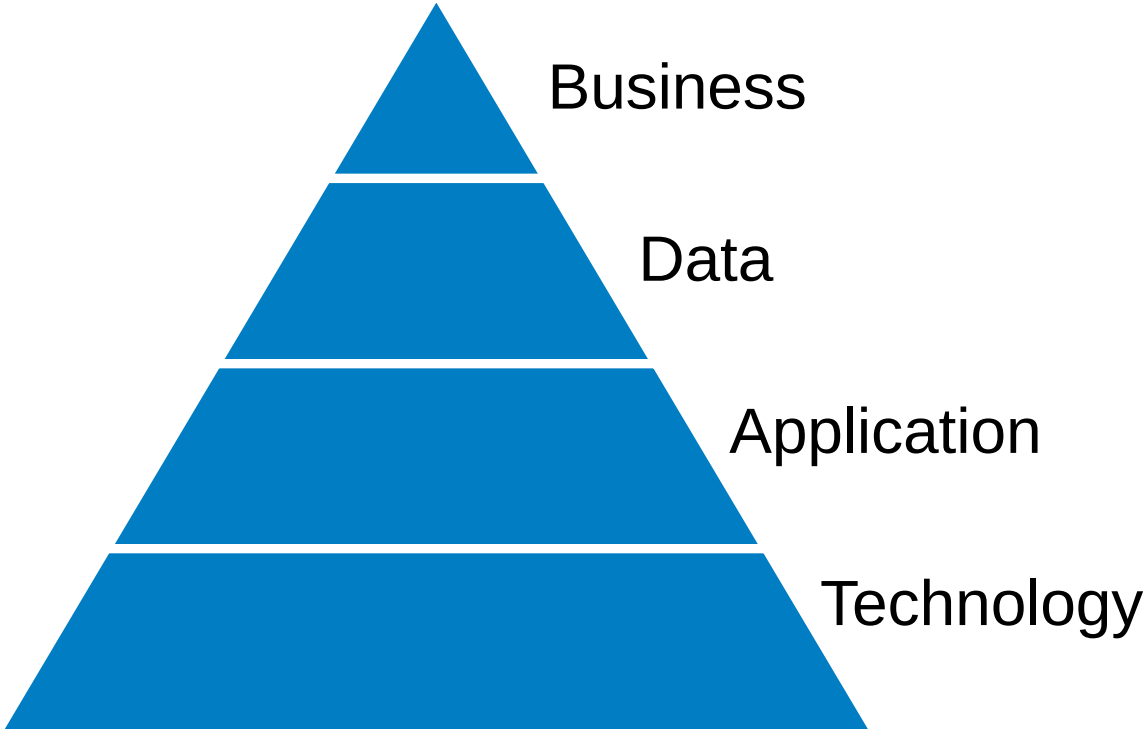
Architecture domains



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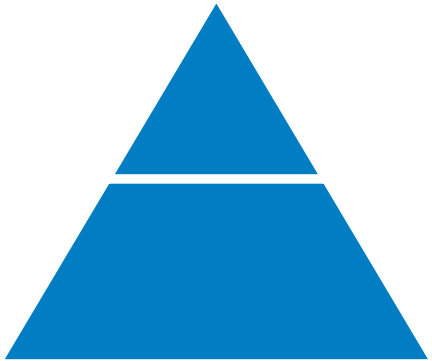
Business and Data



- Business
  - People and organisation
  - Processes
  - Objectives
  - Flows
  - Events
  - Metrics
- Data
  - Sources
  - Flows
  - Interfaces
  - Integrity
  - Volumes
  - Currency

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What is a SAS architecture?

- It’s an architecture with SAS in ?!

- Designing an architecture with SAS requires the same disciplines and structured approach
- Ensure that the layers of architecture supports the business need
- Requires understanding of SAS software and characteristics

- Analytics does create some specific requirements – which can be challenging and differ from many operational systems

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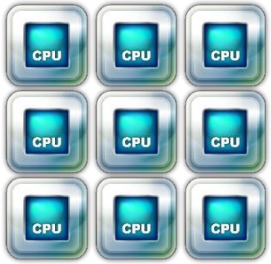
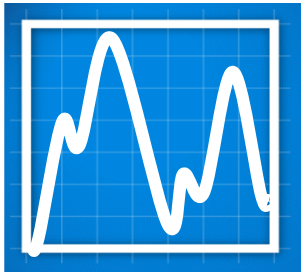
Analytics characteristics

Complex problems

Ever larger volumes of data



Intensive Processing



Less predictable workloads

Mission critical

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Requirements - What do you want?

- Fundamental part of any project
- Without them how do you know what to deliver?
- How do you know what you have delivered is correct?
- Functional
- Non-functional
  - Performance, Availability, Scalability, Security …

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Building blocks

Only one solution – which is fixed

Many possible solutions – to meet different needs

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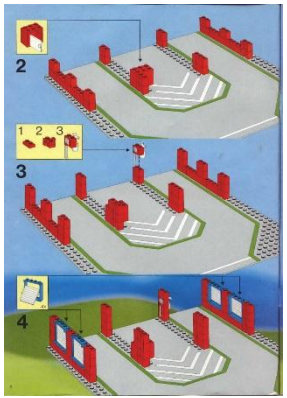
Key building blocks for SAS

SAS Metadata	SAS Mid-Tier	SAS Compute	SAS LASR	SAS Client
Scaling	Resilience/HA	DR	Security	Data Sources	Integration
Server Hardware	Virtualisation	OS	Infrastructure Services	Network	Storage



Where are the instructions?

- Requirements – mainly non-functional
- Enterprise strategy, policy and standards

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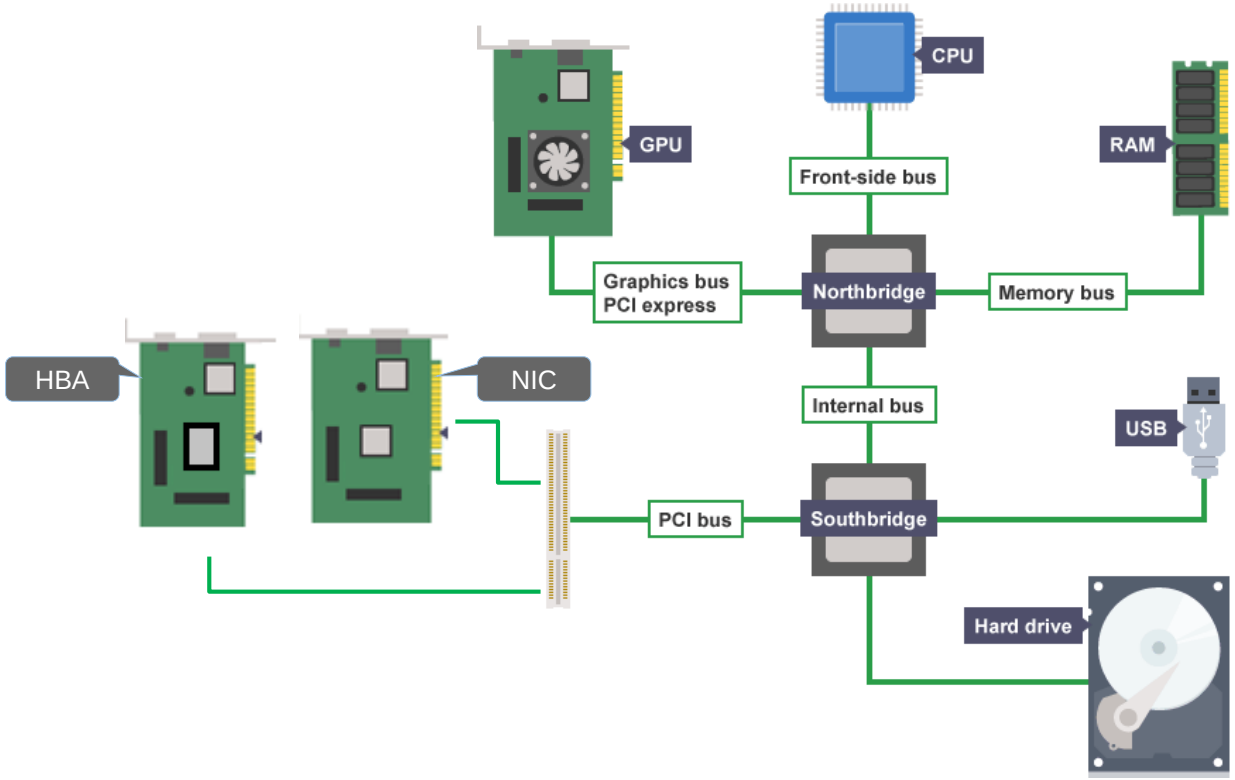
GCSE Computer Science



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Recipes & choosing your dish

… or in architect speak – "topologies"

"The way in which constituent parts are interrelated or arranged"

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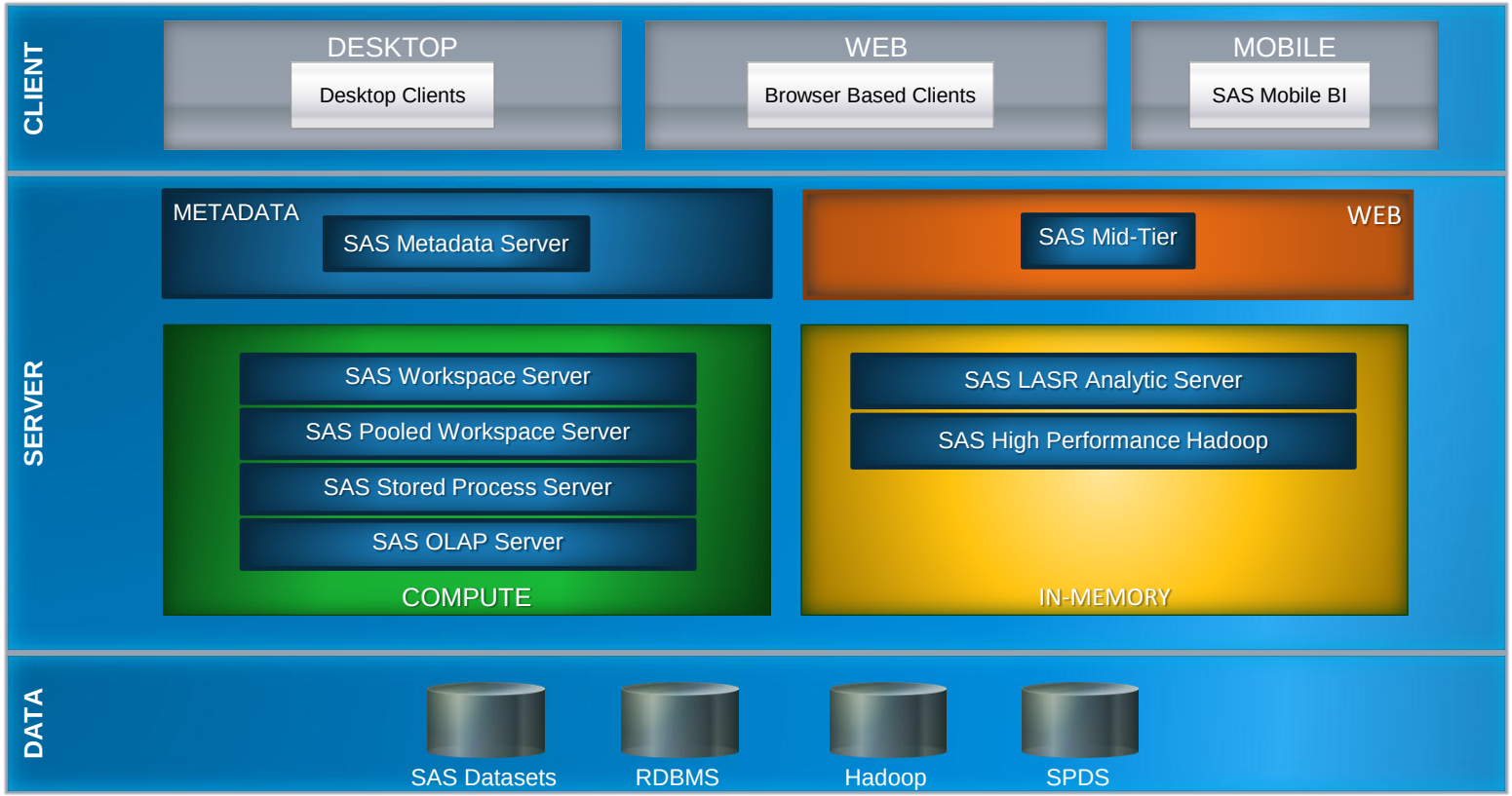
SAS Topology (SAS9.4)



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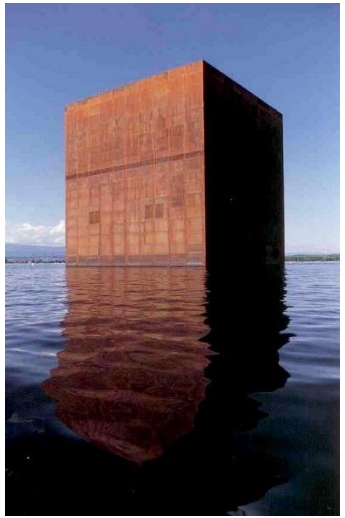
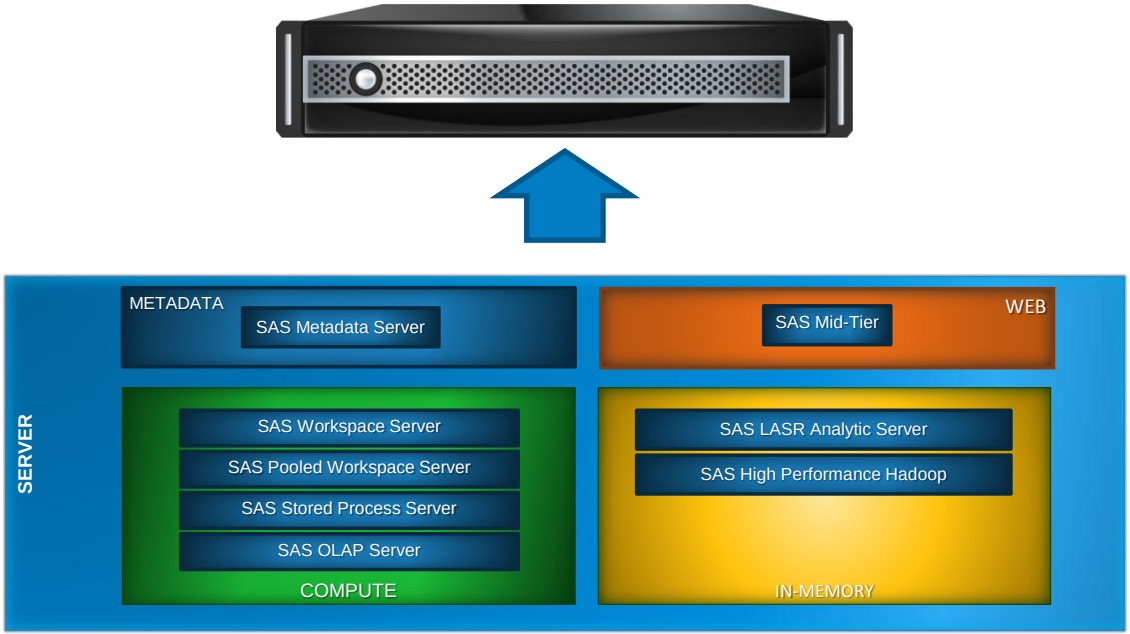
Monolithic





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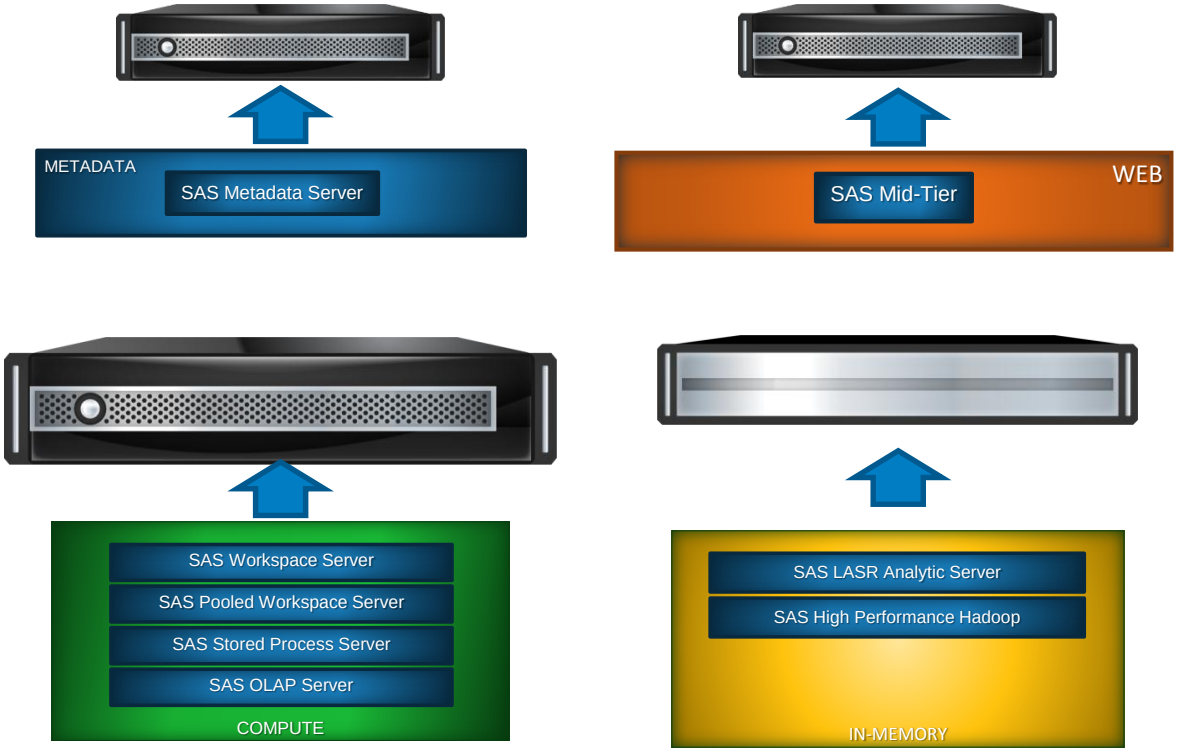
Multi-tier



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Scale out – SAS Grid / Clusters

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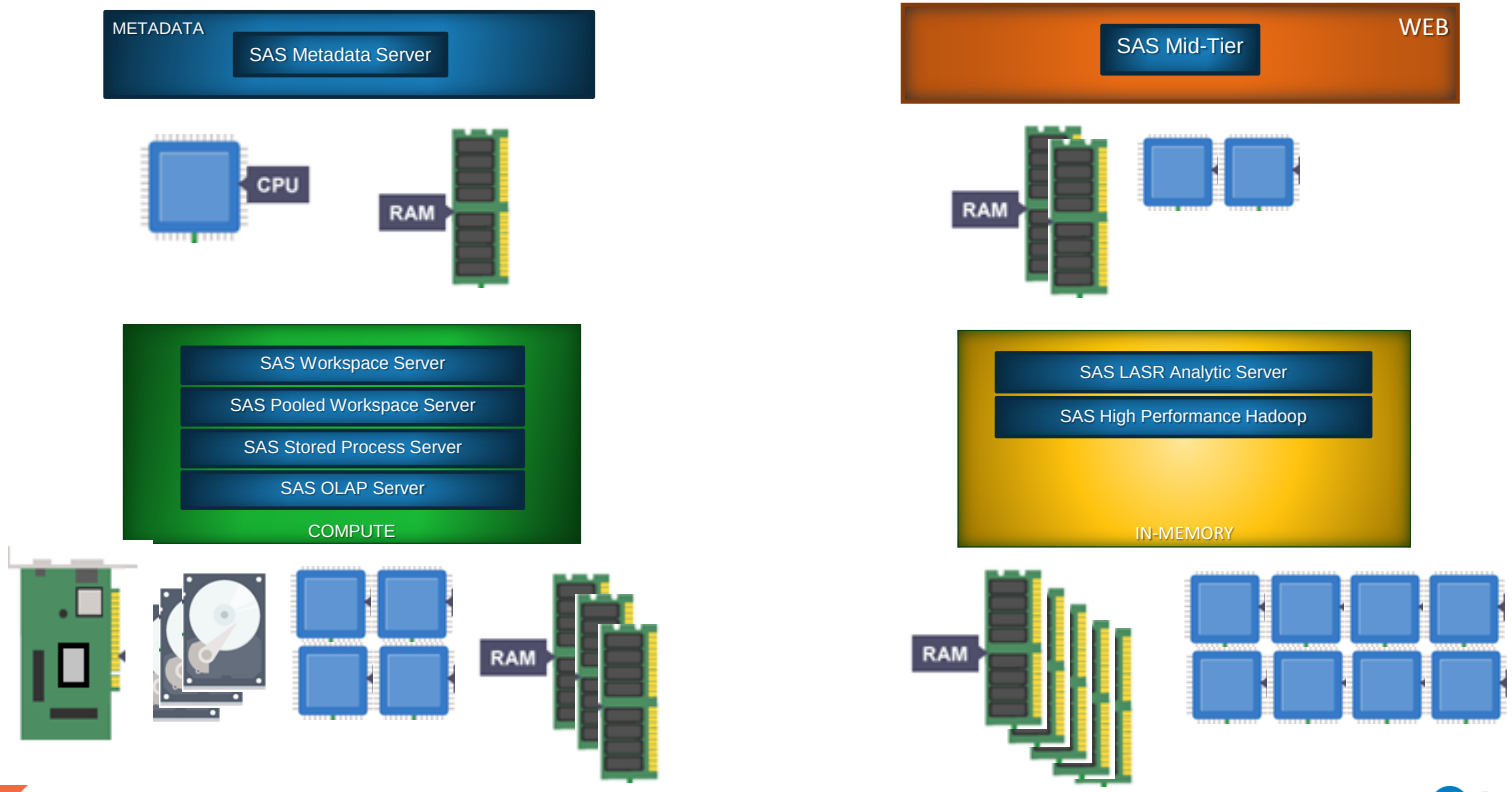
Back to the GCSE …



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What will it be for you?

- Which topology is most appropriate?
  - Non function requirements
  - Enterprise standards & building blocks

- **The ultimate objective has to be to deliver a solution to meet to the business need**

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Key points

- Understand what it is your trying to achieve
- Start with the business, not the technology
- Understand the nature of the application
- Tailor technology to match the need “Not all servers are born equal”
- Keep it simple (or at least try)
- Test it, and then test it again – including performance, volume, resilience …
- Plan for life beyond go-live - evolution
- Expect things to change – adaptable and flexible
- Don’t forget the routine things (like backup/restore, housekeeping, archiving)

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Summary

- Definitions of architecture
- Domains (BDAT pyramid)
- Requirements (shape)
- Building blocks and topologies
- Key points

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Further reading

- TOGAF: https://www.opengroup.org/togaf/
- SAS Global Forum Papers:
  - “Understanding the Anatomy of a SAS® Deployment:What's in My Server Soup?” http://support.sas.com/resources/papers/proceedings11/363-2011.pdf
  - “Best Practices for Implementing High Availability for SAS® 9.4” http://support.sas.com/resources/papers/proceedings14/SAS305-2014.pdf
- SAS Support Site
  - Grid Computing: http://support.sas.com/rnd/scalability/grid/gridpapers.html
  - High-Performance Analytics: http://www.sas.com/en_us/software/high-performance-analytics.html

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