

---

## Overview

This sub-discipline is part of overall service design. It concerns the design of, and planning for, resilient IT/ technology infrastructure and environments. This sub-discipline is about the competencies required to design and plan for the implementation of, the hardware, network and software infrastructure supporting the IT/technology application services, systems, services and assets used to support an organisation. IT/ hardware technology hardware, software and network infrastructure may exist both within a single organisation and also be shared/span across multiple organisations. Infrastructure hardware, software and networks are usually implemented as a result of business demands which indirectly require changes to the infrastructure. IT/technology infrastructure design and planning may also be a proactive activity in terms of trying to improve the availability of systems, services and assets to support service objectives.

Hardware infrastructure may include:

- Processors
- Storage devices
- Mobile devices
- Input and output devices
- Any other items of hardware required for the provision of IT/technology systems, services and systems assets for an organisation

Software infrastructure may include:

- Systems management software such as operating system software
- Database management software
- Software tools
- Storage management software
- Middleware for connecting applications and other components
- Web services

Network infrastructure includes network specific network and hardware comprises and all of the components necessary for any type of network, whether hard wired or wireless, which support the provision of IT services, systems and assets for an organisation.

This sub-discipline requires not only technical understanding of individual hardware, software or network products and services (or any combination of these) but also the architectural principles, standards and protocols that must be applied within the design of the infrastructure.

Individuals working within this area may have competencies relating solely to hardware, software or networks or a combination of these elements of the IT/technology infrastructure.

---

**Performance criteria**
**Prepare, under supervision, for IT/technology infrastructure design and planning activities**
*You must be able to:*

- P1 Correctly follow the systems development lifecycle, service lifecycle and reference all relevant IT/technology architecture models as appropriate to infrastructure design and planning activities
- P2 Accurately source and collate any relevant information about the capabilities and availability of IT/technology products, services and equipment in order to make well reasoned decisions on whether they can be incorporated into designs for IT/technology infrastructure, under direction
- P3 Correctly source any relevant internal and external sources of expertise in particular infrastructure products, services and equipment, as and when required during infrastructure design and planning activities
- P4 Correctly identify any potential implications of customer demands and service requirements, using any information relating to them appropriately in relation to IT/technology infrastructure design and planning activities, under direction

**Assist with IT/technology infrastructure design and planning activities**
*You must be able to:*

- P5 Negotiate effectively and empathetically with customers who demand new improved IT/technology infrastructure components, as directed
- P6 Correctly use relevant information contained within any service improvement and service quality plans in order to inform IT/technology infrastructure design and planning activities, under direction
- P7 Correctly apply any relevant information regarding particular individual infrastructure components and the technical standards that may apply to them, during IT/technology infrastructure design and planning activities, as directed
- P8 Correctly identify and objectively analyse relevant documented problems or errors with any existing IT/technology infrastructure product, service and items of equipment together with information regarding any changes, repairs and replacements made to IT/technology infrastructure products, services and equipment in order to inform IT/technology infrastructure design and planning activities, under direction

**Assist others with relevant information concerning IT/technology infrastructure design and planning assignments**
*You must be able to:*

- P9 Provide clear and timely information concerning IT/technology infrastructure design and planning to sponsors, stakeholders and other relevant internal individuals and groups, as directed by superiors
- P10 Assist others in applying information about the capabilities and availability of IT/technology products, services and equipment in order to make well-reasoned decisions on whether they can be incorporated into

designs for IT/technology infrastructure

- P11 Be fully accountable for the quality and effectiveness of the designs and plans for any individual IT/technology infrastructure component

## Knowledge and understanding

*You need to know and understand:*

### Prepare, under supervision, for IT/technology infrastructure design and planning activities

- K1 Operate with
  - K1.1 reference to the systems development lifecycle, as appropriate to IT/technology infrastructure design and planning activities
  - K1.2 reference to the service lifecycle, as appropriate to IT/technology infrastructure design and planning activities
  - K1.3 reference to IT/technology architecture models
- K2 Source and collate
  - K2.1 information about the capabilities and availability of IT/technology products, services and equipment in order to make well reasoned decisions on whether they can be incorporated into designs for IT/technology infrastructure
  - K2.2 information regarding external suppliers of IT/technology infrastructure design and planning services
  - K2.3 internal and external sources of expertise in particular infrastructure products, services and equipment, as and when required
- K3 Identify
  - K3.1 potential implications of customer demands for new and/or enhanced services on IT/technology infrastructure design and planning activities
  - K3.2 potential implications of service requirements in relation to IT/technology infrastructure design and planning activities
  - K3.3 any documented problems or errors with any existing infrastructure product/service and/or items of equipment during IT/technology infrastructure design and planning activities
  - K3.4 information required from the service catalogue and the targets and levels contained within it, during any IT/technology infrastructure design and planning activities
  - K3.5 information regarding any changes, repairs and replacements made to infrastructure products/services and/or equipment
- K4 What
  - K4.1 is meant by a Service Improvement plan and a Service Quality plan
  - K4.2 is the relevance of service levels in relation to IT/technology Infrastructure design and planning activities
  - K4.3 information might need to be referenced and used during IT/Technology infrastructure design and planning activities

- K4.4 is the range of available IT/technology equipment/products and services that can be incorporated into IT/technology infrastructure designs and plans
- K5 What are the
  - K5.1 different approaches that may apply to the design and planning of hardware, software and network infrastructure products/services and/or equipment
  - K5.2 implications of technology products/services and/or equipment provided by external service providers/hosts on IT/technology infrastructure design and planning activities
  - K5.3 implications of customer demands for new and/or enhanced services on IT/technology infrastructure design and planning activities
  - K5.4 implications of service requirements in relation to IT/technology infrastructure design and planning activities
  - K5.5 internal and external standards that apply to IT/technology infrastructure supporting an organisation
  - K5.6 IT/technology architecture, design and configuration principles and standards that apply to infrastructure supporting an organisation
  - K5.7 the potential implications of poor quality IT/technology infrastructure designs and plans on the operation of an organisation
  - K5.8 potential implications of designing IT/technology infrastructure that makes use of externally provided and/or shared infrastructure products/services, and/or equipment, either wholly or partially
  - K5.9 advantages and disadvantages of using any individual IT/Technology product, service or item of equipment within IT/technology infrastructures
- K6 The fact that
  - K6.1 changes to and/or replacements/refreshes of IT/technology infrastructure often need to be supported by clearly defined benefits and a business case
  - K6.2 design and planning of IT/technology infrastructure frequently requires the application of specific expertise
  - K6.3 large, complex infrastructure design and planning assignments may require the involvement of a number of individuals and teams
  - K6.4 external providers may be required to assist with IT/technology infrastructure design and planning
  - K6.5 as infrastructure ages, the cost and complexity of repairing faults with it may be prohibitive and result in the design and planning of new IT/technology infrastructure
  - K6.6 structured processes and procedures are essential for effective IT/technology infrastructure design and planning activities
  - K6.7 the loss of access to or availability of IT/technology infrastructure products/services and/or equipment can have a major impact on an organisation's operational activities, brand and reputation and designs

- must ensure continuity of service is possible
- K6.8 the impact of any relevant legislation, regulations and external standards needs to be reflected in IT/technology infrastructure design and planning activities and their deliverables
- K7 Why
  - K7.1 IT/technology infrastructure needs to be designed and planned
  - K7.2 some organisations choose to design IT/technology infrastructures that make use of externally hosted/shared infrastructure products/services and/or equipment whilst others choose to provide them internally
  - K7.3 IT/technology design and planning activities should only include infrastructure products/services and/or equipment that has been approved for use within an organisation's configuration
  - K7.4 the alignment of IT/technology infrastructure design and planning activities and their deliverables with IT/technology architecture, analysis and design activities needs to be monitored
- K8 The importance of
  - K8.1 referencing related design deliverables during IT/technology infrastructure design and planning activities
  - K8.2 IT/technology infrastructure design and planning activities being informed by future IT/technology service, capacity and availability needs
  - K8.3 referencing any service improvement plans and service quality plans, during any IT/technology infrastructure design and planning activities
  - K8.4 referencing the service catalogue and the service targets and levels contained within it, during any IT/technology infrastructure design and planning activities
  - K8.5 communicating effectively with external providers of IT/technology infrastructure design and planning services
  - K8.6 making accurate assessment of the cost and complexity of new IT/technology infrastructure designs and plans
  - K8.7 and relevance of IT/technology infrastructure design and planning activities on the service lifecycle supporting an organisation
  - K8.8 IT/technology infrastructure design and planning activities being informed and directed by the business requirements and customer needs
  - K8.9 the interdependency and functionality of infrastructure products/services and/or equipment during IT/technology infrastructure design and planning activities
  - K8.10 referencing current architecture and configuration management deliverables for infrastructure products/services and/or equipment during IT/technology infrastructure design and planning activities
  - K8.11 applying version control, where appropriate, to infrastructure products/services and/or equipment during IT/technology infrastructure design and planning activities

- K8.12 and relevance of IT/technology infrastructure design and planning activities on the full life cycle of information within an organisation
- K8.13 verifying the accuracy, currency, completeness and relevance of information used during IT/technology infrastructure design and planning activities
- K8.14 considering the total effort, elapsed time, risk, complexity and cost that may be required to develop, test and implement new designs for IT/technology infrastructure products/services and/or equipment
- K8.15 having sufficient reliable information data and knowledge about the capabilities and availability of IT/technology products/services and equipment in order to make well reasoned decisions on whether they can be incorporated into designs for IT/technology infrastructure
- K8.16 IT/technology infrastructure designs and plans supporting the business needs
- K9 The need for monitoring the quality and effectiveness of IT/technology infrastructure design and planning activities
- K10 How
- K10.1 effective IT/technology infrastructure designs and plans can improve the efficiency and effectiveness of IT/technology systems, services and assets
- K10.2 IT/technology infrastructure designs and plans need to support new IT/technology services, systems and assets

**Assist with IT/technology infrastructure design and planning activities**

*You need to know and understand:*

- K11 Negotiate with customers who demand new/improved IT/technology infrastructure components
- K12 Use and apply
  - K12.1 the requirements for the design and planning of individual IT/technology infrastructure components
  - K12.2 the technical standards required for any individual infrastructure product or item of equipment
  - K12.3 customer demands for new and/or enhanced services from

- IT/technology infrastructure
- K12.4 the service lifecycle as appropriate to IT/technology infrastructure design and planning activities
- K12.5 the systems lifecycle as appropriate to IT/technology infrastructure design and planning activities
- K12.6 information contained within any service improvement and service quality plans that is required for IT/technology infrastructure design and planning
- K12.7 information from service level agreements required for IT/technology infrastructure design and planning activities
- K12.8 information regarding particular individual infrastructure components
- K12.9 operational information relating to incidents, problems, changes, events and service availability in order to inform and guide IT/technology infrastructure design and planning activities
- K12.10 information required from the service catalogue and the targets and levels contained within it, during any IT/technology infrastructure design and planning activities
- K12.11 information concerning problems or errors with any existing infrastructure product/service and/or items of equipment during IT/technology infrastructure design and planning activities
- K12.12 information regarding any changes, repairs and replacements made to infrastructure products/services and/or equipment
- K13 Document
- K13.1 the processes, tools and techniques applicable to IT/technology infrastructure design and planning activities and their deliverables
- K13.2 any further business requirements that are identified so that they can be reflected in IT/technology infrastructure design and planning activities
- K13.3 the processes, tools and techniques to monitor the effectiveness of IT/technology infrastructure design and planning activities and their deliverables
- K14 Analyse
- K14.1 any documented problems or errors with any existing IT/technology infrastructure product, service and items of equipment during IT/technology infrastructure design and planning activities
- K14.2 information from the service catalogue and the targets and levels contained within it, IT/technology infrastructure design and planning assignment
- K14.3 information regarding any changes, repairs and replacements made to infrastructure products/services and/or equipment
- K15 Who
- K15.1 are the customers of IT/technology infrastructure design and planning activities
- K15.2 internally or externally has the expertise to produce designs and plans

for new enhanced IT/technology infrastructure

K15.3 needs to be contacted internally and externally to provide information and expertise for IT/technology infrastructure design and planning activities

K15.4 are external providers of IT/technology infrastructure design and planning services

**Assist others with relevant information concerning IT/technology infrastructure design and planning assignments**

*You need to know and understand:*

K16 Provide information concerning IT/technology infrastructure design and planning to

K16.1 sponsors and stakeholders

K16.2 internal individuals as requested

K17 Be accountable for the quality and effectiveness of the designs and plans for any individual IT/technology infrastructure component

**Additional Information** (Delete any sections not needed)



ESKITP4083

## IT/Technology Infrastructure Design and Planning Level 3 Role

---

**Developed by** e-skills UK

---

**Version number** 1

---

**Date approved** September 2009

---

**Indicative review date** March 2014

---

**Validity** Current

---

**Status** Original

---

**Originating organisation** e-skills UK

---

**Original URN** 4083

---

**Relevant occupations** Information and Communication Technology; Software Development

---

**Suite** IT and Telecoms

---

**Key words** Network design; Network planning