PUBLICLY AVAILABLE SPECIFICATION

PAS 700:2009

Provision of ICT facilities and services in workplaces

Specification

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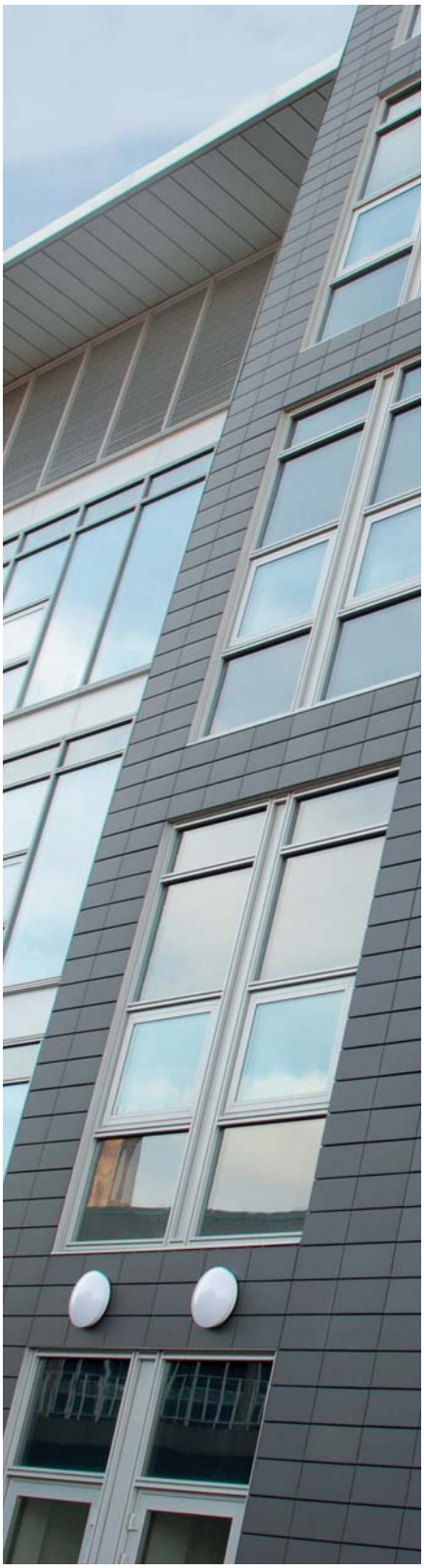

Foreword

This Publicly Available Specification (PAS) was sponsored by Yorkshire Forward[1)] and developed by the British Standards Institution (BSI). It came into effect on 16 April 2009.

Acknowledgement is given to the following organizations that were involved in the development of this PAS as members of the Steering Group:

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Acknowledgement is also given to TCT/7, *Telecommunications – Installation requirements*, for their technical support.

This PAS is not to be regarded as a British Standard. It will be withdrawn upon publication of its content in, or as, a British Standard.

The PAS process enables a specification to be rapidly developed in order to fulfil an immediate need in industry. A PAS may be considered for further development as a British Standard, or constitute part of the UK input into the development of a European or International Standard.

Information about this document

Product certification. Users of this PAS are advised to consider the desirability of third-party certification of product conformity with this PAS. Users seeking assistance in identifying appropriate conformity assessment bodies or schemes may ask BSI to forward their enquiries to the relevant association.

1) www.yorkshire-forward.com

Use of this document

It has been assumed in the preparation of this PAS that the execution of its provisions will be entrusted to appropriately qualified and experienced people, for whose use it has been produced.

Presentational conventions

The provisions of this PAS are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is "shall".

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a PAS cannot confer immunity from legal obligations.

0 Introduction

0.1 Background

When an occupier moves into a workplace there is usually some effort required to set up ICT facilities and services. This could either be a simple task or a major challenge depending on what is already in place. There may be unforeseen costs in bringing in a broadband connection from a distant telephone exchange or routing telecommunications cables through solid concrete floors.

The extent of installed ICT facilities, and the ease with which ICT services can be deployed has become a significant consideration for organizations choosing to relocate.

This PAS provides a specification covering most common ICT facilities and services. It cannot and does not provide a comprehensive specification or even a "shopping list" of all of the ICT facilities and services that an occupier might require.

0.2 Layering of ICT facilities and services

ICT facilities and services are implemented in layers. This PAS splits ICT facilities and services in buildings across four layers. Layers 1 and 2 are facility based. Layers 3 and 4 are service based. Each layer is dependent on the layers below it for operation, i.e. layer 3 services require layer 2 facilities to work.

- **Layer 1: Building** – covers the characteristics and facilities of the building itself and their suitability for ICT usage. It includes ductwork, risers and other permanent facilities necessary for the deployment of cabling. It also covers aspects of flooring, lighting, power and physical security that relate to ICT usage.
- **Layer 2: Infrastructure** – covers the ICT facilities within the building such as cabling, communications rooms, wiring closets, wireless networking, network security, power supplies and the availability of external services such as the Internet.
- **Layer 3: Basic services** – covers essential services such as telephone and Internet connections and their related support.
- **Layer 4: Extended services** – layer 4 builds upon layer 3 to include other ICT services such as telephone and video conferencing, VPN support, hosting and co-location services.

This PAS uses the four-layer concept to assist in identifying which ICT facilities and services are implemented in a given workplace and in determining whether those facilities and services meet the requirements of this PAS.

0.3 Workplace types

0.3.1 General

Workplaces are made available in varying states of readiness for an occupier to move in. The building(s) or parts of a building that comprise a workplace may be marketed in many different ways, including with descriptions such as "shell and core", "category A", "category B" or "turnkey". Each of these terms indicates a differing state of readiness and each requires a different level of investment in order to prepare the workplace for occupation.

This PAS divides the range of workplace offerings into two groups, those that are sufficiently fitted and serviced to be ready to occupy, known as "ready-to-occupy workplaces" (defined in **3.2.2**), and those that are not, known as "part-fitted workplaces" (defined in **3.2.1**). This division is made in consideration of two

large and distinct groups of prospective occupiers:

- Occupiers that are looking for a workplace where they can quickly establish themselves with little or no investment in infrastructure.

  This market is served by many kinds of managed workspace offerings including business centres, science and technology parks and business incubation centres. These types of workplaces are usually rented rather than purchased and are often multi-tenanted campuses with some of the operator's staff located on site. Basic services such as electrical power, heat, light, telephone and the Internet will already be installed and readily available to a new occupier. Such workplaces are likely to be of interest to occupiers that do not wish to make an investment in any particular workplace and its infrastructure, perhaps because they are a small business, in transition or because they simply prefer to outsource.

- Occupiers that are looking for a workplace where they can install their own infrastructure and procure their own services.

  These types of workplaces are likely to be purchased or secured on a long lease because of the investment required. Such workplaces are likely to be of interest to occupiers that wish to reduce costs in the long term or that have particular specifications and the skills to procure the installation of the required ICT facilities and services.

The primary focus of this PAS is the ICT facilities and services in office spaces rather than for industrial processes, outdoor working, transport, etc. However, the two categories of part-fitted and ready-to-occupy workplaces were selected to allow for a wide range of business uses and the reader may apply the principles of this PAS to a spectrum of situations from office spaces within industrial premises to home working.

Despite the focus on workplaces that are offices, one other distinct category of workplace is specifically included within the scope of this PAS, the public workplace (defined in **3.2.3**). Although the occupier never "moves in", this workplace type is given special consideration because it is commonly available and will be used by many office workers.

Public workplaces are provided with ICT facilities and services for the use of visitors or the general public. They include for example services provided in public libraries, waiting rooms at railway stations, conference rooms in hotels, exhibition halls and WiFi hotspots in cafes. It does not include the public access areas in a part-fitted or ready-to-occupy workplace, such as meeting rooms and reception areas.

The terms part-fitted, ready-to-occupy and public workplaces are defined in **3.2.1**, **3.2.2** and **3.2.3** respectively and are accompanied by notes that provide further information and some examples.

0.3.2 Requirements for each workplace type

This PAS specifies the provision of ICT facilities and services in part-fitted, ready-to-occupy and public workplaces. It recognizes that within each of these three workplace types there is a spectrum of offerings. Some part-fitted workplaces will be little more than a shell and others may have been recently vacated and simply need the services re-connecting; some ready-to-occupy workplaces will only have basic services and others may have a wide range of additional services on offer; some public workplaces will simply be WiFi hotspots and others will be business centres in hotels with audio visual and printing facilities.

This PAS identifies for each workplace type a set of minimum requirements for the provision of ICT facilities and services and a set of further requirements for additional facilities and services if provided. Table 1 describes in detail how the requirements in this PAS apply to each workplace type.

0.4 ICT-ready work areas, potential work areas and user capacity

An important consideration of this PAS is that the number of potential work areas (defined in **3.4.2**) in a workplace will usually be greater than the user capacity (defined in **3.3.2**) of a workplace to allow for flexibility in the configuration of the space. This means that ICT-ready work areas (defined in **3.4.1**) will not be set up at every potential work area.

0.5 Operators, occupiers and service level agreements

Workplaces and their related ICT facilities and services are made available under a wide range of contractual arrangements, for instance, they may be may be let, sublet or purchased. This PAS aims to deal with all of the possible scenarios by using the term "operator" for the provider of the workplace and the ICT facilities and services, and the term "occupier" for the occupiers of the workplace and the beneficiaries of these facilities and services. Often the operator will be a middle-party and not the owner of the building or the ultimate supplier of the ICT facilities and services.

A key principle throughout the PAS is that occupiers have service level agreements (SLAs) with operators and operators have SLAs with providers further up the contractual chain.

1 Scope

This PAS specifies requirements for the provision of ICT facilities and services in a workplace. The requirements are divided into four layers and cover:

a) layer 1: the building (see Clause **5**);

b) layer 2: the infrastructure (see Clause **6**);

c) layer 3: basic services (see Clause **7**); and

d) layer 4: extended services (see Clause **8**).

*NOTE 1 Guidance on the layered approach to ICT facilities and services is given in the Introduction (see **0.2**).*

The primary focus of the PAS is office spaces. It allows for three workplace types:

1) part-fitted workplace;

2) ready-to-occupy workplace; and

3) public workplace.

*NOTE 2 Guidance on workplace types is given in the Introduction (see **0.3**).*

This PAS specifies the requirements that are applicable to each workplace type (see Table 1).

It is applicable to workplaces located in part of a building, in a whole building or on a campus.

It is applicable to:

- those specifying ICT facilities and services for a workplace, including architects, developers, agents, operators and occupiers; and
- those wishing to assess the ease of deployment, extent, usability, reliability and flexibility of ICT facilities and services in a workplace or potential workplace.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 6701, *Telecommunications equipment and telecommunications cabling – Specification for installation, operation and maintenance*

BS EN 50173-1, *Information technology – Generic cabling systems – Part 1: General requirements*

BS EN 50173-2, *Information technology – Generic cabling systems – Part 2: Office premises*

BS EN 50173-5[2)], *Information technology – Generic cabling systems – Part 5: Data centres*

BS EN 50174-1, *Information technology – Cabling installation – Part 1: Specification and quality assurance*

BS EN 50174-2, *Information technology – Cabling installation – Part 2: Installation planning and practices inside buildings*

BS EN 60603-7 (series), *Connectors for electronic equipment*

IEEE 802.11, *IEEE standard for information technology – Telecommunications and information exchange between systems – Local and metropolitan area networks – Specific requirements – Part 11: Wireless LAN medium access control (MAC) and physical layer (PHY) specifications* (Available for free from: http://standards.ieee.org/getieee802/portfolio.html.)

2) **BS EN 50173-5:2007** is in the process of being amended.

3 Terms and definitions

For the purposes of this PAS the following terms and definitions apply.

3.1 buildings

3.1.1 campus

workplace comprising more than one building

3.1.2 workplace

place where work requiring the use of ICT facilities and services may be carried out

NOTE 1 In the context of this PAS, workplaces include offices, office facilities in industrial campuses and public workplaces such as public libraries and conference rooms in hotels.

NOTE 2 A workplace may be part of a building, a whole building or a campus.

NOTE 3 Some requirements will also be relevant to home working and mobile working, but home working and mobile working are not the primary focus of this PAS.

3.2 workplace types

*NOTE These classifications of the market offering of the workplace (see **0.3.1**) are provided in order to identify the relevant specifications using Table 1. These classifications consider the market offering of the whole building and not the level of fit-out of the ICT facilities and services in particular.*

3.2.1 part-fitted workplace

workplace type that requires further fitting-out before it is ready to occupy

NOTE Part-fitted workplaces will generally include those that are marketed as:

*a) shell and core – where the office areas are left as a shell ready to be fitted-out to category A [see item b)] or to category B [see item a) of Note to **3.2.2**] and common areas, such as the main entrance and reception, lift and stair cores, lobbies and toilets, may be fitted out to a higher specification or even completed and furnished; and*

b) fitted-out to category A – this varies between developers but usually indicates that the space has been largely prepared for use as an office, including raised floors, suspended ceilings, finishes to walls, blinds and the installation of the mechanical and electrical services throughout the office space.

3.2.2 ready-to-occupy workplace

workplace type that is ready for use as an office

NOTE Ready-to-occupy workplaces will generally include those that are marketed as:

a) fitted-out to category B – this usually means that the space has been completed in accordance with the operator or occupier's specific requirements. This may include partitioning, carpets, reception facilities, kitchen facilities, meeting rooms, selected finishes and lighting and perhaps even furniture. Category B buildings sometimes have additional services which may include ICT services. Carpets, floor boxes and grommets may be present in a category A or a category B building, but often they are left until category B so that the occupier can specify them; and

b) turnkey – this is where the category B specification [see item a)] is such that the workplace is ready for occupation.

3.2.3 public workplace

workplace type where ICT facilities and services are made available for the use of visitors or the general public

NOTE This includes for example public libraries and conference rooms in hotels. It does not include the public access areas in a part-fitted or ready-to-occupy workplace, such as meeting rooms and reception areas.

3.3 roles

3.3.1 user

person using the ICT facilities and/or services in the workplace

3.3.2 user capacity

maximum number of users that can be accommodated in a workplace

NOTE The Health and Safety Executive provides guidance on user capacity.

3.3.3 subscriber

person or organization buying an ICT service on behalf of (a) user(s)

3.3.4 communications service provider

external organization that provides communications services to a workplace

3.4 work areas

3.4.1 ICT-ready work area

area in a workplace for use by one user at any one time, which is provided with ICT facilities and services and is ready for use

NOTE 1 Requirements for ICT-ready work areas are not applicable to potential work areas, whereas all requirements for potential work areas are applicable to ICT-ready work areas.

NOTE 2 An ICT-ready work area does not necessarily include a desk and may just be somewhere a user connects to a wireless network or where a telephone point is provided.

3.4.2 potential work area

area in a workplace where an ICT-ready work area may be set up

*NOTE The number of potential work areas in a workplace will usually be greater than the user capacity (defined in **3.3.2**) of a workplace to allow for flexibility in the configuration of the space. This means that not all potential work areas will be "converted" to ICT-ready work areas (defined in **3.4.1**).*

3.5 information and communication technology (ICT) facilities and services

NOTE The term "ICT" is used in preference to "IT" in this PAS to make it explicit that telephone facilities and technologies such as wireless mobile telecommunications are included.

3.5.1 ICT facilities

physical layer of cables and equipment that is used to deliver ICT services

*NOTE Guidance on the layered approach to ICT facilities and services is given in the Introduction (see **0.2**).*

3.5.2 ICT services

services delivered over the ICT facilities and services related to the provision of the ICT facilities and services

*NOTE 1 Guidance on the layered approach to ICT facilities and services is given in the Introduction (see **0.2**).*

NOTE 2 The Internet is an example of an ICT service delivered over the ICT facilities. Technical support is an example of an ICT service related to the provision of ICT facilities and services.

3.5.3 co-location

provision of shared space for the installation and hosting of subscribers' ICT facilities

3.5.4 pathway

defined route for a cable between termination points

3.5.5 distributor

point where cables interconnect or cross-connect using either passive or active equipment

4 General

4.1 Workplace type

The workplace type shall be classed as a:

a) part-fitted workplace (defined in **3.2.1**);

b) ready-to-occupy workplace (defined in **3.2.2**); or

c) public workplace (defined in **3.2.3**).

*NOTE Guidance on identifying which workplace type is applicable is given in the Introduction (see **0.3**).*

4.2 ICT facilities and services

4.2.1 The minimum ICT facilities and services to be provided for a workplace type shall be identified from Table 1 and provided in accordance with Clause **5** to Clause **8**.

4.2.2 All additional ICT facilities and services provided for a workplace type, which are within the scope of this PAS, shall be identified from Table 1 and provided in accordance with Clause **5** to Clause **8**.

NOTE ICT facilities and services outside the scope of this PAS may be provided, but should be clearly excluded from any claims of conformance to PAS 700.

4.3 Claims of conformance

Claims of conformance of a workplace to PAS 700 shall include:

a) the number and date of this PAS, i.e. PAS 700:2009;

b) the workplace type (see **4.1**); and

c) the ICT facilities and services provided at the workplace (see **4.2**).

4.4 Conformity evaluation

The ICT facilities and services shall be monitored at a minimum annually to check whether they are provided in accordance with the requirements of this PAS.

Where a nonconforming ICT facility or service is identified, steps shall be taken to:

a) identify the cause and rectify the deficiency within 3 months; and

b) prevent its recurrence.

Table 1 – ICT facilities and services applicable to each workplace type

(Sub) clause	ICT facilities and services	Workplace type		
		Part-fitted	Ready-to-occupy	Public
5	**Layer 1: Building**			
5.1	Provision for generic telecommunications cabling	✔	✔	✔
5.2	Lighting	✔	✔	✔
5.3	Raised access flooring	✔	✔	✔
5.4	Electricity supply	✔	✔	✔
5.5	Building security	✔	✔	✔
5.6	Availability of the workplace	✔	✔	✔
5.7	Radio frequency transmittance	✔	✔	✔
6	**Layer 2: Infrastructure**			
6.1	Electricity supply	A	✔	✔
6.2	Provision of generic telecommunications cabling	A	✔	✔
6.3	Network security	A	✔	✔
6.4	Wireless networking	A	✔	✔
6.5	Availability of an Internet connection	✔	✔	✔
6.6	Working environment	A	✔	✔
7	**Layer 3: Basic services**			
7.1	Service level agreements	✔	✔	A
7.2	Provision of ICT-ready work areas	A	✔	✔
7.3	Telephone services	A	✔	A
7.4	Internet services	A	✔	✔
7.5	Technical support	A	✔	A
8	**Layer 4: Extended services**			
8.1	Extended telephone services	A	A	A
8.2	Extended Internet services	A	A	A
8.3	Video conferencing	A	A	A
8.4	Data backup service	A	A	A
8.5	Print services	A	A	A
8.6	Publicly available wireless networking	A	A	A
8.7	Co-location services	A	A	A
8.8	Email services	A	A	A
8.9	Web hosting services	A	A	A
8.10	Backup electricity supply	A	A	A
8.11	ICT disaster recovery facilities	A	A	A

Key ✔ Minimum ICT facility or service to be provided
A Additional ICT facility or service, where provided

5 Layer 1: Building

5.1 Provision for generic telecommunications cabling

5.1.1 The building(s) in the workplace shall be capable of being installed with generic telecommunications cabling conforming to **6.2**, **6.3**, **6.4**, **6.5** and **6.6**.

5.1.2 There shall be a minimum of one space per building that is designated to house a building distributor conforming to **6.2.2**.

Where the building contains an area designated as a data centre, there shall be a minimum of one space that is designated to house a main distributor conforming to **6.2.2** and which may be co-located with a building distributor.

NOTE 1 A building may have more than one building distributor and/or or main distributor.

NOTE 2 A building may have other spaces designated to become distributors.

The number of, and space allocated to, floor distributors depends upon the size and topology of the workplace and shall be in accordance with BS EN 50173-2.

NOTE 3 A floor distributor may be co-located with the building distributor.

5.1.3 There shall be an available pathway from the external network interface to each space designated to accommodate the building distributor(s) and main distributor(s) (where separately designated).

NOTE The external network interface is the point of connection between the communication service provider's facilities and the generic telecommunications cabling in the workplace.

5.1.4 All spaces designated to accommodate distributors shall be capable of being:

a) connected by cables to other such spaces;

b) fitted with air conditioning equipment, where the space needs to be actively cooled to keep the ambient temperature within the working range of the equipment; and

c) fitted with fire compartmentation, detection and suppression equipment.

NOTE Fire compartmentation, detection and suppression equipment may need to be installed. Care should be taken to protect ICT facilities and services where a water sprinkler system is deployed.

5.1.5 There shall be a pathway from a space designated as a floor distributor to every potential work area.

*NOTE The maximum distance between a potential work area and its nearest telecommunications outlets/grommets is specified in **6.2.1.4**.*

5.1.6 Where a potential work area is not adjacent to a wall, facilities for under floor or above ceiling distribution (e.g. floor boxes or grommets) that provide cable protection shall be installed or be capable of being installed to enable telecommunications outlets to be deployed and re-deployed at every potential work area.

5.1.7 Every pathway shall be installed with or be capable of being installed with pathway systems that provide mechanical and environmental protection for all telecommunications cables.

5.1.8 All telecommunications cable pathway systems shall be designed for telecommunications cabling and the separation from potential sources of interference such as electrical cabling shall be in accordance with BS EN 50174-2.

5.1.9 There shall be adequate space on the pathways to install telecommunications cabling to at least two telecommunications outlets at every potential work area.

The capacity of pathways and installed pathway systems shall provide excess capacity in accordance with BS EN 50174-2.

NOTE In order for every potential work area to have at least two telecommunications outlets, the following should be taken into account:

a) the locations and number of distributors and their impact on the numbers of cables required on each pathway; and

b) access to pathways.

5.2 Lighting

NOTE Standards for lighting in the workplace are laid out, in general terms, in BS 7083, which refers in turn to standards defined by the Health and Safety Executive and the CIBSE.

5.3 Raised access flooring

5.3.1 Raised access flooring, if fitted, shall be designed to allow access to any pathways that may be required for telecommunications and power cabling.

5.3.2 Raised access flooring, if fitted, in distributor, data centre and co-location spaces shall be designed to support the weight of equipment racks loaded to their full capacity.

5.4 Electricity supply

5.4.1 The electricity supply for each building in the workplace shall at a minimum meet the building's planned total electricity requirement taking into account any foreseen expansion of the ICT facilities.

NOTE 1 The lead time for the installation of a larger electricity supply may be significant. For the installation of a very large electricity supply, such as for a data centre, it can be six months.

NOTE 2 The cost of installation of a larger electricity supply may preclude or undermine the business case for the installation of ICT facilities. This is more likely where long cables need to be brought (often laid underground) from a distant substation.

5.4.2 The electricity supply for the ICT facilities shall be free from voltage spikes, and other interference such as waveform distortion and noise, which may cause the ICT facilities to malfunction.

NOTE In some workplaces separate "clean" circuits are run for the ICT facilities and in other workplaces the normal circuits may be clean enough. This PAS uses "the electricity supply for the ICT facilities" to refer to the clean supply.

5.4.3 The electricity supply for the ICT facilities shall be capable of being made available at power sockets at every potential work area.

*NOTE The maximum distance between a potential work area and its nearest power sockets is specified in **6.1.2**.*

5.4.4 Where a potential work area is not adjacent to a wall, facilities for under floor or above ceiling power distribution (e.g. floor boxes or track systems) shall be installed or be capable of being installed to ensure that power sockets can be deployed and re-deployed at every potential work area.

5.5 Building security

5.5.1 Each building in the workplace shall have a building security system that protects the physical security of the ICT facilities and services.

5.5.2 Access to the workplace for the installation and servicing of the ICT facilities shall be allowed, by prior arrangement, outside of the times during which the ICT facilities and services are available to users.

*NOTE For an ICT-ready workplace, the times during which the ICT facilities and services are available to users will be defined in an SLA in accordance with **7.1.3**e).*

5.6 Availability of the workplace

The workplace shall be available to the occupier on terms that do not preclude or undermine the business case for the installation of ICT facilities.

NOTE The following may need to be considered when assessing the availability of a workplace and a related business case:

a) planning permission and other permissions for plant (e.g. for external generators and chillers which radiate acoustic noise and require fuel storage);

b) way leave for incoming utilities;

c) landlord's permission for installation work;

d) whether the building is listed by English Heritage;

e) the duration of the availability, which should not be so short as to make it uneconomic to invest in the installation of ICT facilities; and

f) local risks such as flooding, nearby heavy industry or construction work and the availability of a disaster recovery (DR) facility.

5.7 Radio frequency transmittance

5.7.1 Where the transmission of mobile network signals into a workplace is deliberately inhibited (e.g. by an operator or communications service provider), notification of this shall be provided in writing to all occupiers and subscribers and to prospective occupiers and subscribers.

5.7.2 Where the transmission of mobile network signals into a workplace is not deliberately inhibited, any mobile network that is available within 5 m of the outside of each building in the workplace shall be equally available within every room of the building that has a potential work area.

NOTE The use of electromagnetic shielding (for example on roofs with radio or mobile masts) and light-reflective coatings on windows may affect the quality of the signal.

5.7.3 The structure of the building(s) shall not cause reflection or refraction of wireless networking signals or otherwise prevent the deployment of wireless networking to any potential work area.

6 Layer 2: Infrastructure

6.1 Electricity supply

6.1.1 The electricity supply for the ICT facilities shall be available at two or more power sockets at every potential work area.

*NOTE Requirements for the electricity supply for ICT facilities are specified in **5.4**.*

6.1.2 The distance between the centre of each potential work area and its nearest two power sockets shall be less than 3 m.

6.1.3 The electricity supply for the ICT facilities shall be available at every external network interface, distributor, data centre and co-location space.

6.2 Provision of generic telecommunications cabling

6.2.1 Planning and capacity

6.2.1.1 There shall be generic telecommunications cabling in place that enables the delivery of Internet and telephone services to every potential work area, except where wireless networking may be used in accordance with **6.4.2**.

NOTE The data services provided on mobile telephone networks are not a suitable alternative to telecommunications cabling within a workplace.

6.2.1.2 The generic telecommunications cabling shall support a minimum of one potential work area for:

a) each user in office areas;
   NOTE The number of users should take into account the number of visitors expected in the workplace.
b) every 10 m^2 of meeting room; and
c) each reception area for visitors.

6.2.1.3 Horizontal cabling from floor distributors shall enable the provision to each potential work area of a minimum of two telecommunication outlets terminated in one of the following:

a) telecommunications outlets – typically presented within floor boxes, sub-floor boxes, wall-mounted or pole-mounted faceplates;
b) multi-user telecommunications outlets – typically presented within floor boxes, sub-floor boxes (from which work area cords are installed via floor-mounted grommets), wall-mounted or pole-mounted faceplates; and
c) consolidation points – typically presented within sub-floor boxes from which consolidation point cords are installed via floor-mounted grommets to telecommunications outlets mounted, for example, in furniture.

6.2.1.4 The distance between the centre of each potential work area and its telecommunications outlets or grommets shall be less than 3 m.

6.2.1.5 ICT facilities (e.g. telecommunications outlets) shall be located so that work area cords will not trail across gangways.

6.2.1.6 The termination of cables at distributors together with associated equipment shall be housed in cabinets, racks or frames designed for the installation of ICT facilities within which:

a) vertical and horizontal cable management systems shall be used to enable the installation of cables and cords in accordance with BS EN 50174-1;
b) cable management systems shall not be filled beyond their designed capacity.

6.2.1.7 The space allocated to cabinets, racks or frames containing distributors together with associated equipment shall:

a) be secure and protected with a system to authorize, control and audit access;
   NOTE For example, the space should not also be used as a cleaning cupboard.
b) maintain an operating environment within the working range of the installed equipment in accordance with the manufacturers' instructions;
   NOTE The manufacturers' specifications for operating environments usually include limits for temperature and humidity. A combination of the size of the space and the heat output of the equipment may mean that the distributor needs to be actively cooled.
c) be free of a build up of dust and rubbish.

6.2.1.8 Each termination point shall be labelled in accordance with a defined scheme.

NOTE The cabling system should be managed with a clear and logical labelling scheme. BS EN 50174-1 provides information on the basic principles behind administration systems (documentation, identifiers, labels and records) for telecommunications cabling and infrastructure.

6.2.2 General design requirements

6.2.2.1 The design of cabling for areas within the workplace that:

a) accommodate potential work areas shall conform to BS EN 50173-2 (see **6.2.3**);

b) are dedicated to data centres shall conform to BS EN 50173-5 (see **6.2.4**).

NOTE 1 BS EN 50173-2 and BS EN 50173-5 require the application of BS 6701, which in turn requires the application of BS 7671 and the BS EN 50174 series in relation to planning and installation practices.

NOTE 2 A data centre under the terms of BS EN 50173-5 is an area that provides centralized telecommunications services to the rest of the workplace [e.g. computer rooms and private automatic branch exchange (PABX) rooms].

NOTE 3 In a small workplace the functional elements of a data centre as defined in BS EN 50173-5 may be accommodated within the same space as the building distributor of BS EN 50173-2. In this case there may be no fixed cabling structure in accordance with BS EN 50173-5.

6.2.2.2 Where the external network interface(s) are accommodated separately from the distributors of the generic cabling system, the performance of interconnecting cabling shall be selected on the basis of the channel lengths as specified in **6.2.3.3**, **6.2.3.4** and **6.2.3.5**.

NOTE This cabling is unnamed in BS EN 50173-2 and termed network access cabling in BS EN 50173-5.

6.2.2.3 The installation of the cabling shall conform to BS 6701.

NOTE BS 6701 requires the application of BS 7671 and the BS EN 50174 series of standards.

6.2.2.4 All components used shall be compatible with the operating environment taking into account risks to service provision due to accidental damage.

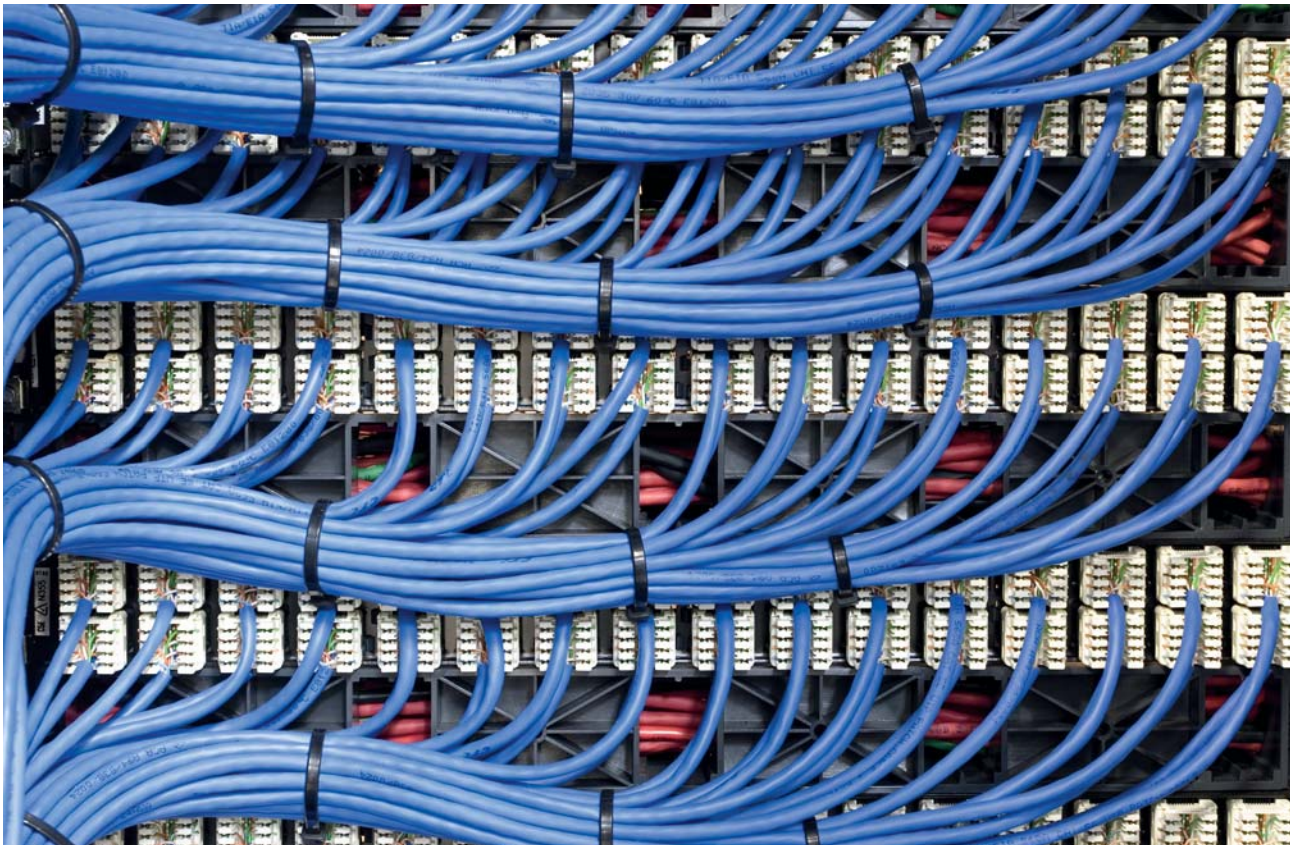
6.2.2.5 Cabling in open areas shall be installed within enclosed cable management systems (e.g. conduit, duct, trunking and power poles).

6.2.2.6 Where adaptors are required to provide pin-pair reassignment at telecommunications outlets (e.g. for telephone services), these shall be supplied.

6.2.2.7 The optical fibre port assignments at both ends of installed optical fibre cabling shall maintain optical fibre polarity in accordance with BS EN 50174-1.

6.2.3 Conformance to BS EN 50173-2

*NOTE This PAS requires the application of BS EN 50173-2 in **6.2.2.1**a). Specific requirements are highlighted in **6.2.3.1** to **6.2.3.6**.*



6.2.3.1 Horizontal balanced cabling shall provide a minimum of Class D performance.

6.2.3.2 The telecommunications outlets shall conform to the BS EN 60603-7 series terminated in accordance with the pin-pair assignments specified in BS EN 50173-1.

NOTE 1 BS EN 60603-7 series telecommunications outlets are 8 position 8 contact (8P8C) sockets also known as RJ45 sockets.

NOTE 2 Where the distance between the floor distributors and the telecommunications outlets is less than 100 m, the reference implementations of BS EN 50173-2 should be applied requiring the use of Category 5 components as a minimum.

6.2.3.3 Where the distances between floor distributors, building distributors and campus distributors allow, the backbone cabling channels shall comprise balanced cabling to provide a minimum of Class D performance.

NOTE Where backbone cabling serves multiple buildings, the use of optical fibre cabling should be considered to avoid transmission problems associated with surge protection techniques and the impact of earth potential differences between buildings.

6.2.3.4 Where the locations of floor distributors, building distributors and campus distributors require backbone channel lengths >100 m and ≤300 m, the backbone cabling channel shall comprise:

a) balanced cabling to provide channel performance of the maximum class possible; and

b) multimode cabled optical fibre of Category OM3 as a minimum.

6.2.3.5 Where the locations of floor distributors, building distributors and campus distributors require backbone channel lengths >300 m, the backbone cabling channel shall comprise:

a) balanced cabling to provide channel performance of the maximum class possible; and

b) multimode cabled optical fibre of Category OM2 as a minimum and singlemode cabled optical fibre of Category OS1 as a minimum.

6.2.3.6 Where the building or floor distributors are directly connected to external network interfaces, the performance of network access cabling shall be selected on the basis of the channel lengths as specified in **6.2.3.3**, **6.2.3.4** and **6.2.3.5**.

6.2.4 Conformance to BS EN 50173-5

*NOTE This PAS requires the application of BS EN 50173-5 in **6.2.2.1**b). Specific requirements are highlighted in **6.2.4.1** to **6.2.4.4**.*

6.2.4.1 Zone distribution balanced cabling shall provide a minimum of Class E_A[3)] performance.

6.2.4.2 The equipment outlets shall conform to the BS EN 60603-7 series terminated in accordance with the pin-pair assignments specified in BS EN 50173-1.

NOTE 1 BS EN 60603-7 series telecommunications outlets are 8 position 8 contact (8P8C) sockets also known as RJ45 sockets.

NOTE 2 Where the distance between the zone distributors and the equipment outlets is less than 100 m, the reference implementations of BS EN 50173-5 should be applied requiring the use of Category 6_A components as a minimum.

6.2.4.3 Where the distances between main distributors and zone distributors allow, the main distribution cabling channels shall comprise:

a) balanced cabling to provide a minimum of Class E_A[3)] performance;

NOTE Where the distance between the main distributors and the zone distributors is less than 100 m, the reference implementations of BS EN 50173-5 should be applied requiring the use of Category 6_A components as a minimum.

b) multimode cabled optical fibre of Category OM3 as a minimum.

6.2.4.4 The performance of network access cabling between the distributors of BS EN 50173-5 and those of BS EN 50173-2 shall be selected on the basis of the channel lengths as specified in **6.2.3.3**, **6.2.3.4** and **6.2.3.5**.

3) Class E should be used until the amended version of BS EN 50173-5:2007 is published, which specifies Class E_A in place of Class E.

6.3 Network security

NOTE The service provider should be responsible for the security of the ICT facilities and services that it provides to its subscribers and public users. In a multi-tenanted workplace this is often the operator or its subcontractors.

6.3.1 Physical and/or contractual measures shall be taken to prevent one or more subscribers or public users denying ICT services to other subscribers.

NOTE For example, a subscriber could overload the facilities or cause the services to be withdrawn resulting in other subscribers being denied access to the ICT services.

6.3.2 Subscribers and public users shall not be permitted access to the ICT facilities or services provided to other subscribers.

6.3.3 Subscribers and public users shall not be permitted access to the ICT facilities used to provide ICT services to any other subscriber, even if they are common ICT facilities used by more than one subscriber.

6.3.4 Each subscriber's ICT facilities and services shall be protected as a minimum by denying other subscribers, public users and any unauthorized party:

a) physical access to ICT facilities such as power distribution, cabling, distributors, data centres and co-location facilities;

b) access to the configuration interfaces of the subscriber's ICT facilities and services; and

c) access to any data produced by the subscriber's use of the ICT facilities and services.

6.3.5 Network traffic not initiated from public areas (e.g. from meeting rooms) or from publicly available wireless networks shall be routed or encrypted so as to prevent it being intercepted by other subscribers and public users.

NOTE This is often achieved using firewalls, and/or network switches (rather than network hubs) with allocated subnets to create a virtual local area network (VLAN) for each subscriber. Private traffic can also be carried on public infrastructure using encryption techniques such as virtual private networking (VPN).

6.3.6 All wireless network security shall be deemed inadequate for the purposes of meeting requirements **6.3.2** to **6.3.5**. Additional protection such as routers or firewalls shall be provided in the wired network.

6.4 Wireless networking

NOTE Wireless networking may be provided in addition to generic telecommunications cabling.

6.4.1 Wireless networking, where deployed, shall conform to IEEE 802.11 and shall be secured with a minimum of 128 bit wired equivalent privacy (WEP) encryption.

6.4.2 Where the ICT facilities and services will only be accessed using mobile terminal equipment, wireless networking may be used instead of horizontal cabling from floor distributors to potential work areas (only).

NOTE Wireless networking is not functionally equivalent to generic telecommunications cabling generally offering inferior reliability, security and data throughput. In situations where users regularly locate mobile terminal equipment at a desk or meeting table, generic telecommunications cabling should be used.

6.5 Availability of an Internet connection

There shall be an external network infrastructure in place that is capable of delivering an Internet connection conforming to **7.4.2**, **7.4.3** and **7.4.4** to the workplace's external network interface.

NOTE 1 The availability of an Internet connection usually depends on a number of factors including:

a) whether a communications service provider is willing and able to provide a service in the geographic area. Connection by ADSL, SDSL, ISDN, leased line, wireless, laser or worldwide inter-operability for microwave access (WiMax) may or may not be options depending on the local infrastructure and geography; and

b) the physical arrangement of the site, landlord permission(s) and way leave.

NOTE 2 The lead time for the installation of an Internet connection may be significant.

NOTE 3 The cost of installation of an Internet connection may preclude or undermine the business case for the installation of ICT facilities.

NOTE 4 The data services provided over mobile telephone networks are not a suitable alternative to a bespoke Internet connection.

6.6 Working environment

A suitable working environment for both people and ICT facilities shall be maintained.

NOTE This may involve the active extraction of waste heat, humidity control and the damping of radiated noise from equipment

7 Layer 3: Basic services

7.1 Service level agreements

7.1.1 All ICT facilities and services made available in the workplace shall be provided in accordance with (a) written service level agreement(s) (SLAs) made between the supplier of the facility or service (usually the operator) and the subscriber (usually the occupier).

7.1.2 The full terms and conditions of the SLA(s) shall be available to subscribers and prospective subscribers.

7.1.3 SLAs shall as a minimum include terms that:

a) provide that all ICT facilities and services identified in accordance with **4.2** and **4.3**c) conform as a minimum to this PAS;

b) set out the fees that the subscriber has to pay for the use of the ICT facilities and services;

c) set out maximum lead times and time to attendance for the provision of all ICT facilities and services;

d) in the case of a ready-to-occupy workplace, specify that the maximum lead time for the provision of the basic services set out in this Clause **7** is one week from the date that the supplier accepts the subscriber's order; and

e) set out the times during which the ICT facilities and services are available to users and a minimum notification period for planned downtime.

7.2 Provision of ICT-ready work areas

There shall be a minimum of one ICT-ready work area for:

a) each user in office areas;

NOTE The number of users should take into account the number of visitors expected in the workplace.

b) every 10 m^2 of meeting room; and

c) each reception area for visitors.

7.3 Telephone services

7.3.1 At least one telephone point shall be available at every ICT-ready work area. The telephone point shall be connected to a telephone service that is in operation.

7.3.2 Where a local exchange is installed requiring digital or proprietary handsets, then compatible telephone handsets shall be made available.

NOTE Some users may need other facilities, such as different handsets for reasons of accessibility. The variety of available handsets needs to be taken into consideration.

7.3.3 Where a local exchange is installed requiring digital or proprietary handsets, at least one analogue line per 50 users shall also be available. The analogue line(s) shall be routable to any potential work area.

NOTE The use of users' own terminal equipment, e.g. modems, fax machines or special handsets, should be accommodated.

7.3.4 A connection to the public telephone network shall be available from every ICT-ready work area regardless of whether it is serviced by an analogue or digital telephone point.

NOTE It is acceptable for connections to the public network from some telephone points to be prohibited or limited as a matter of policy, but it should never be a limitation of the design or implementation of the telephone system itself. For example, calls from meeting rooms may be routed through an operator rather than allowing direct dialling.

7.3.5 The connection to the public telephone network shall be capable of supporting at least:

a) one simultaneous call for each ICT-ready work area for a call centre; or

b) one simultaneous call per ten ICT-ready work areas for other workplace uses.

7.3.6 The telephone service shall offer as a minimum:

a) direct dial to each ICT-ready work area, including direct dial in (DDI) from the public telephone network; and

b) the configuration of hunt groups and/or group pickup.

7.4 Internet services

7.4.1 A connection to the Internet shall be available at every ICT-ready work area.

*NOTE 1 This may be provided via a telecommunications outlet or wireless networking subject to **6.4**.*

NOTE 2 It is acceptable for connections to the Internet to be prohibited or limited as a matter of policy, but it should never be a limitation of the design or implementation of the facilities.

7.4.2 Where the external Internet connection(s) arrive(s) at the workplace's external network interface(s), the total available Internet connection speed (bandwidth) shall be in accordance with Table 2.

Table 2 – Internet connection speed

Number of users	Minimum downstream data rate not contended kbps	Minimum upstream data rate not contended kbps
1 to 20	2 000 total	500 total
21 to 100	100 per user	50 per user
100 +	10 000 for the first 100 users plus 50 per each additional user	5 000 for the first 100 users plus 10 per each additional user

NOTE 1 The minimum required Internet connection speed is based on the number of users and not the user capacity of the workplace.

NOTE 2 The number of users should take into account the number of visitors expected in the workplace and should not be less than the number of ICT-ready work areas in the workplace.

NOTE 3 Contention refers to contention of the line itself and not any contention further upstream in the network or at the communications service provider.

7.4.3 Where the number of users increases, the Internet connection speed shall be increased to conform with Table 2 within three working days and without interruption of Internet service to existing users.

*NOTE 1 The Internet connection speeds specified in Table 2 are the minimum requirements for conformance to this PAS and in many cases the Internet connection speeds will need to be higher. Additional requirements for Internet services are specified in **8.2**.*

*NOTE 2 A portion of the Internet traffic may be carried on a backup connection, if present, in accordance with **8.2.2.3**.*

NOTE 3 Most ADSL services aimed at the domestic market are contended and will therefore be unsuitable for use in a workplace.

7.4.4 Latency, measured as the average round trip delay for 100 ping requests sent to bbc.co.uk between 09:00 and 17:00 local time, shall not exceed 75 ms, and packet loss shall not exceed 1%.

NOTE In the event that bbc.co.uk is unavailable to return ping requests the domain of a major Internet search engine may be used as an alternative.

7.4.5 The external Internet connection(s) shall be provided in accordance with a written SLA between the communications service provider and the subscriber (usually the operator). As a minimum, the external Internet connection shall be monitored at intervals of less than one minute and a procedure shall be in place to report and resolve issues.

NOTE 1 Typically, leased lines are managed by the communications service provider who will be responsible for the detection and resolution of issues such as faults and overloading. ADSL connections are not usually managed by the communications service provider in which case the subscriber will need to make their own arrangements to detect issues and to liaise with the provider.

NOTE 2 Where an operator procures an external Internet connection on behalf of several occupiers, the operator will usually endeavour to match the terms and conditions of its SLAs with the occupiers to the terms and conditions of its SLA with the communications service provider.

NOTE 3 An acceptable usage policy may be imposed by the communications service provider or by the operator.

7.5 Technical support

7.5.1 General

On-site and/or remote technical support shall be provided that is capable of resolving all issues arising concerning telephone and Internet connectivity.

NOTE Technical support may also be provided covering other areas, such as support for desktop applications.

7.5.2 On-site technical support

On-site technical support shall as a minimum:

a) offer a surgery at least once per week or by appointment; and

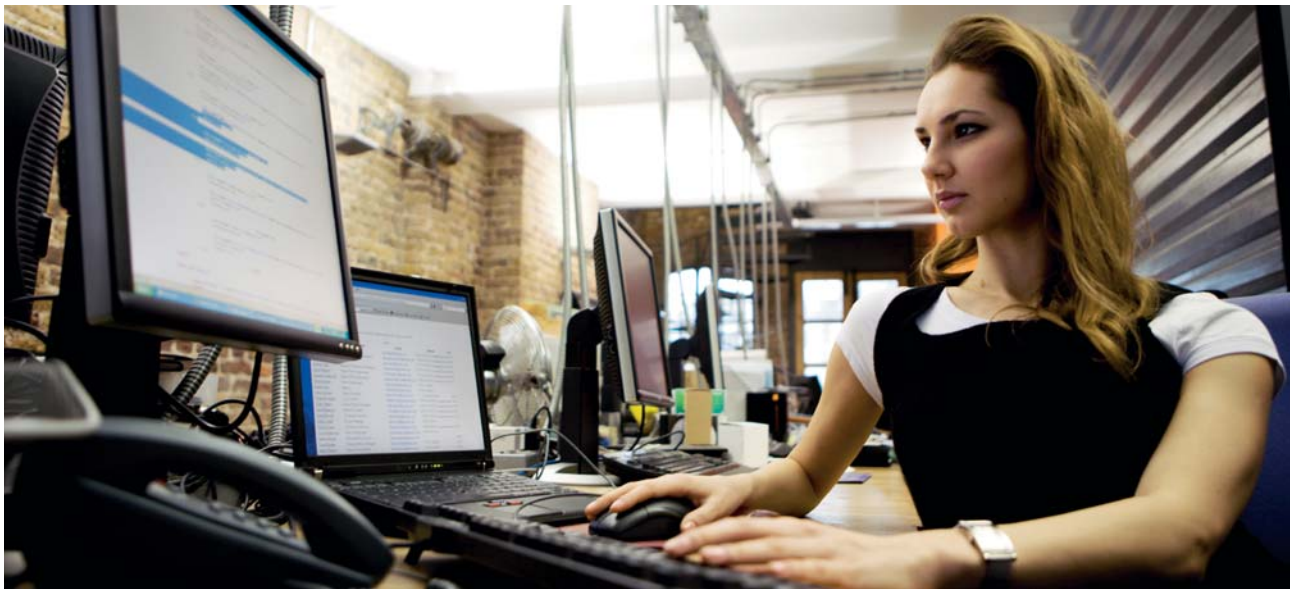
b) offer a call out service with a maximum time-to-attendance of one working day.

7.5.3 Remote technical support

Remote technical support shall as a minimum:

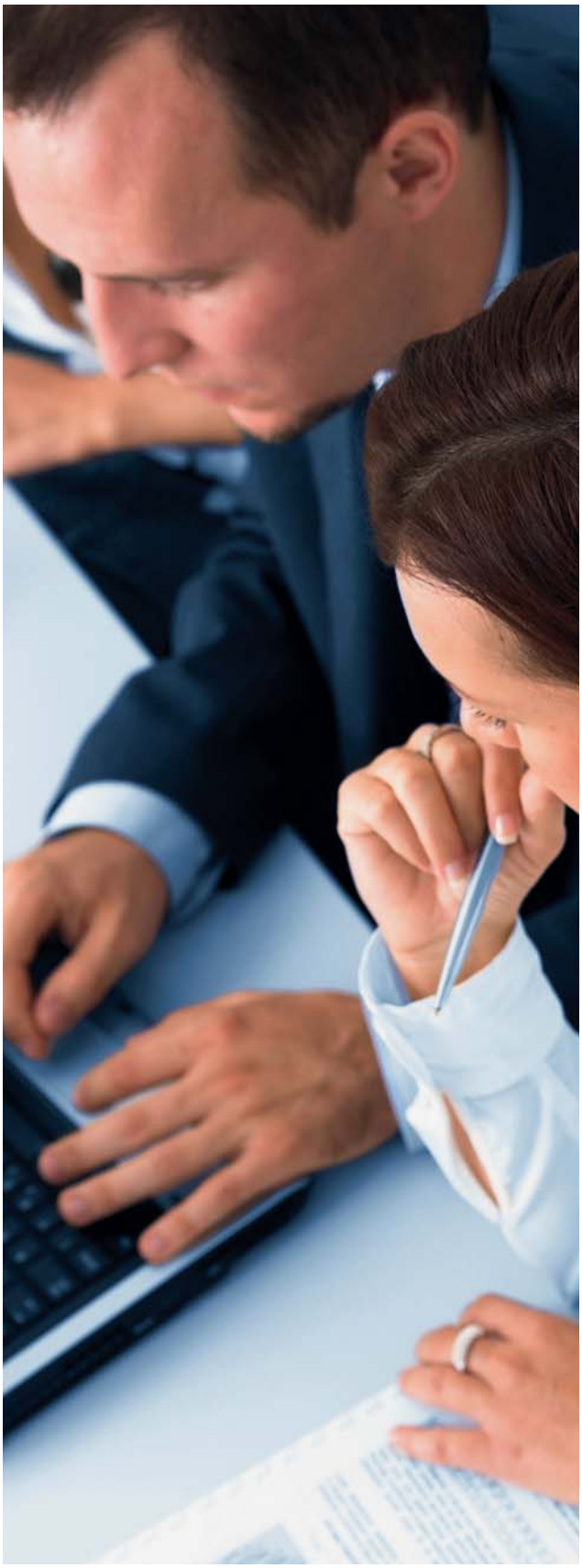
a) be available during defined periods as set out in the SLA defined in **7.1.3**; and

b) provide a means of resolving issues that cannot be dealt with remotely.



8 Layer 4: Extended services

NOTE SLAs cover extended services as well as basic services (see 7.1).



8.1 Extended telephone services

8.1.1 General

An extended telephone service shall include as a minimum:

a) a telephone reception service conforming to **8.1.2**;

b) a voicemail service conforming to **8.1.3**;

c) call logging conforming to **8.1.4**;

d) a telephone directory service conforming to **8.1.5**; and

e) conference calling conforming to **8.1.6**.

8.1.2 Telephone reception service

A telephone reception service shall as a minimum:

a) allow any extension to divert incoming calls to the reception service; and

b) be able to identify which number is being called (so that calls can be answered on behalf of a user).

8.1.3 Voicemail service

A voicemail service shall as a minimum:

a) allow any extension to divert incoming calls to the voicemail service;

b) allow remote (off-site) access to messages; and

c) allow the user to set and change the salutation message.

NOTE BS ISO/IEC 13714 specifies requirements for voice messaging systems.

8.1.4 Call logging

Call logging shall as a minimum:

a) make per-call records of outgoing calls, including the number called, the originating extension and the duration; and

b) allow subscribers access to their call logs.

8.1.5 Telephone directory service

A telephone directory service shall as a minimum:

a) allow users to store numbers in the telephone system and access them from any handset; and

b) allow users to synchronize the directory with a computer application.

8.1.6 Conference calling

Conference calling shall as a minimum allow conference calling between at least three parties, including at least two external lines.

8.2 Extended Internet services

8.2.1 General

An extended Internet service shall include as a minimum:

a) a backup Internet connection conforming to **8.2.2**;

b) an option to upgrade conforming to **8.2.3**;

c) a bandwidth management conforming to **8.2.4**;

d) IP address availability conforming to **8.2.5**;

e) hosting capability conforming to **8.2.6**;

f) virtual private network traffic capability conforming to **8.2.7**; and

g) network equipment conforming to **8.2.8**.

8.2.2 Backup Internet connection

8.2.2.1 There shall be at least one backup external Internet connection separately routed to the workplace's external network interface(s) and provided in accordance with a written SLA between the communications service provider and the subscriber (usually the operator). As a minimum, the backup external Internet connection shall be continuously monitored at intervals of less than one minute and a procedure shall be in place to report and resolve issues.

*NOTE See also Notes to **7.4.5**.*

8.2.2.2 Fail-over to the backup external Internet connection(s) shall be automatic.

8.2.2.3 The speed of the backup external Internet connection(s) shall be a minimum of 25% of the speed of the principal external connection(s) and backup external Internet connection(s) combined.

NOTE The backup connection(s) need not remain idle during normal operation.

8.2.3 Option to upgrade

There shall be the option to upgrade both the principal and backup external Internet connections to a higher speed, within 30 days and without interruption of service.

*NOTE 1 This requirement provides for Internet connection speeds over and above the minimum levels set out in **7.4.2**. It looks at the communications service provider's ability to respond to actual demand.*

NOTE 2 This requirement refers to the option to obtain extra bandwidth from the communications service provider, which is often possible with a managed connection. The purchase of extra bandwidth that cannot be delivered due to line characteristics (as may occur with copper lines such as ADSL) does not fulfil this requirement.

NOTE 3 An implication of this requirement is that a subscriber may upgrade to the highest speed available and thereafter not have the potential to upgrade again – thereby becoming unable to claim to operate an advanced Internet service. This potential "demotion" of a workplace on the occasion of an upgrade is entirely appropriate as the lack of a future upgrade path would introduce a potential future upgrade issue for the workplace.

8.2.4 Bandwidth management

Internet access bandwidth shall be managed so that a guaranteed minimum data rate can be provided to each subscriber.

8.2.5 IP addresses

Static public IP addresses shall be available for allocation to subscribers or individual users.

8.2.6 Hosting

There shall be no restrictions to subscribers' hosting.

NOTE 1 This means hosting may not be restricted by any method including as a condition of the SLA or for instance through the blocking of ports or the effect of firewalls.

NOTE 2 Communications service providers or operators may still prevent illegal or anti-social hosting.

8.2.7 Virtual private network traffic

There shall be no restrictions to virtual private network traffic, either as a condition of the SLA or through restrictions in the ICT facilities and services such as the blocking of ports or the effect of firewalls.

8.2.8 Network equipment

All facilities needed for the extended Internet service shall be provided, including a configuration service for the facilities enabling the subscriber to obtain configuration changes (e.g. opening a port in a firewall, segmenting the bandwidth or configuring a load balancer) within one working day of a request being made.

8.3 Video conferencing

Video conferencing shall as a minimum:

a) be made available in a room which is dedicated for that purpose;

b) use purpose-built video conferencing hardware; and

c) be allocated a minimum amount of bandwidth in accordance with the video conferencing hardware manufacturer's instructions.

8.4 Data backup service

8.4.1 General

A data backup service shall include:

a) a fire safe conforming to **8.4.2**; or

b) an off-site storage for digital media conforming to **8.4.3**; or

c) online storage conforming to **8.4.4**.

8.4.2 Fire safe

A fire safe shall as a minimum be fire-rated for the storage of digital media.

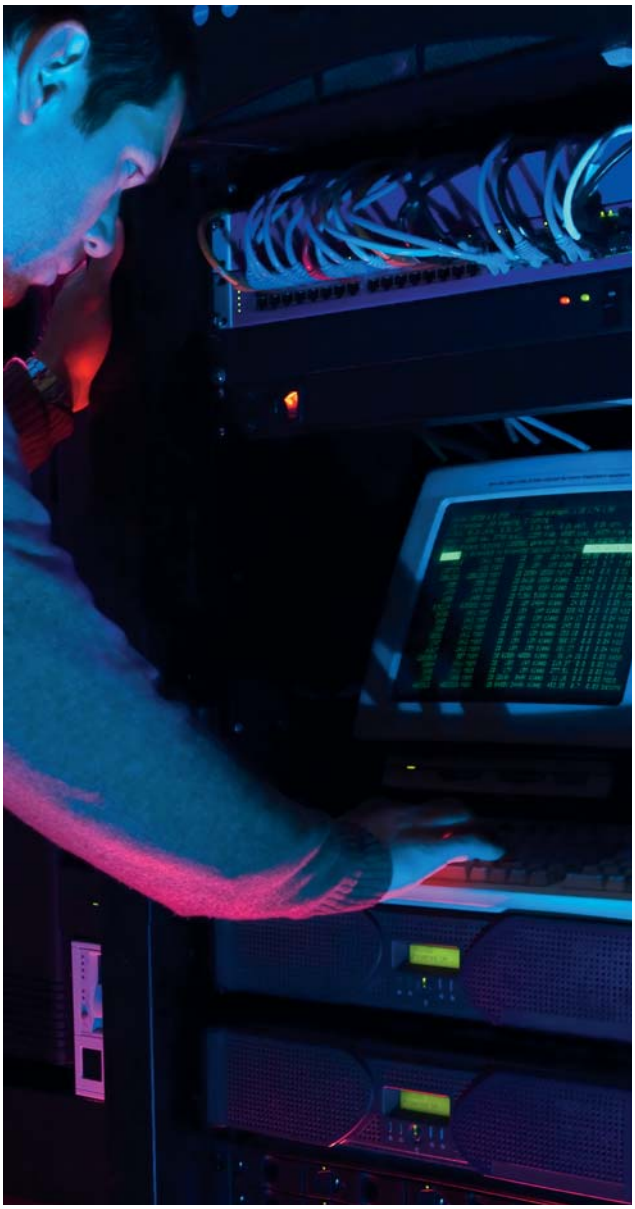
8.4.3 Off-site storage for digital media

Off-site storage for digital media shall as a minimum:

a) provide storage for digital media in a physically secure location that is clean, cool, dry, dark and non-magnetic;

b) be located off site to the workplace so as to minimize the likelihood of the stored copy of digital media being compromised in the same event as any on-site copy; and

c) allow access to stored media within one working day of a request being made.



8.4.4 Online storage

Online storage shall as a minimum:

a) be deployed on dedicated servers;

b) be located off site to the workplace so as to minimize the likelihood of the stored copy of data being compromised in the same event as any on-site copy; and

c) allow access to stored data within one working day of a request being made.

8.5 Print services

NOTE Print services such as a networked printer or photocopier may be provided.

8.6 Publicly available wireless networking

Publicly available wireless networking shall as a minimum:

a) provide a wireless networking service for public use conforming to IEEE 802.11;

b) use a minimum of 128 bit WEP encryption;

c) be monitored and managed to ensure availability;

d) provide a minimum data throughput of 512 kbps; and

e) be separated by firewall from all private ICT facilities and services.

8.7 Co-location services

Co-location services shall as a minimum:

a) consist of a room or rooms dedicated for purpose;

b) provide physical security for subscribers' equipment;

c) have controlled and audited access;

d) provide empty rack space for subscribers' use;

e) provide the electricity supply for the ICT facilities to each rack at a minimum of 2.5 kW per 42U of rack space;

f) provide a network connection to each rack; and

g) maintain an operating environment within the working range of the installed equipment in accordance with the manufacturer's instructions.

NOTE This may involve the active extraction of waste heat and humidity control.

NOTE In addition, co-location services may also:

a) provide a secondary power supply and/or network connection engineered to improve reliability; and

b) provide load balancing and firewalling.

8.8 Email services

NOTE Email services may be provided.

8.9 Web hosting services

NOTE Web hosting services may be provided.

8.10 Backup electricity supply

A backup electricity supply for the ICT facilities and services shall:

a) deliver a fully automatic and seamless transition to a redundant electricity supply in the event of the failure of the primary electricity supply; and

NOTE The primary electricity supply is usually a public utility supply. The redundant electricity supply is often provided using a UPS and/or a generator.

b) as a minimum support the basic ICT facilities and services specified in Clause **7** and any co-located equipment for at least 24 hours.

NOTE In addition, the backup electricity supply may support other equipment.

8.11 ICT disaster recovery facilities

An ICT disaster recovery (DR) facility shall as a minimum:

a) provide an off-site and secure alternative workplace;

b) maintain a full and current copy of all of the subscriber's software and data off site;

c) provide computer hardware, ICT facilities and services onto which the subscriber's software and data can be restored;

d) enable full recovery within one working day.

NOTE ICT disaster recovery is an aspect of business continuity management. BS 25999-1 is a code of practice, which establishes the process, principles and terminology of business continuity management.

Bibliography

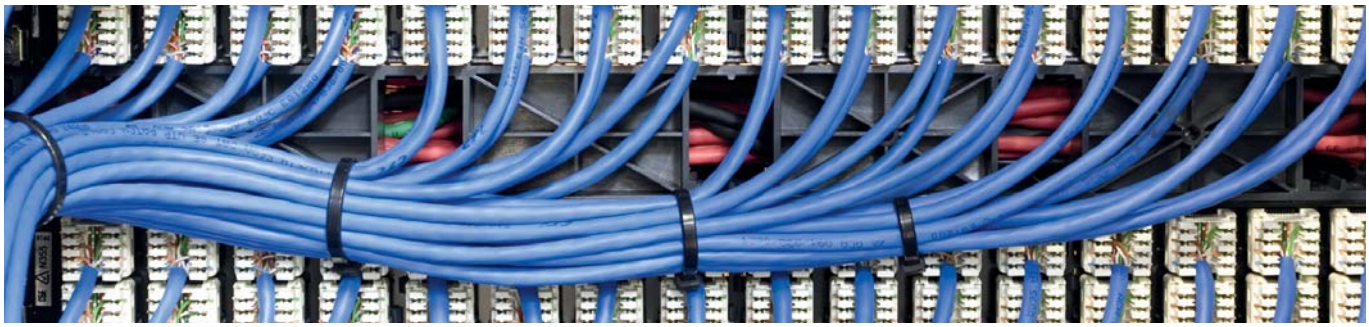
BS 7671, *Requirements for electrical installations – IEE Wiring Regulations*

BS 7083, *Guide to the accommodation and operating environment for information technology (IT) equipment*

BS 25999-1, *Business continuity management – Part 1: Code of practice*

BS ISO/IEC 13714, *Information technology – Document processing and related communication – User interface to telephone-based services – Voice messaging applications*

BSI – British Standards Institution



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