
**Information technology — Security
techniques — Guidelines for information
and communications technology disaster
recovery services**

*Technologies de l'information — Techniques de sécurité — Lignes
directrices pour les services de secours en cas de catastrophe dans les
technologies de l'information et des communications*

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

ISO/IEC 24762 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 27, *IT Security techniques*.

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0 Introduction

0.1 General

This International Standard is aimed at aiding the operation of an Information Security Management System (ISMS) by providing guidance on the provision of information and communications technology disaster recovery (ICT DR) services as part of business continuity management.

Information security management is the process by which management aims to achieve effective confidentiality, integrity and availability of information and service. When an organization implements an ISMS the risks of interruptions to business activities for any reason should always be identified.

ISO/IEC 27001 and ISO/IEC 27002 include a control objective for information security aspects of business continuity management (refer to Control Objective 14.1 in ISO/IEC 27002:2005), the implementation of which will reduce those risks. That control objective is supported by controls to be selected and implemented as part of the ISMS process.

Business continuity management is an integral part of a holistic risk management process that safeguards the interests of an organization's key stakeholders, reputation, brand and value creating activities through:

identifying potential threats that may cause adverse impacts on an organization's business operations, and associated risks;

providing a framework for building resilience for business operations;

providing capabilities, facilities, processes, action task lists, etc., for effective responses to disasters and failures.

In planning for business continuity, the fallback arrangements for information processing and communication facilities become beneficial during periods of minor outages and essential for ensuring information and service availability during a disaster or failure for the (complete) recovery of activities over a period of time. Such fallback arrangements may include arrangements with third parties in the form of reciprocal agreements, or commercial subscription services.

0.2 Structure

This International Standard provides guidelines for the ICT DR services, which include both those provided in-house and outsourced. It covers facilities and services capability and provides fallback and recovery support to an organization's ICT systems. It includes the implementation, testing and execution aspects of disaster recovery. It does not include other aspects of business continuity management.

The guidelines are applicable to both "in-house" and "outsourced" ICT DR service providers of physical facilities and services in varying degrees. ICT DR service providers should interpret the intent of these guidelines within the context of the services they offer.

These guidelines include the requirements for implementing, operating, monitoring and maintaining ICT DR services, divided into two areas:

- a) ICT disaster recovery (Clause 5); and
- b) ICT disaster recovery facilities (Clause 6).

Clause 7, “outsourced service provider’s capability”, specifies the capabilities which outsourced ICT DR service providers should possess, and the practices they should follow, for them to be able to provide basic secure operating environments and facilitate organizations’ recovery efforts. The capabilities required are specified in terms of the infrastructure and services needed to enable organizations to implement and execute their ICT DR plans. (It should be noted that although this clause is targeted at outsourced service providers, the guidelines it contains are also recommended for adoption by service providers in general.)

Clause 8, “selection of recovery sites”, provides guidance for:

- a) organizations that are in the process of selecting an external recovery site as part of their ICT DR practices;
- b) ICT DR service providers who are in the process of building (additional) recovery sites to expand their operations.

Factors such as environmental stability, good infrastructure and availability of skilled manpower locally, may provide a favourable environment for the operation of ICT DR recovery sites. Further, the presence of other ICT DR service providers and their suppliers may create a critical mass for a vibrant local industry. The track record of key players is another indicator of the maturity and vibrancy of the local ICT DR industry. Where applicable, proactive support of the local authority may also contribute to the growth and expansion of this industry.

Clause 9, “continuous improvement”, provides guidance for ICT DR service providers on ensuring continuous improvement to their ICT DR services through a set of practices. These practices can enable service providers to continuously maintain and improve the level of their services and thus provide an additional level of assurance to organizations engaging these services.

0.3 Framework

0.3.1 ICT DR service provision framework

This International Standard is based on a multi-tier framework comprising different elements in the ICT DR services provision, as illustrated in Figure 1. The “foundation” layer comprises the important aspects of ICT DR services, namely Policies, Performance Measurement, Processes and People. This layer helps to define the supporting infrastructure and services capability. The “continuous improvement” layer highlights practices that help to improve ICT DR activities in specific areas, and represents an added level of provision to the services provided. Thus the guidelines in this International Standard are drawn from a composite view of these layers, and with a balance between cost effectiveness and standard rigor considerations.

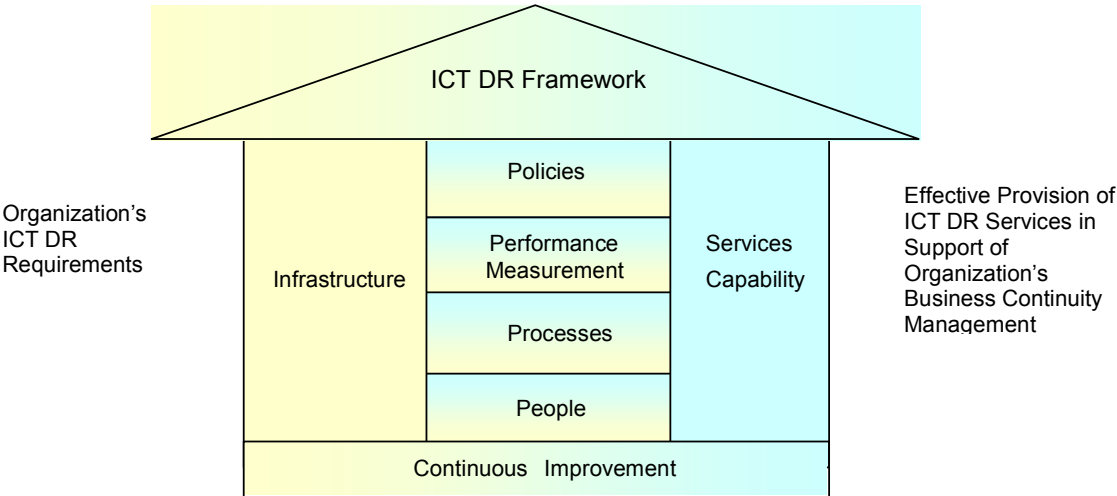


Figure 1 — ICT DR service provision framework

0.3.2 Policies

“Policies” enable ICT DR service providers to set the direction on the other, related, areas of their ICT DR services, and also enable clear communication to the relevant parties on the requirements that can be met by ICT DR service provider facilities.

The “Policies” aspect is elaborated on in clauses 5 to 9 of this International Standard. An established policy is usually expressed as “the system should include the following policies ...” or “there should be documented policies and procedures ...”.

0.3.3 Performance measurement

“Performance Measurement” enables ICT DR service providers to review and improve their services, and at the same time provides a means for service providers to demonstrate that their services meet organization requirements. This will in turn help to promote the ICT DR industry service level as a whole.

The “Performance Measurement” aspect is elaborated on in clause 9.3 of this International Standard, which explains the need for measuring the performance of ICT DR services and illustrates some examples of measurement metrics that service providers can select.”

0.3.4 Processes

“Processes” ensures that a consistent approach will be adopted in the other areas of ICT DR services, making possible the continuous maintenance of service levels and the ease of training of ICT DR personnel.

The “Processes” aspect is elaborated on in clauses 5 to 9 of this International Standard. An established process is usually expressed as “... according to appropriate established procedures”, “establish a set of procedures to ensure ...”, or “there should be documented policies and procedures ...”.

0.3.5 People

“People”, relates to the pool of skilled and knowledgeable service provider, organization and as relevant, third party personnel needed to help operate, uphold and maintain ICT DR practices. Further, the safety and welfare of personnel is also one of the aspects ICT DR service providers will need to take care of.

The “People” aspect is elaborated in various clauses of this International Standard. Clause 5.9 covers the general training and education guidelines, and clause 7.4 elaborates on the need for service provider management expertise. Clauses 6.10 and part of 6.12 cover personnel health and safety, and clause 6.13 provides guidance on personnel welfare aspects.

0.4 Interpretation of clauses

0.4.1 Statements on capability expectations

Statements on capability expectations typically contain the phrase – “ ... service providers should be capable of providing organizations with ... ” – meaning that service providers should possess certain capabilities. Such capabilities could be a latent potential that can be swiftly activated by service providers if there is organization demand. For example, additional resources could be readily channelled from another unit (e.g. from elsewhere in the region or country, or from overseas) in response to an organization requirement. Obviously the actual provision of a particular stated capability to any organization would be subject to contract negotiations between service provider and organization.

0.4.2 Supplementary requests by organizations

Certain statements in this International Standard can lead organizations to making supplementary requests to service providers based on their specific ICT DR requirements. Such requests will be subject to further negotiations between service providers and organizations and not within the purview of this International Standard. For example, organizations may request audits of their service providers. The latter may levy fees for such requests.

0.4.3 Service level agreement (SLA)/Service level commitment (SLC)

Certain subjects raised in this International Standard can be SLA/SLC issues. However, they do not dictate the content of the SLA/SLC between service providers and organizations. The subjects raised are intended to build common understanding and expectation between service providers and organizations. In particular they serve to draw organizations' attention to the typical items that could be included in SLA/SLC negotiations.

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Information technology — Security techniques — Guidelines for information and communications technology disaster recovery services

1 Scope

1.1 General

This International Standard describes the basic practices which ICT DR service providers, both in-house and outsourced, should consider.

It covers the requirements that service providers should meet, recognizing that individual organizations may have additional requirements that are specific to them (which would have to be addressed in the agreements/contracts with service providers). Examples of such organization requirements may include special encryption software and secured operation procedures, equipment, knowledgeable personnel and application documentation. Such additional organization specific requirements, if necessary, are generally negotiated on a case-by-case basis and are the subject of detailed contract negotiations between organizations and their ICT DR service providers and are not within the scope of this International Standard.

1.2 Exclusions

This International Standard does not: <https://standards.iteh.ai/catalog/standards/sist/c30da844-0f2c-40ba-b14c-e55c5c9fe1ba/iso-iec-24762-2008>

- a) provide any guidance on business continuity management as a whole for organizations;
- b) take precedence over any laws and regulations, both existing and those in the future;
- c) have any legal power over the Service Level Agreements (SLAs) included in negotiated contracts between organizations and service providers;
- d) address requirements, legal or otherwise, governing normal business operations to be adhered to by service providers. Examples of such requirements include detailed regulations covering building and fire safety, occupational health and safety, copyright regulation and prevailing human resource practices;
- e) provide an exhaustive list, and thus technical security controls are not covered. Readers should refer to ISO/IEC 27001 and ISO/IEC 27002, vendor literature and other technical references, as necessary.

1.3 Audience

This International Standard applies to:

- a) all organizations requiring the ICT DR services as part of their business (whether in-house and/or outsourced);
- b) ICT DR service providers in their provision of ICT DR services;
- c) communities of organizations with reciprocal or mutual arrangements.

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.

ISO/IEC 27001:2005, *Information technology — Security techniques — Information security management systems — Requirements*

ISO/IEC 27002:2005, *Information technology — Security techniques — Code of practice for information security management*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

**3.1
computing and related equipment**
computer, network, telecommunications and peripheral equipment that support the information processing activities of organizations

**3.2
ICT systems**
hardware, software and firmware of computers, telecommunications and network equipment or other electronic information handling systems and associated equipment

NOTE ICT systems include any equipment or interconnected systems or subsystems of equipment that are used in the acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission or reception of data/information.

**3.3
information security**

preservation of confidentiality, integrity and availability of information

NOTE 1 In addition, other properties such as authenticity, accountability, non-repudiation and reliability can also be involved.

NOTE 2 Adapted from ISO/IEC 27002:2005.

**3.4
infrastructure**
facilities and equipments to enable the ICT DR services, including but not limited to power supply, telecommunications connections and environmental controls

**3.5
organizations**
entities which utilize ICT DR services

**3.6
outsourced service providers**
external service providers of ICT DR services

**3.7
service providers**
in-house teams or external parties providing ICT DR services to organizations

3.8**service level agreement**

written agreement between a service provider and an organization that documents services and agreed service levels

NOTE In the case of outsourced service providers, the service level agreement is a written contractually binding agreement

3.9**service level commitment**

commitment from a service provider (usually an internal service provider) to an organization that defines services and agreed service levels

4 Abbreviated terms

DBA Data Base Administrator

EMF Electro Magnetic Field

ICT DR Information and Communications Technology Disaster Recovery

MDF Main Distribution Frame

PDA Personal Digital Assistant

SLA Service Level Agreement

SLC Service Level Commitment

UPS Uninterruptible Power Supply

USB Universal Serial Bus

VFI Voltage and Frequency Independent

WAR Work Area Recovery

5 ICT disaster recovery**5.1 General**

ICT DR service provision, irrespective of whether it is provided in-house or outsourced, should follow best practice guidelines as outlined in the following clauses. If the guidelines are followed there will be assurance that ICT DR services have been implemented after due consideration of unforeseen events that could affect the ability to fulfil service obligations, and related risk mitigation via prior arrangements with other service providers in the industry.

It should be noted that:

- a) these guidelines will be applicable to ICT DR service providers (of physical facilities and services) in varying degrees. ICT DR service providers should interpret the intent of the guidelines in the context of the particular facilities and services they offer or intend to offer;
- b) the issue of site proximity should be taken into consideration when ICT DR service providers contract and agree SLAs with organizations.

5.2 Environmental stability

Environmental stability is important for the direct operation of a recovery center as well as personnel travel, safety and welfare. The utilities required for the operation of a recovery center, such as power supply and telecommunications, can be affected by environmental instability. Personnel travel and safety to/from a recovery center can be affected by disruption to the transportation system. Personnel welfare and social activities after work can also be limited by an unsafe external environment. The frequent occurrence on a large scale of the following type of activities would indicate underlying environmental instability:

- a) strikes;
- b) demonstrations;
- c) riots;
- d) violent crimes;
- e) natural disasters;
- f) pandemics;
- g) deliberate attacks, e.g. terrorist bombing, biological attacks.

5.3 Asset management

5.3.1 General

Service providers should ensure that assets placed in their ICT DR premises are capable of being uniquely identified, located and retrieved in a timely manner when required by organizations. In addition to computing and related equipment, assets include: application software, vital records stored on media (magnetic or otherwise), and necessary operational documentation placed in service providers' operational premises to facilitate recovery from disasters and failures.

5.3.2 Organization ownership rights and privileges

Service providers should explicitly document and maintain the listing of assets that are in their ICT DR premises. In the case of outsourced service providers, the asset list should be included in service contracts with appropriate clauses inserted to identify their ownership rights and privileges.

5.3.3 Asset protection

For all assets located in their ICT DR premises, service providers should ensure that:

- a) a list of the assets is maintained [this could be through use of a configuration management "system" and associated processes that maintain details of current versions of documentation, software, and all other assets (ISO/IEC 20000 provides guidance on establishing configuration management)];
- b) all assets are tagged/marked in a manner that uniquely identifies ownership;
- c) in the case of outsourced ICT DR service provision, organizations and outsourced service providers do not display explicit organization names in the asset tagging/markings to ensure that security is not compromised. For example, equipment mounted on shared racks should not have explicit organization names as part of the tag/mark.

Service providers should establish “systems”¹⁾ to protect, maintain, locate, retrieve and return all organization tagged/marked assets located at their premises, and ensure that organization ICT DR assets are:

- a) located and kept in safe environments;
- b) maintained in good operating conditions, with the installation of appropriate environmental controls;
- c) not used or redeployed for other than contracted purposes;

and that the location of organizations’ ICT DR assets is accurately tracked for retrieval.

In the case of outsourced ICT DR service provision, outsourced service providers should ensure that:

- a) organizations are informed when their assets are being relocated;
- b) organizations’ assets are retrieved and returned within a predetermined and agreed timeframe when requested by organizations;
- c) organizations are forewarned and their assets returned to them according to appropriate established and agreed procedures before the onset of any seizure or stoppages.

Organizations should consider the implications of disaster recovery data and other assets being stored across national boundaries, and ensure that compliance is maintained with all relevant legal and regulatory requirements.

5.3.4 Availability of documentation

Service providers (if required by their SLAs) and organizations should maintain duplicate copies of plans, disaster/failure procedures and other essential information for managing disasters and failures, including details of how to contact staff and of access points for emergency services. Such duplicate plans, procedures and other essential information should be kept off site at easily accessible locations.

5.4 Proximity of site

DR sites should be in geographic areas that are unlikely to be affected by the same disaster/failure events as organizations’ primary sites. The issue of site proximity and associated risks should be taken into consideration when ICT DR service providers contract and agree SLAs with organizations.

5.5 Vendor management

5.5.1 General

Service providers should assess the relevant risks and then take adequate steps to ensure that critical equipment and services can be provided by their vendors within predetermined and agreed timeframes. Such vendors could include original equipment manufacturers and/or suppliers.

The following guidelines are applicable only to equipment supplied by service providers. Organizations that place their equipment in a recovery site should make their own arrangements with their equipment vendors or suppliers.

1) “Systems” are composed of integrated and interacting components of processes, resources and implementation elements (such as technical implementation of controls or practices) to achieve their stated purpose.