GOVERNMENT ICT STANDARDS

Data Centre Standard

ICTA.2.2.002:2023

The ICT Authority is a State Corporation under the State Corporations Act 446
www.icta.go.ke

REVISION OF ICT STANDARDS

In order to keep abreast of progress in industry, ICT Standards shall be regularly reviewed. Suggestions for improvements to published standards, addressed to the Chief Executive Officer, ICT Authority, are welcome.

ICT AUTHORITY (ICTA)

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CONTENTS

FOREWORD

The ICT Authority has the mandate to set and enforce ICT standards and guidelines across all aspects of information and communication technology including Systems, Infrastructure, Processes, Human Resources and Technology for the public service. The overall purpose of this mandate is to ensure coherent and unified approach to acquisition, deployment, management and operation of ICTs across the public service in order to achieve secure, efficient, flexible, integrated and cost-effective deployment and use of ICTs. To achieve this mandate, the Authority established a standards committee to identify the relevant standard domains and oversee the standards development process. The committee consulted and researched broadly among subject matter experts to ensure conformity to acceptable international and national industry best practices as well as relevance to the Kenyan public service. The committee eventually adopted the Kenya Bureau of Standards (KEBS) format and procedure for standards development. In an engagement founded on a memorandum of understanding KEBS, participated in the development of these Standards and gave invaluable advice and guidance. For example, the Data Centre Standard, which falls under the overall Government Enterprise Architecture (GEA), has therefore been prepared in accordance with KEBS standards development guidelines which are, in turn, based on the international best practices by standards development organizations including ISO. The Authority's Directorate of Standards and Programmes has the oversight role and responsibility for management, enforcement and review of this standard. The Directorate shall carry out quarterly audits in all the Ministries, Counties, Departments and Agencies (MCDA) to determine compliance to this Standard. The Authority shall issue a certificate for compliance to agencies upon inspection and assessment of the level of compliance to the standard. For non-compliant agencies, a report detailing the extent of the deviation and the prevailing circumstances shall be tabled before the Standards Review Board who shall advise and make recommendations to remedy the shortfall. The ICT Authority management, conscious of the central and core role that standards play in public service integration, fostering shared services and increasing value in ICT investments, shall prioritize the adoption of this standard by all Government agencies. The Authority therefore encourages agencies to adhere to this standard in order to obtain value from their ICT investments.

Stanley Kamanguya, OGW
Chief Executive Officer
ICT Authority

1.0 INTRODUCTION

The data center is a facility that houses ICT infrastructure that comprises of networked computers, storage and compute, it is the home to computational power, storage, and applications necessary to support an organizations/enterprise business. The data center infrastructure is central to the IT architecture, from which all content is sourced or passes through. Proper planning of the data center infrastructure design is critical, and performance, resiliency, and scalability need to be carefully considered. All government data centres are expected to provide enough capacity to support all the necessary IT functions of government. The principal goals in data centre design are flexibility and scalability, which involve site location, building selection, floor layout, electrical system design, mechanical design and modularity. The advent of new technologies, such as blade servers, that require substantial incremental power and cooling capacity; the pressure to consolidate multiple data centres into fewer locations; the need for incremental space; changes in operational procedures; and potential changes in safety and security regulations converge to impose constant facilities changes on the modern data centre. Data centre standards will look at the best possible ways of setting up a data centre for government use. This will involve the design of the data centre, arrangement of equipment, operating conditions, security procedures and practices as well as any other requirement that would go into coming up with a modern and efficiently operational data centre. The data centre infrastructure should therefore be robust enough to support large amounts of data flow that government handles and efficient enough to ensure continues service availability. The conditions in the data centre should also be ideal to support the optimal operations of its infrastructure while the management of the data centre should also be easily adaptable to the current and future government operations. In order to design, build and operate an efficient data center, there is need to have guidelines that offer the industry acceptable specifications. This section outlines these guidelines that will be adopted by the government to ensure that it reaps the maximum benefits associated with it data centre operations.

2.0 SCOPE

These guidelines are grouped into the following domains:

- Site selection, Design and Planning (physical location)
- Planning Layout
- Cabling infrastructure
- Environment (Cooling, power and lightning, fire detection and suppression)
- Physical Security
- Data center operations
- Maintenance and SLAs

3.0 APPLICATION

This standard will be applicable to the following:

- National Government of Kenya
- County Governments
- Constitutional Commissions
- State Corporations

4.0 NORMATIVE REFERENCES

The following standards contain provisions which, through reference in this text, constitute provisions of this standard. All standards are subject to revision and, since any reference to a standard is deemed to be a reference to the latest edition of that standard, parties to agreements based on this standard are encouraged to take steps to ensure the use of the most recent editions of the standards indicated below. Information on currently valid national and international standards can be obtained from Kenya Bureau of Standards.

- Uptime Institute's Tier Standard
- US Green Building Council Leeds Certification
- ANSI/BICSI 002-2014
- ANSI/TIA 942-A 2014
- EN 50600
- Uptime Institute: Operational Sustainability (with and without Tier certification)
- ISO 9000 - Quality System
- ISO 14000 - Environmental Management System
- ISO 27001 - Information Security
- PCI – Payment Card Industry Security Standard
- SOC, SAS70 & ISAE 3402 or SSAE16, FFIEC (USA) - Assurance Controls
- AMS-IX – Amsterdam Internet Exchange - Data Centre Business Continuity Standard
- EN50600-2-6 Management and Operational Information

- ANSI/TIA-569-c
- ANSI/TIA-568-c.1
- ISO/IEC 60793
- IEEE, 802.3
- IEEE, 802.1
- IETF RFC 3457, 2709, 1518, 1918
- [ANSI/TIA-568-c.2]
- [ANSI/TIA-568-B.2.1]
- [IEEE 802.3af]
- [ANSI/TIA-568-C.3-1]
- [(ITU-T) Series G.652]
- [IEEE STD-- 802.3-2008]
- [IEEE 802.3an 2006]
- [TIA/EIA 568-B.3]
- [ISO/IEC 11801:2002]
- [ANSI/TIA-568-c.3]
- [IEEE STD-- 802.11-2012]
- [IEEE STD 802.11-2011]
- [IEEE 802.1x]
- [IEEE 802.11i, g]
- [ISO/IEC 17799:2005(E)]
- [IEEE 802.1Q]
- [ISO/IEC 17799:2000]
- [IEEE STD-- 802.3-2008]
- [IEEE 802.3an 2006]
- IEC 62305-4

5.0 DEFINITIONS

For the purposes of this ICTA Standard the following definitions, abbreviations and symbols apply:

4.1 Anti-tailgating

Anti-tailgating refers to an access control for restricting an unauthorized person from gaining access through a turnstile or gate after an authorized person has already gained access.

4.2 Backbone Cable

Are the inter-building and intra-building cable connections in structured cabling between entrance facilities, equipment rooms and telecommunications closets? Backbone cabling consists of the transmission media, main and intermediate cross-connects and terminations at these locations.

4.3 CCTV

CCTV refers to closed-circuit television, or the use of video cameras to transmit images to a specific limited number of televisions on the same network or circuit.

4.4 Cyber Crime

Cybercrime is defined as a crime in which a computer is the object of the crime (hacking, phishing, spamming) or is used as a tool to commit an offense. Cybercriminals may use computer technology to access personal information, business trade secrets or use the internet for exploitative or malicious purposes.

4.5 Data Center

This is a large group of networked computer servers typically used by organizations for the remote storage, processing, or distribution of large amounts of data.

4.6 Equipment Distribution Area

is used in large computer rooms that need additional configuration flexibility between the HDA and equipment. The ZDA houses only passive equipment.

4.7 Horizontal Distribution Area (HDA)

Is the space where the horizontal cross-connect resides. It is the main transition point between backbone and horizontal cabling and houses the LAN, SAN and KVM switches that connect to the active equipment (servers, mainframes, storage devices).

4.8 Hot and Cold aisle

Hot aisle/cold aisle refers to a layout design especially for data warehouses whose purpose is to manage air flow in data centers, consequently lowering the energy, cooling and management cost inside data centers.

4.9 Intruder Detection System

Software application that monitors a network or systems for malicious activity or policy violations.

4.10 Main Distribution Area (MDA)

Is the hub of the cabling system. It includes the cross connect and the horizontal cross-connects if the equipment they serve is nearby. It holds the core routers and the core LAN/SAN switches.

4.11 Multimode Fiber

Multi-mode fiber is a type of optical fiber designed to carry multiple light rays or modes simultaneously, each at a marginally different reflection angle inside the optical fiber core.

4.12 Multi-tenant building

Refers to a facility in which organizations can rent space to host their data. Businesses can rent to meet varying needs, from a server rack to a complete purpose-built module.

4.13 Power Distribution Units

A power distribution unit (PDU) is a type of electrical component that distributes and manages electricity supply to computers, servers and networking devices within a data center environment.

4.14 Rack

A rack is a type of physical steel and electronic framework that is designed to house servers, networking devices, cables and other data center computing equipment. This physical structure provides equipment placement and orchestration within a data center facility.

4.15 Whitespace

In data center, it refers to the area where IT equipment are placed.

4.16 Zone Distribution Area (ZDA)

This is used in large computer rooms that need additional configuration flexibility between the HDA and equipment. The ZDA houses only passive equipment.

6.0 ABBREVIATIONS

ANCI American National Standards Institute
BoQ Bill of Quantities
CCTV Closed Circuit Television
EDA Equipment Distribution Area
GEA Government Enterprise Architecture
HDA Horizontal Distribution Area
HVAC Heating, Ventilation, and Air conditioning
IEC International Electrotechnical Commission
IEEE Institute of Electrical and Electronics Engineers
IETF Internet Engineering Task Force
ISO International Organization for Standardization
ISPs International Ship and Port Facility Security
ITU International Telecommunication Union
MCDAs Ministry, Counties, Departments and Agencies
MDA Main Distribution Area
NFPA National Fire Protection Association
PDU Power Distribution Units
SLA Service-level agreement
TIA Telecommunications Industry Association
UPS Uninterruptible Power Supply
ZDA Zone Distribution Area

7.0 DATA CENTER SITE SELECTION, DESIGN AND PLANNING

7.1.1 MCDA shall seek approval from the Ministry of ICT for the data center projects, not specifically designated for national security purposes in line with National ICT policy 2019 and National ICT policy Guidelines 2020.

7.1.2 MCDA shall ensure that all data centers that hold public data must be a minimum of a level 2/ tier 2 as per Appendix 1.

7.1.3 MCDA shall carry out a feasibility study prior to initiating a Data Center project.

7.1.4 MCDA shall conduct site selection and carry out site surveys as per Appendix 3 "Site selection checklist" to ensure a data center design is in line with the tiered reliabilities.

7.1.5 The choice of the location, civil works and other installations shall guard the data center against disasters such as floods, lightning, earthquake, fire.

7.1.6 The building hosting the data Centre shall not be in the flight path of any nearby airports. The building shall be no closer than 0.8 km (½ mile) from a railroad or major interstate highway. The building shall not be within 0.4 km (¼ mile) of an airport, research lab, chemical plant, landfill, river, coastline, or dam as applicable. The building shall not be located adjacent to a foreign embassy . The building shall not be located in high crime areas

7.1.7 MCDA shall ensure proper grounding forboth lightning protection and grid power. Type 1+2 surge arrestors should be installed to protect the data center from lightning(as guided by IEC 62305-4).

7.1.8 MCDA shall develop a data center design ,the Bill of Quantities (BoQ) shall thereafter be developed as per the design.

7.1.9 MCDA shall ensure that relevant construction and equipment installation is done in line with the specifications and Bill of Quantities (BoQ).

7.1.10 Upon completion of the construction and equipment installation MCDA shall carry out the tests and the results formally documented.

7.1.11 MCDA shall ensure that the 'as built' physical and logical designs of the data centerare documented.

7.1.12 MCDA shall ensure that the data center project iscommissioned and a Completion Certificate issued.

7.1.13 Physical and logical designs shall be updated whenever changes occur.

7.1.14 MCDA shall ensure that the Data center is designed with flexible and adequate white spac that can accommodate future racks and cabinets. The space surrounding the data center must also be considered for future expansion (the facility specifications should be in line with TIA-942 standard).

7.1.15 MCDA shall ensure that the data center includes the following key functional areas (as guided by TIA-942); an Entrance Room/Meet me room, Main Distribution Area (MDA), Horizontal Distribution Area (HDA), Zone Distribution Area (ZDA), Equipment Distribution Area (EDA) and a staging area for unpacking and testing new equipment before deploying them in the computer room as minimum functional areas.

7.1.16 MCDA shall consider arrangements for failover / backup facility for business continuity management.

8.0 PLANNING LAYOUT

8.1.1 A data center shall be designed with plenty of flexible white space that can accommodate future racks or cabinets.

8.1.2 The data center must put in functional areas as per 6.1.16, for future growth and planned for easy annexation.

8.1.3 MCDA shall ensure that there is adequate space between the racks/cabinets. The layout should have both hot and cold aisles with a minimum of 1.2 meter for the cold aisle and a minimum of 1.0 meters on the hot aisle.

8.1.4 The building structural system should be either steel or concrete or fabricated. At a minimum, the building frame should be designed to withstand wind loads in accordance with the applicable building codes for the relevant institutions charged with building approvals.

8.1.5 Truck loading docks shall be provided as required to handle anticipated deliveries, and shall be provided with a level of security similar to the other building entrances.

8.1.6 MCDA shall ensure when building new offices/identifying occupation of new premises that considerations are made for a provision of a floor that meets the data center required minimum height (18 inches). The recommended rack and cabinet height shall be 2.4 m (8 ft). Racks and cabinets shall preferably be no taller than 2.1 m (7 ft) for easier access to the equipment or connecting hardware installed at the top.

8.1.7 Every data center shall fall under any of the tiers as per tiered standards in Appendix 1.

8.2 Cooling

8.2.1 The cooling equipment shall be designed according to Tiered standards.

8.2.2 The cooling equipment shall be designed as per the equipment installed in the Data Center.

8.2.3 There shall be adequate cooling equipment as well as raised floor/overhead cable tray for more flexible cooling.

8.2.4 The cabinets and racks shall be arranged in an alternating pattern to create hot and cold aisle.

8.2.5 The air-conditioning system shall be designed to provide the design temperature and humidity conditions recommended by the manufacturers of the servers to be installed within the data center.

8.2.6 A 24/7/365 dedicated HVAC system with automatic dampers and connected to a backup generator shall be installed.

8.2.7 There shall be adequate cooling equipment as well as raised floor system for more flexible cooling as may be appropriate.

8.2.8 The air-conditioning system shall be designed to provide temperature and humidity conditions recommended by equipment manufacturers. The temperature and humidity shall be controlled to provide continuous operating ranges for temperature and humidity.

8.2.9 There shall be a 24/7 dedicated HVAC system with automatic dampers and connected to a backup generator.

8.3 Power

8.3.1 Power requirements shall be based on the tiered reliability standard- (See Appendix 1) and should include one or more power feeds from the utility. Other power feeds, UPS, Multiple circuits to systems and equipment, on-site generators, solar and alternative clean energy sources shall be considered.

8.3.2 Power requirements shall be estimated for all the existing devices and for devices anticipated in the future.

8.3.3 Power estimation must be made to accommodate required redundancy and future growth.

8.3.4 Every data center shall be supported by generator(s) and UPS System(s) and shall be designed to supply the harmonic current imposed by the UPS system or computer equipment loads. The UPS batteries should be able to support the Data Center for at least 8 hours.

8.3.5 Data Centre shall have a Power Distribution Units (PDUs) for distribution to critical electronic equipment.

8.3.6 MCDA are encouraged to consider the use of green power to cut on cost of power consumption.

8.3.7 Data Center shall be supplied with clean power.

8.3.8 Power requirements will be based on the desired reliability as per tiered reliability standard – Appendix 1.

8.3.9 Where batteries are used for backup, adequate ventilation and spill containment as required shall be provided.

8.4 Fire Detection and Suppression

8.4.1 The data center construction shall be separated from other occupancies by fire resistant rated construction (not less than an hour). Every opening in the fire-resistant construction shall be protected to limit spread of fire and to restrict the movement of smoke from one side to the other.

8.4.2 Automatic detection system(s) shall be installed to provide early fire warning and the equipment used shall be a reputable smoke and fire detection type system. The alarms and trouble signals of automatic detection or extinguishing system shall be arranged to annunciate in a constantly occupied location.

8.4.3 MCDA shall ensure that the IT personnel designated to man the facility are continually and thoroughly trained in the functioning of the alarm system, desired response to alarm condition, location of emergency equipment, tools and all available extinguishing equipment.

8.4.4 MCDA shall ensure that appropriate extractor fans are installed to extract any gas discharge / leakage.

8.4.5 The fire protection systems and hand-held fire extinguishers shall comply with NFPA-75.

8.4.6 Data center shall at all times have fire detection, extinguisher and suppression systems.

9.0 CABLING INFRASTRUCTURE

9.1 Cabling

9.1.1 Data centers shall use a minimum laser-optimized 50 microns single/multimode fiber for backbone cabling and with minimum 24 cores backbone cable.

9.1.2 Data centers shall use the highest capacity horizontal cabling media available as recommended by the current IEEE 802.3 standards to reduce the need for re-cabling in the future.

9.1.3 A data center shall be designed with separate racks and pathways for each media type. The power and communication cables shall be separated on different pathways or separated by a physical barrier.

9.1.4 Adequate space must be provided within and between racks, the cabinet and the pathways for better cable management, bend radius protection, and access.

9.1.5 A labeling scheme for all racks, power, cabinets, patch panels, patch cords and cables must be maintained as per ANSI/ITA-568 and ISO/IEC 11801

9.1.6 Branch circuits in data centers shall be in watertight flexible metal conduit. Feeder circuits to power distribution units and panels shall be installed in solid metal conduit. If the feeder circuits are not in solid metal conduit, they should be in watertight flexible metal conduit.

9.1.7 In data centers that use overhead cable trays, the normal separation distances provided by standard practices provides adequate separation. As specified in ANSI/TIA-569-B, a minimum of 300 mm (12 in) access headroom between the top of a tray or runway and the bottom of the tray or runway above shall be provided and maintained.

9.1.8 In data centers that employ access floor systems, adequate separation of power and telecommunications cabling should be accommodated through allocating separate aisles for power and telecommunications cabling in the main aisles. Where this is not possible, horizontal and vertical separation of power and telecommunications cables shall be provided.

9.1.9 In addition, vertical separation shall be provided by placing the telecommunications cabling in cable trays or baskets as far above the power cables as possible, preferably with the top of the cable tray or basket 20 mm (0.75 in) below the bottom of the access floor tile; in the equipment cabinet aisles, allocate separate aisles for power and telecommunications cabling as maybe applicable.

9.1.10 Cables shall not be left abandoned under the access floor or in overhead cable trays and shall be terminated on at least one end in the main distribution area or a horizontal distribution area, or removed.

9.1.11 Planning of overhead cable trays for telecommunications cabling should be coordinated with architects, mechanical engineers, and electrical engineers that are designing lighting, plumbing, air ducts, power, and fire protection systems. Lighting fixtures and sprinkler heads should be placed between cable trays, not directly above cable trays.

9.1.12 There should be redundancy in the data center network as per the tiered standard.

10.0 ENVIRONMENT

10.1 Physical

10.1.1 The room shall be protected from contaminants in accordance with ANSI/TIA-569-B.

10.1.2 The building design shall guard against excessive computer room vibration.

10.1.3 Floors, walls and ceiling shall be sealed, painted or constructed of a material to minimize dust.

10.1.4 Walls, floors and ceilings shall be light in color to enhance room lighting.

10.1.5 Floors shall have anti-static properties as per IEC 61000-4-2.

10.1.6 Sprinkler systems in computer rooms shall be pre-action systems, where risk of water ingress exists, a means of evacuating water from the space shall be provided (e.g. a floor drain). Any water and drain pipes that run through the room should be located away from and not directly above equipment in the room.

10.1.7 Equipment should be placed in cabinets and racks with "cold" air intake at the front of the cabinet or rack, and "hot" air exhaust out the back.

10.1.8 Blank panels should be installed in unused rack and cabinet spaces to improve the functioning of "hot" and "cold" aisles. Perforated access floor tiles should be located in the "cold" aisles rather than in the "hot" aisles to improve the functioning of the "hot" and "cold" aisles.

10.1.9 A minimum of 1 m (3 ft.) of front clearance shall be provided for installation of equipment. A front clearance of 1.2 m (4 ft.) is preferable to accommodate deeper equipment. A minimum of 0.6 m (2 ft.) of rear clearance shall be provided for service access at the ear of racks and cabinets. A rear clearance of 1 m (3 ft.) is preferable. Some equipment may require service clearances of greater than 1 m (3 ft.) as may be guided by equipment manufacturer requirements.

10.1.10 The data center should have an adequately sized storage room so that boxed equipment, spare air filters, spare floor tiles, spare cables, spare equipment, spare media, and spare paper can be stored outside the functional equipment rooms.

10.1.11 The data Centre building shall conform to all applicable national, state, and local codes.

10.1.12 Where the building is not dedicated to the data center, other tenant spaces should be non-industrial, International Building Code type 'B' offices, and non-intrusive to the data center. Avoid buildings with restaurants and cafeterias to minimize fire risk.

10.1.13 If the data center is to be on an upper floor of a multi-tenant building, then there shall be adequate shaft and conduit space for generator, security, telecommunications, and electrical conduits as well as supplemental HVAC, grounding conductors and cabling to antennas, as needed.

11.0 PHYSICAL SECURITY

11.0.1 The perimeter of the site shall be protected by appropriate intruder detection system and monitored by visible or infrared Closed-Circuit Television (CCTV) system. All common areas shall be monitored, including parking lots, loading docks, and building entrances.

11.0.2 Access to the site shall be secured by identification and authentication systems.

11.0.3 There shall be only one single point of entry. Consideration can be made for physical access control with anti-tailgating / anti-pass-back turn-style gate that permits only one person to pass at any one time after authentication.

12.0 INFORMATION SECURITY

12.0.1 The security of information at the data center should be in line with; information security standard, ISO 27001/2, Data Protection Act 2019 and the computer misuse and cybercrime Act 2018.

13.0 DATA CENTER INFRASTRUCTURE

13.0.1 MCDAs shall size and install Data Center infrastructure in line with the following considerations:

- Data Center Feasibility Study
- Site Identification Survey Results
- Square Footage for the Equipment rooms
- Kw /Power consumption per square footage

13.0.2 MCDAs shall carry out periodic capacity management exercise to cater for future growth and expansion.

14.0 DATA CENTER OPERATIONS

14.0.1 MCDA shall manage the data center in line with the operational standards.

14.0.2 MCDA shall be managed in line with the following standards:

- Cloud Computing Standard
- Information Security Standard
- ICT Human Capital and Workforce Development Standard
- IT Governance Standard
- ICT Network Standards

14.0.3 MCDA shall ensure that monitoring system are installed to check the health status of all the active and computing devices.

14.0.4 MCDA shall install a monitoring tool to check on the data center environment i.e., temperature, humidity and power.

14.0.5 MCDA shall install a real time monitoring system to check the Physical security of the data center.

14.0.6 Access to the data Centre shall require protective gears/garments to minimize dust and other risks

15.0 MAINTENANCE AND SLAS

15.0.1 All the components of the data center shall be tested periodically once the data center is in operation to ensure that they will continue to function properly. The records for the test shall always be kept.

15.0.2 Preventive and Corrective maintenance programs shall be identified to detect imminent or conditional failures for all data center equipment and service tags / maintenance schedule.

15.0.3 MCDA shall ensure Service Level Agreement (SLA) for infrastructure/ equipment installed in the Data Center are maintained with a minimum of data center services availability of 99.99% by the Supplier

APPENDIX I

Tiered Reliability Standard
Refer to the uptime Institute standard
Tier 1 = Non-redundant capacity components (single uplink and servers).
Tier 2 = Tier 1 + Redundant capacity components.
Tier 3 = Tier 1 + Tier 2 + Dual-powered equipment and multiple uplinks.
Tier 4 = Tier 1 + Tier 2 + Tier 3 + all components are fully fault-tolerant including uplinks, storage, chillers, HVAC systems, servers etc. Everything is dual-powered.

APPENDIX II: DATA CENTER SITE SELECTION CHECKLIST

1. Cover Page
2. Site Information Survey
3. Indoor facilities (Indoor Space Requirement Survey)
4. Outdoor Space Requirements Survey
5. Connectivity and Power – (Power and Fiber Access Survey)
6. Operations & Maintenance & Safety Survey Template

1. Cover Page

Data Center Site Selection Checklist

Site Location Name: _____

No	Name	Designation	Organization	Signature
1				
2				
3				
4				
5				
6				
7				
8				

2. SITE INFORMATION SURVEY

SITE INFORMATION SURVEY			
Data Center Information & Contacts	County Name		
	Site Name		
	Site Address		
	Site Contact (Name, phone number)		
		Tel	
	Site Contact 2 (Name, phone number)	**Tel**	
	Facility Owner/Landlord		
Site Coordinates	State the Site longitude		
	State the Site latitude		
Site Details	State the Site Altitude		
	Distance to major road/ trunk Road(km)		**<1km**
	Distance to Airport/ Railway(km)		**>1.6KM**
	Is there available Piped Water & Water Supplier?	☐ **Yes** ☐ **No**	
	What is the Proximity of the nearest water point or water source?		
	What is the Distance to the Fire Station(km)?		
	What is the Availability of Fire Trucks?		
	If Available what is the name of the Fire Station?		
	What is the name of the closest Residential Area?		
	What is the distance to the closest Residential Area(km)?		
	Are equipment that generate noise acceptable?	☐ **Yes** ☐ **No**	Generator operation >75dB
	Are there high voltage overhead and underground power transmission lines?	☐ **Yes** ☐ **No**	High, Low
	Are there lightning strikes in this area?	☐ **Yes** ☐ **No**	
	Does the area floods?	☐ **Yes** ☐ **No**	

SITE INFORMATION SURVEY			
Site Access	Is there 24/7 Accessibility to the site?	☐ Yes ☐ No	
	Are there any requirements to Access the Site?	☐ Yes ☐ No	
	If answer is Yes to above. Please state requirements.	☐ Yes ☐ No	
Remarks /Comments			
Site Photos			

3. INDOOR FACILITIES (INDOOR SPACE REQUIREMENT SURVEY)

Indoor Space Requirements Survey			
Indoor Space Requirements	Do we have any available indoor space on the ground floor?	☐ Yes ☐ No	
	What is the Survey Position for Generator installation?		
	What is the Building Elevation from the ground level?		>0.6m
	What is the storey height(m)?		>3.8m
	What is the Indoor space on ground floor (LxW)?	☐ Yes ☐ No	> 240SQM for 1 room or 2 rooms of 140 SQM + 100SQM
Building Design	What is the shape of the space available?		Measure the usable area of the data center. & Sketch
	What are the adjacent rooms used for?		State use i.e., office, hotel etc.
	Are there any Architectural & Structural As-Built drawings of the available room?	☐ Yes ☐ No	
	Is there a building construction Design Consultant?	☐ Yes ☐ No	
	Is there a building construction Design Consultant?	☐ Yes ☐ No	
	What are the Dimensions of Door? LxW		
	Are any changes to non-Structural components/walls allowed?	☐ Yes ☐ No	
	Are there any Electrical Mechanical and Plumbing As-Built drawings available?	☐ Yes ☐ No	
	What is the Installation position of the air conditioner outdoor units?		
	What is the Installation height difference between the air conditioner indoor and outdoor units (DX)		

Indoor Space Requirements Survey			
Office Space	Is there available office space for 4 staff?	☐ Yes ☐ No	<20SQM
	Are there washrooms?	☐ Yes ☐ No	
	If answer is Yes to the above state, the distance from available room to the washroom		<500m
	Are there any requirements to allow access to the building?	☐ Yes ☐ No	
	If answer is Yes to above. Please state requirements.		
Remarks / Comments			
Site Photos			

4. OUTDOOR SPACE REQUIREMENTS SURVEY

OUTDOOR SPACE REQUIREMENTS SURVEY			
Container Space	Is there enough space for constructing a Data Center site?		60*20m (>1200sqm)
	Elevation and Slope of the site		
Air Conditioner	Is there enough Space for installation of Outdoor air Conditioner Units?		
	Can you carry out trenching works within the available and surrounding space?		Copper Pipes from Data Hall
Generator & Transformer	Survey Position for Generators		
	Survey Position for Transformer (considering access)		
	Is there available Transformer capacity if applicable		
Remarks / Comments			
Site Sketch			
Site Photos			

5. CONNECTIVITY AND POWER – (POWER AND FIBER ACCESS SURVEY)

POWER AND FIBER ACCESS SURVEY			
Power Access	Is there KPLC power?	☐ Yes ☐ No	Medium Voltage (11KV or 33KV), 1 MVA
	What is he nearest Kenya Power Office?		
	Describe the nearest KPLC line?		Sketch
Fiber Access	Is there NOFBI Fiber connection to site?	☐ Yes ☐ No	
	Is there Kenya Power Fiber connection to site?	☐ Yes ☐ No	
	How many fiber cores available?		
	What's optical signal attenuation of the fiber per km?		
	Is Survey possible Fiber Route to the site for NOFBI?	☐ Yes ☐ No	Sketch
	Is Survey possible Fiber Route to the site for KPLC?	☐ Yes ☐ No	Sketch
Remarks /Comments			
Site Photos			

6. OPERATIONS & MAINTENANCE & SAFETY SURVEY TEMPLATE

OPERATIONS & MAINTENANCE & SAFETY SURVEY TEMPLATE			
Environmental Factors	What are the entry points to the facility?	☐ Yes ☐ No	Sketch
	Are there civil works / safeguards employed against disasters e.g., flooding from rainwater?		
		☐ Yes ☐ No	
	What are the access requirements for the facility?	☐ Yes ☐ No	
	Are there any security incidents that have occurred within / around the facility?		
	Name the neighboring facilities bordering the location?		
Operations & Maintenance	Name the closest Fueling station?		<10km
	State the distance in KM?		
	What is the cost (Ksh) of water per cubic meter?		
	Is water available in the area?	☐ Yes ☐ No	
	If answer is Yes to above, then What is the source of the water		Bowser, County Council or Private water source
	Are there any Construction approvals needed by Local authorities?	☐ Yes ☐ No	
	How much is the Land rent?		
	Are there any initial costs of acquiring the land?	☐ Yes ☐ No	
	How much are the monthly or yearly Lands rates?		
	Are there any future development plans for the land neighboring the available space	☐ Yes ☐ No	
	Are there any future development plans for the building?	☐ Yes ☐ No	
	Apart from the proposed available space mention any other space available?		

OPERATIONS & MAINTENANCE & SAFETY SURVEY TEMPLATE			
Business Opportunities	List SME's and companies neighboring the institution/ space		
	List any upcoming projects		
Remarks / Comments			
Site Photos	How much is the Land rent?		

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