



ICT-05-24
ICT Network Management Policy

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I. Acronyms and Abbreviations

4G	Fourth Generation
ICT SBU	Information Communication Technology Sub Business Unit
ICT Manager	Information Communication Technology Manager
VPN	Virtual Private Network
COBIT	Control Objectives for Information Technology
DHCP	Dynamic Host Configuration Protocol
DNS	Domain Name System
ICT	Information Communication Technology
ISO	International Standards Organization
IP	Internet Protocol
IETF	Internet Engineering Task Force
MAC	Media Access Control
RFC	Request for Comment
SITA	State information Technology Agency
VLAN	Virtual Local Area Network
VOIP	Voice over Internet Protocol

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II. Definitions

Active Directory: Electronic database that stores all network information about a Microsoft network infrastructure.

Appliance Device: An electronic device that performs a special function on a network, the software is encoded in the device itself to form a single computer system.

DHCP: Protocol for issuing hosts devices with IP addresses on a network.

DNS: Protocol in a network for resolving hostnames to IP addresses.

Default Gateway: Network device that routes network traffic from one network to the other.

Hostname: Name assigned to devices on a network that uniquely identifies the device.

IP: Network protocol used for routing network traffic from one location to another on network.

IP Address: Network address used to uniquely identify device on a network

MAC address: A unique address hard coded on a network interface card on a network device.

Network: Is a collection of computers and other hardware components interconnected by communication channels that allow sharing of resources and information.

Network interface card: A device attached to a network device used to connect the network device to the network.

Private IP Address: IP addresses that are not visible to the Internet, they are used by organization to assign host within an organization private network

RFC: A memorandum published by the Internet Engineering Task Force (IETF) describing methods, behaviours, research, or innovations applicable to the working of the Internet and Internet-connected systems.

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Router: Network device that routes network traffic from one network to the other.

Resource Record: Record in a DNS server that maps network device name in to an IP address.

Subnet: A small logical portion of a network that is assigned a network ID.

Static IP address: An IP address that is assigned manually

Three Factor Authentications: An approach to security authentication, which requires that the user of a system provide more than one form of verification in order to prove their identity and allow access to the system.

VLAN: A technology used to segment a network into smaller manageable pieces for performance and security purposes.

VOIP: Protocol used to transmit voice over data networks.

Wi-Fi: Wireless networking technology that uses radio waves to provide wireless high-speed Internet access.

WLAN: Group of computers that form a network based on radio transmissions rather than wired connections.

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1. Preamble

Information Communication Technologies are based on protocols and identification of both source and destination addresses for successful transmission of messages in various forms. The technological platforms and devices must be identifiable in order for the said transmissions to succeed, and thus the use of addresses – in this case the Internet Protocol Addresses.

Institutions over the world have the responsibility of ensuring not only the registration and management of their networks and electronic resources, but equally to secure transmission over their networks and the internet. Best management of IP Addresses influence security and supplements measures for ensuring compliance, security and control.

IP Address management requires proper allocation and administration of IP addresses throughout an organization. This policy must provides the necessary basis for management of Polokwane Municipality IP Addresses.

2. Purpose and objectives

The purpose of this policy is to establish standards and directives for the allocation, administration and usage of IP Addresses throughout Polokwane Municipality network infrastructure.

The objectives of this policy are:

- a) Ensure users and devices are allocated with consistent and secure access to a networks.
- b) To avoid the conflicting addresses.
- c) Ensure that electronic resources are available to the users.

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3. Scope of Application

This policy is applicable to those responsible for the management of Polokwane Municipality ICT Network Infrastructure and Security, including service providers. The policy further applies to all officials and other stakeholders. This policy covers IP Address Inventorying, Dynamic Address Service Management as well as IP Name Service Management.

4. Legal Framework

The following publications govern the execution of the Network Management Policy and were taken into consideration during the compilation of this policy:

- 4.1. Polokwane Municipality ICT Security Policy
- 4.2. ISO/IEC 27001
- 4.3. Information Security Forum (Code of good practice for Information Security)
- 4.4. Minimum Information Security Standards
- 4.7. International Standard for Risk Assessment
- 4.8. COBIT Framework
- 4.9. Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996)

5. Administration of the policy

ICT Manager is responsible for enforcing this policy and continuously ensuring monitoring and compliance.

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6. Policy Contents

All ICT network devices, computer equipment and systems approved by ICT management must be allocated an approved IP address to connect to Polokwane Municipality network infrastructure. The allocation and management of IP addresses must conform to the standards and directives laid throughout this policy and other Polokwane Municipality related policies.

6.1. General

6.1.1 Private IP addresses that conform to RFC (1918) standard allocated by SITA and Private IP addresses approved by ICT Manager should be used to allocate approved devices to connect to the network.

6.1.2 All IP address information should be documented on a spread sheet and must include, but not limited to the following:

- a) Subnet information
- b) VLAN assignments
- c) Device Static IP assignments
- d) Device related information
- e) VOIP Ranges
- f) DHCP Scopes
- g) DHCP exclusions
- h) DHCP reservations
- i) DHCP pools

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6.2. Configurations

6.2.1 DHCP Server

- a) DHCP server should be configured with IP address scopes, pools, exclusions, and reservations in order to assign IP addresses as required.
- b) All sites separated by routers should have own DHCP server or relay agent installed.
- c) DHCP servers should be authorized through Polokwane Municipality Active Directory.
- d) DHCP servers should be capable of dynamically updating DNS server resource records for every assigned IP address.
- e) DHCP server options should be configured with the Domain Name, Default gateway and DNS server IP address.

6.2.2 DNS Servers

- a) DNS servers should be configured on the network and must allow dynamic updates from DHCP servers.

6.2.3 IP Address Allocation

- a) All Polokwane Municipality Servers, Routers, Switches, Security devices and other network devices shall be assigned with static IP addresses.
- b) Client computers such as desktops (with exception to cashier computers), laptops, and smart phones shall be assigned dynamic addresses through DHCP servers.

6.2.4 Network Access Control

- a) Network access shall be controlled through Network Access Control system and no device that has not registered its MAC address shall be allowed to connect to the network.

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- b) Wireless Devices shall be authenticated with two factor authentication before access to Polokwane Municipality network is provided.

6.2.5 Administration and Change Management

- a) ICT Change management form should be completed and approved by ICT Manager prior to any IP address changes be made on the network except for DHCP assigned IP addresses.
- b) Excel spread sheet documentation should be updated to reflect changes made on any system on the network.
- c) The IP Address spread sheet documentation should be stored on a central shared folder accessible to only authorized ICT personnel.

6.2.6 Fail-Over and Availability

- a) IP address database and DHCP server database must be backed up as part of the normal Polokwane Municipality backup processes.
- b) DHCP servers should be configured in a fail-over configuration to provide redundancy in an event one DHCP server fails.

6.2.7 Tracking, Monitoring and Reporting

- a) An electronic system should also be implemented and be used to monitor and manage IP addresses throughout the Polokwane Municipality network.

7. Default

Non-compliance of this policy shall constitute violation of the policy and shall be treated in terms of the Polokwane Municipality disciplinary code and procedure policy.

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8. Inception Date

This policy comes into effect from the date of approval.

9. Policy Review

This policy shall be reviewed every three (3) years.

10. Enquiries

Enquiries about the policy should be directed to the ICT Manager.

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