Identifying an IP address

- Internet identifiers including information about how to reach a network location
  - (via the Internet routing system)

- IPv4: 32-bit* number. Written in Dotted Decimal Notation
  205.150.58.7
  4 billion different host addresses

- IPv6: 128-bit* number. Written in Hex Decimal Notation
  2001:0503:0C27:0000:0000:0000:0000:0000
  16 billion billion network addresses (/48)

* bit = binary digit
IP Addresses vs. Domain Names

- **IP Address [Identifier]**
  - “Computer-friendly”
  - Unique number identifies computer on Internet
  - Used for routing

- **DNS Name [Reference]**
  - “People-Friendly”
  - Maps host name to unique IP address
  - Not used for routing

- IP addresses are mandatory for Internet Protocol communications, while domain naming facilitates communication and accessibility of the Internet to the end users
IP addresses

- Necessary for Internet Routing
- A finite “Common Resource”
- Never “owned” by address users
  - Are not property
  - Cannot be bought, sold, traded...
  - Provided on non-permanent basis for use
  - Returned to provider when no longer required

- Not dependent upon Name System
The Number Registry System TODAY
Questions
The RIR in the IG Ecosystem - ICANN/ASO{-AC}/NRO{-NC}

Adiel A. Akplogan
CEO, AFRINIC.
2014
ICANN Ecosystem

- **ICANN Staff**
  - President and CEO

- **ASO**
  - Regional Internet Registries
    - ARIN
    - RIPE NCC
    - LACNIC
    - APNIC
    - AFRINIC

- **GNSO**
  - gTLD Registries and Registrars
  - Intellectual Property
  - ISPs
  - Businesses
  - Universities
  - Consumers

- **CCNSO**
  - ccTLD registries (e.g., .us, .uk, .au, .it, .be, .nl, etc.)

- **Nominating Committee**
  - 17 voting delegates + 5 non-voting delegates

- **Root Server System Advisory Committee (RSAC)**
- **Security & Stability Advisory Committee (SSAC)**
- **At Large Advisory Committee (ALAC)**

- Governmental Advisory Committee (GAC)
- Technical Liaison Group (TLG)
What is the ASO

• **Address Supporting Organization**
  – ASO MoU, 21 October 2004

• Recognized under the ICANN Bylaws to:
  – Oversee global number resource policy work
  – Appoint 2 Directors to the ICANN Board
  – Appoint representatives to serve on various ICANN bodies as needed: (e.g. NomCom)
  – Advise ICANN Board on number resource matters

• **ASO Address Council**
  – 15 individuals, 3 per RIR region
What is the NRO

- **Number Resource Organization**
  - Vehicle for RIR cooperation and representation
  - Lightweight, unincorporated association
  - NRO MoU, 24 Oct 2003

- **Why?**
  - Protect the unallocated Number Resource pool
  - Promote and protect the bottom-up policy development process
  - Act as a focal point for Internet community input into the RIR system
  - And: **Fulfill the role of the ICANN Address Supporting Organisation (ASO)**
NRO Structure

• Executive Committee
  – 1 appointed representative from each RIR, plus RIR board and staff observers
  – 3 officeholder positions, rotating annually
  – Decisions by unanimous EC agreement
  – 1 Board member as observer

• Secretariat
  – Rotating with NRO Secretary position
  – Executive Secretary: German Valdez

• Coordination Groups
  – Engineering (ECG), Communications (CCG), Public Affairs (PACG) and Registration Services Managers (RSM), IPv6 Coordination Group (IPv6CG)
NRO in 2014

• Executive committee
  – Adiel Akplogan (AFRINIC) – Chair
  – Axel Pawlik (RIPE-NCC) – Secretary
  – Ernesto Majo (LACNIC) – Treasurer
  – APNIC: Paul Wilson
  – ARIN: John Curran

• Executive Secretariat
  – German Valdez
ASO/NRO and Policy Development

Regional Communities

- AfriNIC
- APNIC
- ARIN
- LACNIC
- RIPE NCC

Facilitators

Policy makers

Regional policy

Global Policy

ASO-AC

NRO-NC

ICANN IANA
Global Internet Number Resource policy is developed through a bottom-up open and inclusive approach. Beginning in geographic regions, issues are raised through the Regional Internet Registry communities in the Number Resource Organization (NRO) and brought into the Address Supporting Organization (ASO). Global policies are forwarded to the ICANN Board of Directors and upon ratification, new policy is implemented through the Internet Assigned Numbers Authority (IANA) working cooperatively with the Regional Internet Registries (RIRs) and their constituencies in the respective regions.

The Internet ecosystem consists of a collaborative network of organizations responsible for standardization, coordination, administration, and day-to-day management in the Internet sphere including the IETF, ICANN, the IANA function, the RIRs, governments, NGOs, and many others. Each organization has a specific role and provides fundamental value to the overall functioning of the Internet.

The NRO represents the 5 RIRs collectively, and established the ASO by agreement with ICANN.

The ASO acts within the ICANN framework to oversee the policy development process for global Internet Number Resource policy.

The ASO appoints members to the ICANN Board, the ICANN Review Team, the ICOMCOM and other ICANN entities.

Global Internet Number Resource policies are implemented by ICANN through the IANA function.

Disclaimer: This graphic is a living document, built for illustrative purposes only and is not intended to be a definitive guide.
Questions
Before AFRINIC
Why AFRINIC

• Need for a registry to address IPN resources needs in an homogenous manner.
• Provide “proximity” service to Local Operators.
• Provide an environment to define Policies that are more relevant to the local realities.
• Increase training and awareness in the region on Internet IP technology
Highlight of New Bylaws (2013)

• Reduce Board size from 13 to 9 with three non-regional
• Membership Types
  – Registered Members (Board)
  – Resources Members (LIR/End-Users)
  – Associate Members (Others)
• Introduction of a formal General Member Meeting once a year
• Separate Nomination committee from Election Committee
• Formalisation of CoE in the Bylaws
• Introduce: e-voting and emergency Policy decision
Organisation Structure

Community/Members [LIRs / End Users / Associate Members]

CEO

AfriNIC Staff
Total 40
From 12 Countries

AfGWG

Council of Elders

Remuneration and Compensation
Nomination Committee
Finance
Audit

Independents

West Africa
North Africa
Central Africa
East Africa
Southern Africa
Indian Ocean
Values


1. Neutrality
2. Consistency
3. Impartiality
ACTIVITIES

**Internet Numbers Registry function**
- Manage IPv4 & IPv6
- Manage ASN (2 and 4 byte)
- Manage rDNS tree for IP prefixes in use by African Operators
- Provide a Public WHOIS
- Contribute to IP address Management Global Policy development

**Other Services to the community**
- Biannual Internet Protocol meeting: 20 so far in 1 countries
- Internet Infrastructure reinforcement development in Africa:
  - IXP
  - DNS Root Server copy
  - Anycast service to support ccTLDs in Africa
  - Support to academic Networks

**Training**: more than 150 training sessions in 45 countries around Africa since 2005.

Setup in 2004 and Headquartered in Mauritius. Employ 34 Staff today.
Number Management Chain

IANA
Internet Assigned Numbers Authority

Manages Central Pool
0/0, 2000::/3,

Regional Internet Registries (/8, /12)
- AfriNIC
- APNIC
- ARIN
- LACNIC
- RIPE NCC

Final users (/24, /23, ...)
- LIR
- End Users
- ...

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NR Management Principle

• Policy Objectives
  – Conservation
  – Aggregation
  – Uniqueness

• Administrative Objectives
  – Neutrality
  – Consistency
  – Impartiality
NR Management Policies

Regional Communities

Policy makers

Facilitators

{ Global Policy }

{ Regional policy }

AfriNIC

APNIC

ARIN

LACNIC

RIPE NCC

ASO

NRO

ICANN

{IANA}
IP Address Allocation Process

Need Address

Meet Criteria? YES

NO

Go to ISP

Apply

Initial Application? YES

NO

Registration Service Agreement

Receive Resource

Community Establishes Criteria Through Policy Development Process

Where are we going

• 15% Internet penetration in Africa to 60% penetration by 2020 with mobile as key user device & multitude of online apps (including clouding).

1. From the management of scarce number resources to accurate & reliable Network Information Centre

2. Internet Protocol Knowledge Centre
Questions
IANA Oversight Transition

Adiel A. Akplogan
CEO, AFRINIC.
2014
Process & Timeline

- **Regional Consultations**: ARIN, LACNIC, RIPE-NCC, APNIC, AFRINIC

- **CWG**: Cross Community Working Group (CWG) to Develop a Stewardship Transition Proposal on Global Naming Registry Functions of IANA

- **CRISP**: Consolidated RIR IANA Stewardship Proposal Team

- **IETF**: IANAPLAN Working Group formed to develop a Stewardship Transition proposal for protocol parameters registries of IANA

- **Process & Timeline**
  - Dec 2014
  - 15-Jan 2015
AFRINIC Region

- First round Table in Djibouti
  - **Mailing list:** ianaoversight@afrinic.net
  - **Dedicate web repository:**
    http://afrinic.net/en/community/iana-oversight-transition

- **CRISP** Team from AFRINIC region:
  1. Alan P. Barrett
  2. Mwenda Kivuva
  3. Ernest Byaruhanga (staff)

- Survey to collect input from our community on guiding principles
Questions