Phase 2: Deployment of IPv6 in African Countries

Training and Capacity Building Report:

Client: African Telecommunications Union (ATU)

Consultant: Masterspace Solution

Date of Submission: December 2025

Table of Contents

List of Acronyms

ATU: African Telecommunications Union

IETF: Internet Engineering Task Force

ICANN: Internet Corporation for Assigned Names and Numbers

AFRINIC: African Network Information Centre

INR: Internet Number Resources

ISP: Internet Service Provider

SLAAC: Stateless Address Autoconfiguration

DHCPv6: Dynamic Host Configuration Protocol for IPv6

NAT64: Network Address Translation from IPv6 to IPv4

DNS64: DNS server for IPv6 networks that provides synthesized A records for IPv4-only hosts

DS-Lite: Dual-Stack Lite

RFC: Request for Comments

IS-IS: Intermediate System to Intermediate System

OSPFv3: Open Shortest Path First version 3

BGP: Border Gateway Protocol

ICT: Information and Communication Technology

SIG: Special Interest Group

IoT: Internet of Things

5G: 5th Generation Wireless Systems

Executive Summary

This report summarizes the five-day training and capacity-building program conducted as Phase 2 which is part of "Promoting the Transitioning to IPv6 in Africa" consultancy project for the African Telecommunications Union (ATU). The workshop, held between November 24th-November 28th 2025, successfully trained 52 experts from 26 ATU member states, aiming to bridge the critical knowledge gap hindering IPv6 adoption. The program employed a blended methodology, combining theoretical policy workshops for decision-makers with intensive, hands-on technical labs for engineers. Key topics included IPv6 policy development, government and ISP roadmaps, advanced routing protocols (IS-IS, OSPFv3, BGP), and practical transition mechanisms like NAT64/DNS64 and DS-Lite. All training materials, lab guides, and configuration cheat-sheets were made available through a dedicated GitHub repository and shared drive to foster continuous learning and serve as a long-term resource. The program concluded with participants demonstrating significantly enhanced technical skills and a deeper understanding of the strategic imperatives for IPv6 adoption, fulfilling the core objectives of the capacity-building phase and creating an additional and new cohort of IPv6 champions and advocates across the continent.

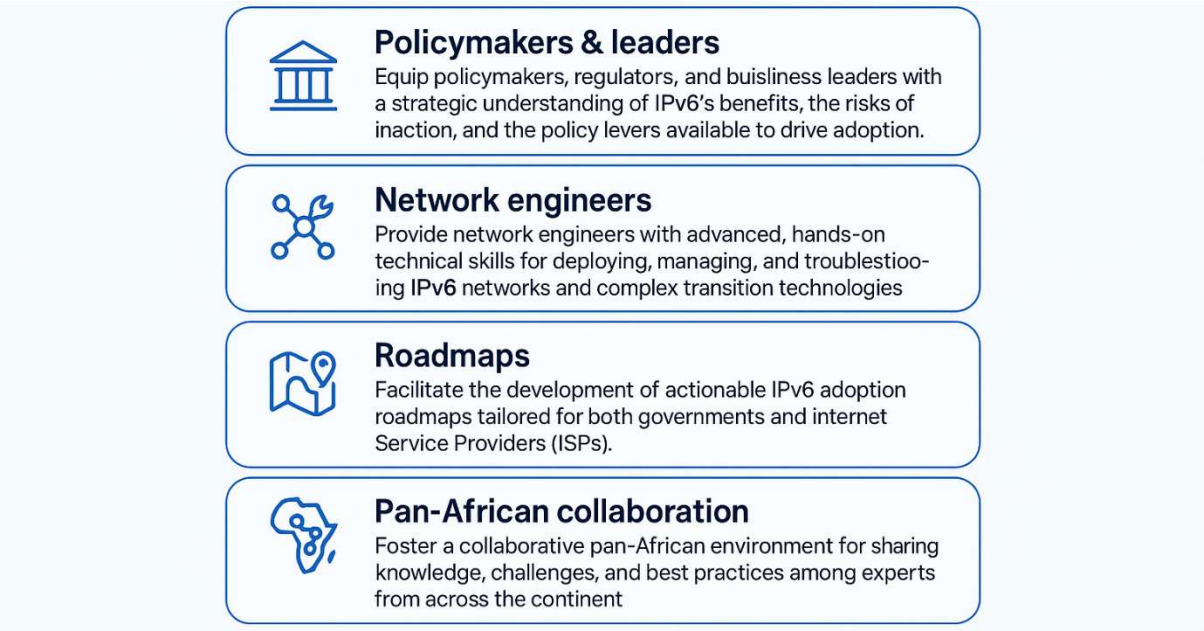
1 Introduction

1.1 Background and Project Context

This training program constitutes Phase 2 of the broader ATU consultancy aimed at accelerating IPv6 adoption across Africa. The urgency of this initiative is underscored by two critical factors: the official exhaustion of AFRINIC's IPv4 address pool in 2025 and the continent's lagging IPv6 adoption rate of a mere 5%, which is well below the global average of approximately 45%. This disparity presents a significant risk to Africa's future digital growth, innovation, and global connectivity. This workshop was designed specifically to address the knowledge and skills gap among key policymakers, regulators and technical personnel, providing them with the necessary competencies to plan, deploy, and manage the transition to IPv6 within their respective countries and organizations.

1.2 Training Program Objectives

The primary objectives of the training program were to:



- Equip policymakers, regulators, and business leaders with a strategic understanding of IPv6's benefits, the risks of inaction, and the policy levers available to drive adoption.
- Provide network engineers with advanced, hands-on technical skills for deploying, managing, and troubleshooting IPv6 networks and complex transition technologies.

* Facilitate the development of actionable IPv6 adoption roadmaps tailored for both governments and Internet Service Providers (ISPs).
* Foster a collaborative pan-African environment for sharing knowledge, challenges, and best practices among experts from across the continent.
* Certify a cohort of experts in IPv6 planning and implementation, creating a pool of regional champions and advocates to lead and support adoption efforts locally.

2 Training Program Overview

2.1 Target Audience

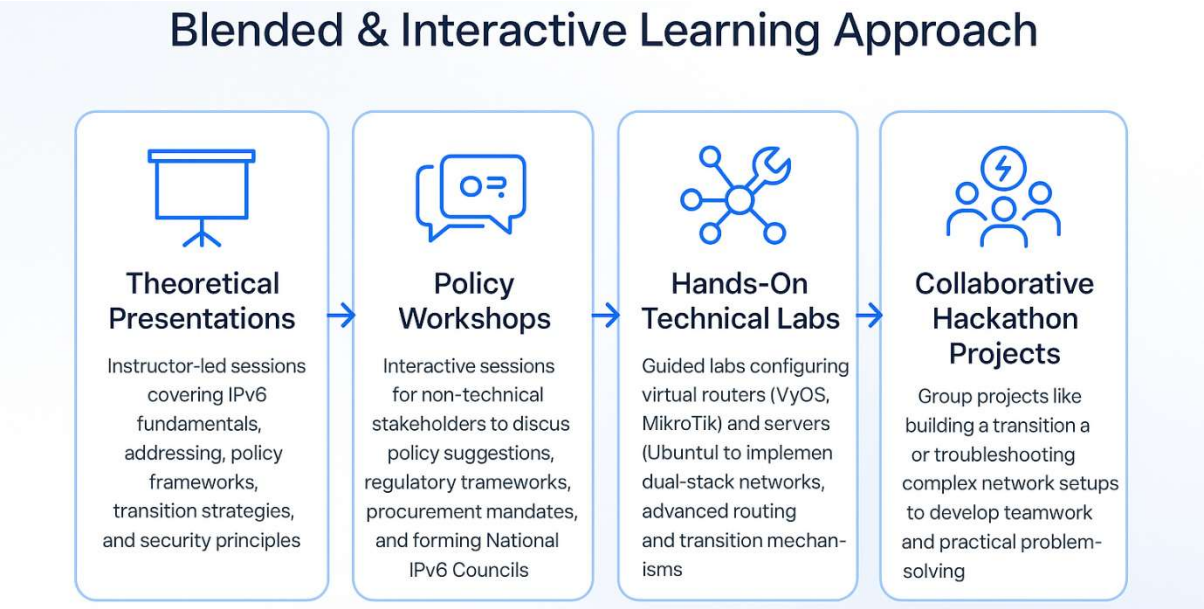
The workshop was attended by **52 experts from 26 ATU member states**, comprising a diverse group of stakeholders critical to the IPv6 transition ecosystem:

2.2 Training Dates and Duration

The intensive training program was conducted over a period of **five consecutive days** during the November-December 2025 timeframe, as outlined in the project's work plan.

2.3 Training Methodology

A blended and highly interactive learning approach was adopted to maximize engagement, knowledge retention, and practical application:



3 Curriculum and Content Covered

The five-day curriculum was meticulously structured to cater to both policy and technical tracks, with a progressive learning path from foundational knowledge to advanced implementation.

3.1 Day I: Foundational Concepts and Policy

- **Policy:** The roles of IETF, ICANN, and AFRINIC; the implications of IPv4 Exhaustion; and an overview of the INR Policy Development Process.
- **Technical:** IPv6 Address Types and Principles of IPv6 Addressing Planning.
- **Hands-On Lab:** Introduction to IPv6 Addressing Tools and basic network configuration.

3.2 Day II: IPv6 in Government and Core Principles

- **Policy:** IPv6 in Public Administration, the strategic importance of a National IPv6 Council, and engaging with hardware vendors on IPv6 readiness.
- **Technical:** IPv6 in modern Operating Systems (PC & Smart Devices).
- **Hands-On Lab:** Implementing IPv6 Transition Strategies, with a focus on SLAAC, DHCPv6, and IPv6 Mostly (RFC8925).

3.3 Day III: Business Case and Transition Labs

- **Policy:** Building the business case for IPv6 adoption, targeted at business leaders and financial decision-makers.
- **Hands-On Lab:** A deep dive into transition mechanisms, including setting up IPv6 Test Beds, lab environments, and implementing NAT64 (RFC6146), DNS64 (RFC6147), and DS-Lite (RFC6333).

3.4 Day IV: Advanced Routing and Security

- **Policy:** Formulating and discussing IPv6 Transition Policy Suggestions for governments and regulators.
- **Hands-On Lab:** This day was heavily focused on advanced technical skills, covering Protocol Hardening for IPv6 security and the configuration of advanced routing protocols (IS-IS, OSPFv3, and BGPv4) in a dual-stack environment.

3.5 Day V: Open Sessions and Strategic Discussions

* **Policy:** Open Policy Lightening Talks, providing a platform for participants to present and discuss policy challenges and solutions from their home countries.
* **Technical:** Open Technical Lightening Talks, allowing engineers to share IPv6 technical strategies and implementation experiences.

4 Hands-On Laboratory Environment and Resources

A key success factor for the workshop was the robust, accessible, and realistic hands-on lab environment that allowed participants to immediately apply theoretical knowledge.

4.1 Virtual Lab Infrastructure

A comprehensive virtual lab environment was established, enabling each group to work on a dedicated set of virtual network devices. This setup allowed for the simulation of complex topologies, including core telecom backbones and enterprise networks, without the need for physical hardware. The environment gave participants practical experience with industry-relevant platforms like VyOS, MikroTik RouterOS, and Ubuntu Linux.

4.2 Centralized GitHub Repository

A GitHub repository was created to serve as a single, persistent source of truth for all technical documentation and resources. This repository was a cornerstone of the training methodology and included:

* **Networking-Principles.md:** A comprehensive guide covering networking theory from beginner to expert levels.
* **Virtual-Lab-Setup-Guide.md:** Step-by-step instructions for setting up and accessing the lab environment.
* **Configuration-Cheatsheet.md:** A collection of practical configuration commands for VyOS and MikroTik, designed to save time and reduce common errors.
* **IPv6-Workshop-Guide.md:** A dedicated guide containing instructions for all IPv6 implementation exercises.
* **Test-Lab-Addresses.md:** Pre-defined IPv4 and IPv6 address plans for all lab exercises, ensuring consistency and adherence to best practices.

4.3 Key Lab Exercises and Projects

Participants successfully completed several complex hands-on projects that mirrored real-world deployment scenarios:

IS-IS Routing Configuration: As detailed in the "ISISLab" training module, participants configured a dual-stack network from scratch using the IS-IS routing protocol. This involved setting up multi-topology for IPv4/IPv6, configuring wide metrics, enabling authentication, and announcing prefixes correctly.

Stateful NAT64/DNS64 Deployment: A major capstone project involved building a complete NAT64/DNS64 solution to provide IPv4 internet access for an IPv6-only client network. This required configuring Jool on Ubuntu, BIND9 for DNS64, and complex static routing on VyOS and MikroTik routers. The project included a deep troubleshooting exercise where participants diagnosed and resolved 100% packet loss, as documented in the project's case study.

Transition Mechanism Implementation: Other labs provided hands-on experience with the practical setup and verification of DS-Lite and other tunneling strategies.

5 Key Outcomes and Evaluation

5.1 Achievement of Training Objectives

The program successfully met all its stated objectives. Participants in the technical track departed with tangible, demonstrable skills in configuring and managing complex IPv6 networks. Participants in the policy track left with a clear understanding of the strategic actions needed to drive national adoption. The certification of over 50 experts creates a significant and immediate boost to the continent's human resource capacity for IPv6.

5.2 Participant Projects and Outputs

The "hackathon" and project-based approach yielded practical, real-world outputs. The detailed report on the **Stateful NAT64/DNS64 Deployment** is a prime example, serving as a working template and a documented learning experience that participants can directly apply in their own networks. Other groups developed draft IPv6 addressing plans for national service providers and transition roadmaps for government agencies, demonstrating a clear application of the workshop's content.

5.3 Qualitative Participant Feedback

End-of-course feedback was overwhelmingly positive (*Appendix D*). Participants consistently praised the blended approach, highlighting the value of the extensive hands-on labs in solidifying complex theoretical concepts. The GitHub repository was frequently cited as an invaluable and

enduring resource that they would continue to use long after the workshop. The opportunity to network and collaborate with peers from different countries was also highlighted as a major benefit, fostering a sense of a unified African networking community.

6 National IPv6 Transition Roadmap

6.1 Phase I: Preparing for the IPv6 Transition

This initial phase focuses on preparing the local ecosystem to adopt IPv6 by achieving the following objectives:

* **Training and Workforce Preparation:** Establishing a specialized training partnership to prepare the local workforce with IPv6 knowledge.
* **Resource Allocation:** Requesting additional IP address allocations for both IPv4 and IPv6 from AFRINIC to support current and future needs.
* **Community Engagement:** Ensuring adequate participation in local, regional, and global IPv6 workshops, conferences, and summit-related activities.
* **Testing and Validation:** Establishing pilot tests for hardware and software before deployment in a natural production environment.

6.2 Phase II: Implementation of Dual Stack Operation

This phase focuses on the technical implementation of IPv6 alongside the existing IPv4 infrastructure.

* **Strategy Approval:** Analyse and approve the appropriate dual-stack strategy for each stakeholder before implementing the infrastructure.
* **Core Network Enablement:** Enable dual-stack operation in the infrastructure networks of Internet Service Providers (ISPs), Internet Exchange Points (IXPs), and all other relevant stakeholders.
* **Service Preparation:** Preparing essential network services like Dynamic Host Configuration Protocol (DHCP) Server, Domain Name Service (DNS), and Web servers to support Dual-Stack operation.
* **Commercial Rollout:** Enable commercial IPv6 Internet service for customers.

6.3 Phase III: Monitor and Make Changes to IPv6 Strategy

This final phase involves continuous monitoring and adjustment to ensure the transition goals are met.

* **Monitoring:** Monitor the dual-stack IPv6 implementation and make changes to policy, strategy, and timelines to achieve the national Internet penetration target.
* **Service and Application Support:** Ensure that the targeted network services and applications are successfully supporting IPv6.

- **Target Achievement:** Ensure that the targeted Internet penetration rate is achieved within the specified timeframe.
- **Strategic Adjustments:** Make changes to the implementation strategy if the targets have not been achieved.

6.4 High Level Implementation Guidelines for the Roadmap

6.4.1 Core Policy Principles

These principles form the foundation of the transition plan:

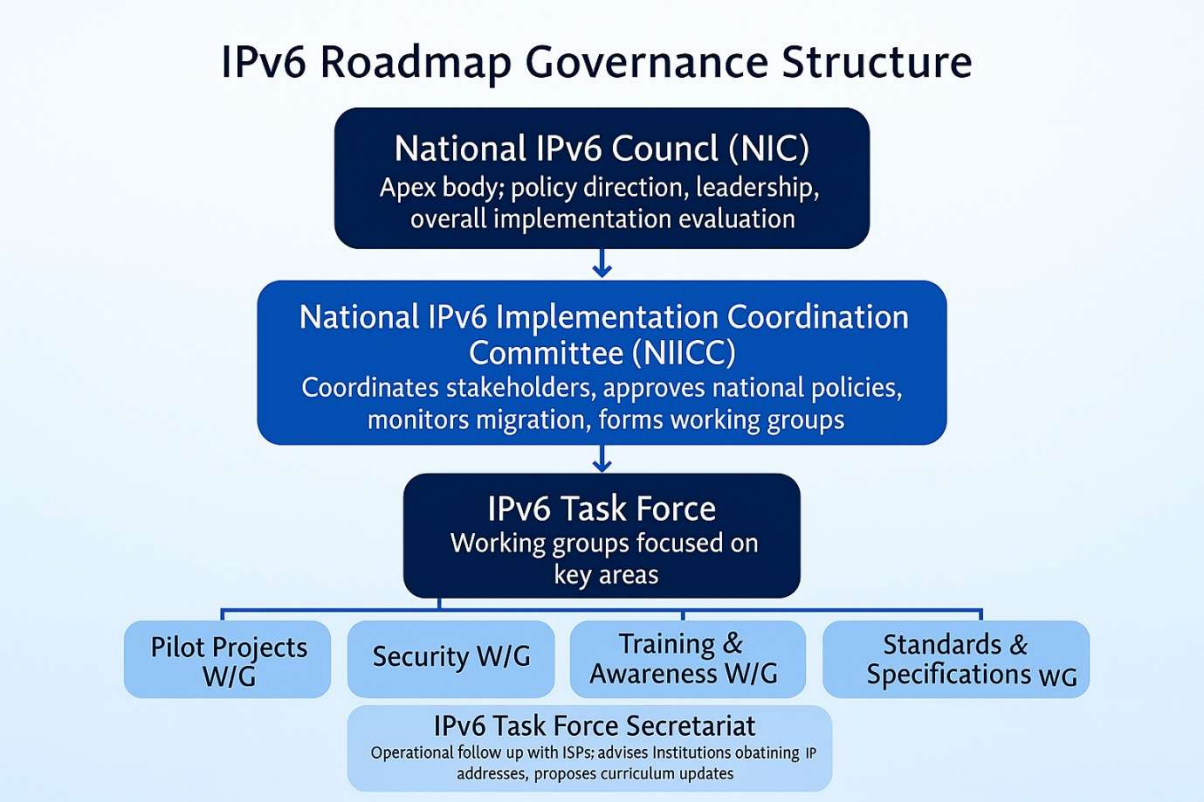
- **Mandate IPv6 Support:** The policy should mandate that all new IT procurement and services are IPv6-capable and support operating in an IPv6-only environment.
- **Establish Milestones:** Define clear, time-bound milestones for the transition.
- **Phase Out IPv4:** State the strategic intent to eventually phase out the use of IPv4 for all systems.
- **Security Integration:** Ensure that security plans, assessments, and monitoring processes address the use of IPv6 from the outset.

6.4.2 Implementation Phases

Phase	Task
Phase 1: Initiation and Planning	**Form an Integrated Task Force:** Establish a team with members from acquisition, policy, and technical departments to govern the effort. **Gather Requirements:** Collect technical and business requirements across all technology pillars (networking, systems, applications, etc.). **Develop an Addressing Plan:** Plan addressing based on the total number of sites, reserving blocks for infrastructure, and using consistent subnet prefix sizes (e.g., a minimum of a /48 for each site). **Acquire Resources:** Obtain necessary IPv6 address blocks from a Regional Internet Registry (AFRINIC).
Phase 2: Assessment and Design	**Assess Current Readiness:** Perform an automated discovery to audit all current devices and software for IPv6 capability. **Identify Gaps:** Verify which hardware and software can be upgraded and plan for the replacement of non-compliant devices. **Conduct Pilots:** Identify opportunities for IPv6 pilots and complete at least one operational pilot of an IPv6-only system to gain experience and identify lessons learned. **Design Architecture:** Design the network architecture to support native IPv6 operation, considering dual-stack (IPv4/IPv6) as a transition mechanism.

Phase 3: Implementation and Deployment	**Implement in Phases:** Deploy the solution in a phased manner to minimize disruption to existing operations. **Upgrade Public Services:** Prioritize the upgrade of public-facing servers and services (web, email, DNS, etc.) to use native IPv6. **Enable Internal Systems:** Gradually enable IPv6 on internal client applications, servers, and supporting enterprise networks. **Leverage Vendor Support:** Work with procurement authorities to ensure vendors provide products and services that can operate in an IPv6-only environment.
Phase 4: Operations, Maintenance, and Security	**Monitor Compliance:** Continuously monitor and manage compliance with organizational guidance and industry best practices. **Address Security:** Ensure all security services (firewalls, identity management, logging) are fully functional in an IPv6 environment. Block unmanaged IPv6 traffic if necessary during the early stages to prevent security vulnerabilities. **Provide Training:** Offer capacity building and specialized training for network engineers and IT staff. **Conduct Audits:** Periodically perform conformance audits to measure the level of IPv6 implementation across the network.

6.4.3 Governance Structure for the Roadmap



7 Conclusion and Recommendations

7.1 Summary of Training Success

The training and capacity-building program was a resounding success. It has created a strong, knowledgeable, and certified cohort of over 50 IPv6-aware experts across Africa. By providing both high-level strategic guidance for policymakers and deep technical expertise for engineers, the workshop has laid a critical foundation for accelerating the continent's long-overdue transition to IPv6, directly addressing the core goals of the ATU consultancy.

7.2 Recommendations for Future Capacity Building

To build on this momentum and ensure a lasting impact, the following actions are recommended:

Establish a Community of Practice: Create a dedicated online forum or mailing list for the workshop alumni. This will enable them to continue sharing knowledge, asking for peer support, and collaborating on implementation challenges long after the training.

Promote National Task Forces: Actively encourage and support participants to use the knowledge and materials from the workshop to establish or reinvigorate National IPv6 Task Forces in their respective countries, a key recommendation from the training content.

Develop Advanced Workshops: Plan future, more specialized workshops on emerging topics such as advanced IPv6 security, network automation for dual-stack environments, and the role of IPv6 in 5G and IoT deployments.

Maintain and Expand the GitHub Repository: Continue to update the central repository with new guides, best practices, and configuration examples based on feedback and new developments, ensuring it remains a living, valuable resource for the entire African networking community.

8 Appendices

8.1 Appendix A: Detailed Training Timetable

Day	Time Slot	Session Title	Track / Type
Day I	09:00 - 10:30	The IETF, ICANN and AFRINIC	Policy Workshop
	10:30 - 10:45	Morning TEA	Break
	10:45 - 12:00	IPv4 Exhaustion and the Implications	Policy Workshop
	12:00 - 13:00	IPv6 in Africa since 2010	Policy Workshop
	13:00 - 14:00	LUNCH BREAK	Break
	14:00 - 15:30	IPv6 Address Types	IPv6 Principles
	15:30 - 15:45	Evening TEA	Break
	15:45 - 16:45	IPv6 Addressing Planning / IPv6 Addressing Tools	IPv6 Principles / Hands-On Lab
Day II	08:30 - 10:30	IPv6 in Public Administration (Govt)	Policy Workshop
	10:30 - 10:45	Morning TEA	Break
	10:45 - 12:00	National IPv6 Council	Policy Workshop
	12:00 - 13:00	IPv6 and the Vendors (Hardware)	Policy Workshop
	13:00 - 14:00	LUNCH	Break
	14:00 - 15:30	IPv6 in Operating Systems (PC & Smart Devices)	IPv6 Principles
	15:30 - 15:45	Evening TEA	Break
	15:45 - 16:45	IPv6 Transition Strategies	SLAAC and DHCPv6
Day III	08:30 - 10:30	IPv6 for Business Leaders	Policy Workshop
	10:30 - 10:45	Morning TEA	Break
	10:45 - 12:00	IPv6 Test Beds	IPv6 Transition Hands-On Lab
	12:00 - 13:00	IPv6 Labs Environment	IPv6 Transition Hands-On Lab
	13:00 - 14:00	LUNCH	Break
	14:00 - 15:30	IPv6 Transition Strategies	NAT64 RFC6146
	15:30 - 15:45	Evening TEA	Break
	15:45 - 16:45	IPv6 Transition Strategies	DNS64 RFC6147 / DS-Lite RFC6333
Day IV	08:30 - 10:30	IPv6 Transition Policy Suggestion	Policy Workshop
	10:30 - 10:45	Morning TEA	Break
	10:45 - 12:00	Protocol Hardening	IPv6 Security
	12:00 - 13:00	Routing Protocols	ISIS, OSPFv3 & BGPv4
	13:00 - 14:00	LUNCH	Break
	14:00 - 16:45	Routing Protocols	ISIS, OSPFv3 & BGPv4 (Continued)
Day V	08:30 - 10:30	Open Policy Lightening Talks	SIG Policy Session
	10:30 - 10:45	Morning TEA	Break
	10:45 - 13:00	Open Technical Lightening Talks	SIG IPv6 Technical Strategies
	13:00 - 14:00	LUNCH	Break

8.2 Appendix B: Link to Training Materials Repository

All technical guides, lab manuals, configuration files, and presentations used during the workshop are permanently available at the following public GitHub repository and Google Drive:

→ Training Materials: https://github.com/Bengo-Hub/networking-cheatsheet.git

→ Lab Manuals: https://drive.google.com/drive/folders/1-1lZsx2JhJrnNHmwePhJumStlFjv8OA7

8.3 Appendix C: Qualitative Feedback

8.3.1 English Responses:

Part 1: Participant Information (Optional)

Organization

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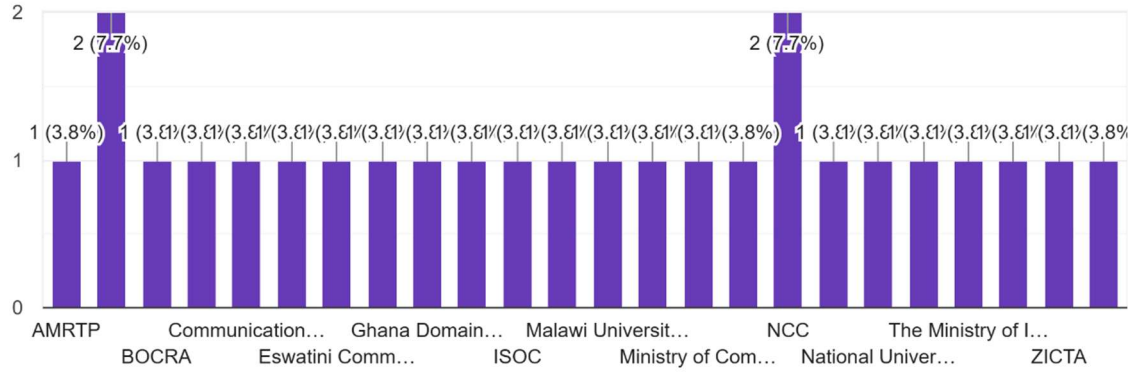

Country

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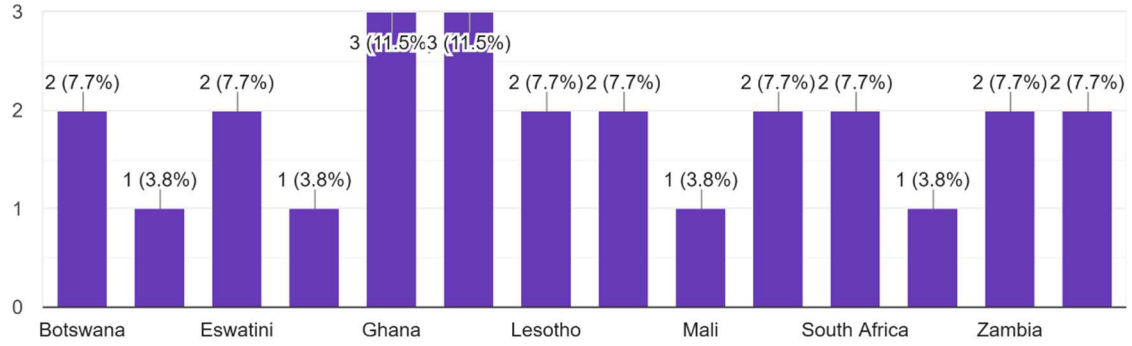

Role/Job Title

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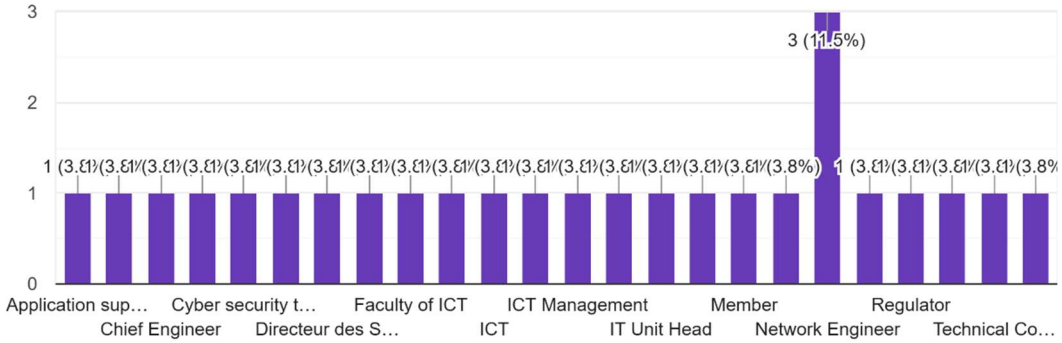

Part 2: Overall Workshop Evaluation

Overall satisfaction with the workshop

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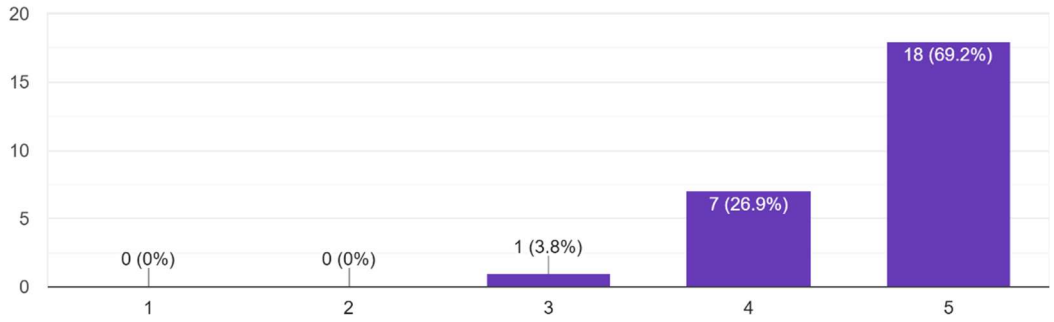

The workshop objectives were clearly defined and met

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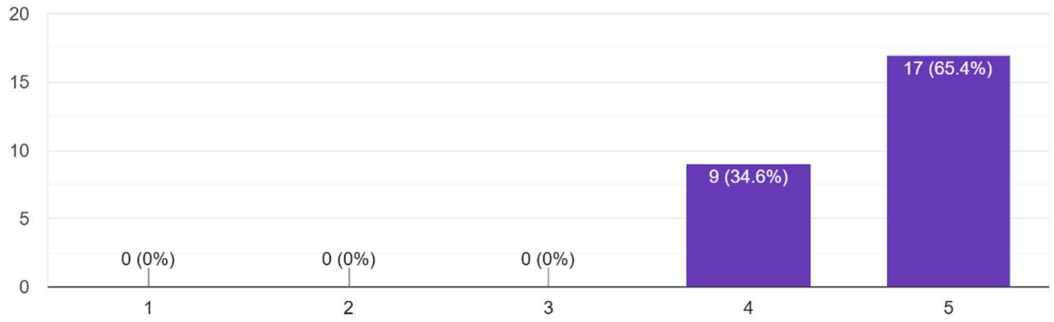

Relevance of the workshop content to your professional role

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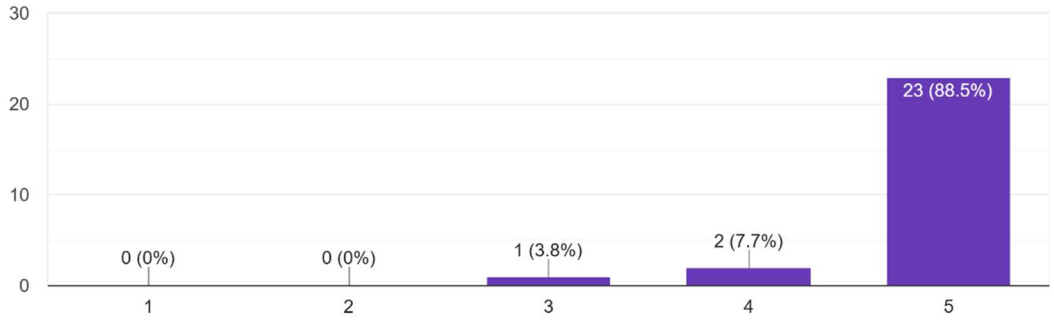

Balance between policy/theory and practical/hands-on sessions

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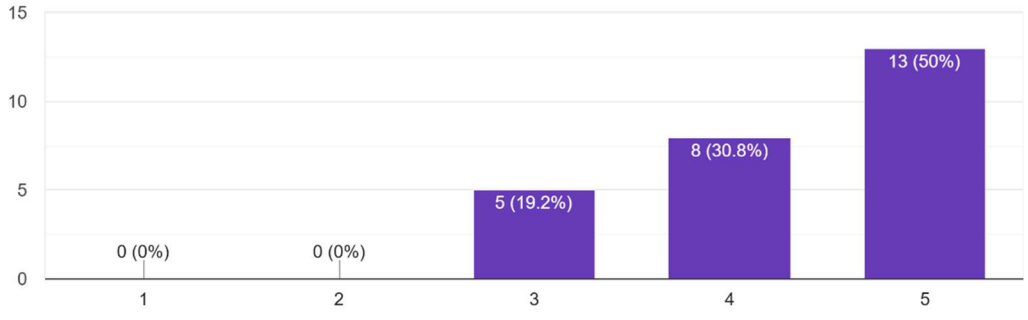

The duration of the workshop was appropriate

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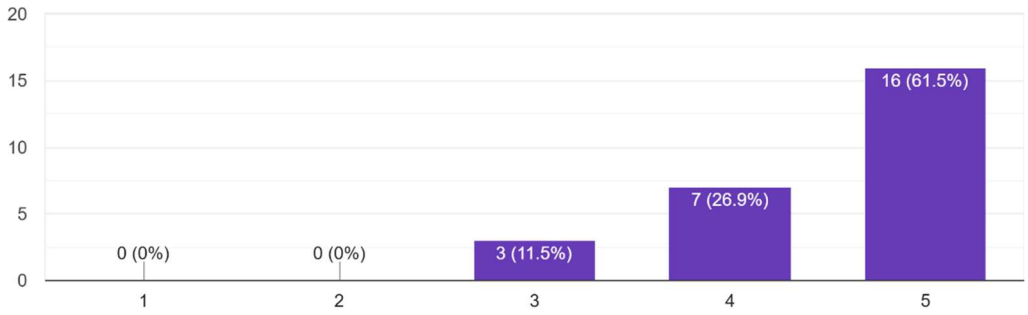

The pacing and schedule of the sessions were appropriate

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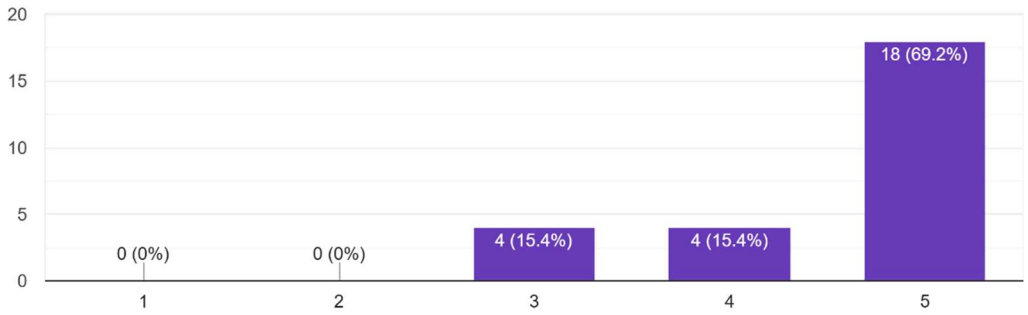

Part 3: Policy, Strategy, and Business Sessions

Understanding IPv4 Exhaustion and the Urgency for IPv6

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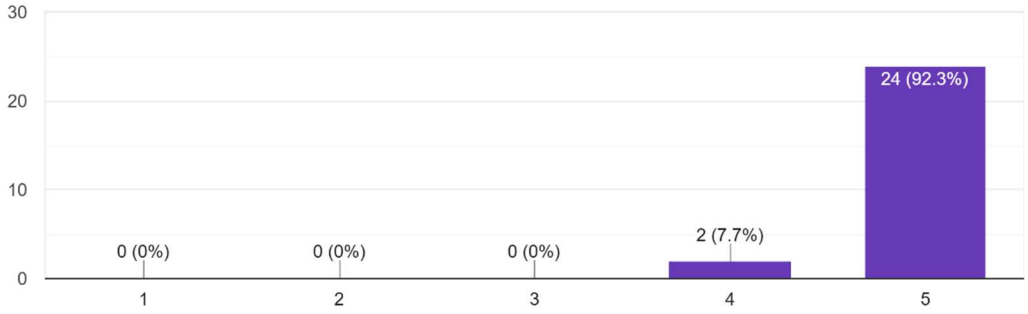

The Role of Policymakers and Government in IPv6 Adoption

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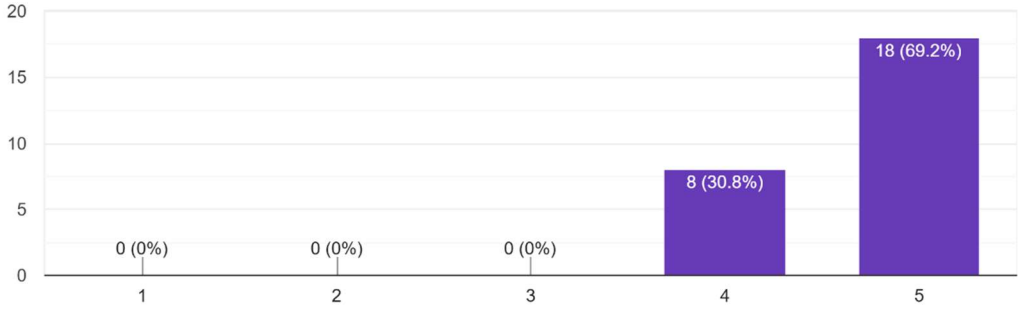

Challenges of IPv6 Adoption (Cost, Legacy Infrastructure, etc.)

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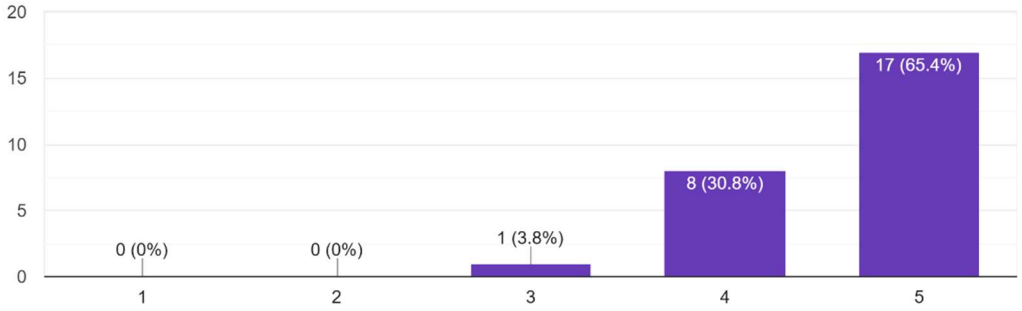

Benefits of Deploying IPv6 (Security, Scalability, etc.)

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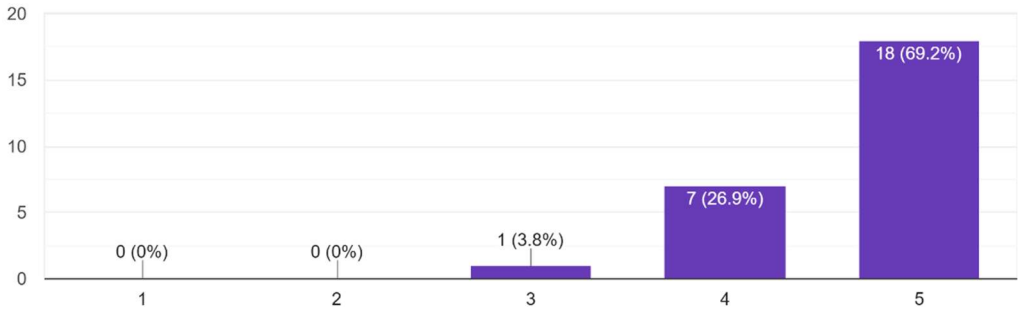

Developing Government & ISP IPv6 Roadmaps

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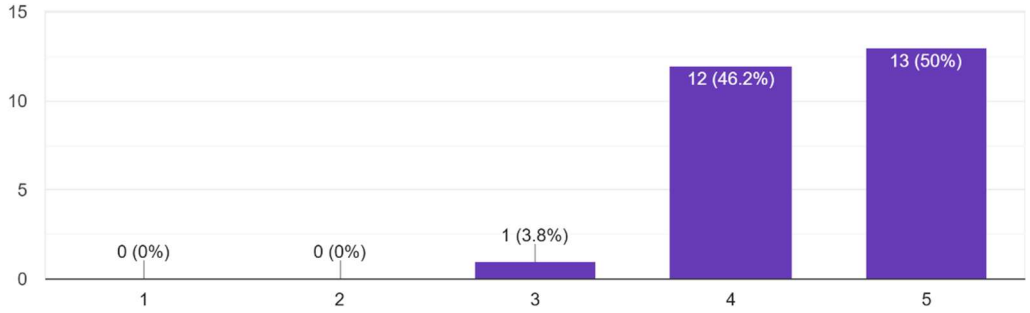

Guidelines for Establishing National IPv6 Task Forces/Councils

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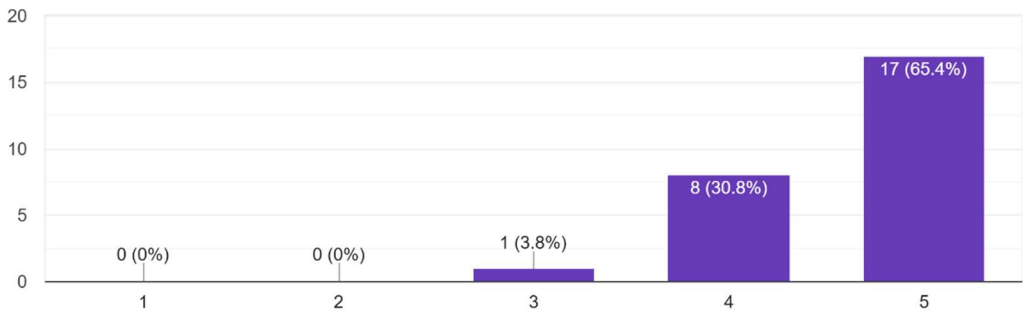

Part 4: Technical Hands-On Labs & Workshops

Introduction to the Virtual Lab Environment (VyOS, MikroTik, etc.)

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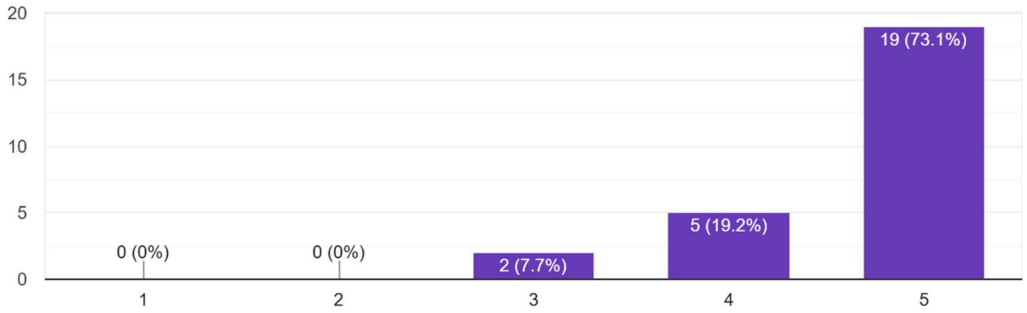

Basic IPv4/IPv6 Addressing and Interface Configuration

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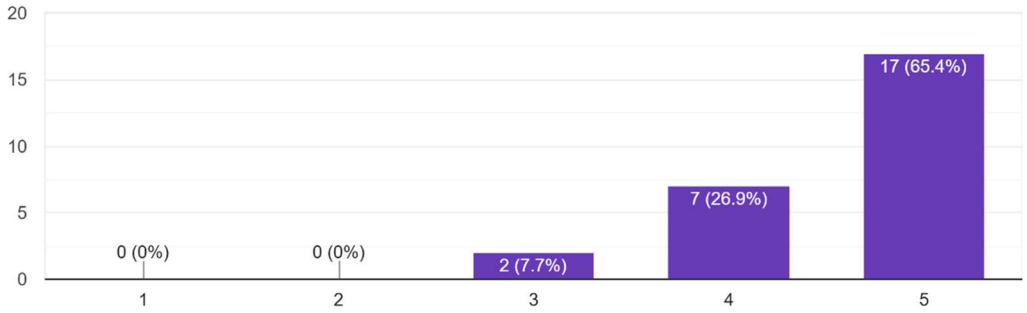

IS-IS Routing Protocol Configuration for IPv6

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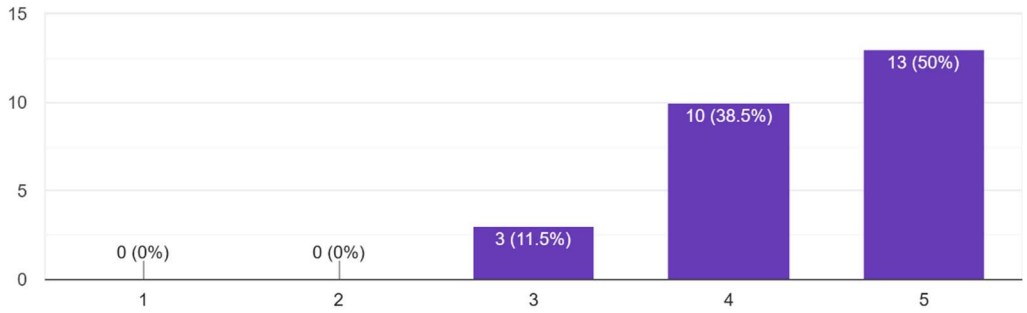

Understanding IPv6 Transition Mechanisms (Dual-Stack, Tunneling)

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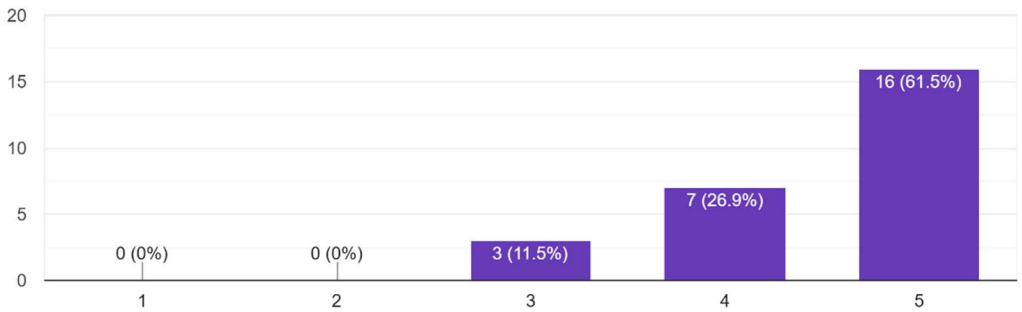

Stateful NAT64/DNS64 Deployment Lab (using Jool and BIND9)

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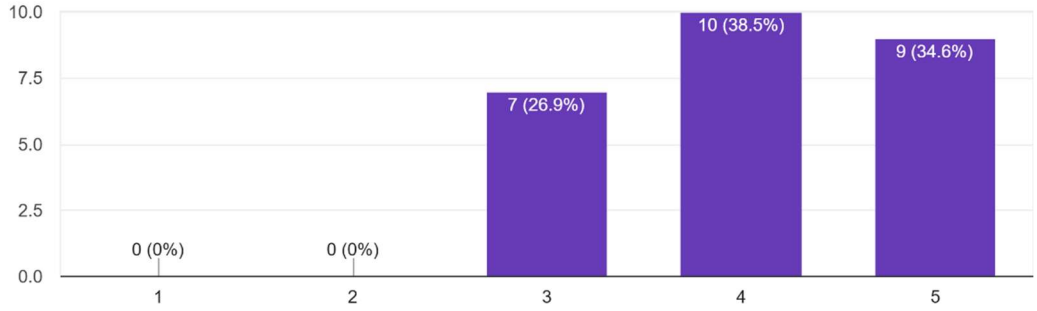

Troubleshooting Exercises (e.g., Packet Loss in NAT46)

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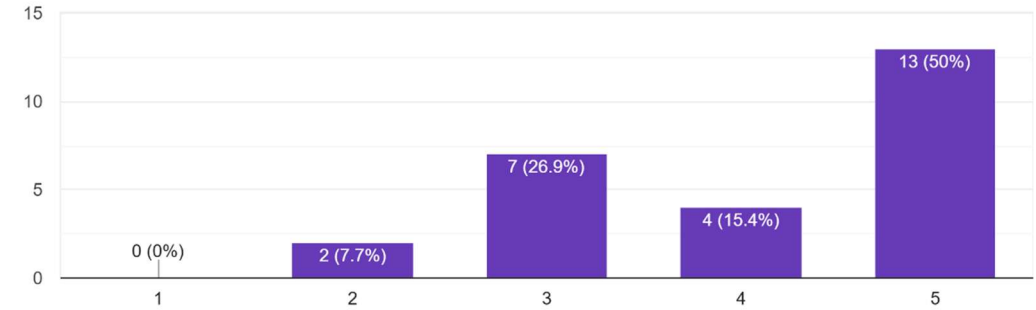
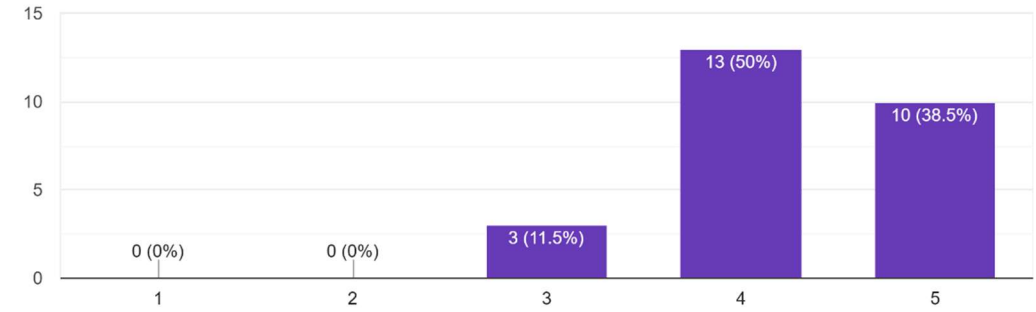


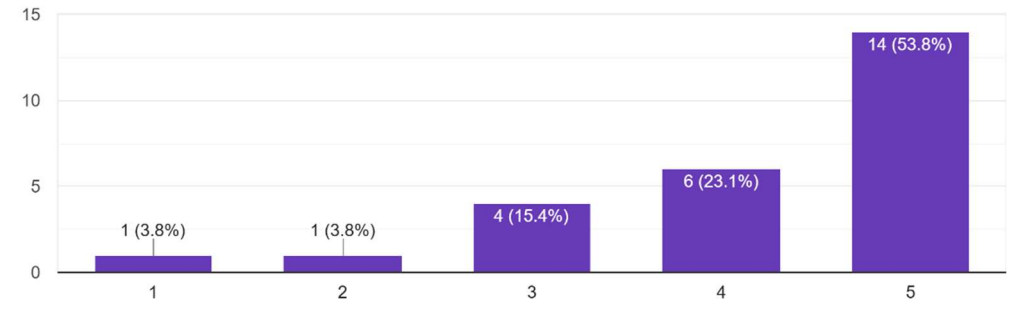
Clarity of the hands-on lab instructions and guides

26 responses



The collaborative group work ("Hackathon" style) was effective

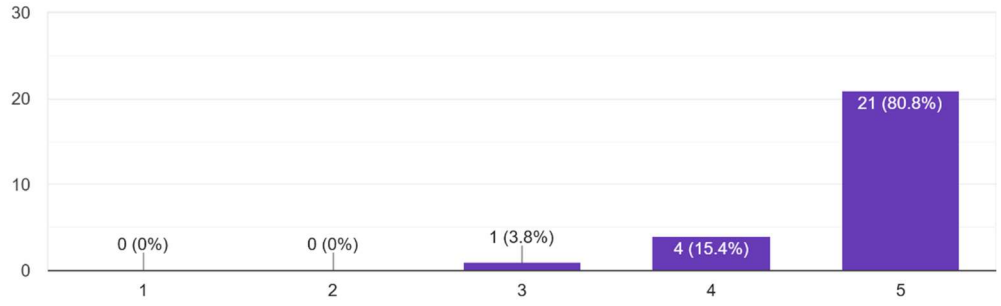
26 responses



Part 5: Trainers & Facilitation

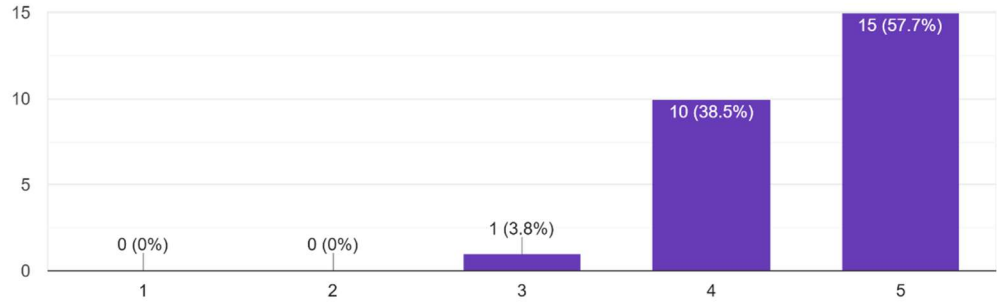
Knowledge and expertise in the subject matter

26 responses



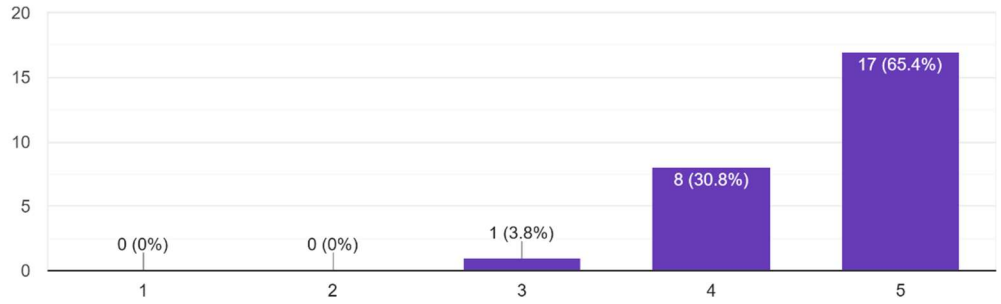
Clarity of presentations and explanations

26 responses



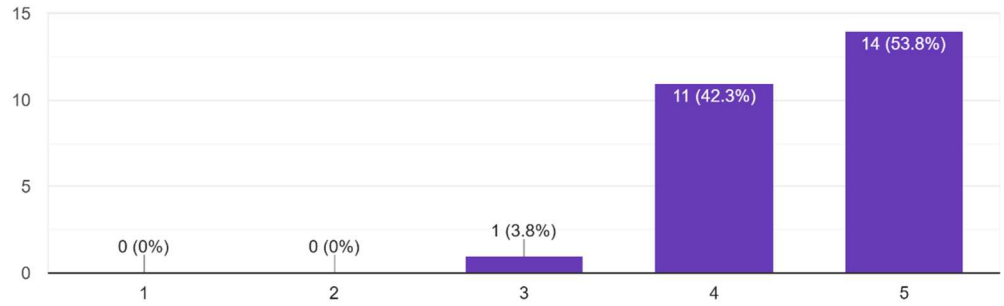
Ability to answer questions effectively

26 responses



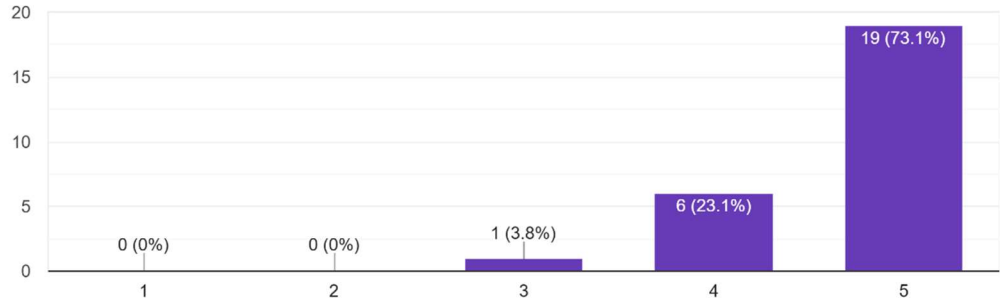
Engagement and interaction with participants

26 responses



Overall effectiveness of the trainers

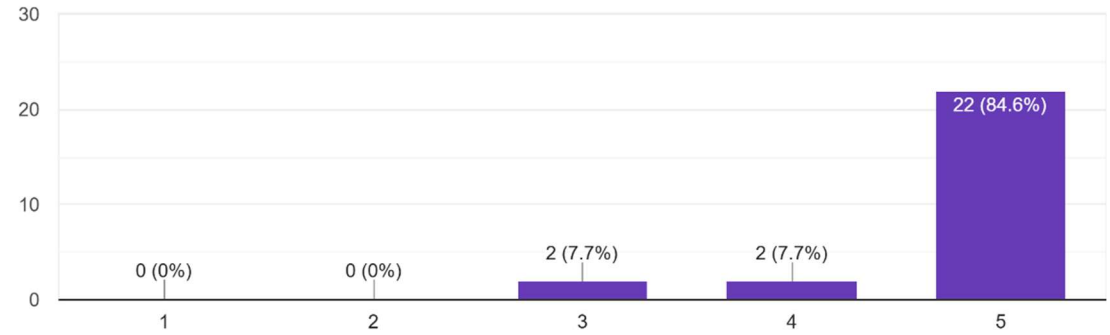
26 responses



Part 6: Training Materials & Environment

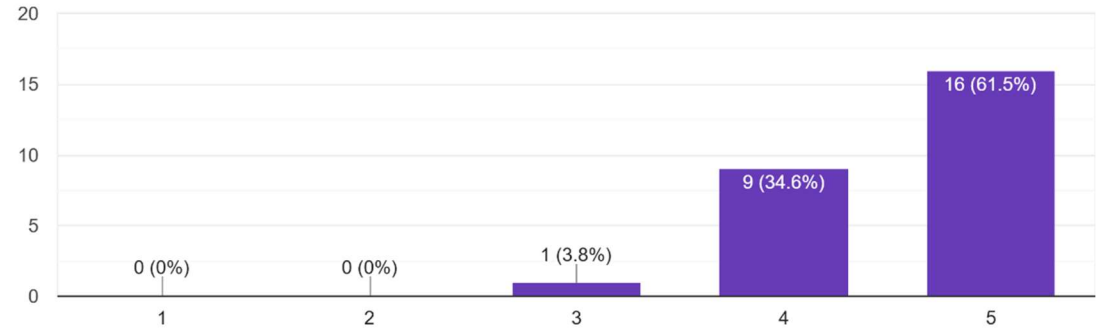
Quality and usefulness of presentation slides

26 responses



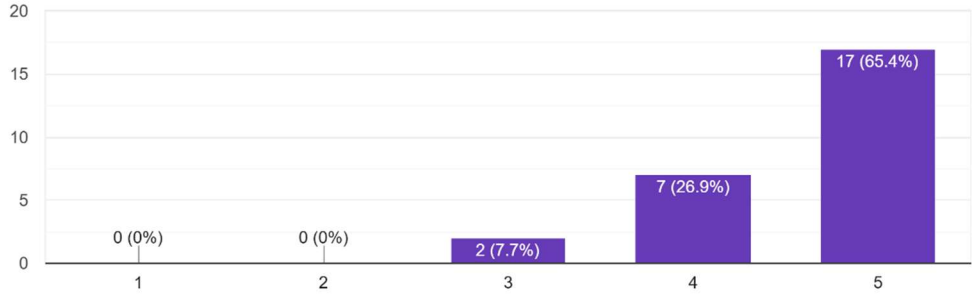
Quality and usefulness of the hands-on lab guides

26 responses



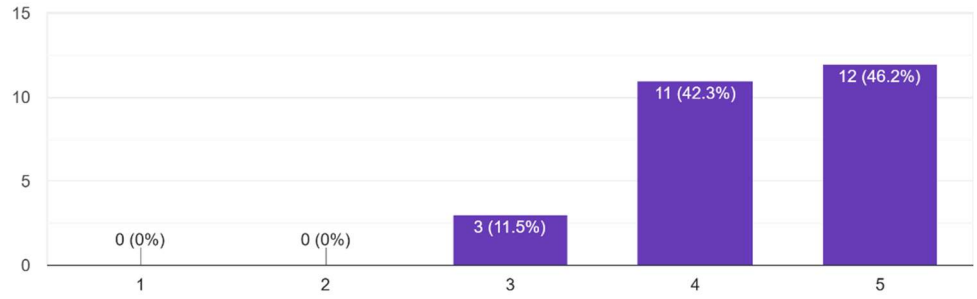
Functionality and accessibility of the virtual lab environment

26 responses



Quality of the training venue and facilities (e.g., seating, AV)

26 responses



Part 7: Open-Ended Feedback

What was the most valuable or useful part of this workshop for you, and why?

11 responses

Hands-on activities on IPv6

Hands on labs

The trainer is very knowledgeable and I found the practical sessions very valuable. I wish we had more time for the practicals

Engagement and addressing questions asked

The presentations were very informative and insightful on where Africa is regarding IPv6 adoption, and the strategies we must utilize to increase adoption. The hands-on labs equipped us with skills to share with network engineers in our home countries.

Everything

1) Hands-on Workshop Learning:The most valuable part of the workshop was the practical demonstrations on configuring IPv6 in the virtual environments. Seeing how dual-stack, NAT64 and DNS64 work in practice gave me confidence to apply these techniques in my own projects.

2) IPv6 Adoption Policy: "For me, the most useful part was learning about the regulatory and strategic drivers behind IPv6 adoption. It helped me understand why organizations in Africa, including Cameroon, must prepare now to avoid future connectivity and compatibility issues."

I have learned a lot of information about IPv6 and sharring expérience with others country.

The IPv6 Implementation Guidelines, particularly the chapter concerning governments, clearly outline the guidelines for establishing a framework for IPv6 deployment. In our view, these guidelines are comprehensive and leave no room for dispute

Are there any specific IPv6-related topics you would like to see covered in future workshops?

10 responses

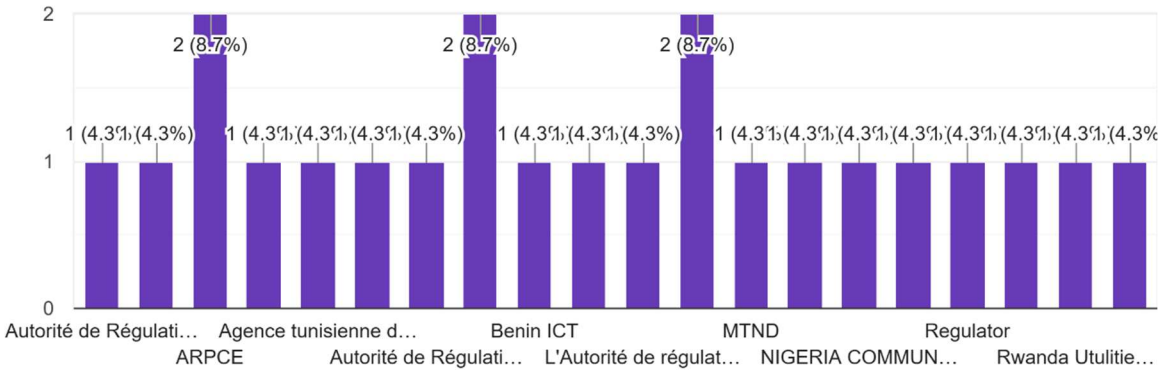
No
All is covered
NAT64/ DNS64, ipv6 security, more practical implementation
Translation and tunneling
Time allocated for the workshop should be increased.
NAT64 and DNS64 technical training.
Details of statistics adoptions in different country
Les aspects techniques sont nécessaires pour accompagner l'adoption de l'IPv6. Il est nécessaire d'avoir sur le plan local une base technique pour accompagner les mesures. Ceci dit, nous pensons que l'ATU ait des relais techniques dans chaque pays et ces points focaux doivent être bien formés et avoir une véritable expertise dans le déploiement de l'IPv6.

8.3.2 Francophone Responses

Partie 1: Informations sur les participants (facultative)

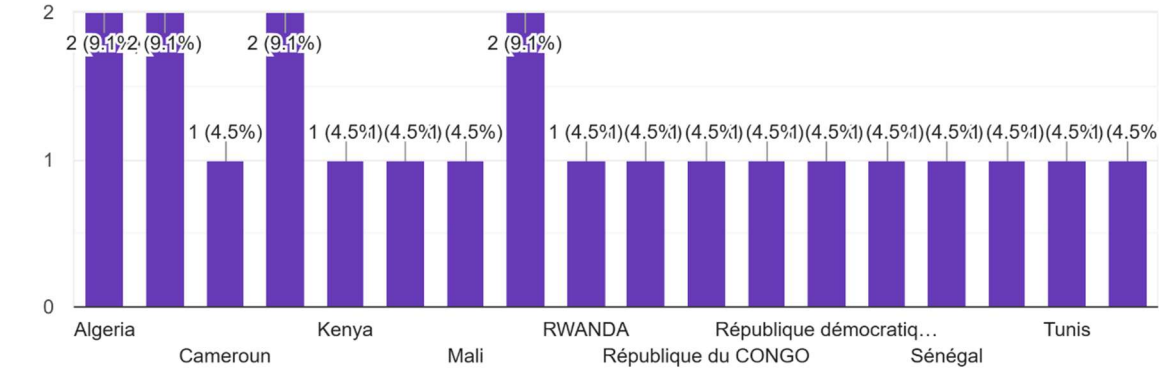
Organisation

23 responses



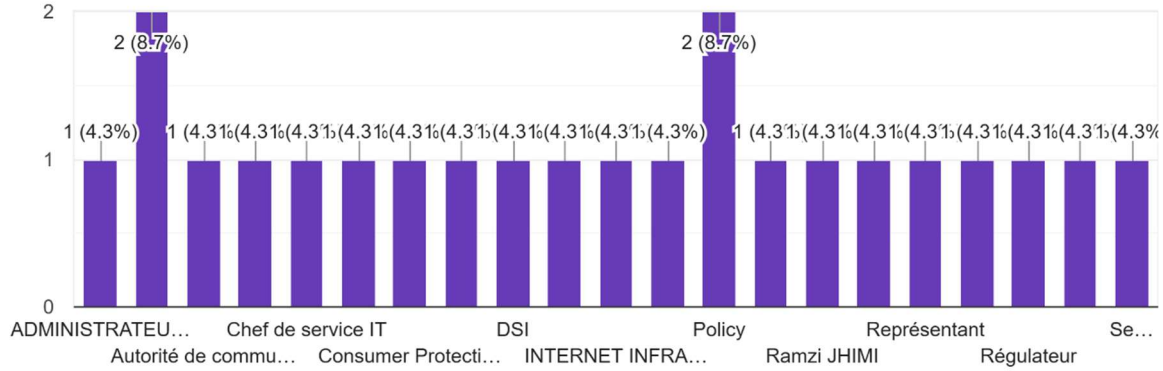
Pays

22 responses



Intitulé du poste

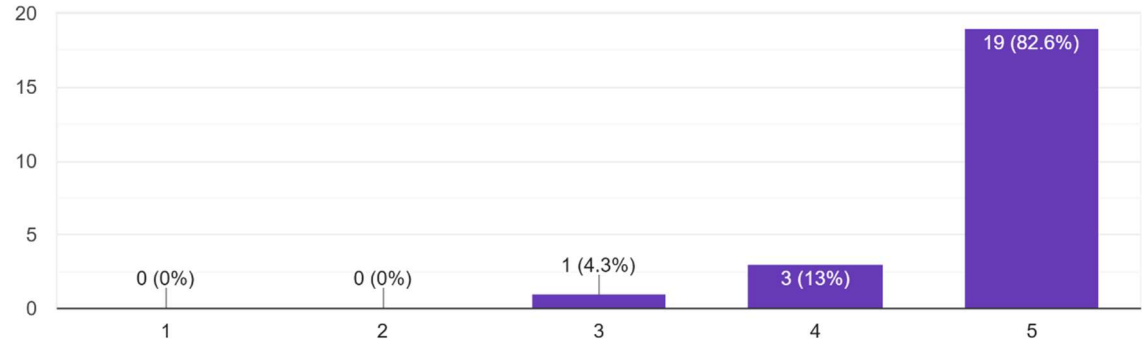
23 responses



Partie 2: Évaluation globale de l'atelier

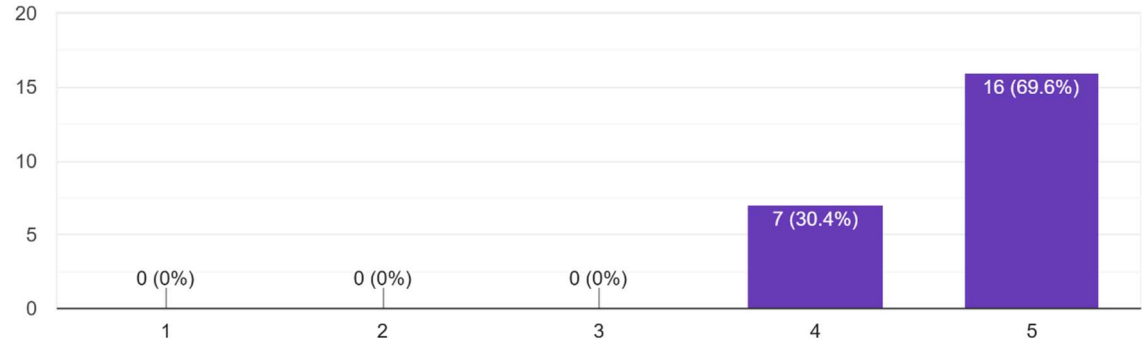
Satisfaction générale concernant l'atelier

23 responses



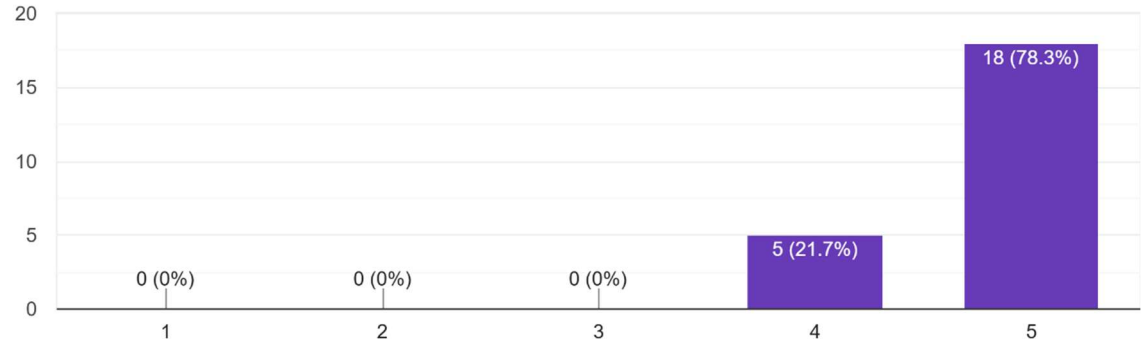
Les objectifs de l'atelier étaient clairement définis et ont été atteints.

23 responses



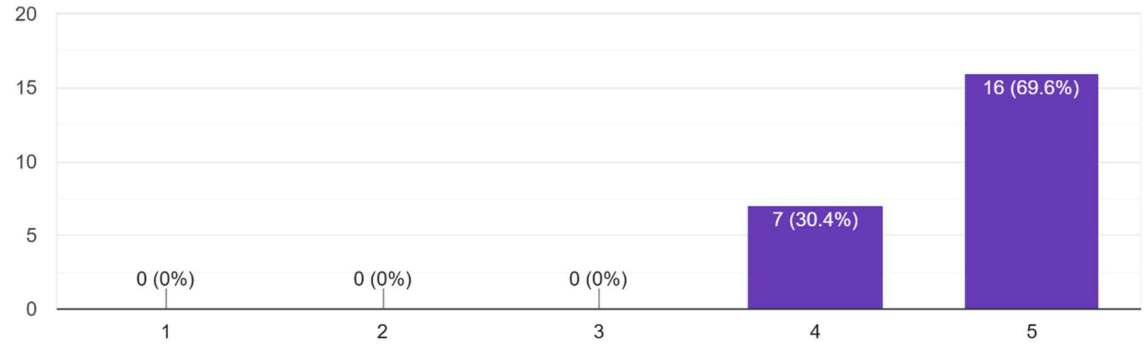
Pertinence du contenu de l'atelier pour votre rôle professionnel

23 responses



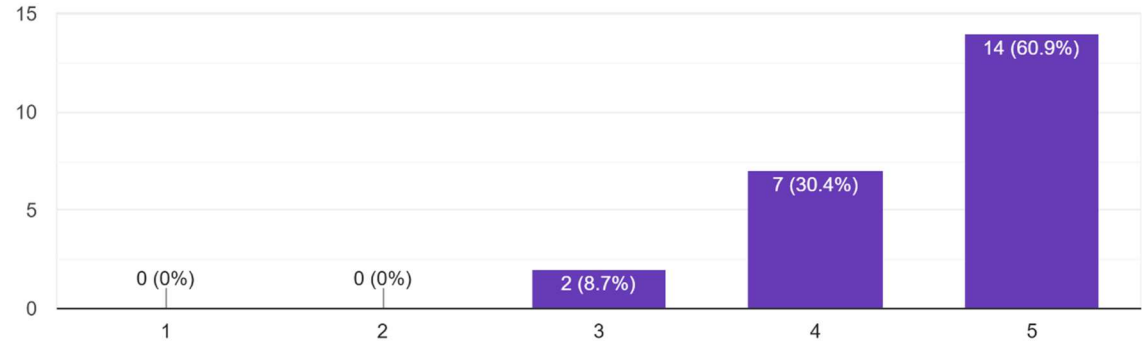
Équilibre entre les séances théoriques et pratiques

23 responses



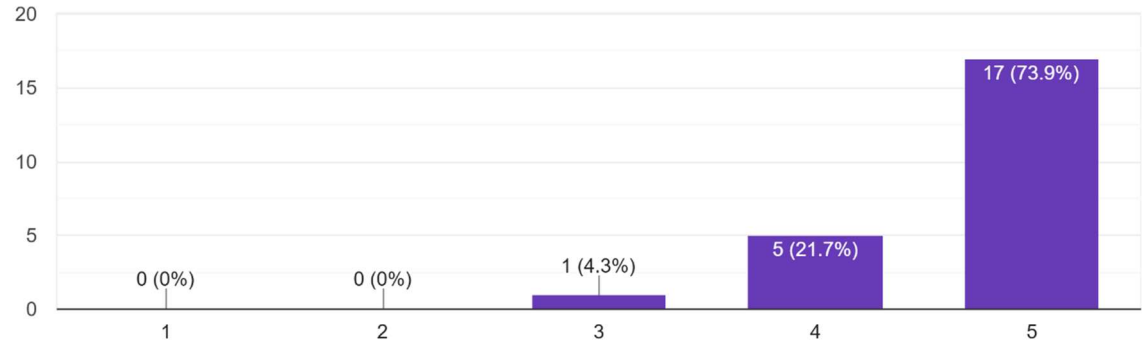
La durée de l'atelier était appropriée

23 responses



Le rythme et le calendrier des séances étaient appropriés

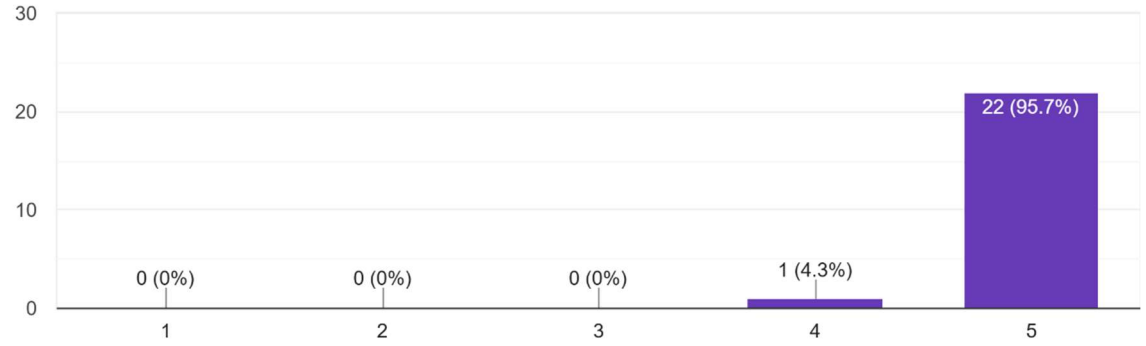
23 responses



Partie 3: Séances sur les politiques, les stratégies et les affaires

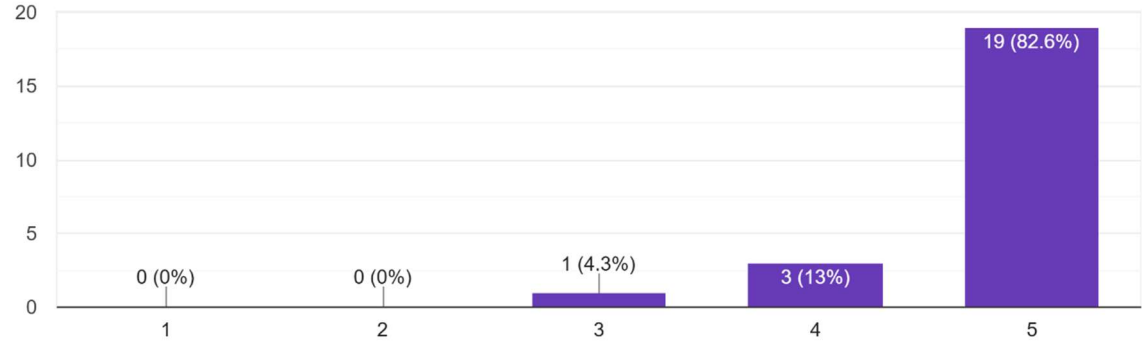
Comprendre l'épuisement des adresses IPv4 et l'urgence de l'IPv6

23 responses



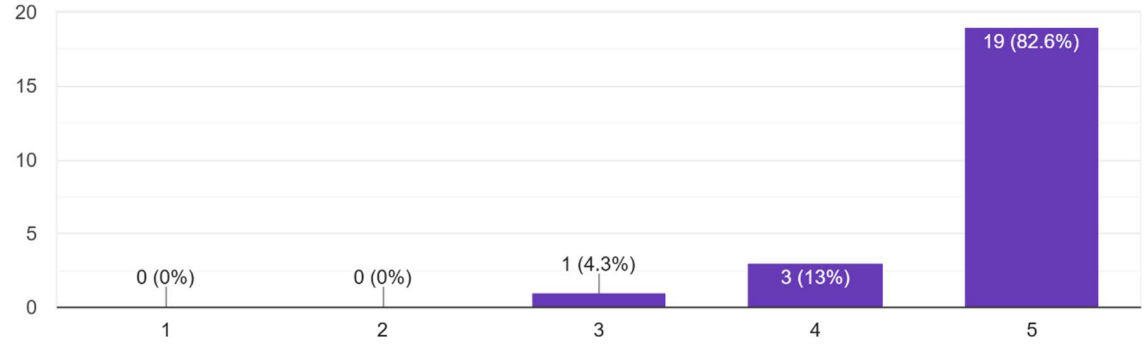
Le rôle des décideurs politiques et des gouvernements dans l'adoption de l'IPv6

23 responses



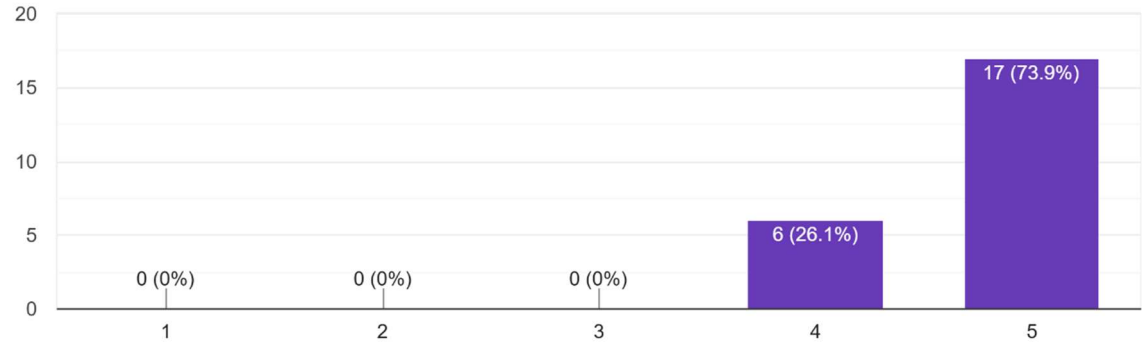
Le rôle des décideurs politiques et des gouvernements dans l'adoption de l'IPv6

23 responses



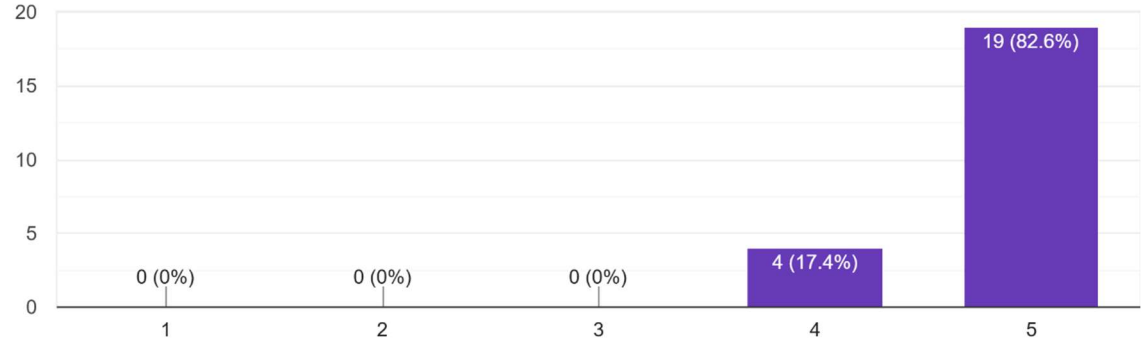
Défis liés à l'adoption d'IPv6 (coût, infrastructure existante, etc.)

23 responses



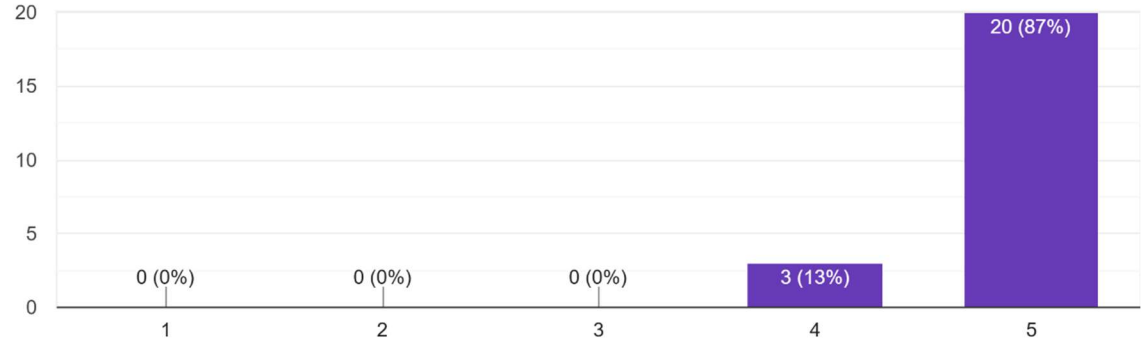
Avantages du déploiement d'IPv6 (sécurité, évolutivité, etc.)

23 responses



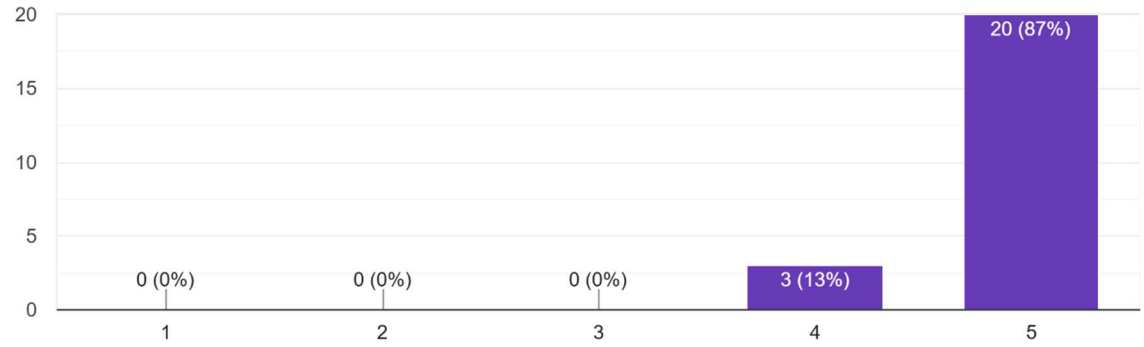
Élaboration de feuilles de route IPv6 pour les gouvernements et les fournisseurs d'accès Internet

23 responses



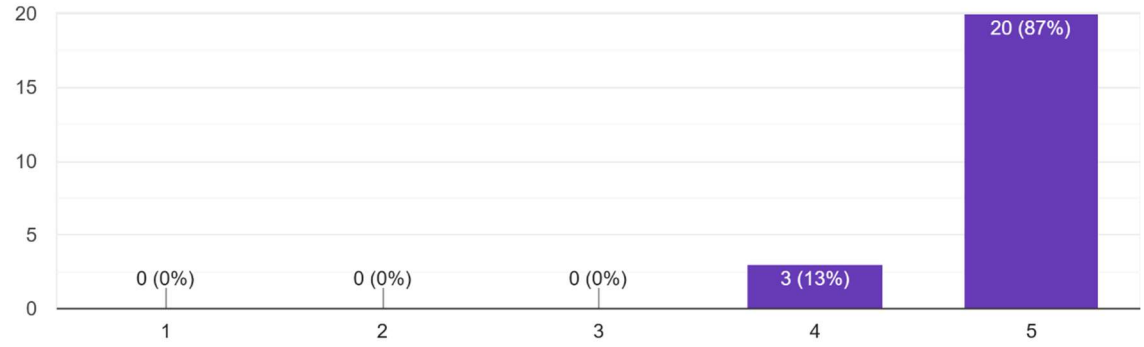
Élaboration de feuilles de route IPv6 pour les gouvernements et les fournisseurs d'accès Internet

23 responses



Lignes directrices pour la mise en place de groupes de travail/conseils nationaux sur l'IPv6

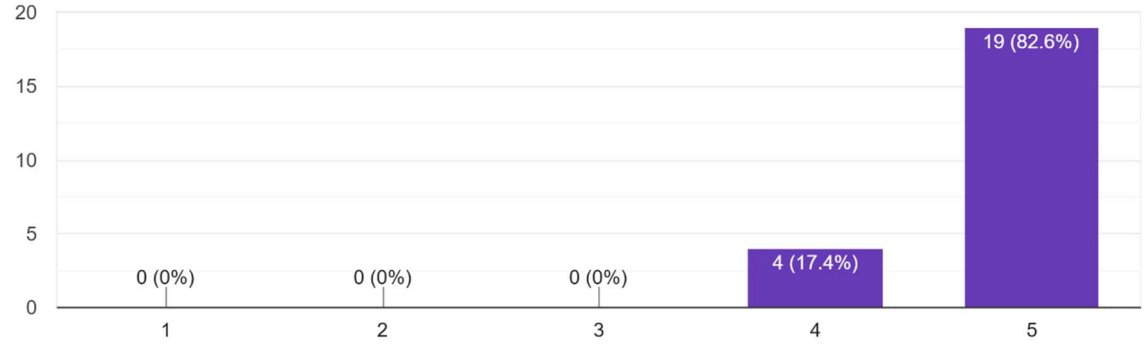
23 responses



Partie 4: Ateliers et travaux pratiques techniques

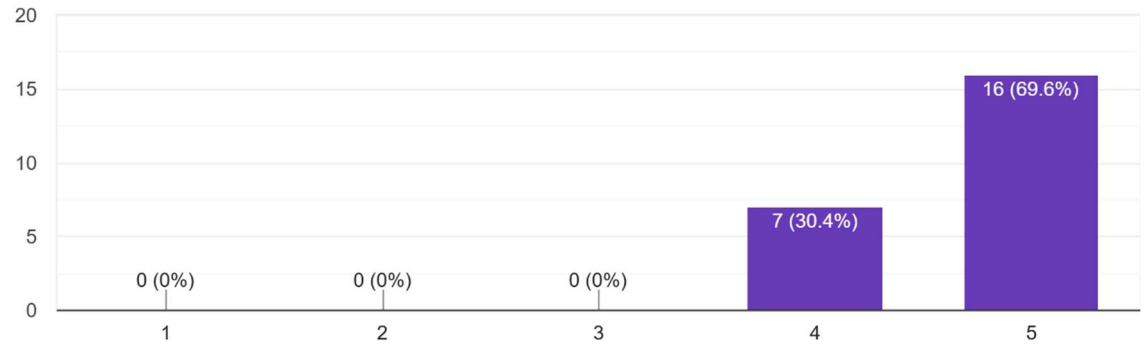
Introduction à l'environnement de laboratoire virtuel (VyOS, MikroTik, etc.)

23 responses



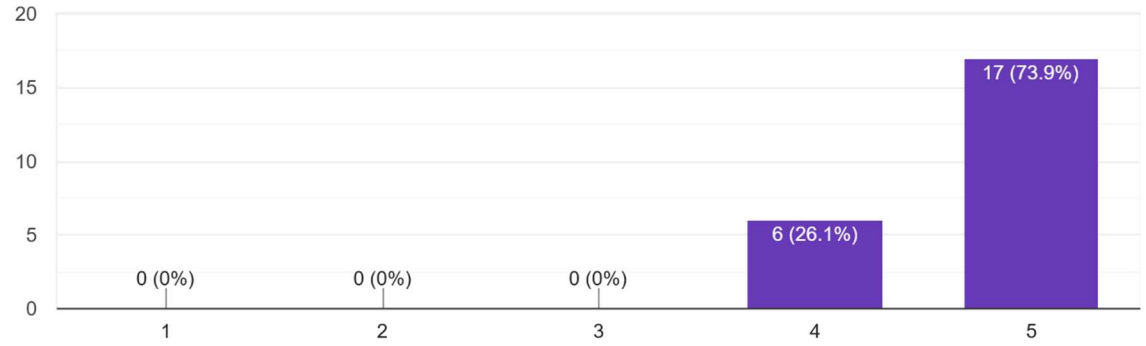
Configuration de base des adressages IPv4/IPv6 et des interfaces

23 responses



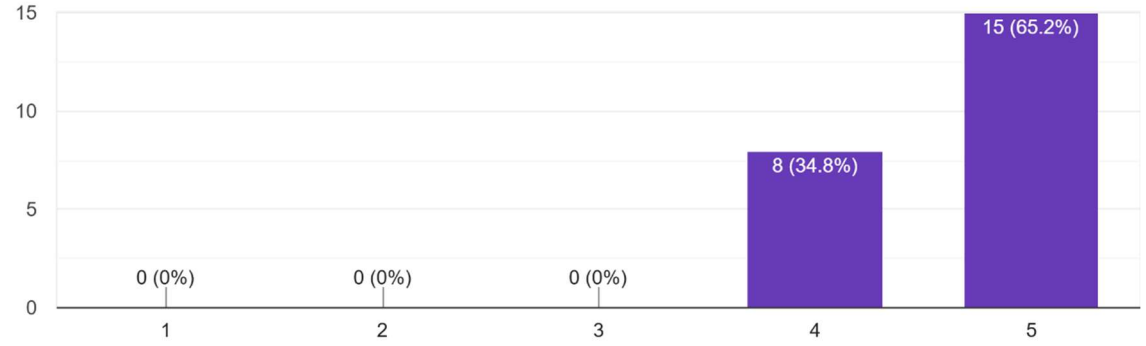
Configuration du protocole de routage IS-IS pour IPv6

23 responses



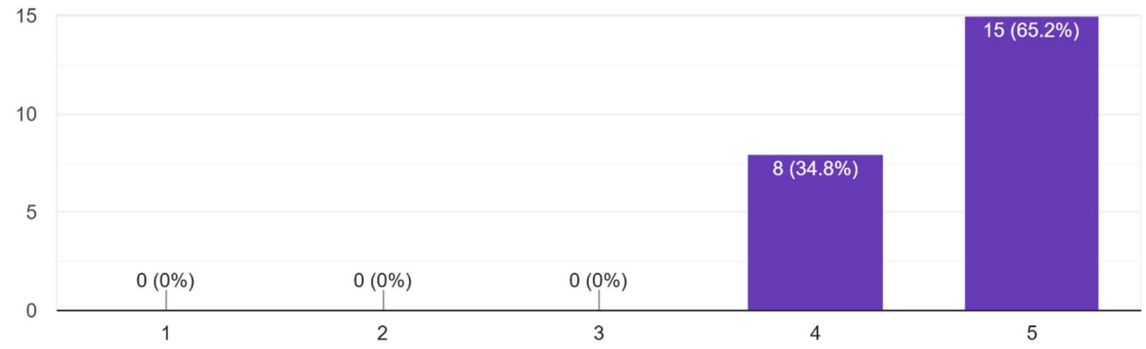
Comprendre les mécanismes de transition IPv6 (double pile, tunnelage)

23 responses



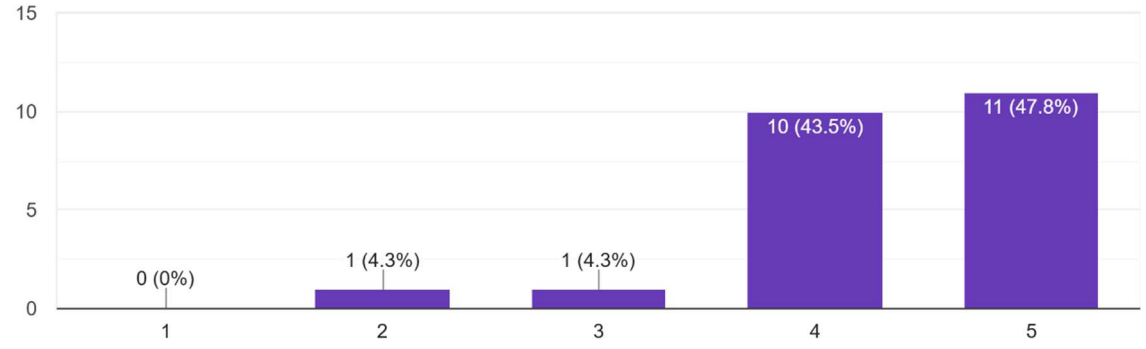
Laboratoire de déploiement NAT64/DNS64 avec état (utilisant Jool et BIND9)

23 responses



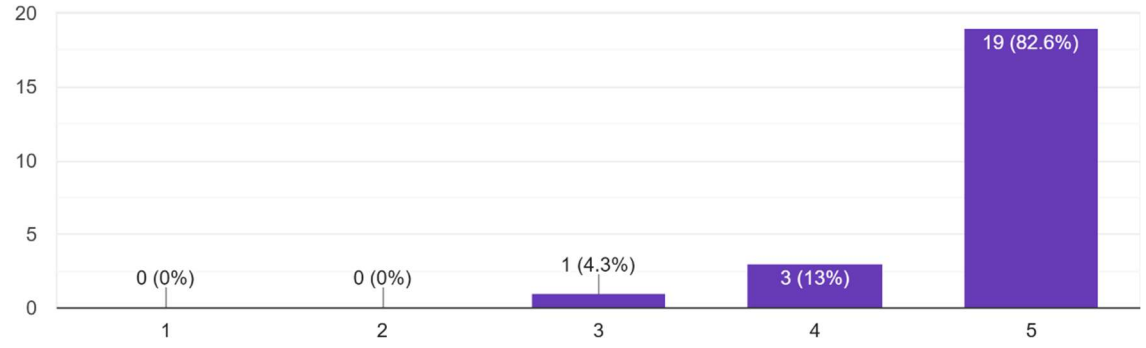
Exercices de dépannage (par exemple, perte de paquets dans NAT46)

23 responses



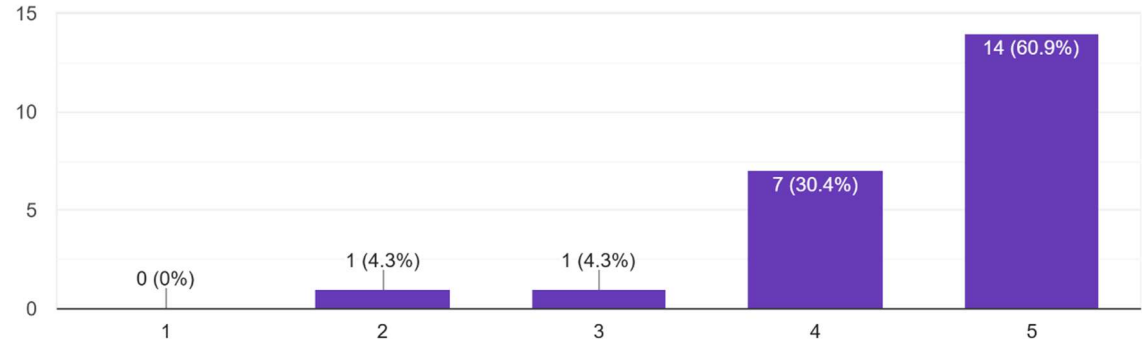
Clarté des instructions et des guides pratiques de laboratoire

23 responses



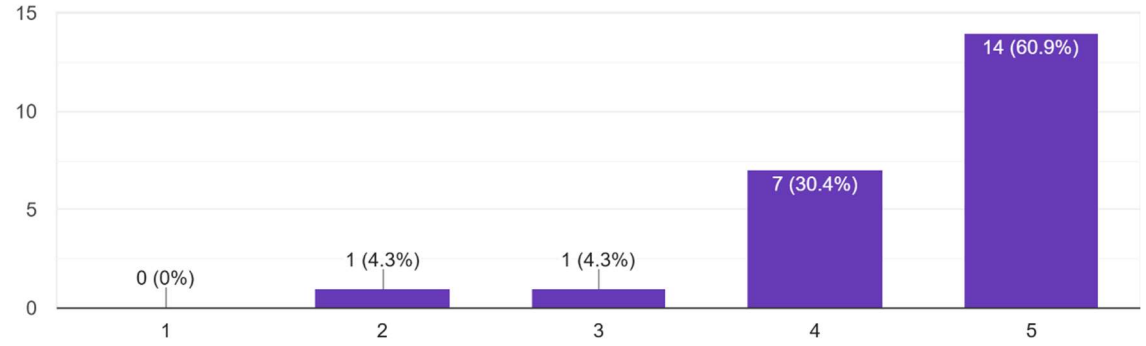
Le travail de groupe collaboratif (de type « hackathon ») a été efficace

23 responses



Le travail de groupe collaboratif (de type « hackathon ») a été efficace

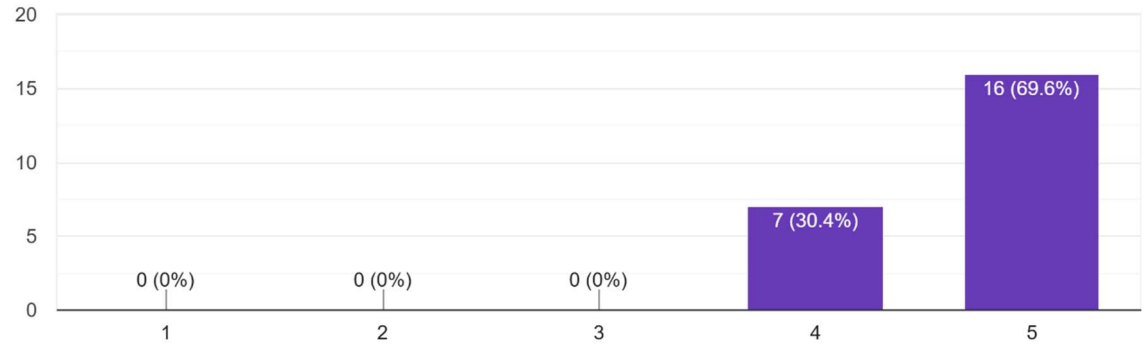
23 responses



Partie 5: Formateurs et facilitation

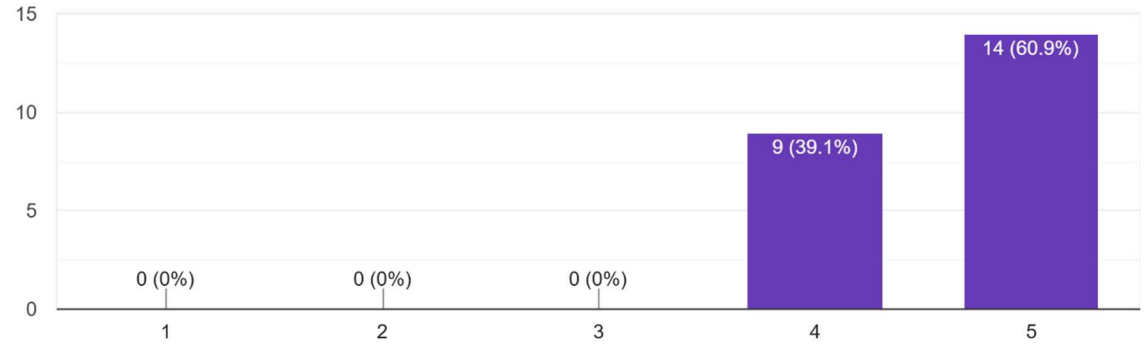
Connaissances et expertise dans le domaine

23 responses



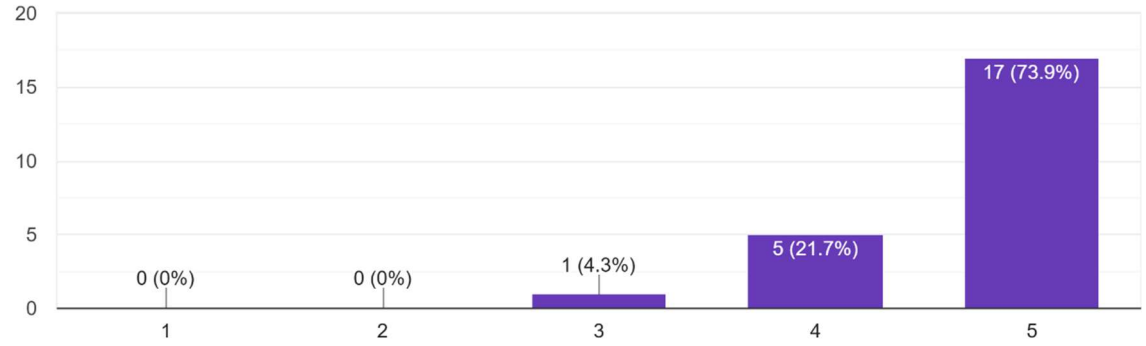
Clarté des présentations et des explications

23 responses



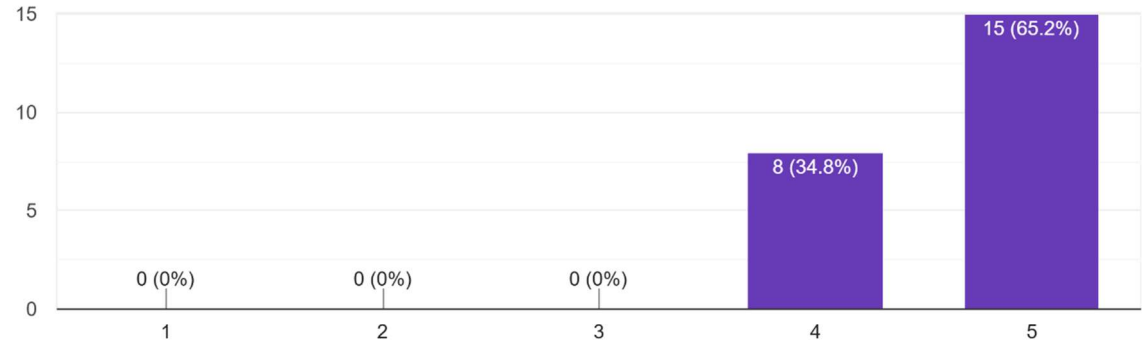
Capacité à répondre efficacement aux questions

23 responses



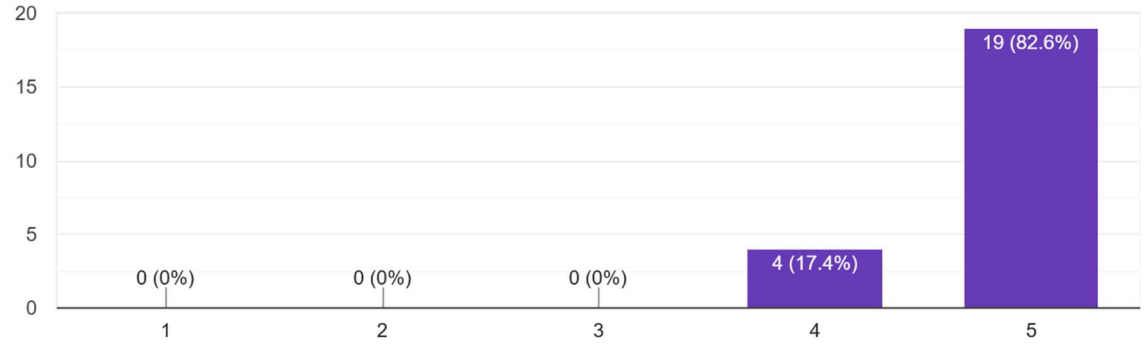
Engagement et interaction avec les participants

23 responses



Efficacité globale des formateurs

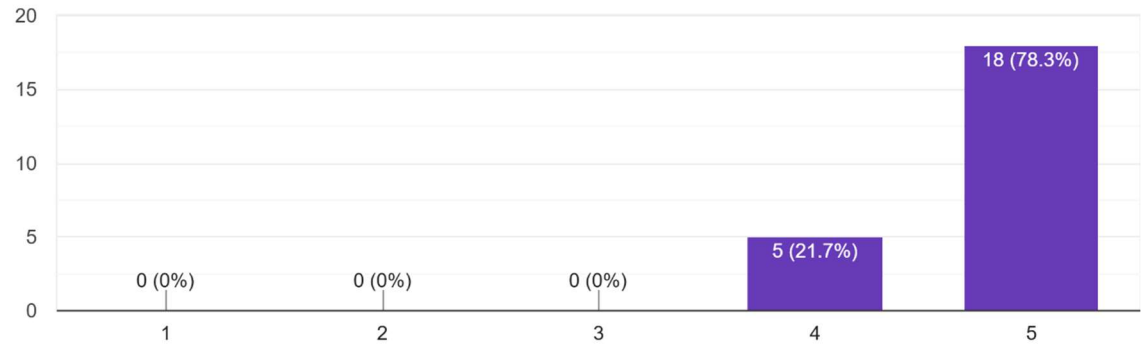
23 responses



Partie 6: Matériel de formation et environnement

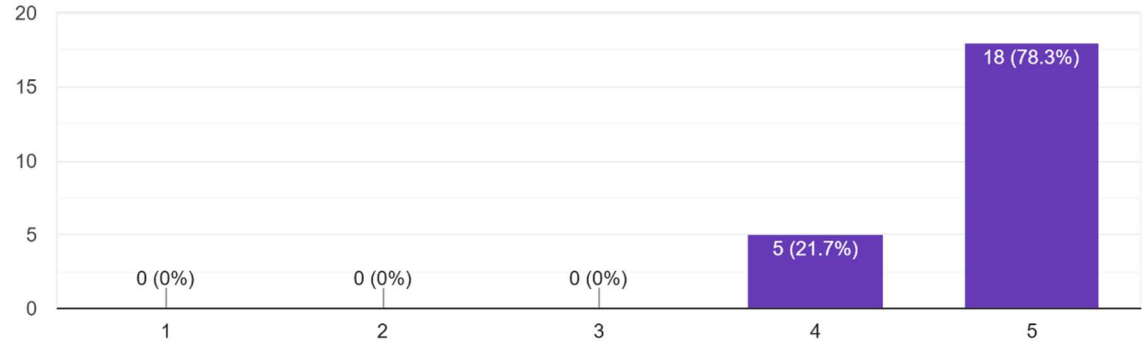
Qualité et utilité des diapositives de présentation

23 responses



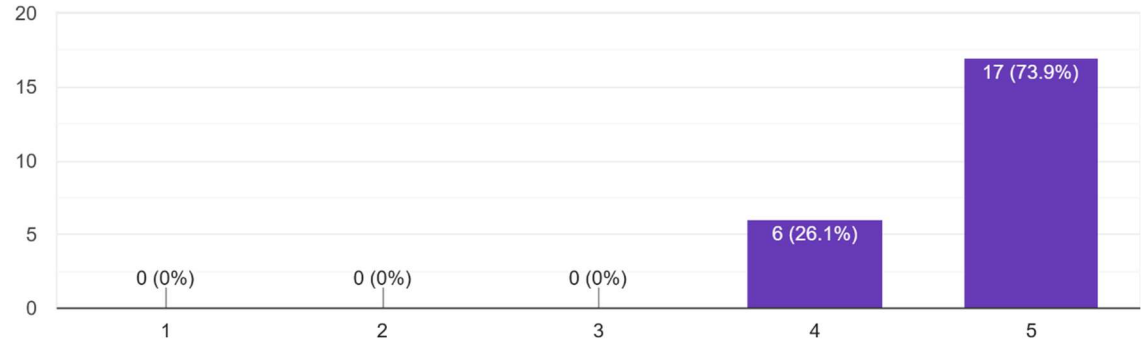
Qualité et utilité des guides pratiques de laboratoire

23 responses



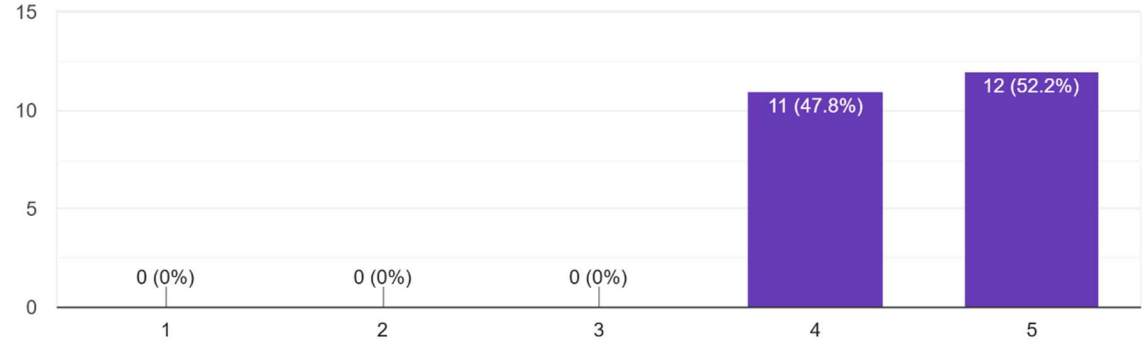
Fonctionnalités et accessibilité de l'environnement de laboratoire virtuel

23 responses



Qualité du lieu et des équipements de formation (par exemple, sièges, matériel audiovisuel)

23 responses



Partie 7: Commentaires ouverts

Quel a été l'aspect le plus précieux ou utile de cet atelier pour vous, et pourquoi ?

10 responses

L'atelier m'a permis de comprendre que la réussite de la migration vers IPv6 ne repose pas uniquement sur la technologie, mais aussi sur une stratégie claire, l'identification des parties prenantes et la définition des facteurs clés de succès.

c'est le nécessité pour le Pays d'avoir un cadre réglementaire sur la technologie IPv6.
en vue de la rareté des adresses publiques Ipv4, le numérique de demain pour l'Afrique doit se tourner vers l'IPv6.

L'importance de la transitition vers l'IPv6 parceque les address ne sont pas limiter

Le laboratoire a été un aspect très important pour la prise de décision au niveau des autorités.

L'aspect pratique

The draft of the policy and business guide

Everything discussed was useful and very insightful to me

Des formations techniques renforcées, La récurrence de ce type d'invitations et Le maintien du même groupe de participants

FROM Policy making to Technical aspect

La partie pratique sur le déploiement et la configuration IPv6, car elle m'a permis de mieux comprendre l'application réelle dans l'infrastructure réseau.

Quel a été l'aspect le moins utile de l'atelier, ou quel aspect pourrait être amélioré ?

8 responses

Tous les aspects étaient nécessaires, aussi bien dans les axes de gouvernance que dans le dans la technique

Le logement des participants

Tout les aspects sont utiles les guidlines pourraient etre ameliore et collaboration de l'ATU avec les Gouvernemnts pour mieux facilites la mobilisation de l'adoption de l'IPv6

Everything shared was equally important

The Hands-on needs more time for us who have no IT Background

Certains ateliers auraient pu bénéficier d'un peu plus de temps

Period and duration for this workshop was too short to make or drive our IPV6 adoption agenda/progress

Certaines sessions théoriques étaient un peu longues ; un contenu plus interactif améliorerait l'engagement.

Y a-t-il des sujets spécifiques liés à IPv6 que vous aimeriez voir abordés lors de futurs ateliers?

9 responses

Impacts sur la cybersécurité : nouvelles menaces et meilleures pratiques.
Optimisation des performances réseau avec IPv6.
Surveillance et monitoring des réseaux IPv6.
Développement des compétences techniques (ingénieurs, administrateurs).
Création de communautés IPv6 locales.

la sécurité avec l'adresse IPv6. la création des règles sur les pare-feu et la supervision des réseaux IPv6.

La continuite des formations sur l'Adoption de IPv6 jusqu'a ce que notre continent Afrique a l'adoption total de l'IPv6

Sur la mise en place d'une stratégie d'adoption de ipv6

I don't think there is anything necessary that has been left out

Not really, just that the we need more situational analysis to understand the lesson learned from other places

Vous sentez-vous mieux préparé(e) pour promouvoir ou mettre en œuvre l'IPv6 au sein de votre organisation/pays après cet atelier ? Veuillez expliquer.

10 responses

Je suis prête à jouer un rôle de catalyseur en sensibilisant les parties prenantes, en partageant les bénéfices concrets d'IPv6 et en contribuant à la mise en place de feuilles de route adaptées à notre contexte national.
Je crois que la migration vers IPv6 est une opportunité pour renforcer la compétitivité numérique de notre pays. Mon objectif est de fédérer les acteurs autour d'une vision commune et de soutenir les initiatives qui facilitent cette transition.

OUI je me sent prêt à promouvoir l'IPv6. dans notre cas le Congo nous somme à 26;02% d'adoption de l'IPv6 selon Google Adoption IPv6.
Nous avons vue qu'il y a des Fournisseurs D'accès Internet qui ont des Plages d'adresses IPv6 alloués par AFRINIC, et il serait nécessaire pour mon gouvernant d'encadrer du point de vue développement de l'économie numérique et de la cybersécurité nationale.

Biensure avec collobartion des institution public et prive pour l'adoption de l'IPv6

Je me sens un peu mieux préparé pour promouvoir ou mettre en œuvre l'IPv6 au sein de mon pays car tous les documents qu'on nous a fourni sont pratiquement tous en anglais.

Oui,j'ai beaucoup appris sur l'importance d'accélérer l'adoption de ipv6

The entire training has been very useful to me with regard to helping my country in accelerating the IPV6 adoption

Absolutely, i am now better prepared to Justify why my country need to adopt to IPv6 to achieve its Digital Economy initiatives of the Minister and Renew Hope Agenda of Mr. President.

Oui, je me sens clairement mieux préparé. Les compétences acquises lors des sessions théoriques et des laboratoires pratiques me permettent aujourd'hui de contribuer efficacement à la transition IPv6 au sein de mon organisation et de mon pays. La Tunisie a atteint un taux d'adoption de 21,06 %, et cette formation me permettra d'accélérer encore davantage cette transition en partageant les bonnes pratiques, en formant d'autres équipes et en participant à la planification stratégique de la migration.

100% ready to commit drive this agenda. As I now have the foundation and the technical know how on where to start

Oui, je comprends davantage les étapes techniques et organisationnelles nécessaires pour une migration réussie.

D'autres commentaires ou suggestions ?

8 responses

Impacts sur la cybersécurité : nouvelles menaces et meilleures pratiques.

il faut continuer à sensibiliser le public à l'IPv6 , surtout les décideurs publics

Seulement pour remerciement

Augmenter la durée de la formation, 5jours à mon avis est peu

Please keep up with the remaining steps/processes of the project.

Je tiens à remercier l'ATU, l'AFRALTI et l'ICANN pour la qualité exceptionnelle de l'organisation. Je recommande vivement la poursuite de telles initiatives, car elles contribuent directement à renforcer les capacités techniques en Afrique. Je suggère également de maintenir le même groupe de formateurs, dont l'expertise et la pédagogie ont été très appréciées, et de continuer à organiser ce type d'ateliers régulièrement afin d'accompagner les pays encore au début de leur transition vers IPv6.