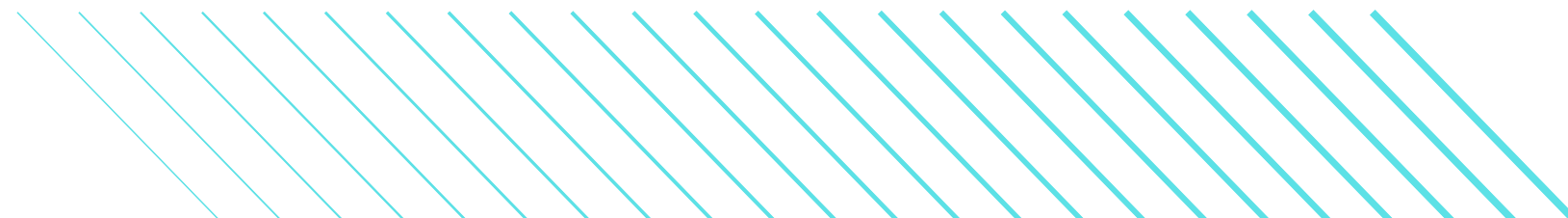
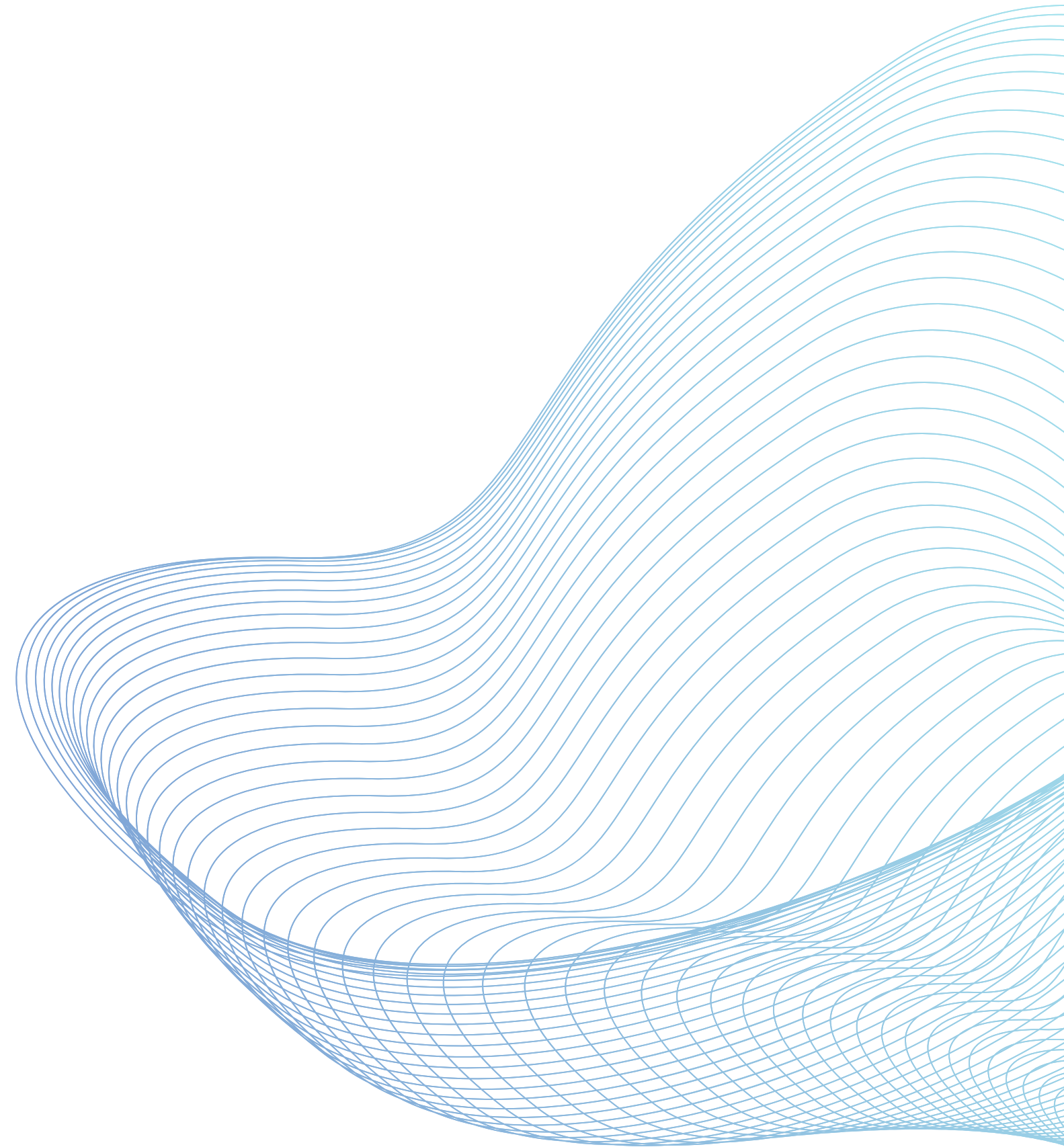




EDUROAM IMPLEMENTATION AND ITS IMPACT ON ACADEMIC COLLABORATION IN NEPAL

Nirajan Parajuli

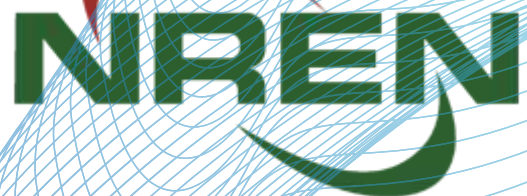
NEPAL RESEARCH AND EDUCATION NETWORK



INTRODUCTION

eduroam (education roaming) is the secure, worldwide roaming access service developed for the international research and education community.

- **Origin:** Launched in 2002 by Klaas Wierenga of SURFnet.
- **Concept:** Integration of RADIUS-based infrastructure with IEEE 802.1X technology for seamless roaming access in research and education networks.

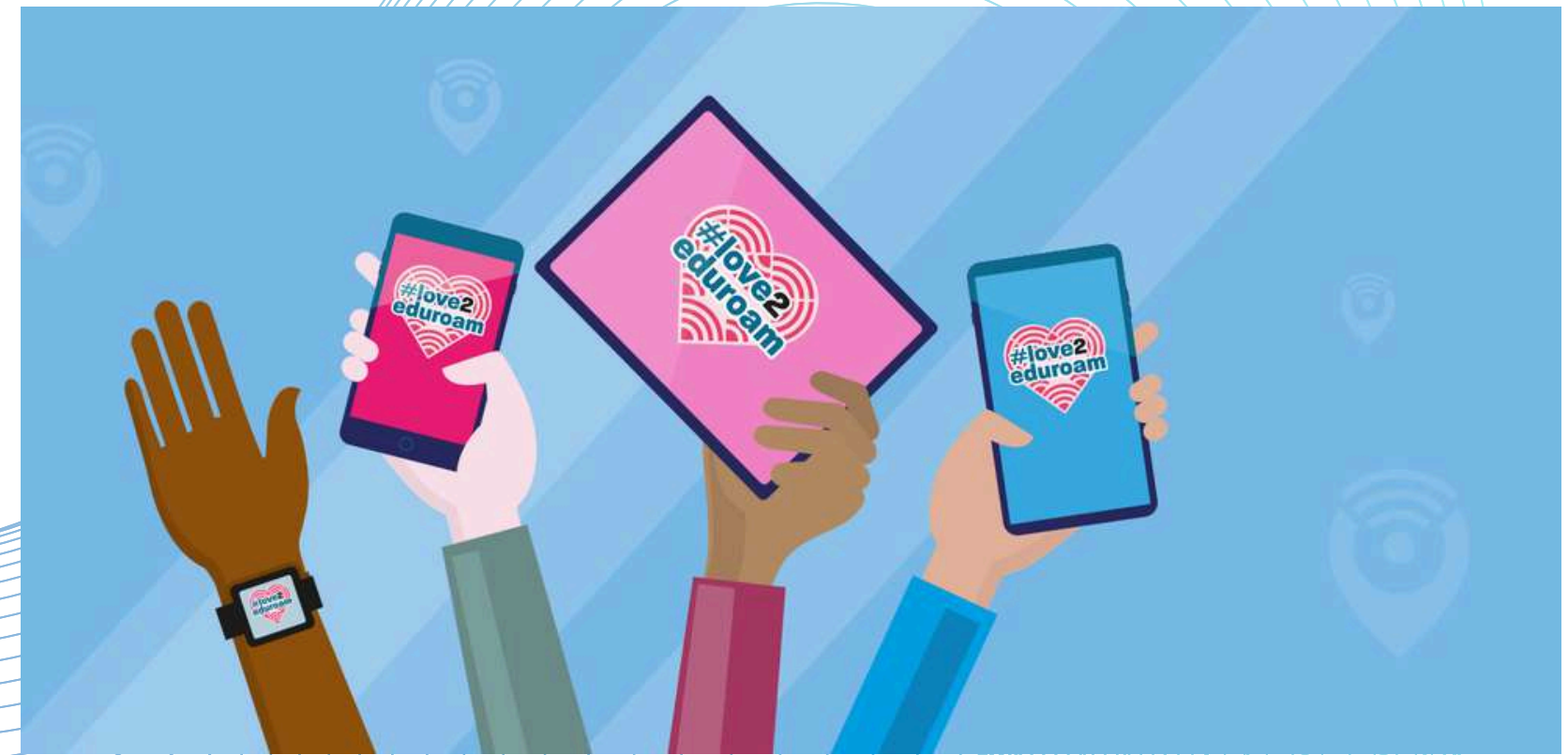


NREN

The logo for NREN (National Research and Education Network) features the letters 'NREN' in a bold, green, sans-serif font. A stylized, light blue wave-like graphic is positioned behind the text, and a red arc is visible above the 'N'.

HIGHLIGHTS

- **Service:** Secure, global roaming access for the research and education community.
- **Credentials:** Uses the same username and password as the user's home institution.
- **Features:** Provides seamless, secure, and easy-to-use wireless network connectivity.
- **Access:** Enables students, researchers, and staff to access the Internet and network services across campuses and participating institutions.



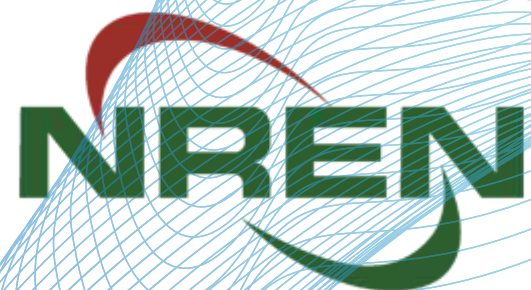
MOTIVATION

- With research teams and students becoming ever more mobile, the need to provide visitors with secure access to Wi-Fi can cause large administrative headaches.
- Resources must be allocated to providing and supporting temporary accounts or institutions must rely on extremely unsecure open networks.



BENEFITS

- **Convenience:** Connect to the internet using the same credentials as your home institution.
- **Security:** Uses advanced encryption to secure your connection.
- **Reliability:** Supported by many institutions worldwide.
- **Widely Available:** Available in many countries and institutions globally, facilitating easy connectivity for researchers and students while traveling.
- **Cost-effective:** Free service, eliminating the need to purchase and manage guest accounts at each institution.
- **Accessibility:** Provides wireless access to the internet for students, researchers, and staff from participating institutions, regardless of location.



TECHNOLOGY

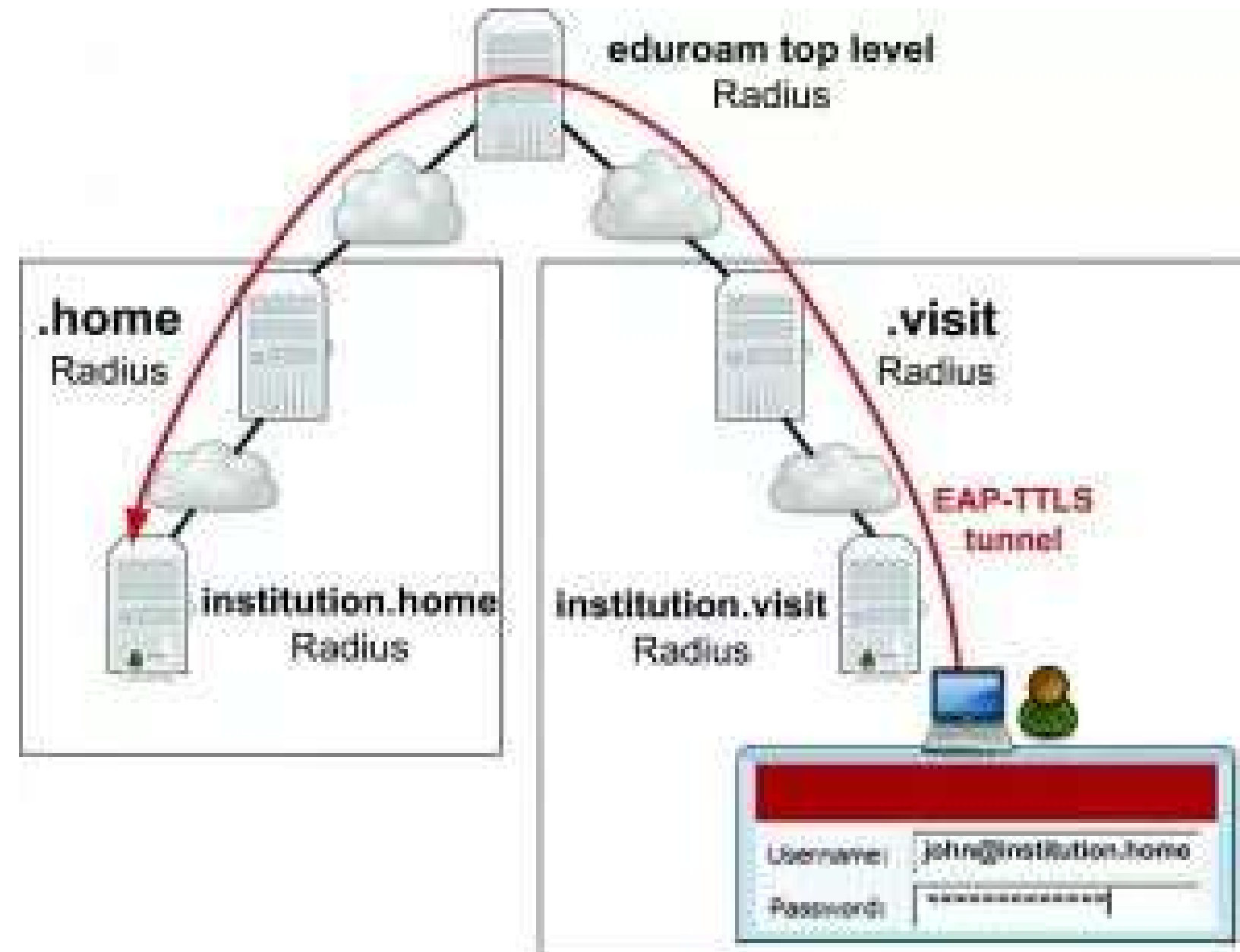
- eduroam uses IEEE 802.1x.
- A standard for Layer 2 port-based Network Access Control.
- It detects users at the network's edge, specifically at a port on a Network Access Server (NAS).
- NAS could be a wireless access point or an 802.1x compatible wired switch.
- AAA: Authentication, Authorization, and Accounting.
- Secure logging transactions use encryption.
- Individual session keys are used for data encryption.

TECHNOLOGY

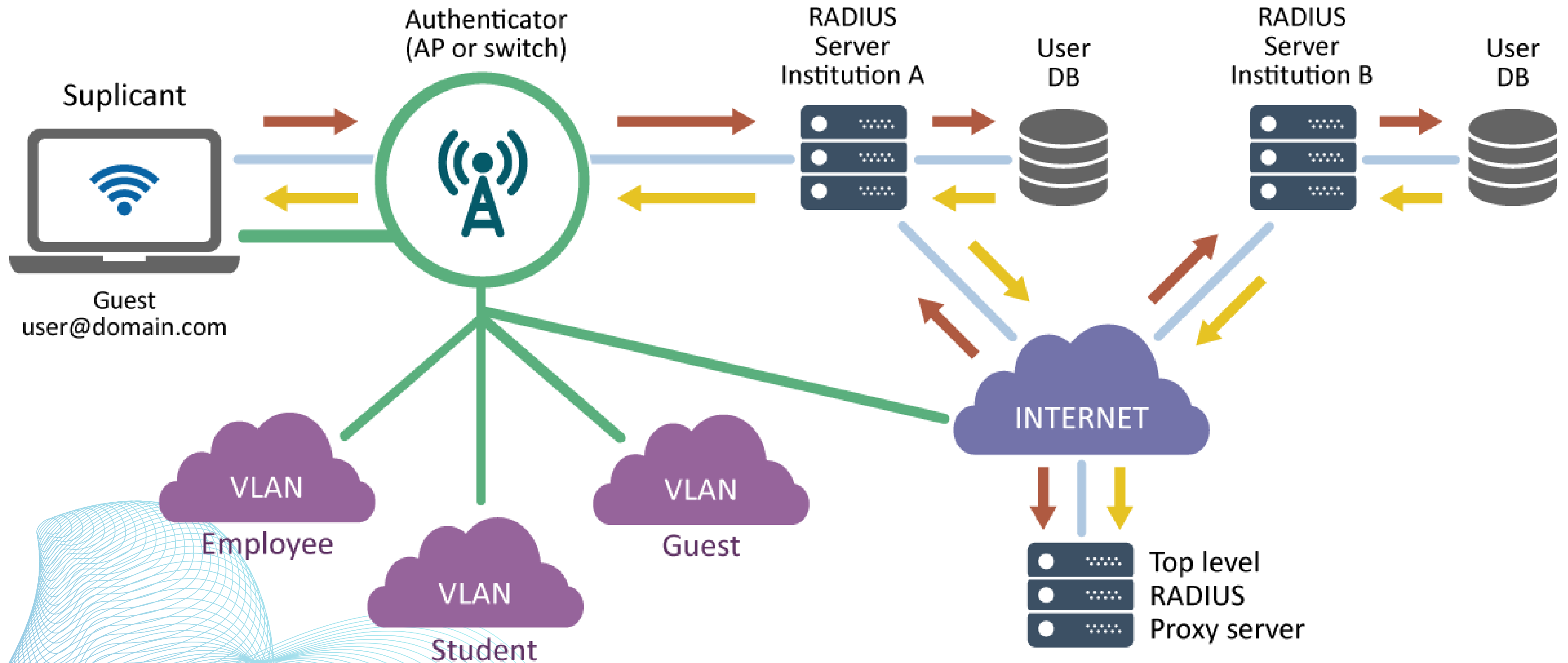
- OS: Ubuntu/Debian
- Radius: Freeradius
- Database: Mysql/Mariadb
- Web Server: Nginx
- Application: PHP (forked from daloradius)

TECHNOLOGY - SETUP IN THREE EASY STEPS

1. Set up a RADIUS server connected to your institutional identity server (LDAP).
2. Connect your access points to your RADIUS server.
3. Federate your RADIUS server.



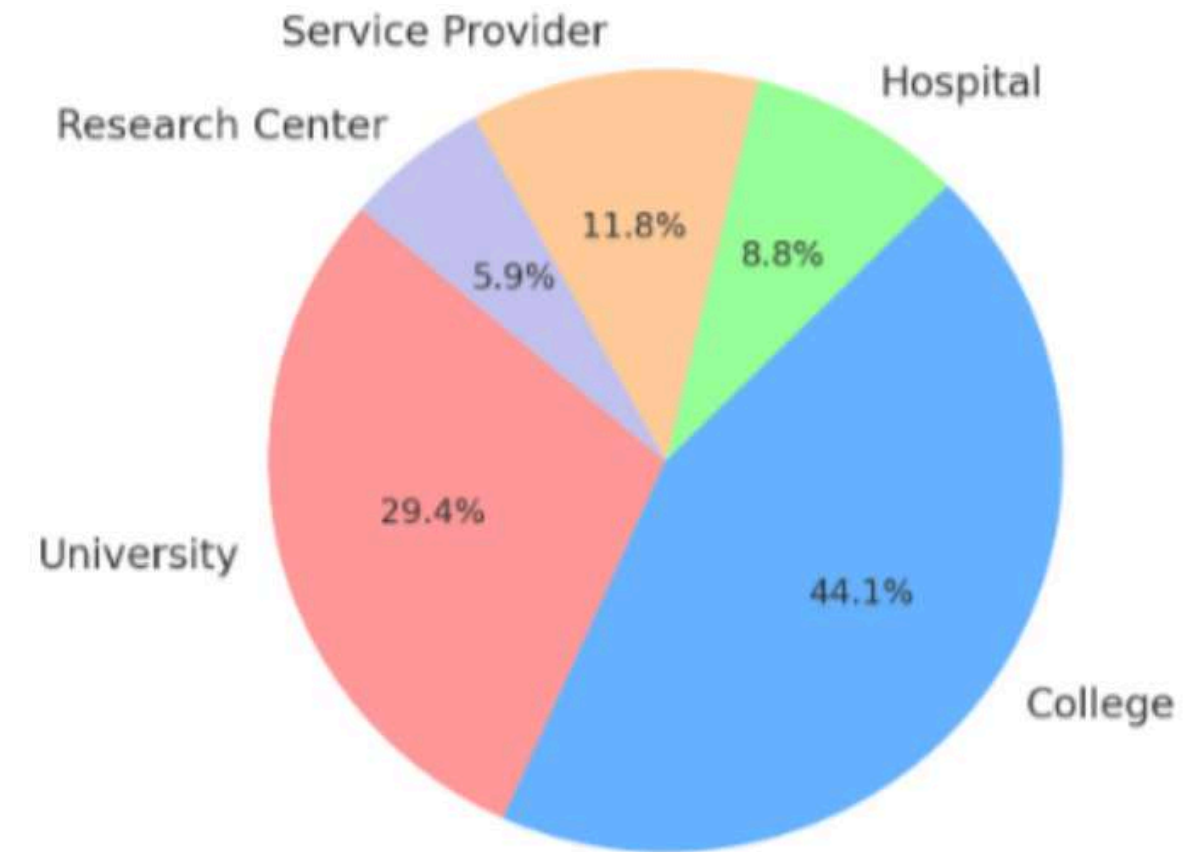
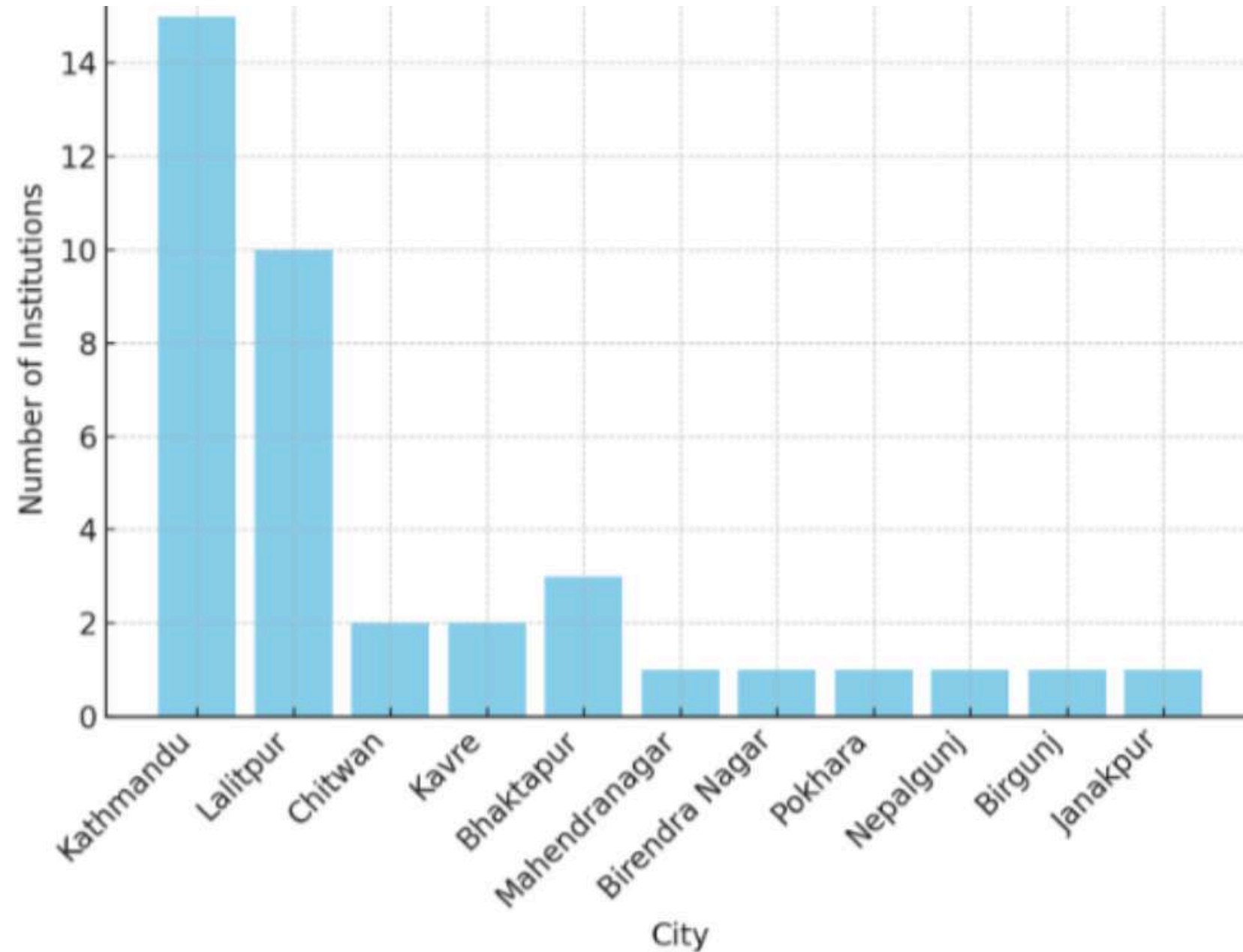
RADIUS AUTHENTICATION



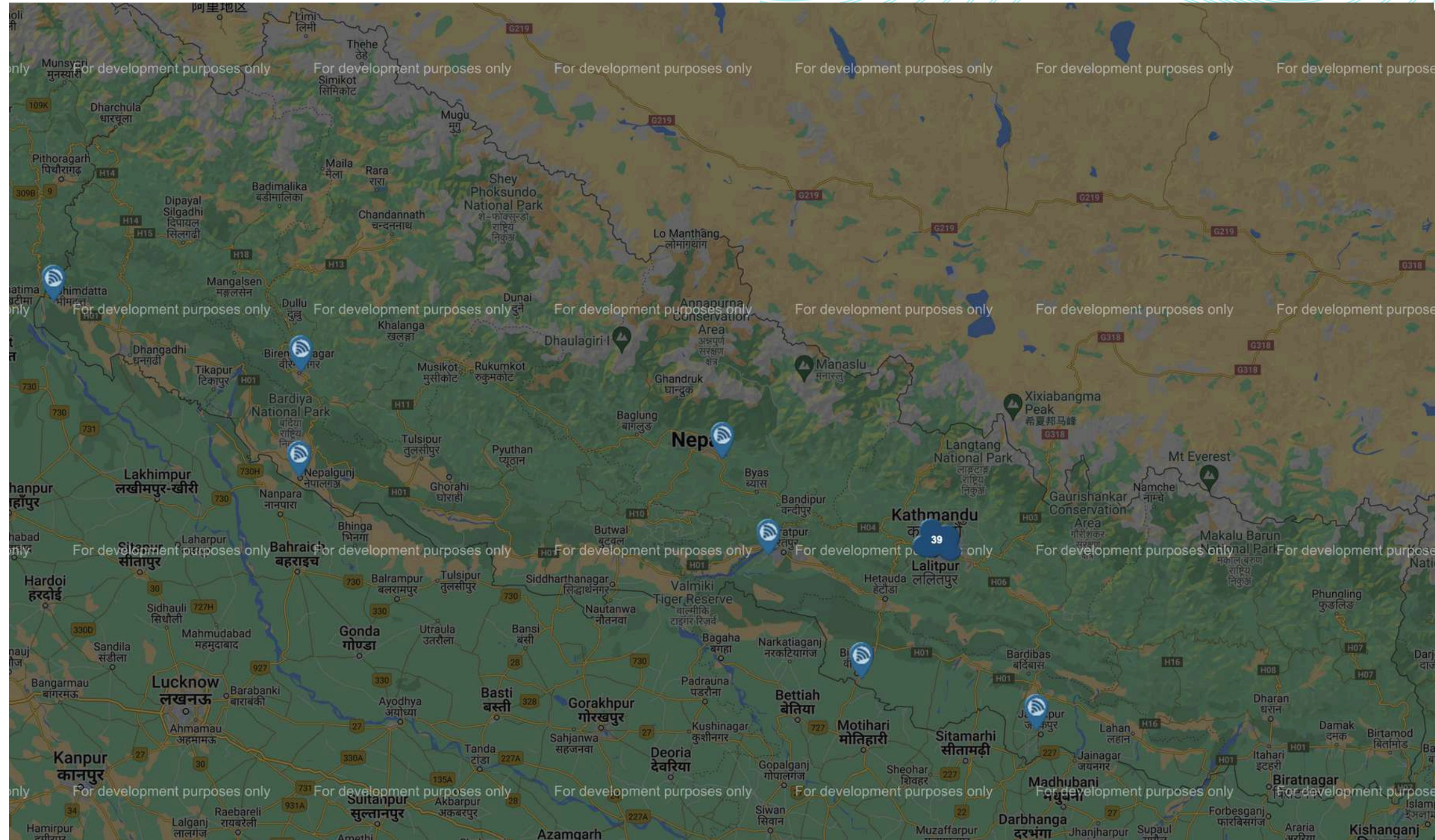
EDUROAM IN NEPAL

- 45 institutions are connected to eduroam.
- Tribhuvan University, a large organization, has 220 access points connected via eduroam.
- Kathmandu University and Khowpa Engineering College, Tribhuvan University have set up their own RADIUS servers for local access to eduroam.
- Bir Hospital, Dhulikhel Hospital, and the National Trauma Center, NAST are also connected to eduroam.
- Local website : <https://eduroam.org.np/>

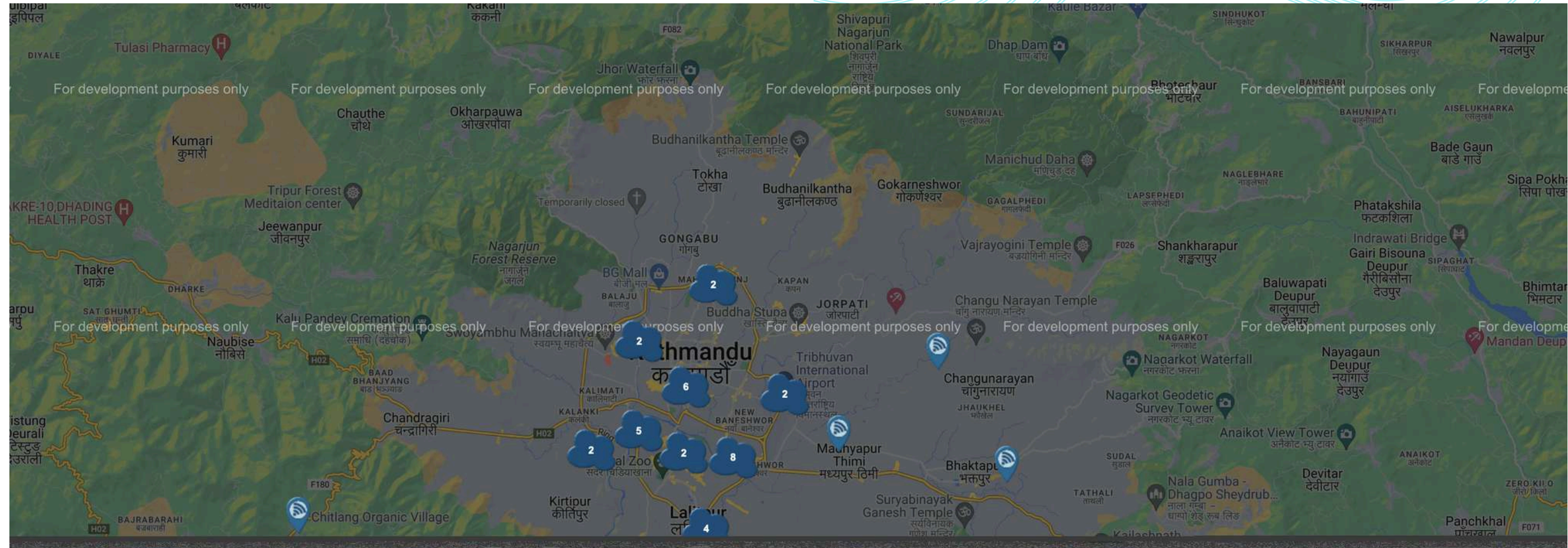
EDUROAM CONNECTION - LOCATION AND INSTITUTIONS



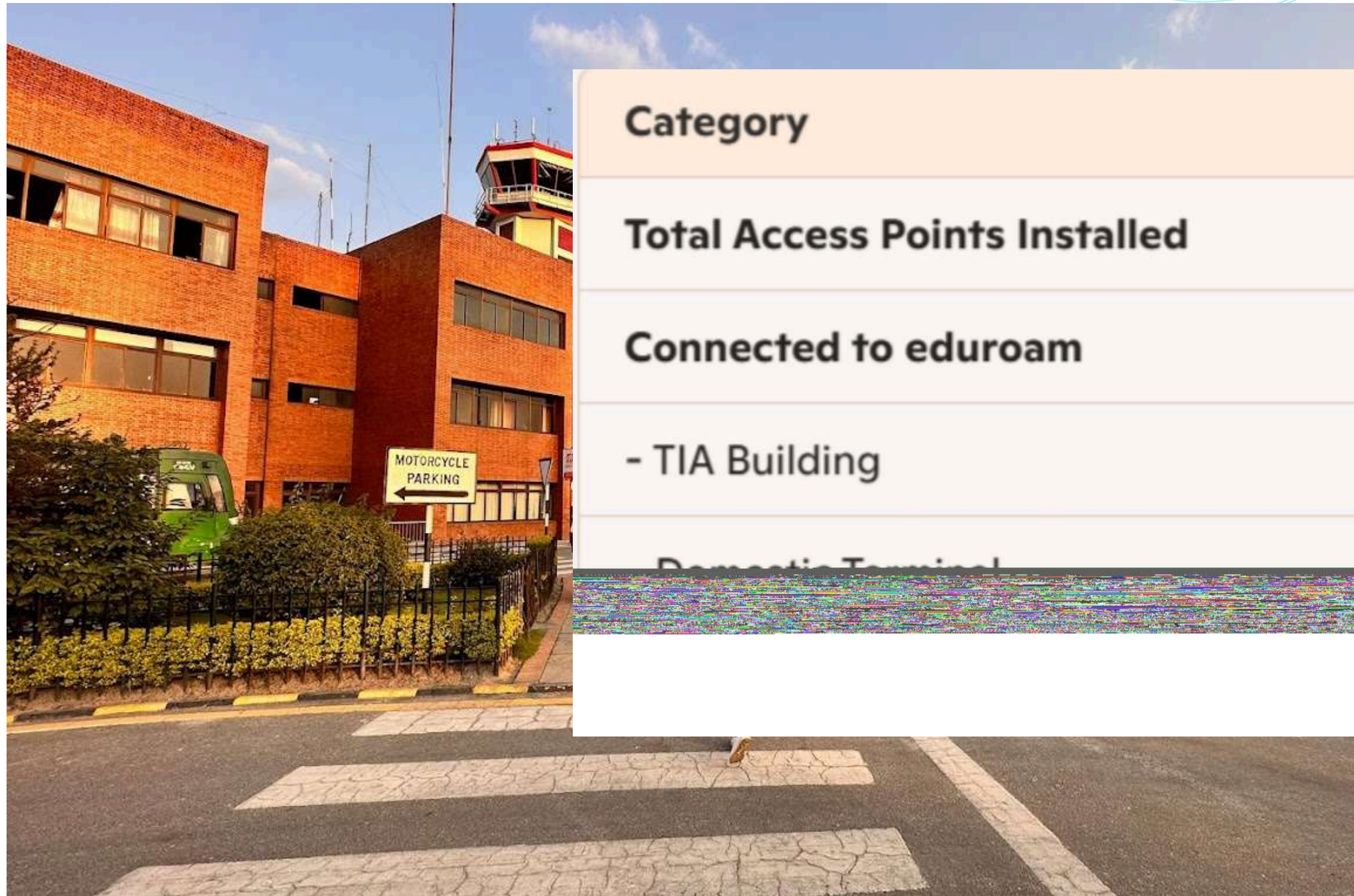
COVERAGE



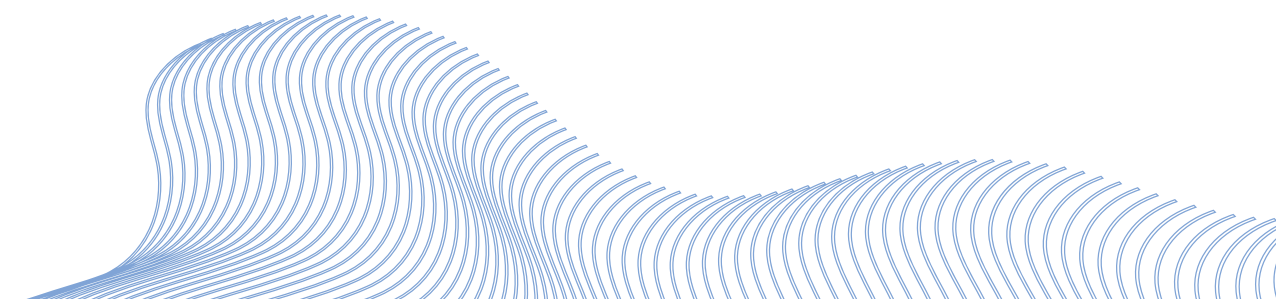
KATHMANDU VALLEY



TIA IS EDUROAM ENABLED RECENTLY

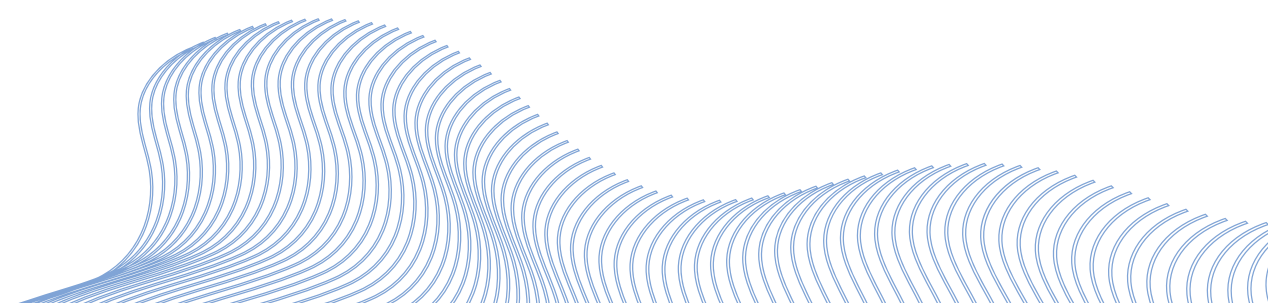


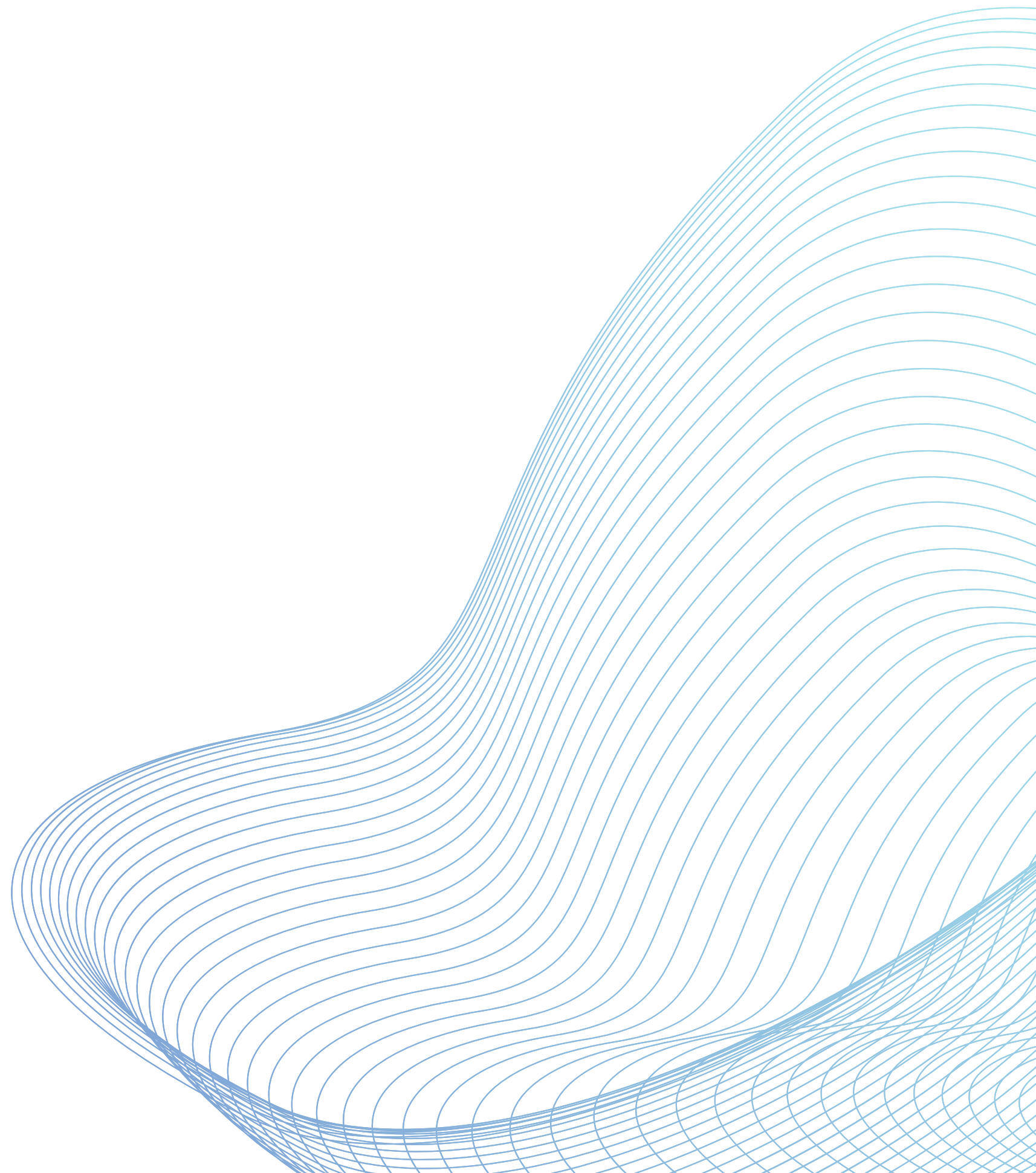
Category	Number of Access Points
Total Access Points Installed	74
Connected to eduroam	
- TIA Building	45
Domestic Terminal	12



CHALLENGES OF EDUROAM CONNECTION



- **USER MANAGEMENT**
 - Device Management
 - Server and VM requirements
 - Awareness and Training
- 



**LET'S
CONNECT
WITH US!**

