

# SANReN Connect Proof of Concept (POC)

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A national initiative of the Department of Science  
and Innovation and implemented by the CSIR

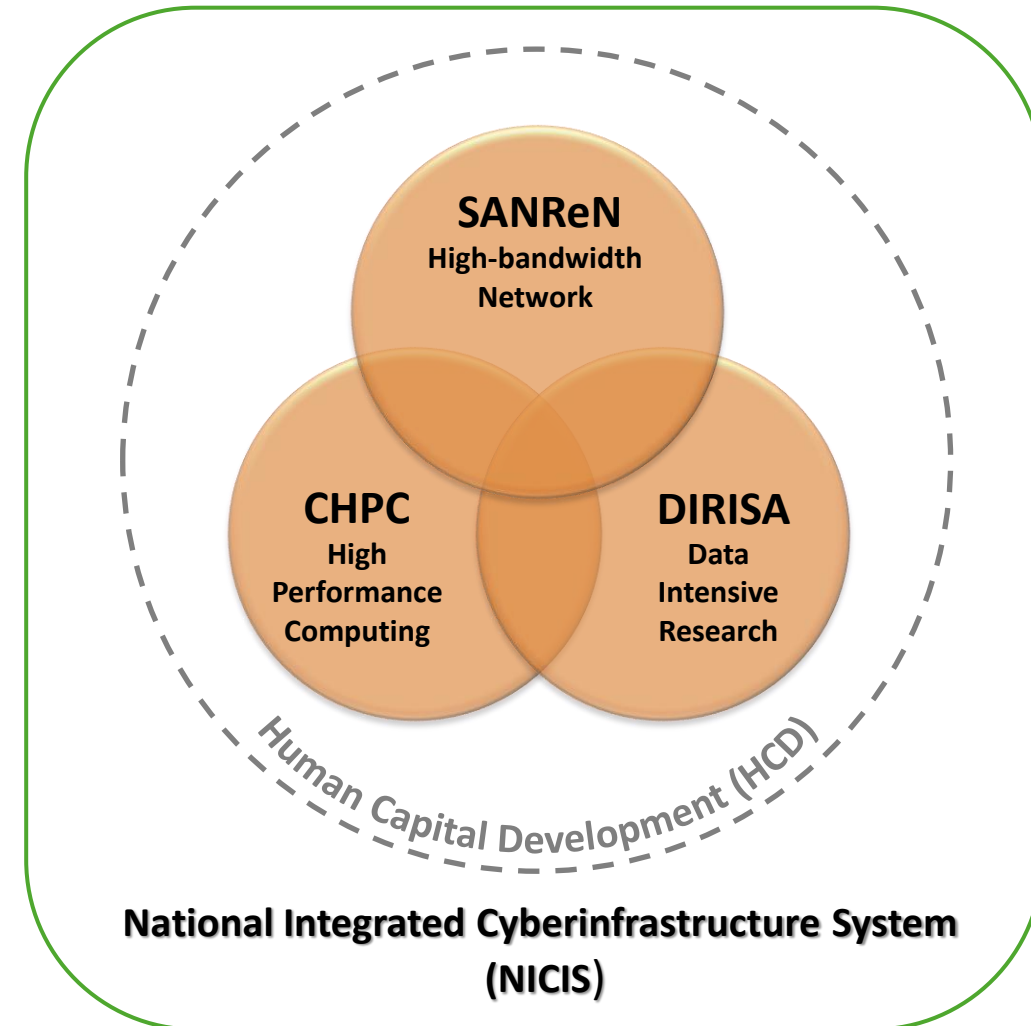


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# Background: NICIS

- National Integrated Cyberinfrastructure System (NICIS)
- Structure
  - South African Research Network (SANReN)
  - Centre for High Performance Computing (CHPC)
  - Data Intensive Research Initiative of South African (DIRISA)
  - HCD encompasses the 3 pillars
- NICIS is a hosted programme of the DSI
- Hosted at the CSIR as a centre in NGEI Cluster, Smart Society Division



# The South African NREN

- Structure

- Roles and responsibilities of the de facto South African NREN are distributed between SANReN and TENET

- Functions

- SANReN

- Builds the Network (network reach and capacity)
- Develops Advanced Services

- TENET

- Operates the SANReN Network under terms of collaboration agreement with CSIR
- Build onto the network
- Host Services
- Represents South African NREN at UbuntuNet Alliance (founding member) – Regional REN for South East Africa
- SABEN – entity for the connection of TVET colleges



# SANReN Connect POC - What is it?

- A new VPN-based solution designed to provide students with zero-cost internet access, with data costs covered by SANReN.
- Test user base: South African universities, TENET and SANReN employees

# South African Universities



# Requirements

- Must be registered with SAFIRE – South African Academic Identity Federation

i.e. Universities manage their own usernames, passwords and authentications

- Must have a Telkom SIM card

For the POC: Network provider selected through RFQ to provide data through Reversed billing service for 12 months

- Must have the latest OpenVPN client

# Why?

GAP in existing internet solutions for education:

- Wired SANReN network
- eduroam
- Network providers offerings
- Buying personal data
  
- Students may currently be disadvantaged by a lack of internet access when off campus.
- The successful implementation of SANReN Connect will enhance the network's footprint, support education at no cost to the user – currently funded by SANReN.
- Bridges digital divide

# Why?

- Data costs in South Africa have historically been known to be higher than other parts of the world. (Moyo and Munoriyarwa, 2021)
- High poverty rates - In most South African households, the money could always be used elsewhere.
- According to the Statista Research Department (2025), the number of smartphone users in South Africa was forecast to continuously increase between 2024 and 2029 by 12 million users (+86.83 percent). After the ninth consecutive increasing year, the smartphone user base is estimated to reach 25.83 million users and therefore a new peak in 2029.



# How?

- Leveraging smartphone adoption, existing SANReN hardware resources and open-source software
- The service reroutes student traffic destined for the internet through zero-rated SANReN Connect IP address/s.
- Reversed billing service through South African network provider– IP address per SAFIRE IdP represented by a VPN
- Multiple VPN servers for load balancing and redundancy
- Extends the reach of the SANReN network, overcoming user mobility limitations of traditional campus-based connectivity solutions
- Provides access to the SANReN network for users on their existing devices away from the University network and eduroam hotspots.

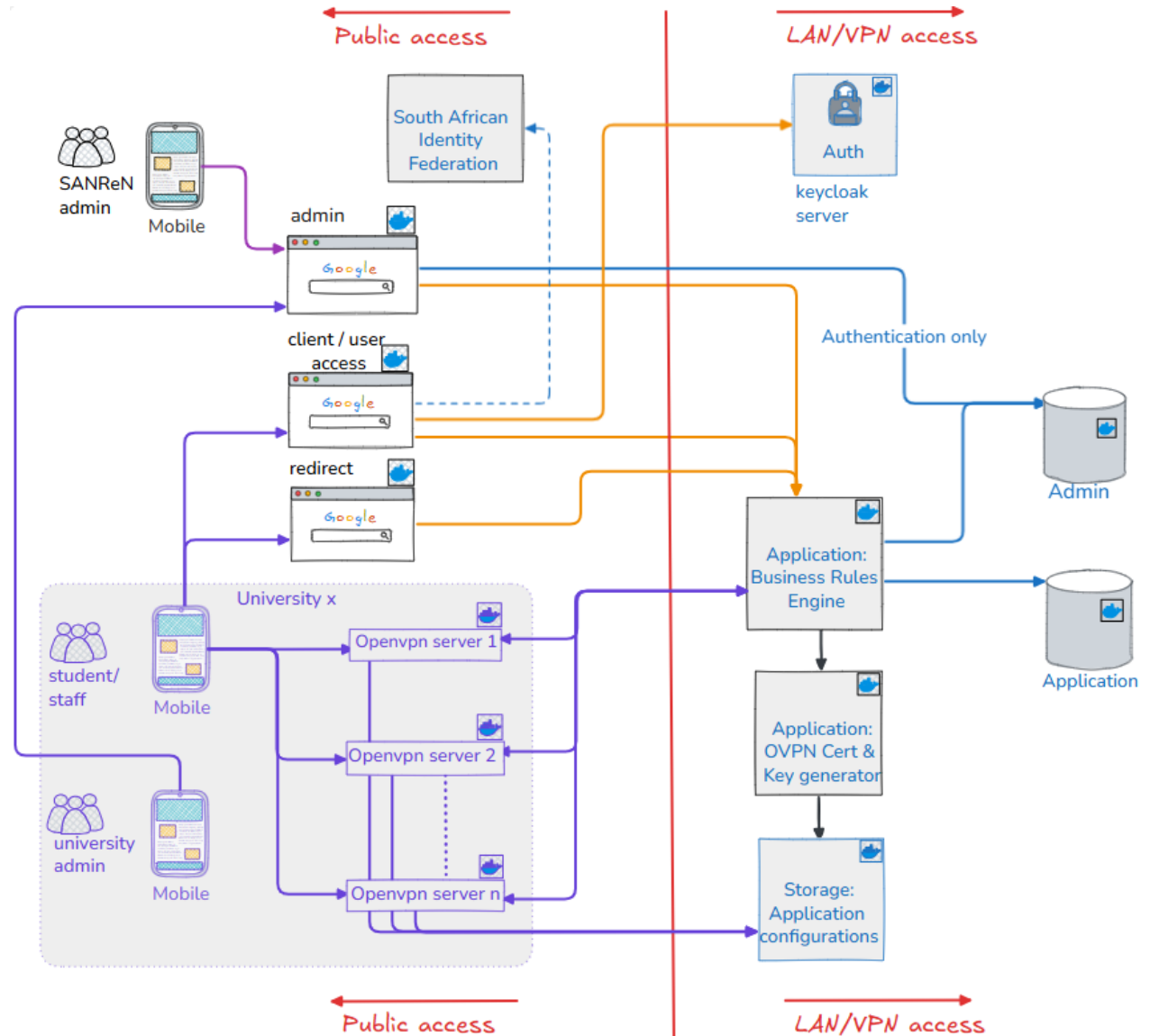
# How?

- SANReN team have developed the core functionality of the SANReN Connect Proof-of-Concept (PoC)
- Testing the service with users to evaluate the effectiveness of traffic zero-rating and performance under load

# Overview of the service design

## Benefits of using SANReN Connect

- ✓ Offers free internet connection
- ✓ Off-campus internet connection
- ✓ Federated identity login (SAFIRE)
- ✓ Secure VPN encryption
- ✓ Supports academic continuity
- ✓ Works across all major OS
- ✓ Real-time data usage tracking



# Advantages to R&E institutions

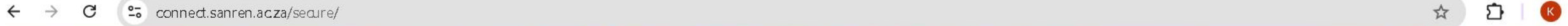
- Leverages economies-of-scale by purchasing a large quantity of data (at a lower price) that is shared by the national R&E community
- SANReN may negotiate on behalf of the community
- More flexibility for institutions - no contractual obligations based on the number of students

# Functionality for admins

Individual institution control and monitoring:

- Able to monitor stats
- Activate and suspend students
- Manage data limits
- Manage login frequency – verification of affiliation
- Manage bandwidth limits – premium and standard settings
- Able to supplement their allocated free data offering

# How does a user access the service?



## Welcome Kasandra

SANReN Connect is a secure, high-speed internet service designed specifically for South Africa's research and education community. To get started, download your VPN configuration file below and start using your allocated data securely over the SANReN network.

### VPN

Download VPN Configuration file



Download

### Terms & Conditions

View and the terms of service



View

### Balance

Check your current data balance

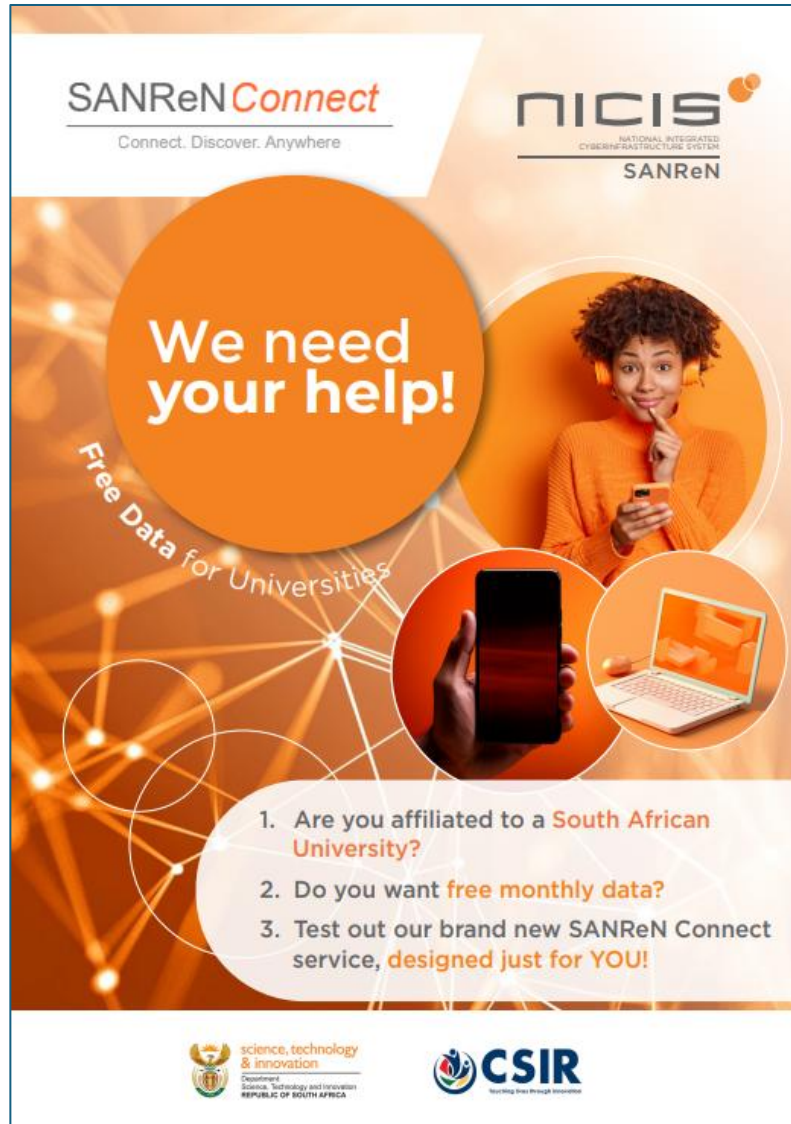


View

### Benefits of using SANReN Connect

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# Launch at CHPC conference



**SANReN Connect**  
Connect. Discover. Anywhere

**NICIS**  
NATIONAL INTEGRATED  
CYBERINFRASTRUCTURE SYSTEM  
SANReN

**We need your help!**

Free Data for Universities

1. Are you affiliated to a **South African University**?

2. Do you want **free monthly data**?

3. Test out our brand new **SANReN Connect** service, **designed just for YOU!**

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Leading One Through Innovation



**Why SANReN Connect?**

- Free Monthly Data** - stay connected anytime, anywhere
- Secure VPN Access** - access the internet via a secure VPN
- SAFIRE authentication** - log in using your existing institutional credentials via SAFIRE

**REQUIREMENTS:**

1. You must have a **Telkom SIM** card or **Telkom eSIM** to access the free data in this POC.
2. Download the **latest OpenVPN** client that will be used to access the service.

**HOW TO GET STARTED:**

1. Go to [connect.sanren.ac.za](http://connect.sanren.ac.za) from the device that you will be using the data from.
2. Login to the service (Your institution must be registered with SAFIRE for access to the service.)
3. Download the VPN file on your SANReN connect account page
4. Open your VPN client and "import" your VPN file by uploading it to the app.
5. Connect to your personal VPN profile.
6. Use the internet! You can view your data allocation balance on the SANReN Connect website.
7. Provide us with feedback on the user survey available on the SANReN Connect website.

For any questions, queries or feedback please contact [sanrenconnect@sanren.ac.za](mailto:sanrenconnect@sanren.ac.za)

For more information and a detailed how-to guide go to [connect.sanren.ac.za](http://connect.sanren.ac.za)

# Initial observations from the POC

- Anticipate that some users will be blocked as their institution is not registered with SAFIRE – trying to address this proactively before the launch at the CHPC conference in December
- Some users have difficulty with use of the VPN client: outdated versions, not familiar with downloading and uploading/importing a file.



# Next steps?

- Interest and ease of use
- Usage patterns
- Inform decisions on scaling the service
- Refine functionality based on practical use
- Test the service's performance under load conditions
- Assess its ability to provide zero-rated traffic and seamless connectivity for students, regardless of their location.
- To validate the feasibility of the solution – better costs, more network providers

# Thank You! Questions?

[kassandra@sanren.ac.za](mailto:kassandra@sanren.ac.za)

<https://www.sanren.ac.za/>

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# References

- Statista Research Department (2025) *South Africa: mobile internet users 2020-2029*. 3 June. Available at: <https://www.statista.com/statistics/558867/number-of-mobile-internet-user-in-south-africa/> (Accessed: 3 October 2025).
- Moyo, Dumisani & Munoriyarwa, Allen. (2021). 'Data must fall': mobile data pricing, regulatory paralysis and citizen action in South Africa 'Data must fall': mobile data pricing, regulatory paralysis and citizen action in South Africa. *Information Communication and Society*. 24. 10.1080/1369118X.2020.1864003.