# Unisa ICT Connectivity Roadmap

## 21 September 2011

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# 4.1 Current network Topology

❑2 Campuses

❑36 Regional Offices

❑Connectivity services provided by Telkom SA and SANReN

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# 4.1 What is SANReN

- It is a project to create a National Research and Education Network in South Africa. However, unlike most other NRENs, SANReN will provide its clients with both connectivity to the world's research networks as well as commodity Internet access.

- In 2005, the South African Department of Science and Technology obtained funding from treasury for a R365 million over a three-year project period to build a world-class National Research and Education Network to further the country's research aims.

- Late in 2007, Meraka announced that it had partnered with the then provider of academic networking in South Africa, TENET. Under their memorandum of understanding, Meraka would build SANReN and TENET would operate it. This arrangement is very similar to the relationship between GÉANT and DANTE in Europe.

- Covers all major Metropolitan Areas nationally

- Sites will be interconnected with either a 10 Gbps DWDM ring, or a fiber "Grey" ring. Sites on the DWDM ring will be receiving a 10 Gbps service at the site, sites on the "Grey" ring will be receiving one or multiples of 1 Gbps connections. The size of the connection per institution will be made by SANReN, and will be based on a reasonable demand. The idea is that each institute will be given a surplus of bandwidth where such a surplus does not become unnecessary
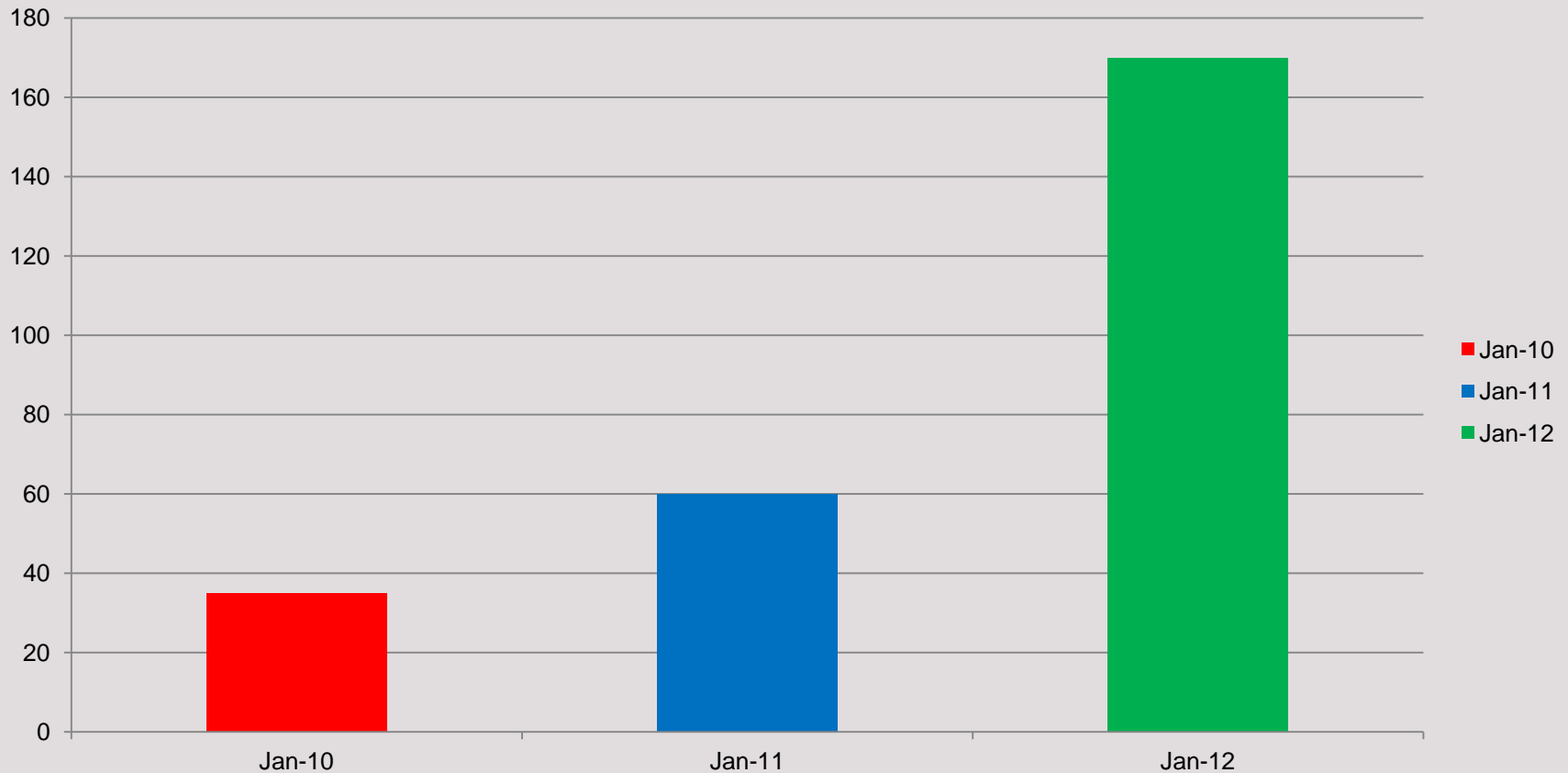
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# Current Network Connectivity



Unisa Wide Area Network With SANReN
Current
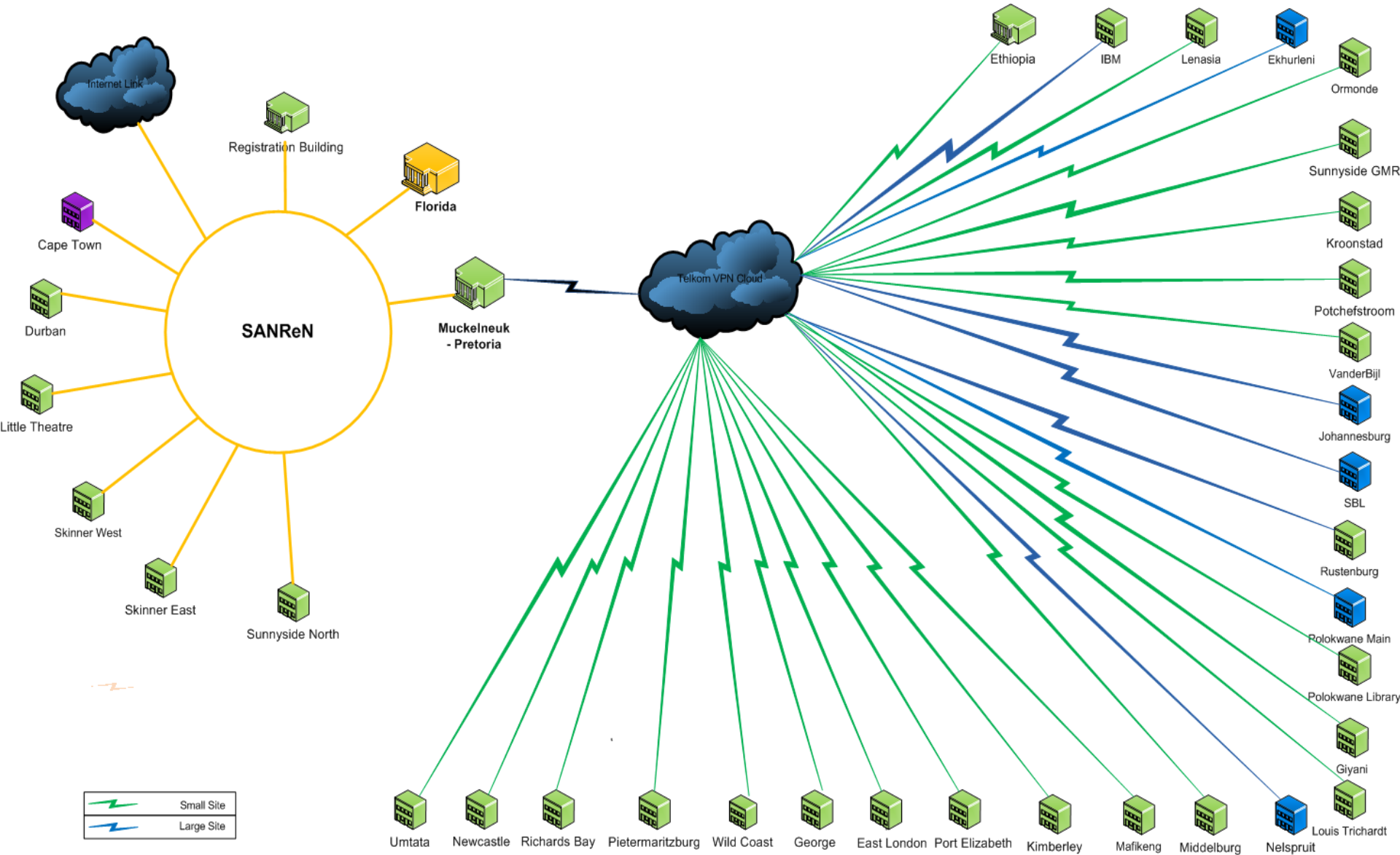
# Regional Bandwidth Growth

**Regional Bandwidth Growth**

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# 4.2 Planned Network Connectivity



Unisa Wide Area Network With SANReN
2012
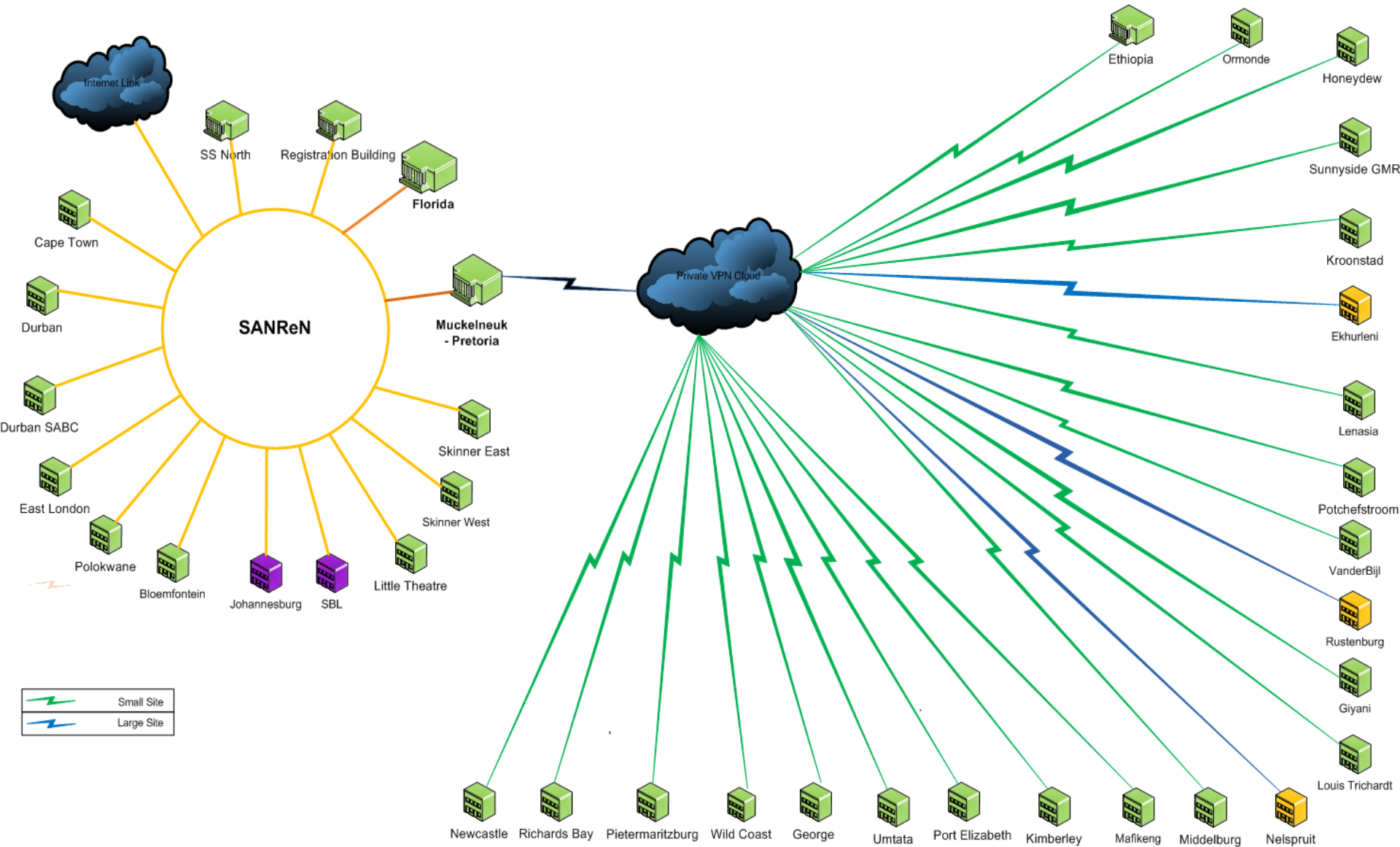
# Connectivity of Regional Offices

| Office / Centre | Rent/Own | Number of Students | Solution |
|---|---|---|---|
| **MIDLANDS** | | | |
| Rustenburg | Owned | 9523 | |
| Bloemfontein | Rented | 4032 | SANReN - TBC |
| Mafikeng | Rented | 3221 | |
| Kimberley | Rented | 3737 | |
| Potchefstroom | Rented | 2129 | RCCP- Phase 3 |
| Kroonstad | Rented | 3715 | |
| **WESTERN CAPE** | | | |
| Cape Town | Owned | 24382 | SANReN - TBC |
| George | Rented | 2011 | RCCP - Phase 3 |
| Port Elizabeth | Rented | 4845 | |
| Mthatha | Rented | 7457 | RCCP - Phase 2 |
| East London | Owned | 6437 | SANReN - TBC |
| **Northern / East** | | | |
| Polokwane Main | Owned | 13479 | RCCP - Phase 2 |
| Polokwane Library | Owned | | RCCP - Phase 2 |
| Nelspruit | Rented | 5885 | RCCP - Phase 3 |
| Louis Trichardt | Rented | 3410 | RCCP - Phase 1 |
| Middelburg | Rented | 10716 | |
| Giyani | Rented | 7657 | RCCP - Phase 1 |

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# Connectivity of Regional Offices

| Office / Centre | Rent/Own | Number of Students | Solution |
|---|---|---|---|
| **Kwa-Zulu Natal** | | | |
| Pietermaritzburg | Owned | 10684 | RCCP - Phase 2 |
| Durban Main | Owned | 51283 | SANReN |
| Durban Boland Bank | Rented | | SANReN - TBC |
| Richards Bay | Rented | | |
| Newcastle | Rented | 6035 | |
| Wild Coast | Rented | | RCCP - Phase 3 |
| Pietermaritzburg | Owned | 10684 | RCCP - Phase 2 |
| **Gauteng** | | | |
| Muckleneuk | Owned | | SANReN |
| Skinner East | Owned | | SANReN |
| Skinner West | Owned | | SANReN |
| Little Theatre | Owned | | SANReN |
| Sunnyside Registration | Owned | 45754 | SANReN |
| Sunnyside North | Owned | | SANReN |
| SBL - Midrand | Owned | | |
| Ekhurleni | Rented / Owned | 30854 | |
| Florida | Owned | 23860 | SANReN |

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# Connectivity of Regional Offices

| Office / Centre | Rent/Own | Number of Students | Solution |
|---|---|---|---|
| **Gauteng** | | | |
| Johannesburg | Rented | 28114 | SANReN - TBC |
| Vanderbijl Park | Rented | | RCCP - Phase 1 |
| Ormonde Conference Center | Owned | | |
| Lenasia | Rented | | |

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# Rural Campus Connectivity Project

❑ Funded by the Department of Higher Education and Training (DHET)
❑ The primary purpose of an RCCP access network is to connect one or more rural university campuses to a point-of-presence (PoP) of the South African National Research Network (SANReN).
❑ RCCP access networks will be designed to have an expected useful life of at least five years, and to make use of whatever technologies are best suited to the circumstances.
❑ Once an RCCP access network has been commissioned and declared operational by the Project Manager, it will be handed over to TENET, who will operate it as an integral component of SANReN in terms of REN Access Network Agreements with the participating institutions.
❑ The RCCP Steering Committee will deem a campus to be rural if it is not located within any of the seven metropolitan areas served by the SANReN backbone ring, viz. Bloemfontein, Cape Town, Durban, East London, Johannesburg, Port Elizabeth and Pretoria.
❑ The RCCP will not bear maintenance or operational costs, nor any other any recurring components of the costs of any RCCP access network.   All recurring costs will be borne by the beneficiary institutions as agreed in advance with TENET and specified in REN Access Network Agreements with TENET.

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# 4.3 Rural Campus Connection Project

| RCCP Projects | | | |
|---|---|---|---|
| **Univ** | **Campus** | **SANReN PoP** | **Priority** |
| UNIVEN | **Main Campus** | Turfloop | 1 |
| UNISA | Giyani | | |
| UNISA | Makhado | | |
| UL | Experimental Farm | | |
| UL | | | |
| MUT | **Main Campus** | | 1 |
| VUT | **Main Campus** | Vanderbijlpark | 1 |
| NWU | Quest Campus | | |
| NWU | Faranani | | |
| UNISA | Sedibeng | | |
| VUT | Sebokeng | | |
| TUT | Garankuwa | | 2 |
| TUT | Soshanguwe | | |
| TUT | Soshanguwe | | |
| UL | Medunsa | | |
| DUT | | Pietermaritzburg | 2 |
| UNISA | Pietermaritzburg | | |
| TUT | Polokwane | Polokwane | 2 |
| UL | | | |
| UNISA | Polokwane | | |
| UNISA | Polokwane Library | | |
| VUT | Upington | | 3 |

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# 4.3 Rural Campus Connection Project

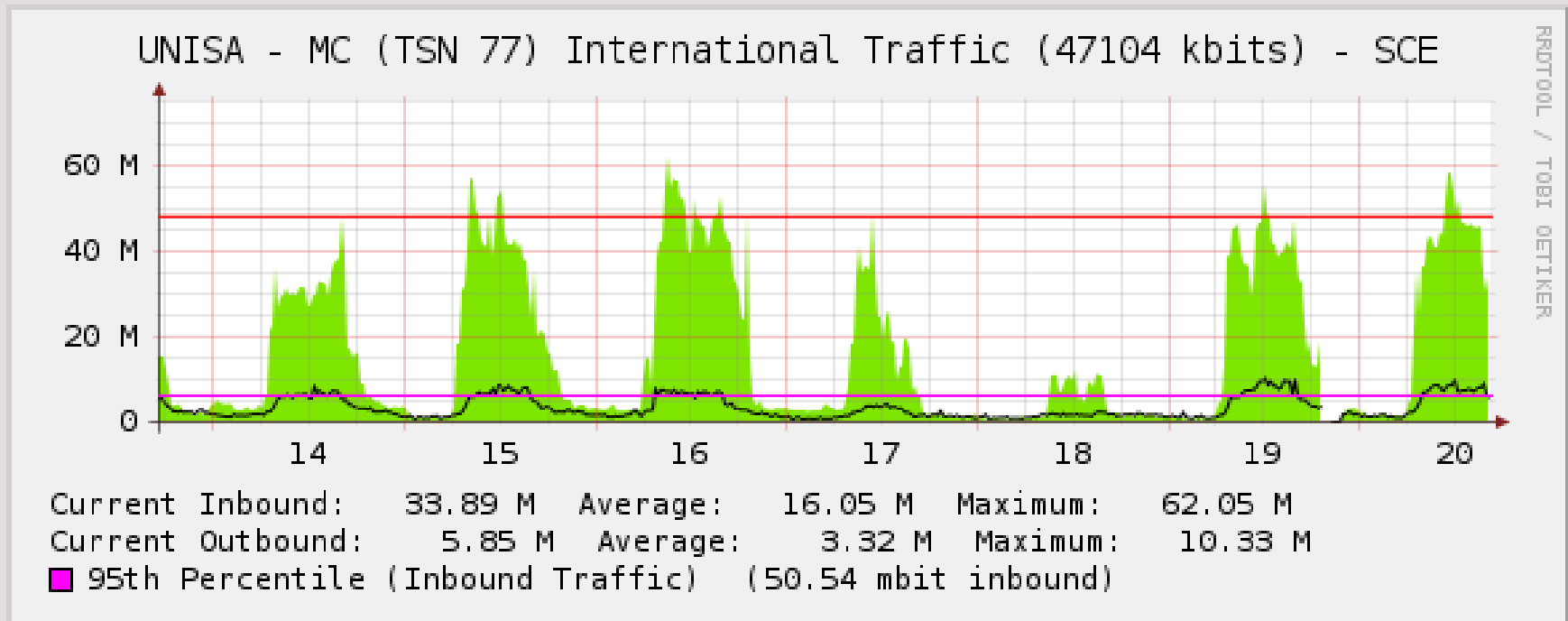| RCCP Projects | | | |
|---|---|---|---|
| **Univ** | **Campus** | **SANReN PoP** | **Priority** |
| UNISA | Mthatha | Mthatha | 2 |
| WSU | Zamukulungisa | | |
| NMMU | Saasveld | | 3 |
| UNISA | George | | |
| NWU | Satellite | Potchefstroom | 3 |
| UNISA | Potchefstroom | | |
| UNISA | | UZULU MC | 3 |
| UZULU | | | |
| UFS | Qwaqwa | | 3 |
| UNISA | | | 3 |
| TUT | Nelspruit | Nelspruit | 3 |
| UNISA | | | 3 |
| VUT | Secunda | Witbank | 3 |
| WSU | Masibulele | | 3 |
| UNISA | Mbizana | Mthatha | 3 |
| UKZN | Centre Somkhele | UZULU | 3 |
| CPUT | | | 3 |
| VUT | Upington | | 3 |

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# Internet Usage

- **SEACOM**
  - Completed July 2009

- **WACS – West African Coastal System**
  - Expected to be completed end 2011

- **SANReN**

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# Internet Growth

**International Bandwidth Growth**
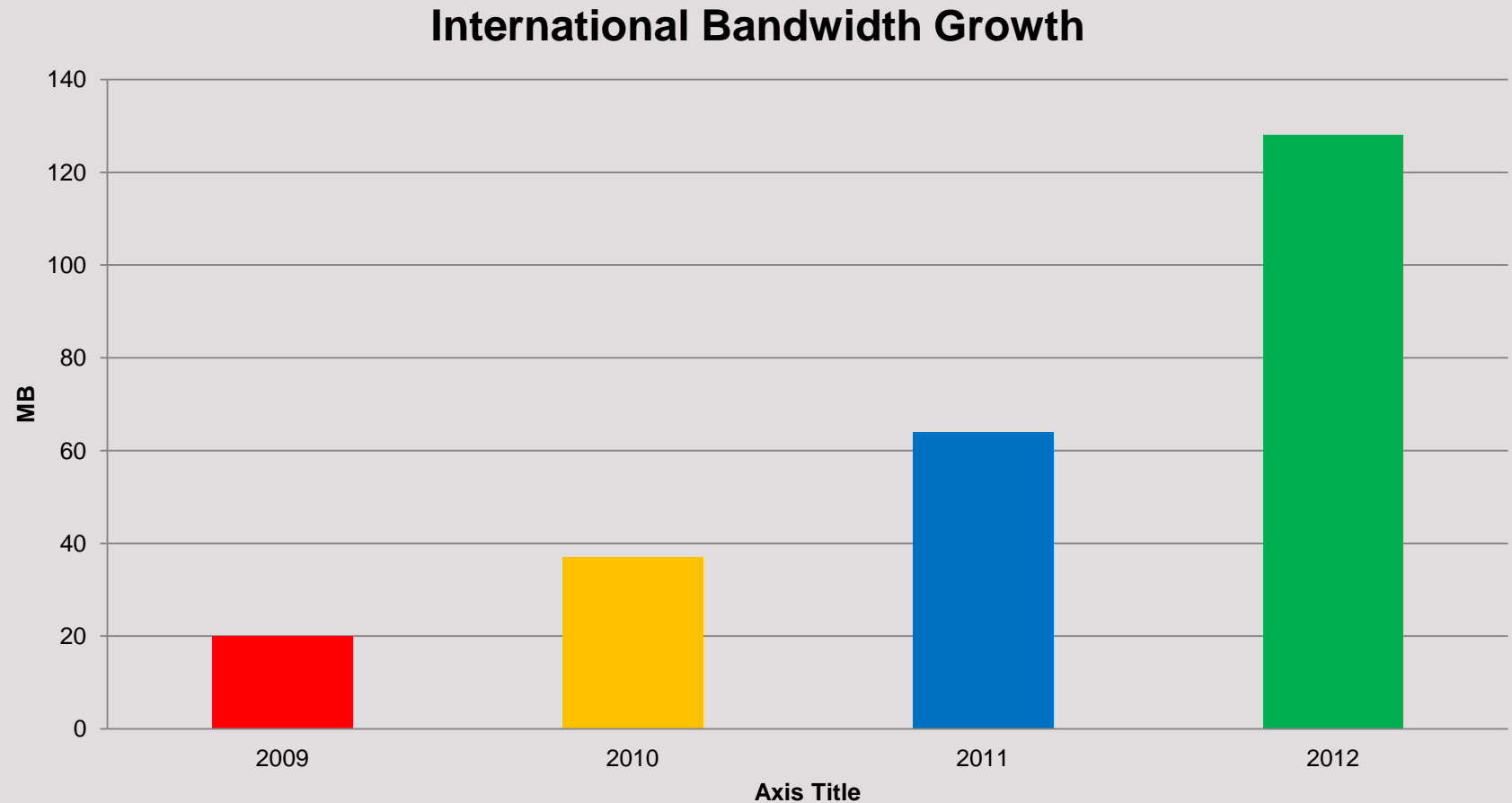
# Current International Internet Bandwidth



UNISA - MC (TSN 77) International Traffic (47104 kbits) - SCE

- Upgraded recently, does burst but it is still manageable
- Relatively inexpensive
- Similar for the Florida Internet Landing point

# Internet Usage

- **Current**
  - Mid 2011 - Upgraded from 37Mbps to 64Mbps International
  - Needs to be reviewed regularly
  - Limited to access at Unisa locations

- **Future**
  - Additional requirements require additional bandwidth
  - EDUROAM requirements

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# EDUROAM

- **What is EDURAOM**
  - Secure, world-wide roaming access developed for the international research and educational community

  - EDUROAM allows students, researchers and staff from participating institutions to obtain internet connectivity across campus and when visiting other participating institutions by simply opening their laptop.

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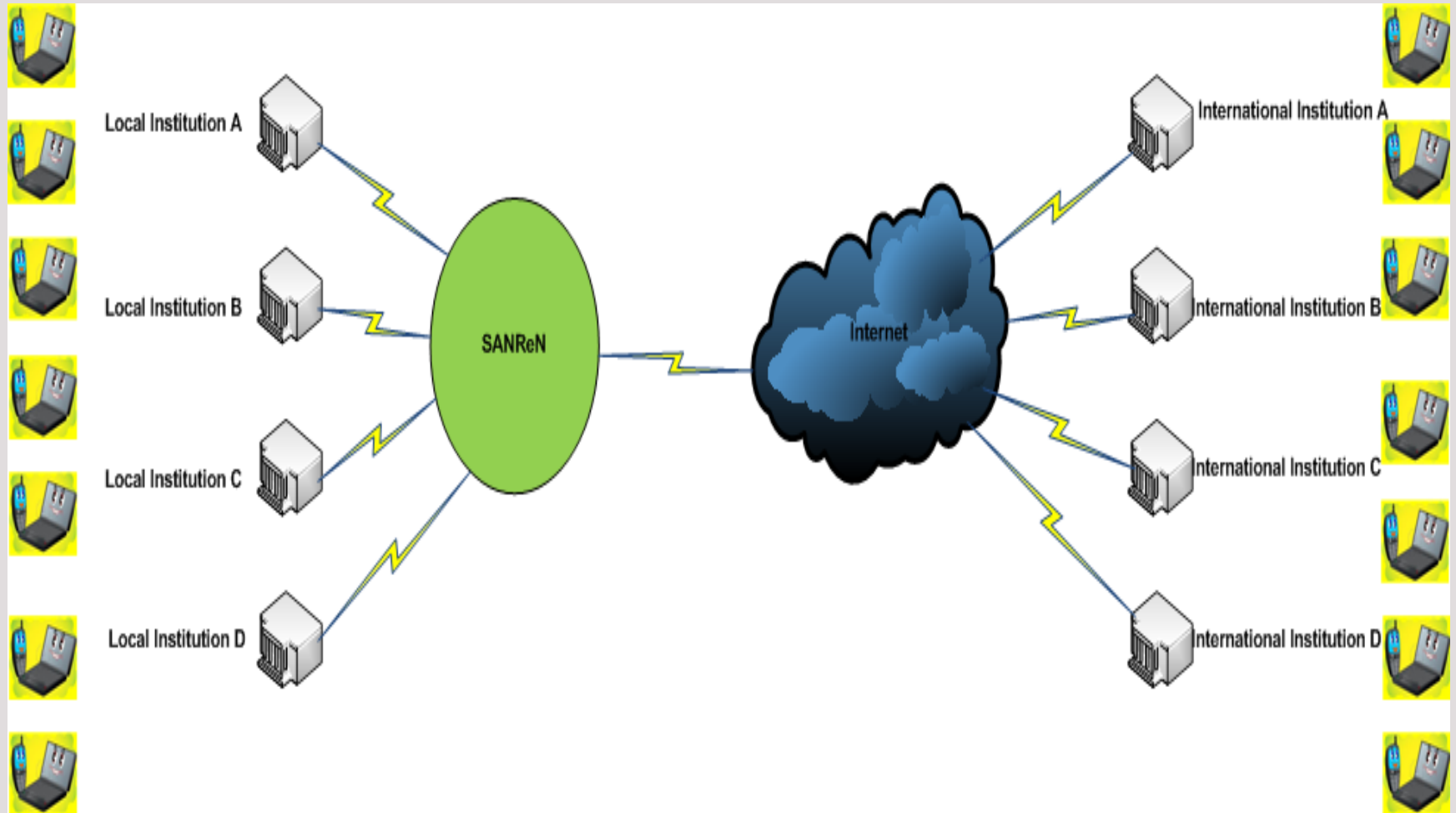
# EDUROAM

# EDUROAM

- **Advantages**
  - Greater coverage area (Locally and Internationally) through the use of other participating institutions resources

- **Disadvantages**
  - Prevalence of wireless devices among students
  - Greater requirement for additional internet bandwidth for UNISA to provide similar service for guest users

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# 4.7 Wireless Access

- **Proposed**

  - **Staff**
    - » **Access to everything**
  - **Student**
    - » **Access to Intranet and Internet**
  - **Guest**
    - » **Access to Internet**

    **\* National Solution \***

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# 4.7 Expanding Student Access

- **Current**

    – Limited to Unisa offices, Libraries, Laboratories & few MPCCs

    – Small impact on current resources such as Internet and technical resources

- **Future**

    – Expanding outside the boundaries of Unisa

    – ICASA and other regulatory requirements

    – Partnerships / Collaboration

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# Collaborative Access



Collaborative Access
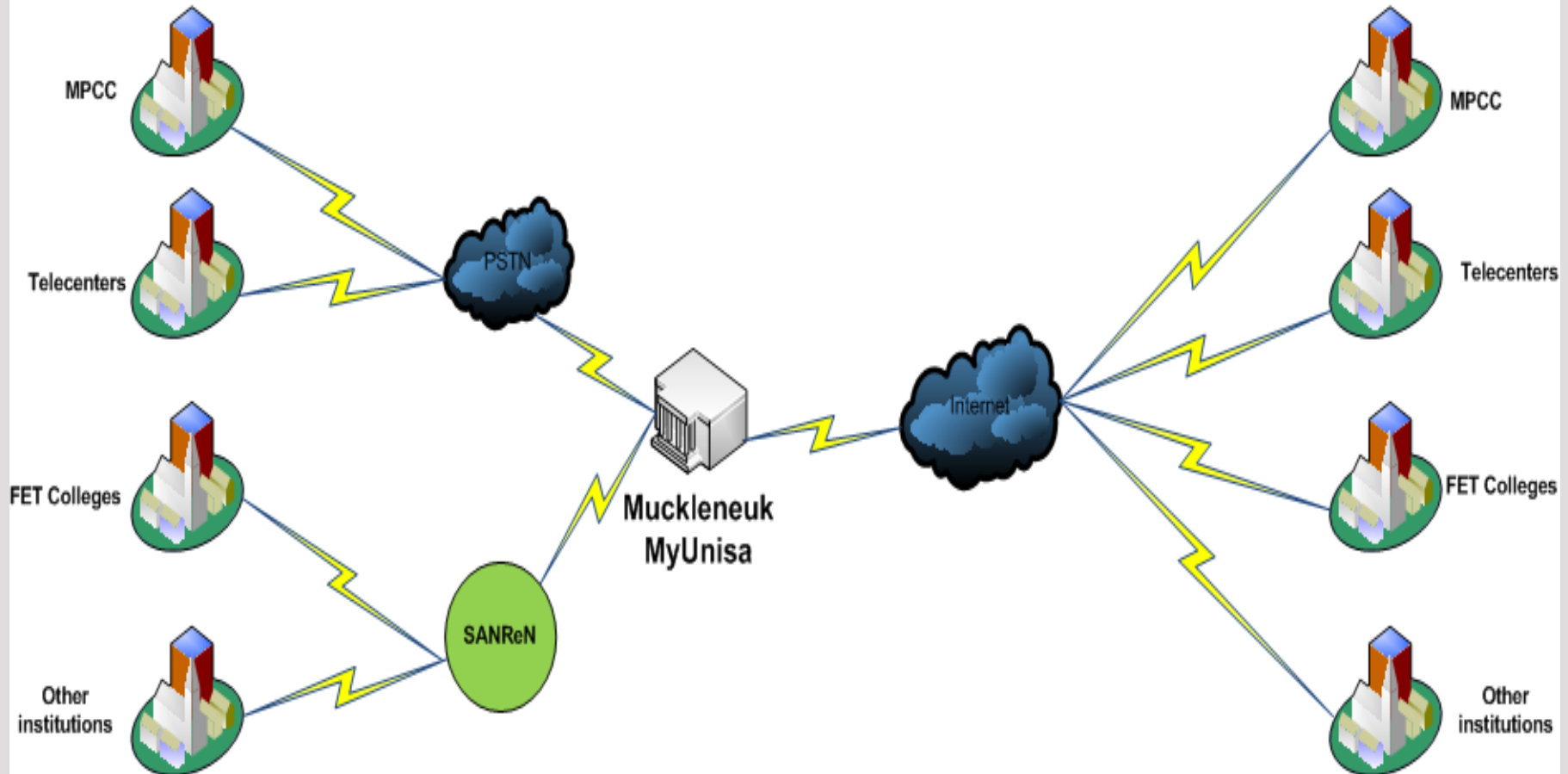
# Collaborative / Partnerships

- Advantages
  - Greater coverage area with resources (Workstations and Administration)
  - Leverage current initiatives (SANREN and Regional Connectivity project
  - Enhancing Community Projects (MPCC – Bandwidth and workstations)

- Disadvantages
  - Limited Access (Resources)
  - Short term contracts
  - Not just for Unisa students

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# Wi-Fi Coverage

- **Current**
  - No coverage outside Unisa locations

- **Identify possibilities**
  - Current partnerships with MPCC / Telecenter / FET Colleges
  - Other areas
  - Facilities and resources

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# Extending Wi-Fi Coverage

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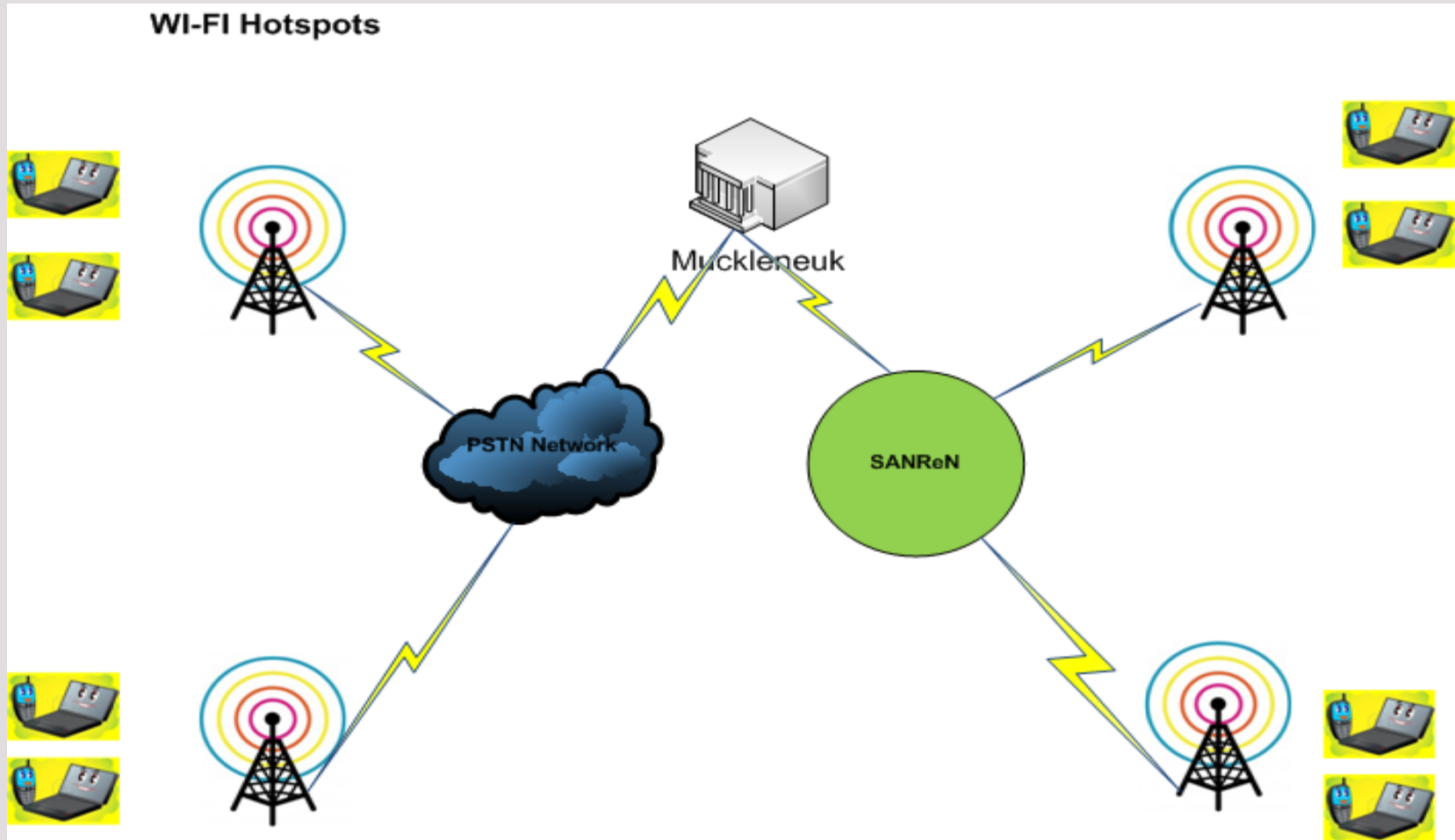
# Wi-Fi Hotspots

- **Advantages**
  - Greater coverage area
  - Leverage current initiatives (SANREN, Regional Connectivity and MPCC)

- **Disadvantages**
  - Prevalence of wireless devices among students
  - ICASA Regulatory Requirements
  - Office / Working Facilities

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# Current Projects

- LAN Upgrade Project – Nov 2011

- EDUROAM

- Regional Connectivity Project – Completed Jan 2012

- Application for an ICASA exemption

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# THANK YOU