

Case Study: Tshwane Proof of Concept

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Overview

- Background
- Goals
- Implementation
- Results
- Implications
- Opportunities
- Conclusion

Background – Who is Neology

- Vendor, Distributor and Integrator to Operators, ISP's, Enterprise and Government
- Hardware and systems behind Open Access and commercial networks
- Technology neutral business approach
- Aim to provide a turnkey solution for all our customers

Background - Municipalities

- **Municipal entities can support a significant amount of economic development within the communities they serve through the development of communications infrastructure**
- Municipalities are becoming more, not less, involved in the development of needed communications infrastructure
- The levels of involvement for any given municipal entity are varied and offer options depending on the dynamic of the needs of the community
- Significant value can be created through economic development – an amount that can be counted in the hundreds of millions of Rands

Background - Municipalities

- Municipalities have a mandate to provide services to their community
- Success of this project is measured differently than for a typical private sector project
- Already have access to appropriate sites, servitudes and facilities

Background – Tshwane

- Service Delivery
- Universities, Technicons and Innovation hub – Science Hub
- Maximising Existing Infrastructure

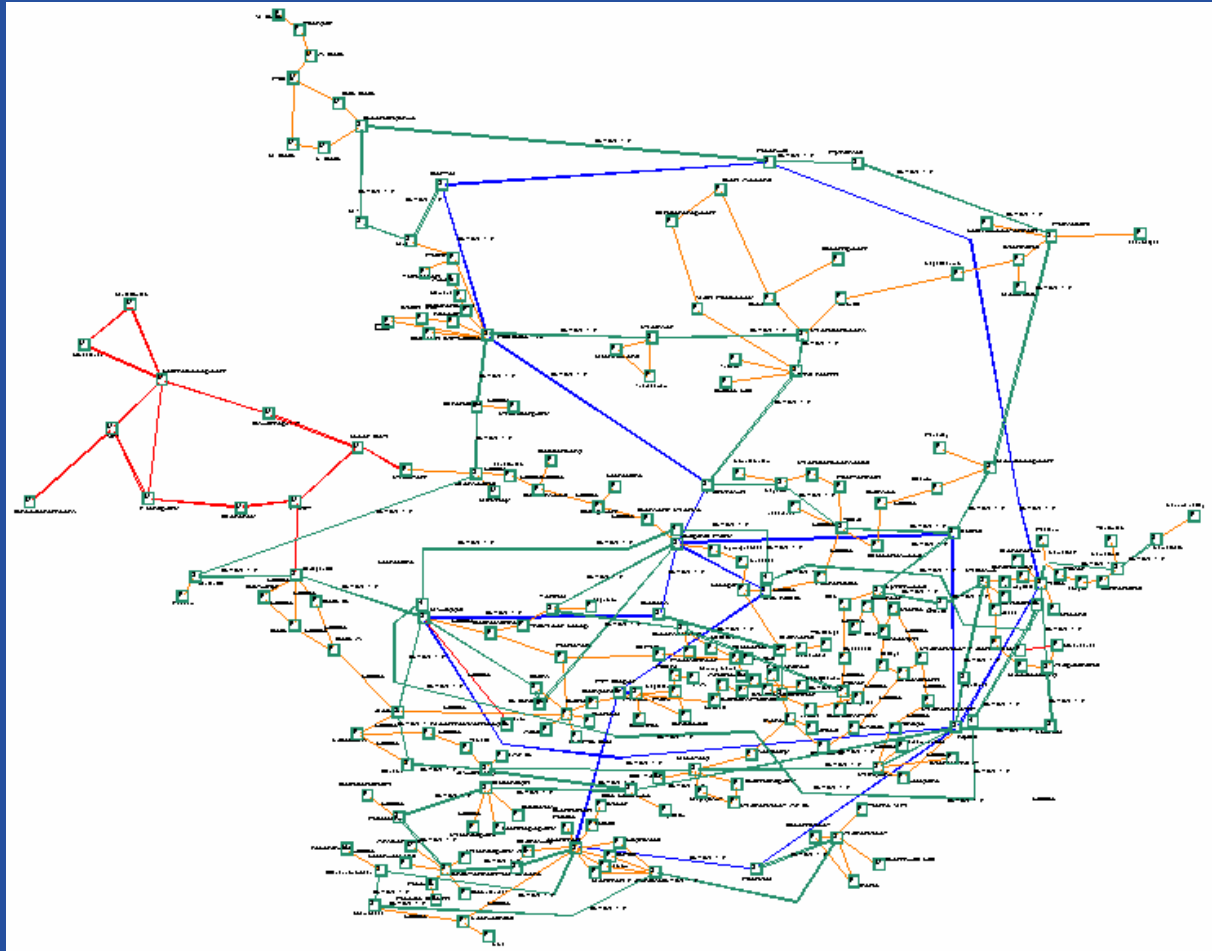
Background - Tshwane

- Tshwane Global Digital Hub Programme
 - Assignment: Socio-Economic growth through the Tshwane Information and Communication Technology (ICT) sector Evolution (Council Resolution 53, May 2002)
 - Digital Hubs are based on sound and pervasive **Broadband** ICT infrastructures which are leveraged to modernize cities and attract investment
 - Digital hubs are the necessary and essential cornerstones of Smart Digital Cities;
 - Technology build-out essential

Background – Tshwane

- Core Fiber network deployed over 8 years
- Designed for Electrical Grid Management
- Wireless technologies deployed where required or where fiber not justified
- Opportunity to expand and offer additional services
- Ongoing research process
- Healthcare Projects
- Schools Projects

Background – Existing Infrastructure



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Goals – Government Networks

- **Enhanced** information access
- **Increased** empowerment
- **Collaborative** communities

Goals – Municipal Broadband Networks

- Provide true broadband capacity
- Serve the local geographic community
- It is **in essence a public utility for the information society**
- They are operated on an open basis
- It facilitates entry by removing the high fixed costs associated with the need to deploy them
- Key is; they have a corporate governance structure that gives importance to serving the “common good” and provides wholesale access services

Goals - Tshwane

- Drives economic growth
- Competition driven cost reduction of services
- Change rules around infrastructure competition and the access to it
- Allows the “smaller guy” to make a living
- Keeps money IN the community

Implementation - Tshwane

- Proof of concept covering open access methodologies
- WiFi, WiMax, Fiber, FSO
- Utilising appropriate municipal infrastructure
- 2 Phases:
 - Core solution architecture
 - Multiple service provider deployment

Implementation - Tshwane

- Simple layered framework
 - Infrastructure
 - Management
 - Services
- Anyone can play
- Independent of technology or architecture
- Fair and non-discriminatory competition
- Transparency to ensure fair trading
- Encourage interconnections
- Promote regionalised services

Implementation - Tshwane Open Access Layered Framework

Service Layer

ISP's, VOIP providers, SMMEs, eGovernment

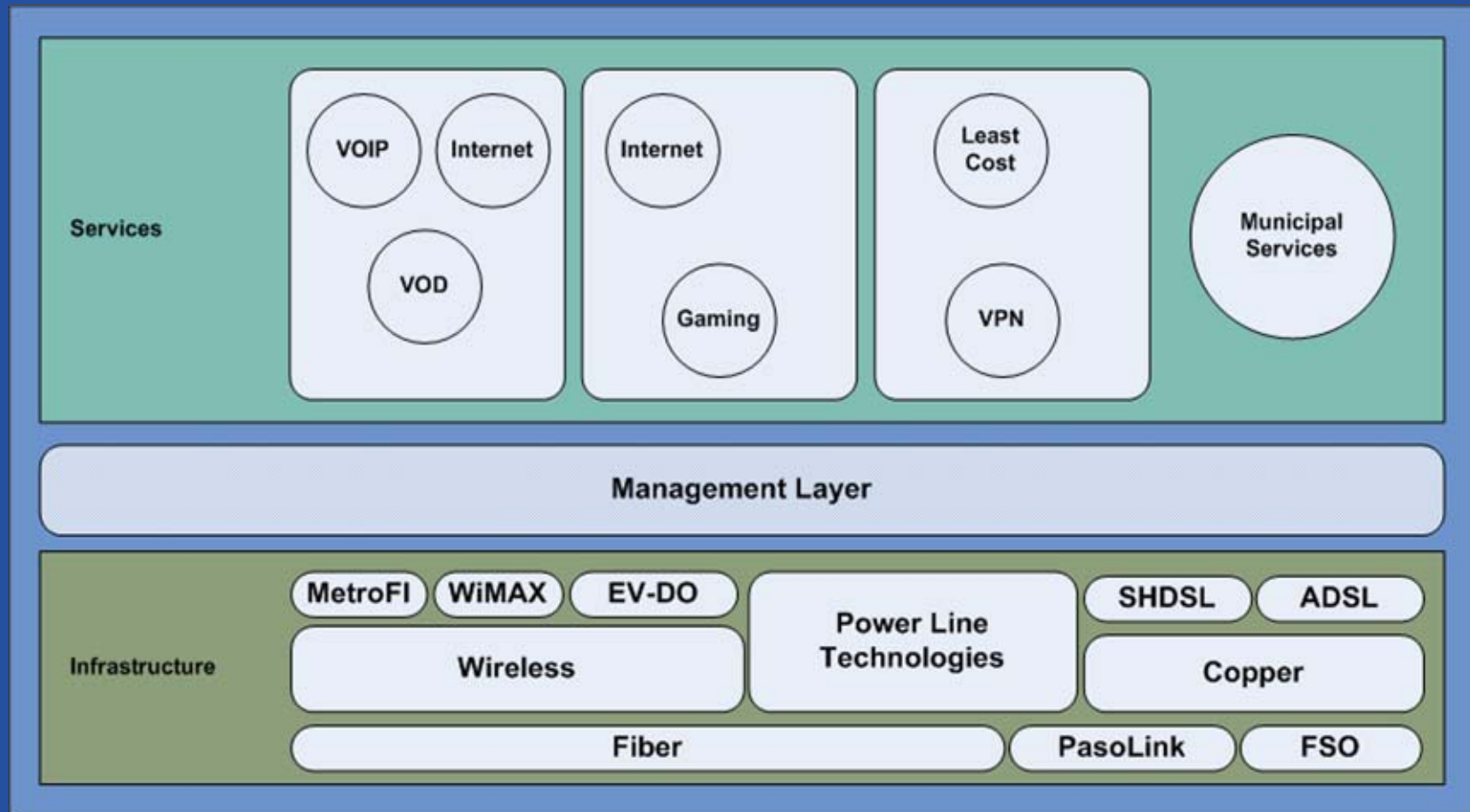
Management Layer

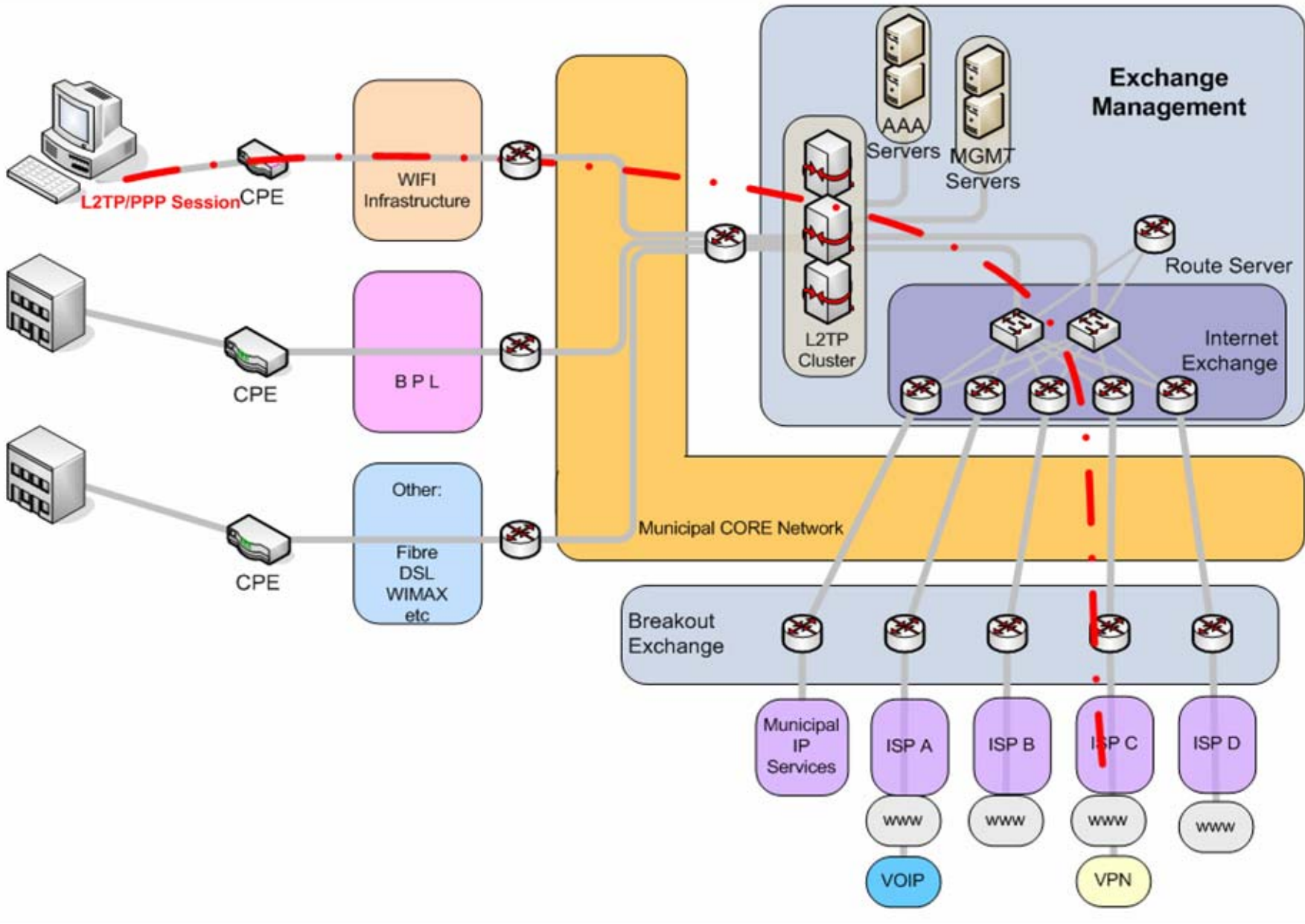
Municipal Exchange

Infrastructure Layer

Municipal Sites & Infrastructure

Implementation - Tshwane Overview - Layers





Implementation - Tshwane Deployment

- CORE Network Deployment
 - Based in Tshwane Electrical NoC
 - Provides portal and breakout services to all customers
- Local Internet Exchange
- Distribution Network
 - Primarily fiber based
 - Additional Wireless backhaul (primarily WiFi)

Implementation - Tshwane Network Components

- BPL (GTS - Rooiwal)
- Meshing (Neology – Hatfield)
- WiFi High Sites
 - Soshanguve
 - Menlo
 - Meintjies (Union Buildings)
 - Cable Hill (Pretoria North)
 - Atteridgeville
 - Centurion
 - Olivenhoudt
 - Wapadrand
- WiMAX
 - Internal voice and data projects

Implementation - Tshwane Mesh Deployment

- Single radio nodes
 - Node density provides good enough performance
 - Upgrade path to multi-radio units
- 3rd Generation multi-radio mesh nodes in testing
- Pole mount
 - 15-20 minutes installation time per node
 - Strap-on, supply direct from to 220v lines, with isolation switch
 - Requires a pair of gloves, strapping tool, screwdriver, and a shifting spanner
- 18 nodes deployed

Implementation - Tshwane Meshing Solution

- Mesh Support
- Point to Multi-Point support
- Low node cost
- Local firmware development
 - Open Source – International Community
 - Neology Customizations
- Supports multiple radio operation
- Self-healing mesh architecture

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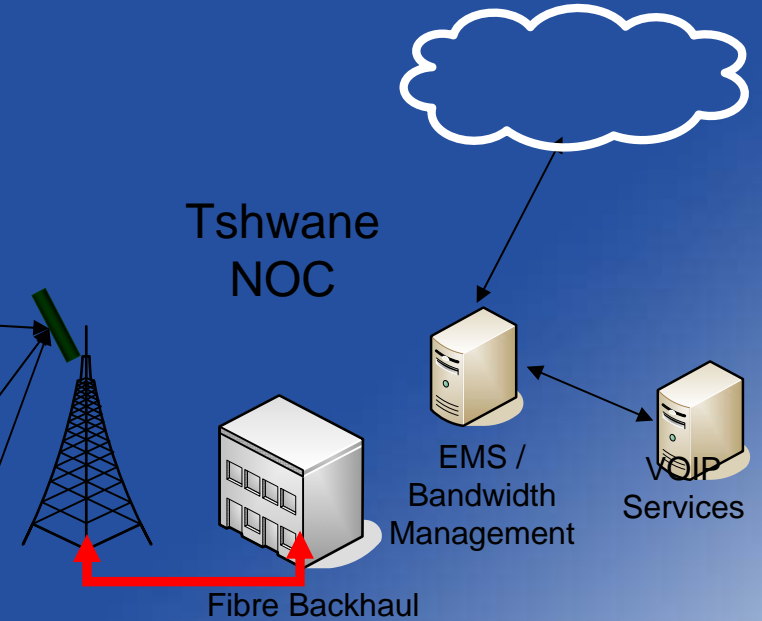
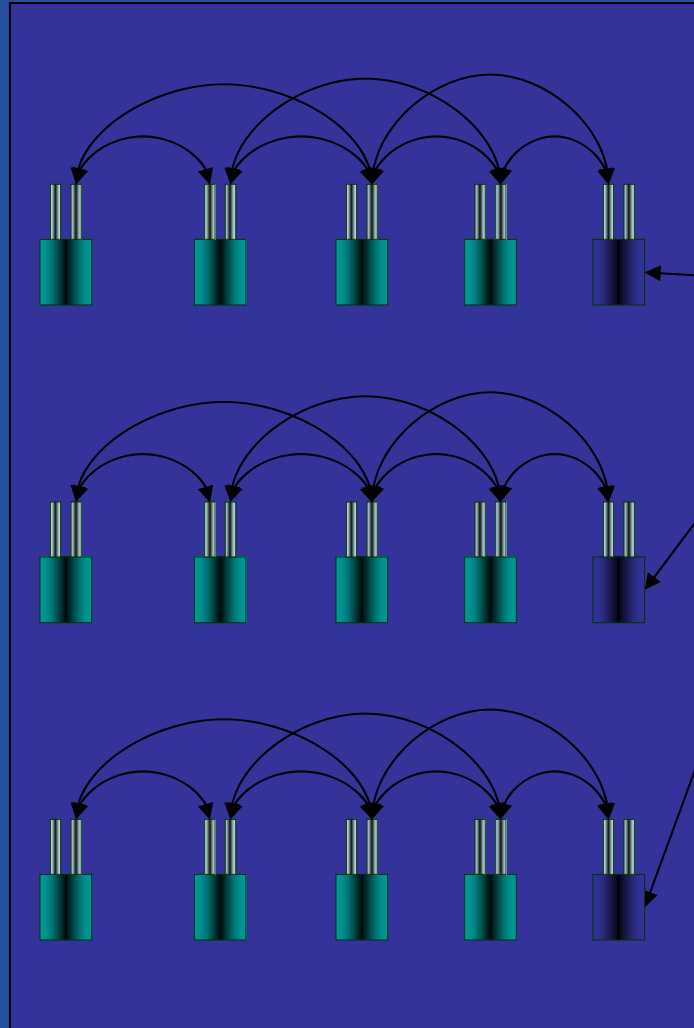


Implementation - Tshwane MetroFi Mesh

CPE Devices



MetroFi Mesh



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Implementation - Tshwane Mesh Deployment



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Implementation - Tshwane Service Layer

- Access layer used to provide a basic IP service restricted to the portal
- Encrypted tunnels to the relevant service provider
 - ISP's
 - Business to Business
 - Tshwane e-services
- Same principle are applied to all access technologies (incl BPL, WiMax, WiFi & Fiber)

Implementation - Tshwane

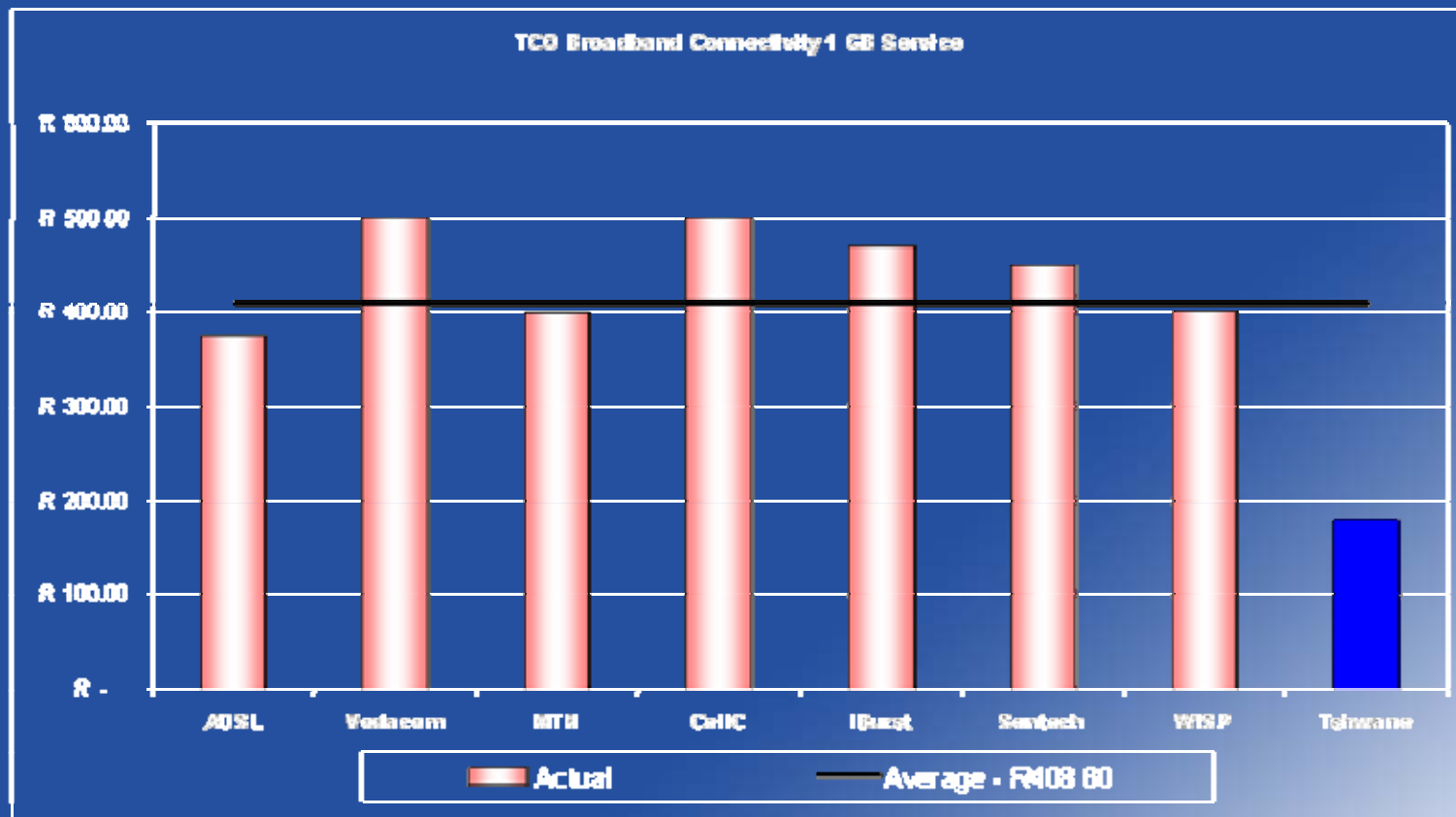
Current Services

- Internet
 - R180 for 1Gb
 - R350 for 3Gb
 - No line costs
- Tshwane IP Services
 - Free access to e-gov, limited internet, rate limited
- Other ISP's currently integrating under POC
- Future - Fixed Business Connections
- Private municipal network
- Private government network

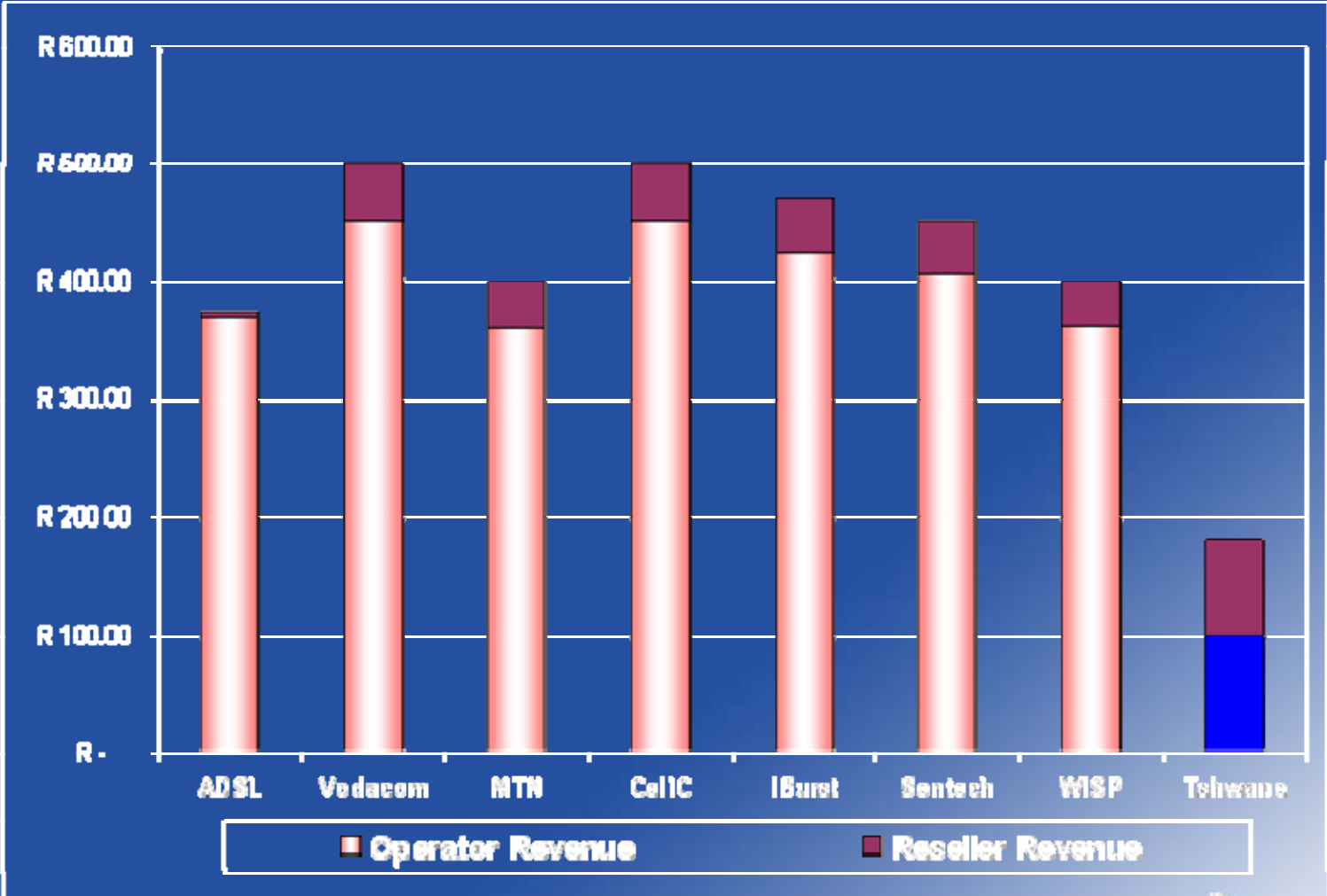
Results - Tshwane

- Direct reduction in access costs for the people, the municipality and government departments
- Availability of services
- SME opportunities

Results – TCO



Results - Revenue



Implications

Practical Changes for Tshwane citizens

- Lower point of entry for every citizen
- Removes digital delivery concerns focus on Access, Content and education
- Low cost telephony access
- Lower cost of data access
- Access to content
 - Free access to banking
 - Free access to Tshwane content sites
- Innovative delivery models, including private sector involvement, in progressing e-government

Implications

Broadband Content and Services

- Improve the quality of delivery
- Increase reach and scale
- Increase efficiency and cost savings
- Meet the expectations of citizens
- Rich media and interactivity

Opportunities – Looking forward

- Critically mentioned Bandwidth constraints solved within municipal areas
- Removing access medium concerns
- Growth of Services
 - Information Services
 - Interactive Services
 - Integrated Services

Opportunities - Services

- Access to government facilities and services
- e-Learning
- GIS services
- Voice services
- Reach of Access

Opportunities - Services

- Disability Access
- Emergency Services
- Intelligent Transportation Services (ITS)
- Online/remote education
- Online banking
- Business to Business Sales

Opportunities – Risk Awareness

- e-Literacy
- Focus on serving community
- Do NOT blindly follow e/m – Gov initiatives
- Contacts with authorities should become time- and cost-saving
- Sufficient know-how to electronically interact with governments

Conclusions

- Technology is **NOT** the deciding factor
- Municipal networks forms basis of access
- Huge opportunities but awareness of risk critical
- Should form the basis of all e-Government deployments

Thank You

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