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## Internet Bandwidth Challenges

Strategies for optimising and managing bandwidth in low bandwidth environments

Executive manager's overview and briefing

Martin Belcher  
<mbelcher@inasp.info>

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## Presentation outline

- Review the challenges that universities face in relation to Internet service provision and access (bandwidth)
- Review the role of bandwidth management in these issues (now and in the future)
- Review the role that executive and senior management have to play in this area
- Examine possible actions and best practice for executive and senior management

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## First, some definitions ...

- **Connectivity, Internet connection:** the connection that allows access to the Internet
- **VSAT, leased line, dial up, fibre connection, etc.:** different methods of accessing the Internet
- **Bandwidth:** the rate of data transfer - i.e. the capacity of the Internet connection being used
- **Gbps, Mbps, Kbps:** Gigabits, Megabits, Kilobits per second – the units in which bandwidth is usually measured

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## More definitions ...

- **Network traffic:** the amount of information that is being passed around a network (in particular the Internet connection)
- **Network traffic congestion/saturation:** traffic jams or grid lock
- **Bandwidth reality:** bandwidth and connectivity are extremely expensive, do not meet demand, and are a constant cause of tension!

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## The essential issue

- Bandwidth is a resource that is...
  - limited
  - in high demand
  - expensive
  - of high value
- It should be managed accordingly

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## What is the bandwidth challenge?

- Available bandwidth is limited and insufficient to meet demand
- Existing bandwidth is usually running at maximum capacity
  - as a result it is often unusable
- The cost of bandwidth is extremely high
- Expanding bandwidth capacity is limited due to finances, supply, technology

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## Why are these issues a challenge?

- Existing bandwidth is often not managed
  - See the ATICS Report: [www.atics.info](http://www.atics.info) for full details of the situation in African universities

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## What does this mean?

- The university is not participating in the digital library revolution
  - Existing digital library resources are under-utilised
  - Further investment in digital library technology is unrewarding (high cost/low use)
- The university is not providing its staff, researchers and students with the information they require
  - Lack of access to up-to-date, global research information = restricted research potential

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## The financial impact

- Low level of return on investment
  - High network costs (c.\$5000 per month)
  - Low level of use (page downloads taking >10 minutes)
- Low incentive to invest more within the university infrastructure
  - Poor ICT investment (including staff, training, etc.)
  - More computers / same bandwidth = slower access / less research

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## Possible solutions?

- Do nothing !
  - often the reality but not the answer
- More bandwidth and lower cost
  - Local, national and international consortia
- Better management of the existing resource
  - Improved access, no additional bandwidth costs
- Combined approach (low cost + management)
  - Half price + double speed = quadruple access
  - Increased long-term sustainability

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## Bandwidth management

1. **Monitoring and management** of available resource
  2. **Optimisation** of the resource to ensure value for money and fitness of purpose
- Three key groups to ensure success:
    - Executive management
    - Senior implementation management
    - Technical staff involved in the day-to-day implementation

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## Bandwidth management essentials

Issues for executive and senior  
management

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## Executive management roles in bandwidth management

- Leadership
  - Authority behind a decision or action is essential
- Supportive policy environment
  - Any developments must be sponsored and advocated
- Strategic direction
  - Bandwidth management needs to be integrated within the university policy

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## Leadership and strategic direction

- How does bandwidth connectivity help to achieve strategic aims and objectives?
- What implications are there for policy, resources and priorities within the institution?
- How can the strategy be realised by actions and results?
- How can consensus be achieved and mobilised?
  - Changing working patterns may be unpopular

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## Supportive policy environment

- Policy is an enabling element of higher education management
  - Some things are denied in order to make other things possible
  - Without policy it is impossible to manage key aspects of bandwidth use
  - Policies will need to restrict how bandwidth is used (and is unlikely to be popular if managed badly)
- Policy development must be consultative, supported and led from the top

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## Leadership and accountability

- Successful implementation of bandwidth strategy can only be achieved by ensuring accountability:
  - Within the IT department
  - Within the user community
  - Within the executive management

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## Resourcing

- Bandwidth management is a strategic priority
  - no institution of higher education can deliver on its mission without good connectivity
- Resources need to be identified to ensure successful implementation of bandwidth management

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## The IT department as a resource

- The IT department must be adequately equipped and managed
  - appropriate IT governance
  - appropriate alignment of IT operations with institutional objectives
  - appropriate resourcing of IT staff and operations
  - appropriate benchmarking and explanation of bandwidth use

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## Recommendations for senior management

- Make bandwidth management a priority
- Be safe (ensure safe Internet access)
- Respond to demands
- Encourage positive behaviour
- Monitor the IT team
- Give everyone an identity (user monitoring)
- Evaluate connection options regularly
- Join forces (collaboration with other institutions)

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## Further information ...

- More information on the Bandwidth Management and Optimisation programme can be found in:
  - *Optimising Internet Bandwidth in Developing Country Higher Education*  
In print and also online: <http://www.inasp.info/pubs> in English, French or Spanish
  - <http://www.inasp.info/bandwidth>  
More information about the entire support programme, workshops, resources and publications

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## Further information about INASP

- International Network for the Availability of Scientific Publications (INASP)
- Established in 1992
- The mission of INASP is to enable worldwide access to information and knowledge with particular emphasis on the needs of developing and transitional countries.

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## INASP

- The major components of our strategy are:  
Networking people • providing access to information • supporting local exchange of information and knowledge • strengthening local publishing • training and capacity development
- Programme areas
  - Research and Education
  - Library Support Programme
  - Publishing Support Initiatives
  - Health Information
  - Rural Development

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## INASP

To find out more about  
INASP programmes and activities  
visit our website:  
<http://www.inasp.info>

INASP  
58 St Aldates, Oxford, OX1 1ST, UK  
Tel: +44 1865 249909  
Fax: +44 1865 251060  
Email: [inasplinfo](mailto:inasplinfo)

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## Thank you

Further information on bandwidth management and optimisation:

<http://www.inasp.info/bandwidth/>  
<http://www.bmo-community.org/>

The bandwidth management and optimisation programme is supported by:  
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