



UNIVERSITY *of the*
WESTERN CAPE

UNIVERSITY OF WESTERN CAPE (UWC)


A BANDWIDTH MANAGEMENT POLICY

...
DATE OF LAST APPROVAL: C::2011/02

Approved by Council, 9 June 2011 (C2011/02)

SECRETARIAT
Private Bag x17, Bellville 7535,
South Africa
T: +27 21 959 2727 / 2146
F: +27 21 959 3443
scopperfield@uwc.ac.za
www.uwc.ac.za

A place of quality,
a place to grow, from hope
to action through knowledge

	UNIVERSITY OF THE WESTERN CAPE INFORMATION & COMMUNICATION SERVICES
	Bandwidth Management Policy
DOCUMENT IDENTIFICATION	
DOCUMENT TYPE:	Policy
DOCUMENT NUMBER:	UWC-ICS-019
DOCUMENT TITLE	University of the Western Cape Bandwidth Management Polley
VERSION NUMBER:	0.1
DATE ISSUED:	4 November 2010

DOCUMENT CONTROL.....	2
Preparation.....	2
Release.....	2
Distribution List.....	2
Document Approval.....	2
1. Introduction.....	3
2. Scope.....	3
3. Purpose.....	3
4. Challenges.....	3
5. Bandwidth Management Techniques.....	4
6. Bandwidth for servers facing outward.....	5
7. Special cases.....	6

DOCUMENT CONTROL

Preparation

ACTION	NAME	DATE
Prepared by:	Anver Natha	6 June 2010
Updated by:	Anver Natha	10 October 2010
Updated by:		
Updated by:		
Updated by:		

Release

VERSION	DATE RELEASED	CHANGE NOTICE ..	PAGES AFFECTED	REMARKS
0.1	4 November		All	

Distribution List

NAME	ORGANISATION	TITLE

Document Approval

RESPONSIBILITY	NAME	TITLE	SIGNATURE
Compiled by			
Approved by	EAISC		

1. Introduction

The Information and Communication Services (ICS) department provides Internet access to a large number and variety of users, including staff, students, researchers and departments.

A major barrier to effective use of Internet resources, as well as the support of research is the scarcity of bandwidth and its misuse for non-teaching and learning activities.

ICS has a campus-wide responsibility to manage this resource by ensuring that the Internet bandwidth is made available in an equitable and efficient manner in support of the academic, research and administrative programmes of the university.

2. Scope

The policy applies to all permanent, contract and temporary employees, students, contractors, consultants and other workers at the university, including those affiliated with third parties who access the university computer network.

3. Purpose

The bandwidth policy describes the technology solutions that will be implemented to manage the available University of the Western Cape (UWC) bandwidth to ensure that the UWC campus has adequate bandwidth to meet its educational, research and administrative requirements, and to ensure that it is available for academic use. It describes the challenges posed by unmanaged bandwidth and the techniques used to minimise bandwidth abuse. The University reserves the right to restrict or otherwise control the use of any of the Internet protocols (This right to restrict may include the right to set a limit on individual usage by volume for undergraduate students, postgraduate students and staff)

4. Challenges

- Internet bandwidth has email, business, private, recreational, educational and application traffic that competes for the available bandwidth. Internet traffic therefore has to be managed to ensure that the most benefit is gained by the investment in infrastructure.
- Internet bandwidth is often used for activities that are unrelated to the intention for which the investment is made. For example, many users run bandwidth-hungry applications such as peer-peer music, video sharing and Internet TV, which in turn monopolises the entire Internet connection and may expose the University to the risk of copyright violation
- Many peer to peer and poorly managed sites may expose the University network to viruses and Trojans.
- E-resource sites to which the Library subscribes to, often have strict licensing agreements that regulate downloads from the various sites. Violation of the agreement may result in access to the resource being blocked to the University.

- Without appropriate bandwidth management unauthorised users may gain access to the University resource.
- Existing capacity is usually running at maximum capacity during work hours and users are limited to a poor web browsing experience.

5. Bandwidth Management Techniques

Authentication

Network login accounts and passwords (the user **Network Identity**) are created whenever staff members join UWC or when students register for study at UWC. Access to email, network and certain IT services such as Internet access, depend on the user being registered on the UWC network and accessing these resources using their Network identity.

Authentication is the process whereby users identify themselves on the network using their Network Identity and gain access to resources after successful validation of the user credentials.

The implications of not complying with the network registration process **will** mean **that** all unregistered students, staff members and visitors on our network will not be able to access the Internet or any authentication based University system.

Content filtering

The ICS department manages access to various resources on the Internet by either blocking or allowing content. This filtering technique is based on an industry standard database that is integrated into the UWC firewall device and which comprises of 77 web content categories, analysing more than 45 million rated **websites**.

This enables us to reduce the non-educational and non-business web overutilization. Categories such as child pornography are blocked on the firewall device.

Mail Scrubbing and Spam Control

Mail scrubbing is a form of spam control. UWC has vendor agreements with companies that pre-process email offsite. The result is that spam free mail is passed onto the user mailbox. With the growth of email volumes, there has also been a visible growth in unsolicited email and spam reaching the user mailbox.

Spam has become the preferred method for security exploits, and the ICS department utilises mail scrubbing techniques to control junk mail, phishing and virus exploits. Spam filtering or mail scrubbing reduces the bandwidth that junk mail would normally occupy and use.

Usage capping (Quotas)

Usage capping refers to giving each user a reasonable share of the bandwidth to enable them to carry out their academic or research work. Usage capping would have the impact of encouraging users to think about their usage of bandwidth, and ensure that they deploy their quota to meet their own needs rather than for recreational purposes. Where bandwidth capping is implemented, there is usually a procedure for acquiring bandwidth above the cap.

JCS will investigate the potential of differential bandwidth capping at UWC, as well as possible procedures for allocating bandwidth and for enabling the purchase of bandwidth above the cap.

Bandwidth Shaping

In a university environment, educational, research and community engagement activities must enjoy preferential access to the Internet. Student labs however, reveal considerable usage that falls outside these areas, including peer-peer file sharing, SMS sending, listening to Internet radio, accessing external email sites, viewing pornography, etc.

Bandwidth shaping allows us to prioritise traffic that is relevant compared to recreational traffic and traffic that simply monopolises our bandwidth.

It is not possible to set hard and fast rules as to what constitutes important traffic as this changes from place to place and time to time on the campus. For example, a lecturer running an online class in a student lab where there is collaboration with students outside UWC could legitimately ask that traffic for the lab be given priority while the class is being run.

Bandwidth shaping must cater for these needs, and be able to provide an effective experience for as many users as possible in a complex environment such as the university.

Thus, the objective of bandwidth shaping on UWC Internet access is to ensure that when the traffic is at its heaviest that the priority business traffic receives preferential treatment.

It also enables *us* to dynamically allocate bandwidth for important activities on the campus. Caps have been imposed for peer-to-peer traffic, media streaming, and games. Certain sites, such as pornography, warez, games, and off campus email are blocked or squeezed into smaller pipes during certain hours of the day.

6. Bandwidth for servers facing outward

UWC has many web servers, including some that exist within research and funded projects, and it is vital that such servers are accessible from outside. JCS will provide for guaranteeing a reasonable portion of its bandwidth to be available for interaction with these web servers, both for incoming and outgoing traffic.

7. Special cases

ICS recognizes that there are special cases where some of the principles of this strategy regarding bandwidth management may not apply, or may be applied differently from the rest of campus. This includes postgraduate and research areas that make extensive use of the Internet, for example in computer science, information systems, bioinformatics, GIS, landscape ecology, and others. ICS will endeavour to meet the requirements of such areas in a way that will not obstruct legitimate research while at the same time maintaining the integrity of the campus operational network. Any allowance made for special cases will be subject to the availability of funds to meet additional costs that may be incurred.