Bandwidth Usage-Computing Services - Carnegie Mellon University

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Computing Services

Wired / Wireless Network Bandwidth Usage Guideline

Purpose

The Carnegie Mellon Computing Policy establishes a general policy for the use of computing, telephone and information resources. The purpose of this guideline is to establish acceptable practices that support the policy as it applies to Wired/Wireless Network bandwidth usage.

This guideline was established to ensure that the Carnegie Mellon community has a clear understanding of proper procedure and usage, and to ensure that all users are able to obtain their fair share of the wired/wireless network. Demand for both inbound and outbound bandwidth exceeds the quantity purchased by the University and traffic is noticeably congested during peak usage periods.

Computing Services reserves the right to modify this guideline as necessary. Any changes to this guideline will be posted to official.computing-news and will be reflected on this web page.

Services which can have a negative impact on the wired/wireless network include, but are not limited to:

- Web servers
- Peer-to-Peer file sharing
- FTP servers
- Multiplayer Gaming and Game Servers

Many of these services are provided within the overall research and educational goals of the university. Even so, those providing services must do so in a way that does not cause degradation of the entire wired/wireless network.

Additionally, there are other issues which can cause your machine to have a negative impact on network bandwidth. The following list contains some examples and should not be considered to be exhaustive:

- Worm or viral infections
- Compromised systems running ftp, IRC, or other services
- Malicious spyware programs

Applies to

This guideline applies to all campus affiliates. This includes students, faculty and staff members as well as guest account holders.

Definition/Clarification

Carnegie Mellon has two primary points of access to the network:

Commodity Link: These redundant links, provided through Level3 Communications and Sprint, handle most of the network traffic sent to and from Carnegie Mellon and the monetary cost to the university is significant.

Research Link: This link is provided through the Three Rivers Optical Exchange (3ROX) and it links over 200 universities and educational institutions as well as government and private industry partners. Although this link is not free, the cost is significantly lower for the university and decreases the dependence on the Commodity Links.

Guideline Statement

No individual service or system running on the wired/wireless network should use more than **10 gigabytes (10GBs) of bandwidth per day**, regardless of whether it is inbound or outbound over the commodity network link.

Initial Notification: Initially, a system will trigger an overuse notification if the 5 day average for either inbound or outbound usage exceeds 10 GBs. To calculate a 5 day average, we use the **greatest value** of inbound or outbound usage per day. These numbers are totaled then averaged.

Averaging high usage over a 5 day time period allows machines infrequent bursts of activity above the daily limit. As long as the usage totals less than 50 GB in a 5 day period, no notification would be issued.

The situation illustrated in the table below WOULD generate an initial overuse notification. However, no notification would be issued if, for example, the spike in inbound usage on Day 2 were only 40 GB (3.5 + 40 + 1.5 + 2 + 1.5 = 48.5 GB/5 = 9.7 GB)

Usage	Day 1	Day 2	Day 3	Day 4	Day 5	Total/Average
Inbound	**3.5 GB**	**45 GB**	1 GB	1 GB	**1.5 GB**	**53.5 /GB/5 = 10.7 GB**
Outbound	1 GB	1.5 GB	**1.5 GB**	**2 GB**	1 GB	

Notice that, in the following example, the average usage for inbound or outbound traffic respectively does not exceed 10 GBs. However, an overuse notification WOULD be issued since the average of the HIGHER of inbound or outbound usage over this five day period exceeds 10 GBs.

Usage	Day 1	Day 2	Day 3	Day 4	Day 5	Total/Average
Inbound	**9 GB**	6 GB	7.5 GB	**12.5 GB**	**9.5 GB**	**53.5 /GB/5 = 10.7 GB**
Outbound	3.5 GB	**9.5 GB**	**13 GB**	6.5 GB	4 GB	

Subsequent Notification: Once an initial overuse notification has been issued, checks on that machine are performed DAILY.

- A system with over 10 gigabyte usage (inbound or outbound) in one day would immediately exceed the usage guideline. Continued violations will result in further warnings that may eventually lead to loss of network access.
- A system with 12.5 gigabytes inbound traffic on one day and 15 gigabytes of outbound traffic on a second day would incur two overuse incidents.

In cases where a user has been asked to disable a service, and does not do so, Computing Services may revoke access to the network and initiate appropriate disciplinary procedures against the user. Disciplinary actions may include loss of network access for 45 days.

User Responsibilities and Procedures

Those who provide services that may use large amounts of network bandwidth should monitor those services to determine whether they are operating within the guidelines.The web site at http://bandwidth.net.cmu.edu provides access to the Bandwidth Usage Monitoring System that is currently used for Carnegie Mellon's Computing Services wired/wireless and dorm networks. Network usage for the previous five day period is provided.

Most services can be configured to "throttle back" or limit the amount of traffic that they generate. For example, FTP servers and peer-to-peer file sharing applications can be configured to limit the maximum number of users that can connect to the service at the same time.

Peer-to-peer services consume a large portion of the Commodity Link bandwidth. Most peer-to-peer file sharing applications immediately begin to act as servers upon installation and activation and the "shared" folder becomes available to others who are using similar programs. The sharing service can be disabled in all peer-to-peer applications. Users should disable the sharing service unless they have legal materials that they intend to make available to others.

Owners of servers or services who exceed the usage guideline and feel they have legitimate cause to do so, must contact Computing Services. In rare cases an exemption may be granted. In all cases, solutions for fair use of the Commodity Link bandwidth will favor those services that support the research and educational goals of the university.

Revision History

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