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Network Management

Q: Why does MICHIGAN BROADBAND SERVICES manage its network?
A: MICHIGAN BROADBAND SERVICES manages its network with one goal: to deliver the best possible broadband Internet experience to all of its customers. High-speed bandwidth and network resources are not unlimited. Managing the network is essential to promote the use and enjoyment of the Internet by all of our customers. All Internet service providers need to manage their networks and MICHIGAN BROADBAND SERVICES is no different. In fact, many of them use the same or similar tools that MICHIGAN BROADBAND SERVICES does. These reasonable network management practices are consistent with industry standards. We also try to use tools and technologies that are minimally intrusive. If we didn't manage our network, our customers would be subject to the negative effects of spam, viruses, security attacks, network congestion, and other risks and degradations of the service. Just as the Internet continues to change and evolve, so too, will our network management practices to address the challenges and threats on the Internet. By engaging in reasonable and responsible network management, MICHIGAN BROADBAND SERVICES can deliver the best possible broadband Internet experience to all of its customers.

Q: How does MICHIGAN BROADBAND SERVICES manage its network?
A: MICHIGAN BROADBAND SERVICES manages its network so that all customers will equally experience the best level of service possible. While our network is engineered to greatly reduce the possibility of congestion, even the fastest fiber optic technologies have their upper limits. Adequate available bandwidth is MICHIGAN BROADBAND SERVICES'S primary method to managing the network. We carefully monitor bandwidth usage throughout the network so that we can prevent congestion before it occurs. If an event occurs in which abnormal bandwidth patterns reach the point of creating network congestion, we utilize predefined tools and processes that ensure all users are impacted equally. This ensures the least possible impact possible.

Q: Does network management change over time?
A: Yes. The Internet is highly dynamic. As the Internet and related technologies continue to evolve and advance, MICHIGAN BROADBAND SERVICES'S network management tools will evolve and keep pace so that we can deliver an excellent, reliable, and safe online experience to all of our customers. We will provide updates here and in other appropriate locations if we make important or significant changes to our network management processes.

Network Management for Congestion

Q: How does the current congestion management work?
A: The current congestion management techniques are very basic. All internet data traffic is considered "best effort", and is therefore subject to congestion management processes. The actual techniques will use a combination of buffering and "first in first out" tools to accomplish

the goal of lessening the impact caused by the congestion. Selection of traffic to delay during times of congestion will be completely random and all customer traffic regardless of their bandwidth usage or network application will be equally subject to the same factors of randomization.

Q: Does the congestion management target peer-to-peer ("P2P") or other applications, or make decisions about the content of my traffic?
A: No. The technique is "protocol-agnostic," which means that the system does not manage congestion based on the applications being used by customers. It is also content neutral, so it does not depend on the type of content that is generating traffic congestion. Said another way, customer traffic is congestion-managed not based on the applications or content being used, but based on current network conditions and recent amounts of data transferred by users.

Q: How does the congestion management impact me and my use of the MICHIGAN BROADBAND SERVICES Internet service?
A: Being protocol-agnostic customers will most likely not notice a change in their Internet experience. The goal of congestion management is to enable all users to have access to a fair share of the network at peak times even if congestion should occasionally occur. Congestion management focuses on the consumption activity of the network as a whole whereby everyone is impacted the same. In fact it is rare our High-Speed Internet customers are ever affected because of our bandwidth capabilities.

Q: How often does MICHIGAN BROADBAND SERVICES expect to use any congestion management processes?
A: Based on our experience, network performance congestion is not common. MICHIGAN BROADBAND SERVICES monitors how user traffic is affected during high usage periods and would make the adjustments reasonably necessary to ensure that our Internet customers have a high-quality online experience. MICHIGAN BROADBAND SERVICES also routinely evaluates its overall network performance and periodically enhances its network by adding capacity which continues to alleviate possible network congestion.

Q: Does this congestion management process apply to both Commercial and Residential services?
A: Yes.

Q: Is MICHIGAN BROADBAND SERVICES Digital Voice affected by congestion management? What about other VoIP providers?
A: MICHIGAN BROADBAND SERVICES Digital Voice is a separate facilities-based IP phone service that is not affected by these processes. This phone service also does not affect the last mile capacity for, or the performance of, the MICHIGAN BROADBAND SERVICES Internet service. MICHIGAN BROADBAND SERVICES customers who use VoIP providers that rely on delivering calls over the public Internet who are also using a disproportionate amount of bandwidth during a period when congestion management processes go into effect may experience a degradation of their call quality at times of network congestion. It is important to note, however, that VoIP calling in and of itself does not use a significant amount of bandwidth. Furthermore, our experience does not indicate any significant change in the quality of VoIP calls, even for managed customer traffic during periods of congestion.

Q: What about MICHIGAN BROADBAND SERVICES.net and streaming video or video downloads? What will happen to them?
A: Our system has no ability to determine the applications or protocols being used or the content, source or destination. All customers are impacted equally.

Q: Does MICHIGAN BROADBAND SERVICES block P2P traffic or applications like BitTorrent, Gnutella, or others?
A: No. MICHIGAN BROADBAND SERVICES does not block P2P traffic or applications like BitTorrent, Gnutella, or others as part of network congestion management.

Q: Does MICHIGAN BROADBAND SERVICES discriminate against particular types of online content?
A: No. MICHIGAN BROADBAND SERVICES provides its customers with full access to all the lawful content, services, and applications that the Internet has to offer. However, we are committed to protecting customers from spam, phishing, and other unwanted or harmful online content and activities. MICHIGAN BROADBAND SERVICES uses industry standard tools and generally accepted best practices and policies to help it meet this customer commitment. In cases where these tools and policies identify certain online content as harmful and unwanted, such as spam or phishing Web sites, this content is usually prevented from reaching customers. In other cases, these tools and policies may permit customers to identify certain content that is not clearly harmful or unwanted, such as bulk email or Web sites with questionable security ratings, and enable those customers to inspect the content further if they want to do so.

Network Security Practices

Q: Does MICHIGAN BROADBAND SERVICES employ network security practices in addition to the congestion management processes?
A: Yes. As described above, MICHIGAN BROADBAND SERVICES employs a number of practices to help prevent unwanted communications such as spam as well as protect the security of our customers and network. MICHIGAN BROADBAND SERVICES limits the number of login, SMTP, DNS, and DHCP transactions per second (at levels far above 'normal' rates) that customers can send to MICHIGAN BROADBAND SERVICES'S servers in order to protect them against Denial of Service (DoS) attacks. We do not disclose the exact rate limits in order to maintain the effectiveness of these measures, which ensure that these critical services are available for all of our customers. In order to further protect our customers, MICHIGAN BROADBAND SERVICES blocks a limited number of ports that are commonly used to send spam, launch malicious attacks, or steal a customer's information, for example. In addition, MICHIGAN BROADBAND SERVICES conducts several security initiatives, and offers security tools for our customers. For more information, visit Kaspersky Internet Security.

Network Management of Device Attachment

Q: Does MICHIGAN BROADBAND SERVICES have rules regarding the attachment of devices to its network by customers?
A: In order for a modem device to be approved for use on MICHIGAN BROADBAND SERVICES'S network, it must pass certain certification requirements applicable to the network technology utilized in delivering the broadband service to the customer. The devices approved for use on the Michigan operations outside plant (copper based) are:

- ADSL or ADSL2+ modems that are deployed for Internet services and comply with ITU-G.992.1 or ITU-G.992.1.
- Comtrend-5361 Currently deployed for Voice, Video, and Internet services for single line ADSL (ITU-G.992.5, Annex A).
- Comtrend-5631 Currently deployed for Voice, Video, and Internet service for bonded ADSL2+ (ITU-G.998.1 ATM Bonding, Annex A and Annex M).

Network Privacy Protection

Q: How does MICHIGAN BROADBAND SERVICES protect the privacy of information received from customers and 3rd parties?
A: Occasionally traffic may be inspected for trouble shooting purposes. This information may be stored for short periods during the trouble analysis and then discarded. The only information provided to third parties would be information given to law enforcement after the proper subpoenas and other documents are provided. For more information, view our Privacy Policy.

Network Management for Specialized Services

Q: Are there specialized Internet services that may impact the broadband performance?
A: No.

Residential and Commercial Terms and Services

Q: Where do I find pricing information for broadband services?
A: Please find commercial terms, packages and other information at http://www.michbbs.com

General Service and Performance Characteristics

Q: How would you generally describe the MICHIGAN BROADBAND SERVICES Performance of Internet data products?
A: The MICHIGAN BROADBAND SERVICES Internet data portfolio includes a wide range of products including a number asymmetric and symmetrical speed profiles.

Q: What are the factors for determining performance for a Broadband Provider?
A: MICHIGAN BROADBAND SERVICES provisions its network to ensure that its customers can enjoy the speeds to which they subscribe. However, MICHIGAN BROADBAND SERVICES does not guarantee that a customer will actually achieve those speeds at all times. Without purchasing an expensive, dedicated Internet connection, no Internet Service Provider ("ISP") can guarantee a particular speed at all times to a customer. MICHIGAN BROADBAND SERVICES advertises its speeds as "up to" a specific level based on the tier of service to which a customer subscribes.

The "actual" speed that a customer will experience while using the Internet depends upon a variety of conditions, many of which are beyond the control of an ISP such as MICHIGAN BROADBAND SERVICES. These conditions include:

1. Performance of a customer's computer, including its age, processing capability, its operating system, the number of applications running simultaneously, and the presence of any adware and viruses.

2. Type of connection between a customer's computer and modem. For example, wireless connections may be slower than direct connections into a router or modem. Wireless connections also may be subject to greater fluctuations, interference and congestion. MICHIGAN BROADBAND SERVICES does not recommend wireless modem connections for use with its higher speed tiers as many wireless connections do not perform at the speeds delivered by these tiers.

3. The distance packets travel (round trip time of packets) between a customer's computer and its final destination on the Internet, including the number and quality of the networks of various operators in the transmission path. The Internet is a "network of networks." A customer's connection may traverse the networks of multiple providers before reaching its destination, and the limitations of those networks will most likely affect the overall speed of that Internet connection.

4. Congestion or high usage levels at the website or destination. If a large number of visitors are accessing a site or particular destination at the same time, your connection will be affected if the site or destination does not have sufficient capacity to serve all of the visitors efficiently.

5. Gating of speeds or access by the website or destination. In order to control traffic or performance, many websites limit the speeds at which a visitor can download from their site. Those limitations will carry through to a customer's connection

6. The performance of the cable modem you have installed. Modem performance may degrade over time, and certain modems are not capable of handling higher speeds.

7. Latency is another measurement of Internet performance. Latency is the time delay in transmitting or receiving packets on a network. Latency is primarily a function of the distance between two points of transmission, but also can be affected by the quality of the network or networks used in transmission. Latency is typically measured in milliseconds, and generally has no significant impact on typical everyday Internet usage. As latency varies based on any number of factors, most importantly the distance between a customer's computer and the ultimate Internet destination (as well as the number and variety of networks your packets cross), it is not possible to provide customers with a single figure that will define latency as part of a user experience.

Q: How do I determine general performance levels for my MICHIGAN BROADBAND SERVICES Internet?
A: MICHIGAN BROADBAND SERVICES offers its customers to the ability to test the speeds that they are receiving on MICHIGAN BROADBAND SERVICES'S network - from the customer's computer to a test site on MICHIGAN BROADBAND SERVICES'S network http://speedtest.myMichigan Broadband Services.net/ . These tests are heavily dependent on a customer's home network configuration, modem, and computers, and therefore do not reflect the performance of the MICHIGAN BROADBAND SERVICES network only.

There are other speed tests that measure Internet performance. We have provided links to a few of these sites below for your reference. Please note, however, that all speed tests have biases and flaws. Each of these tests measures limited aspects of an ISP's speed and therefore must be seen as a guide rather than definitive measurements of performance.

Customer Documents Related to Network Management

Q: What other documents outline the information detailing the customer rights and requirements of the network?
A: http://www.michbbs.com

Contact Information for Network Management

Q: How can I contact MICHIGAN BROADBAND SERVICES if I have any questions about network management?
A: Go to the website reference page www.michbbs.com for more information about contacting MICHIGAN BROADBAND SERVICES Customer Service.

Complaint Process

Q: How do I register a complaint?
A: A customer may register a complaint for immediate action by calling 855.642.4227.