Northeast Ohio Regional Report on Ohio's Readiness for Global Electronic Commerce May 2000

This is a summary report. For more detailed information please visit www.ecom-ohio.org.

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We wish to thank the members of the ECom-Ohio Steering Committee, whose untiring efforts have brought ECom-Ohio to fruition.

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Ready, Set, Go!

Action! must be our watchword as the information revolution powerfully transforms our economy and society. But is Ohio ready to compete in the new information economy? This report answers that question and more. It documents ECom-Ohio's landmark public-private leadership effort to measure Ohio's readiness for global electronic commerce. The project has collected data in 22 key indicators that measure our state's performance against a comprehensive set of national benchmarks (www.cspp.org).

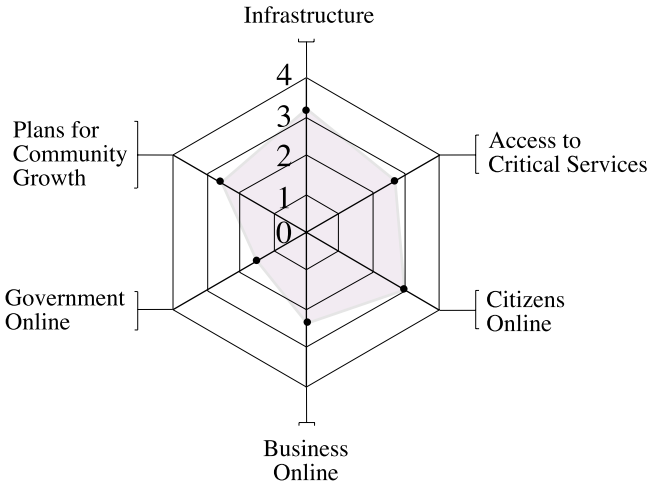
The Internet and growth of e-commerce as a way of doing business has thrust Ohio's industrial base into a time of turbulent change. Network traffic doubles every six months and forecasts show that business-to-business e-commerce will be a major driver of our state's economy in the next decade, generating new entrepreneurial ventures, sources of wealth and jobs. As industry experts recently observed:

> *"Business-to-business trade isn't growing up in high-tech centers like Silicon Valley; it's developing in industrial hubs like Cleveland and Detroit. As B2B trade expands, there will be a flight of talent and venture capital money to support these efforts, leaving the coasts feeling a bit of a frost — while middle America experiences the Internet boom in 2001."*
>
> *- - Forrester Research, February, 2000*

We firmly believe that Ohio—a leader in the first industrial revolution—has the potential to be a leader in the ECom revolution in which we are participating today. Thriving in this time of change will challenge all of Ohio's firms and institutions. The report you hold identifies a course of action and the direction we must take to remain competitive. Turn the page to see how you can get involved within your home, firm, educational institution, or government unit to move our state forward in the new economy.

Roderick G. W. Chu
Chancellor, Ohio Board of Regents

Lars Nyberg
Chairman and CEO, NCR Corporation



Northeast Ohio's Electronic Commerce Readiness

Northeast Ohio's overall ratings are based on six summary aspects of the Computer Systems Policy Project (CSPP) grid. The CSPP grid provides national benchmarks on e-commerce readiness for communities and regions at www.cspp.org. ECom-Ohio collected and analyzed data to evaluate the State of Ohio's performance based on the CSPP benchmarks.

Infrastructure Capabilities

Components of E-Commerce

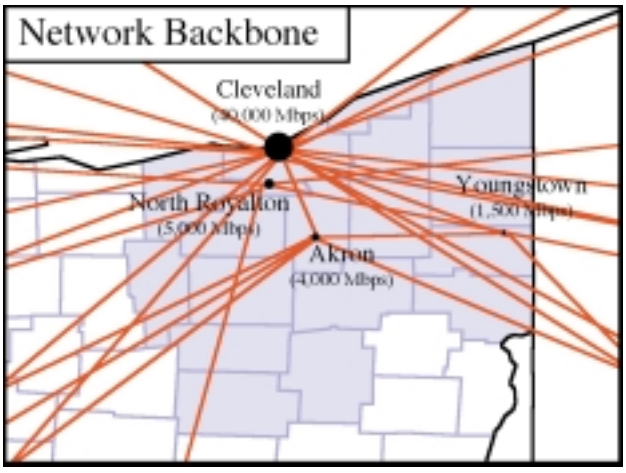
Northeast Ohio has an information infrastructure providing strong network redundancy. Access is not a problem today although limited service and pricing options may become a barrier as automakers and other original equipment manufacturers (OEMs) drive more suppliers in the region to web-based procurement and scheduling systems. Internet use by Northeast Ohio citizens is slightly below the national average and local business use of e-commerce tools must be increased to broaden access technology choices, and assure the region's future competitiveness.

Infrastructure: The communication networks that connect users to the Internet.

Access: The choices available by which users can connect to the public data network at the level they demand or need.

Usage: The extent to which business, government, and household users utilize the access available to them.

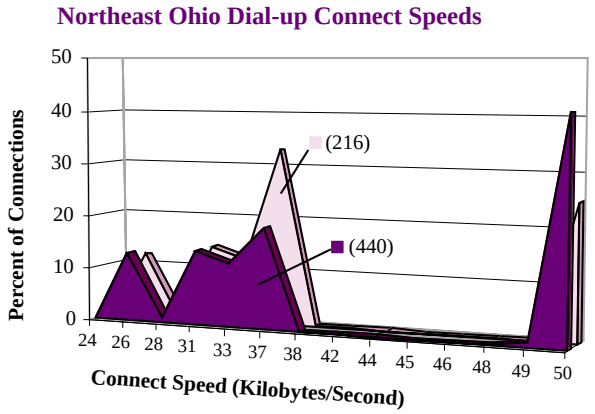
Available Local Backbone



High bandwidth connectivity in Northeast Ohio is provided through a number of national network providers. A major high bandwidth switching point in North Royalton contributes to a high level of connectivity in this region. There is limited deployment of Digital Subscriber Lines (DSL) in the Northeast region. Connections at 1.5 Mbps (T-1) speeds are available in most urban and suburban areas, with most access available in metropolitan regions. Access capacity from 18 different service providers totals over 40,000 Mbps to points outside the region. Almost 5% of businesses use DSL, 10.3% use T-1s, and 2.1% use cable modems for access to the Internet. Wireless access to the Internet is not available.

Ability to Meet Demand

Connection attempts from the Northeast Ohio region typically do not experience tremendous disruptions; 90% of connection attempts are successful. However, dialup connections are not robust enough to support high bandwidth applications. Sixty percent of Northeast Ohioans report interruptions in service at least once a month. Infrastructure is sufficient to support above average levels of data traffic today.



Key Findings

Northeast Ohio's connectivity choices are broad in metropolitan areas, with strong network links to the national Internet backbone. In rural areas, there is less choice. The region's overall Internet backbone connectivity is very strong and will support forecasted increases in usage by the growing number of information technology firms.

Action Agenda

- Re-deploy economic development tools to boost network capacity to assure that network infrastructure stays ahead of demand.
- Support efforts to develop a robust network infrastructure map to support Northeast Ohio's information industry retention and attraction efforts.
- Engage Case Western Reserve University as the most wired campus in America.

Access to Critical Services

Range of Services

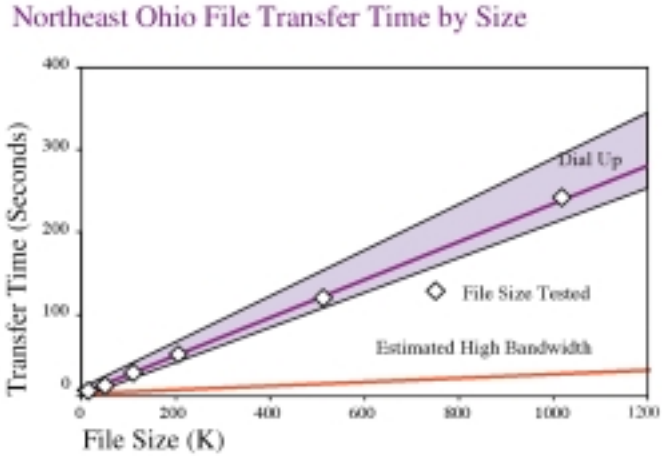
Dialup access at 56K is available throughout the region to residents and small businesses. Integrated Services Digital Network (ISDN) and cable modem services are available in the urban and suburban core. T-1s are available throughout the region. Limited high bandwidth access is available in Cleveland-Akron-Canton metropolitan areas, but only 7% of the population is connected at these speeds. A moderate range of payment and service options is available to businesses throughout the region, but many non-urban areas do not have access to ISDN, Digital Subscriber Line (DSL) or cable services.

Affordability

For residents and small businesses, flat dialup service options are available universally. Approximately 58% of households and 83% of businesses in Northeast Ohio know of alternative service packages available. Service options based on usage are available from selected Internet Service Providers (ISPs) throughout the region. Businesses have the choice of higher bandwidth services through both ISDN and cable, at flat rates based upon connection speeds, not actual usage.

Quality of Service

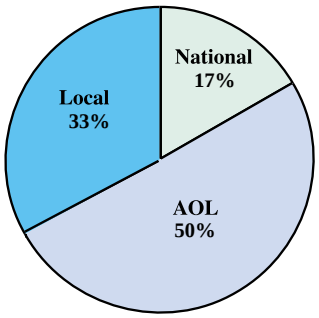
Dialup and higher bandwidth service setup times are nominal. Statewide, most accounts are active within 7-10 days. Approximately 91% of users in business and 86% at home consider transmission speeds adequate for current levels of usage. Although 66% of residents and businesses report disruptions in service at least once a month, 87% of Northeast Ohio citizens rank service response as satisfactory.



Competition

For data services, many markets have only one option for telephone services. Cable data service is available in some geographic areas, serving 5% of the online households in Northeast Ohio. The Northeast Ohio region has a competitive ISP market and some providers have different levels of service for home and business needs. Buyers can find alternative service packages from a moderate number of ISP providers.

Northeast Ohio Customer Usage by Type of ISP



Key Findings

The Northeast Ohio region is adequately served by Internet providers with some broadband service and pricing options available . With strong forecasts for growth in business-to-business e-commerce in manufacturing and automotive OEMs, emerging high bandwidth applications will require numerous broadband technology choices.

Action Agenda

- Support statewide legislative and regulatory efforts to broaden technology and service choices available to rural consumers.
- Provide discounted Internet access service to small businesses through organizations like the Council of Smaller Enterprises (COSE), CAMP Inc., and the Northeast Ohio Software Association (NEOSA).

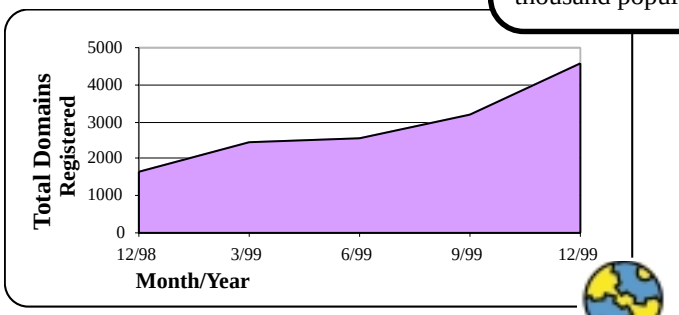
Business Online

Domains

Overall, the state's domain growth rate significantly increased in the last six months of 1999, making Ohio the twelfth highest state in terms of newly registered domains. The number of domains in the Northeast region increased by 178% in 1999, a growth rate twice that of the previous year, and well above the national average. Most domains are concentrated in metropolitan Cleveland, with significant numbers in Geauga County, as well.

1.08
domains per thousand population

Northeast Ohio Domains

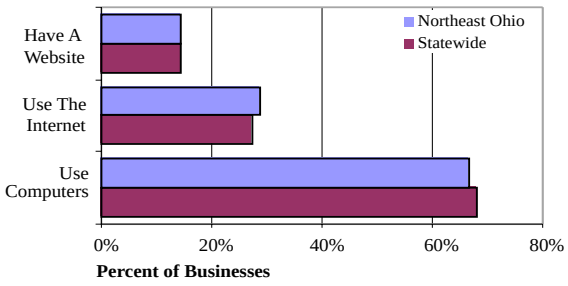


Source: Network Solutions Inc.

Websites

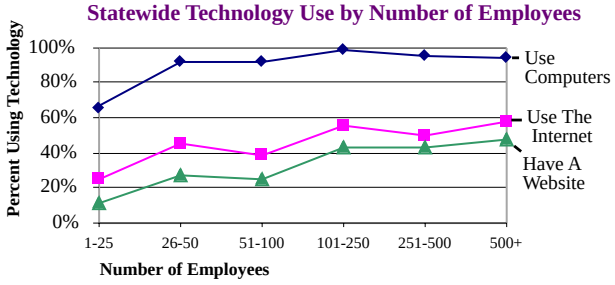
About 27% of the Northeast Ohio businesses are online, and 16% of Northeast Ohio businesses have websites. Among the Ohio businesses with more than 100 employees, website usage is substantially higher at 66%. The transportation, retail and financial service industries are more aggressive at using highly interactive content to attract new customers. Very few businesses are using tracking or push technology to retain customers. While there are companies with websites that demonstrate latest best practices in web usage, these are not widely used. As automakers and other OEMs move more supplier operations to web-based applications, Northeast Ohio businesses will need to move more aggressively to web technologies.

Business use of technology . . .



. . . varies with the number of employees

Statewide Technology Use by Number of Employees



Market Development & Business-to-Business Transactions

Of the Northeast Ohio businesses that have websites, 82% cite competitive pressure and attracting new customers as primary reasons for creating a web presence, indicating an aggressive growth market. There are few significant business-to-business electronic transactions except in those Northeast Ohio industry sectors with strongly linked supply chain management systems, such as automotive OEMs and logistics and distribution. About 27% of Northeast Ohio businesses use the Internet, and 7.5% of Northeast Ohio businesses use Electronic Data Interchange (EDI) with suppliers or customers.

Northeast Ohio Business Best Practice Sites

Fedex Custom Critical:
www.fedexcustomcritical.com
American Greetings:
www.americangreetings.com
Ameritech:
www.ameritech.com
Progressive:
www.progressive.com
Parker Hannifin Corp.:
www.parker.com
Beachwood Place Inc.:
www.beachwoodplace.com
Dillards Department Store:
www.dillards.com

Networking

Local Area Networks (LANs) are used in 33% of Northeast Ohio businesses. Even though many businesses are networked, only 7.5% rely on e-mail as their primary form of business communication. In only 61% of businesses in Northeast Ohio do more than half their employees use computers.

29% businesses have a LAN

13% businesses have a WAN

Key Findings

Businesses in the Northeast Ohio region have not been aggressive users of websites for marketing or selling. However, a positive trend shows that Northeast Ohio area businesses are adapting new technologies more quickly than national rates.

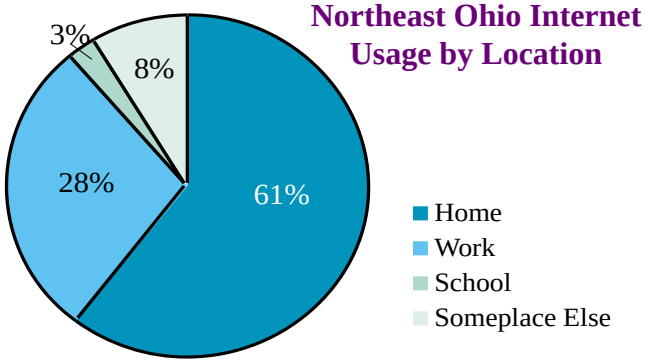
Action Agenda

- Use Chamber and business outreach community to stress critical need to build online presence and master e-commerce skills.
- CAMP and its ACCESS Center will provide strong outreach and technical assistance to small manufacturers and auto suppliers for e-commerce solutions.

Citizens Online

Internet Access at Home and at Work

The Northeast Ohio region is slightly below the national average in terms of computer ownership and Internet usage. Forty-seven percent of Northeast Ohio citizens own a computer, and 38% are online and log on weekly. Approximately 18% of Northeast Ohio citizens cite lack of access as a barrier to getting on the Internet, although the Cleveland and Akron areas have a strong network of community computing centers for public access.



Schools

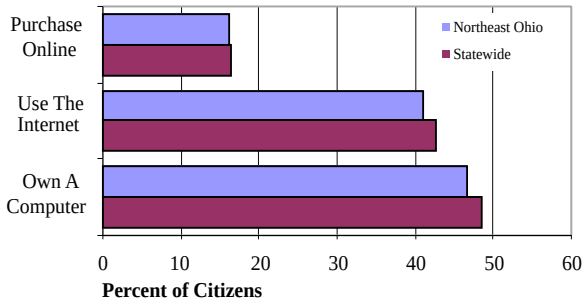
While over 90% of the schools in Northeast Ohio are wired, some schools within the urban core and in rural areas lack adequate updated hardware or facilities for effective educational use. Seven out of 10 schools in Ohio have every classroom connected to the Internet. Ninety percent of schools in Northeast Ohio offer staff and teachers Internet training either on or off site; but there is a perceived lack of computer skills mastery and full integration into curriculum offerings.

Libraries

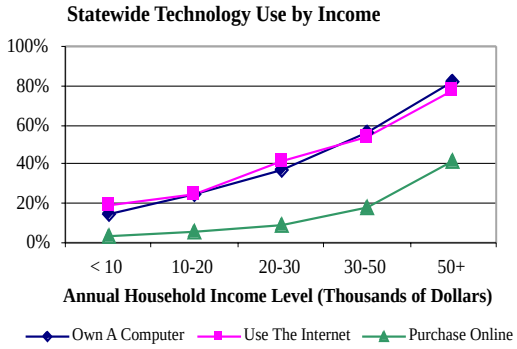
Through the Ohio Public Library Information Network (OPLIN), libraries in Ohio boast an outstanding array of network services and public access to information, databases and resources. The library network in Northeast Ohio consists of 147 buildings with Internet access and 1,575 workstations providing free public access to the Internet, access to web-based e-mail for independent professionals, and computer hardware, software and training.

Ohio Citizens Online

Household Internet use . . .



. . . varies by income



Key Findings

Northeast Ohio has moderate citizen participation relative to other Ohio regions and is slightly below national averages. Public access through schools, community centers and libraries is adequate in metro-politan areas but rural areas of the region suffer from a lack of broadband service and public access points.

Action Agenda

- To boost computer literacy, trainteachers extensively in computer skills and use curriculum to actively share that knowledge with students.
- Use private sector computing facilities for public training and seminars.
- Use the example set by Lorain County Community College to engage community partners in dialogue, planning and action for the Digital Economy.
- Survey Information Technology (IT) industry occupational demand and communicate findings through regional workforce initiatives.
- Develop an image-boosting program to attract and retain IT talent.
- Promote IT initiatives at the College of Business at the University of Akron and Kent State University to assist in educational efforts.

Community Planning

New Communities Created

Northeast Ohio has not yet invested in a strong economic development presence on the Internet. However, University Hospitals and the Cleveland Clinic have notable web-based outreach, education and scheduling capabilities through the Internet. The Cleveland Live site provides a multipurpose gateway to community events, news and resources.

Northeast Ohio Websites of Interest

Greater Cleveland PC Users Group:
www.gcpcug.org
Northeast Ohio Software Association:
www.neosa.org
Cleveland Clinic:
www.clevelandclinic.org
University Hospitals of Cleveland:
www.uhhs.com
Cleveland Live:
www.cleveland.com

Employment Opportunities and Skills

Several local colleges and proprietary schools in Northeast Ohio provide an IT curriculum and numerous degree programs. The Northeast Ohio Software Association (NEOSA) is working with other business groups and educational institutions to actively change curriculum content to improve the technology literacy of graduates. Some of the local employment and one-stop training centers provide job search and resume posting services, as well as participating in OhioWorks, the statewide job search network.

www.ohioworks.com

Planning

NorTech (Northeast Ohio Technology Coalition) and numerous other local technology groups are focusing on information technology and its potential to boost jobs and the economy in this region. While many of these initiatives, groups and associations are now beginning to be integrated; clear goals and timelines have not yet been set.

Government Websites

Few government units outside of Cleveland are online. Of those cities and counties online, there are few government resources, downloadable forms, or other self-service options for citizens. No local government unit provides procurement online.

Northeast Ohio Government Websites of Interest

Cuyahoga County
www.cuyahoga.oh.us

Key Findings

The Northeast region is actively attempting to coordinate individual community technology planning efforts to maximize their impact. There must be an aggressive effort to put local government units online.

Action Agenda

- Develop vertical government portals to share costs of hosting and maintaining of web enabled citizen services for local governments.
- Better coordinate local technology planning efforts.

Glossary of Terms

Access—The technology choices available by which users can connect to the public data network at the level they demand or need (dialup, cable, DSL, ISDN, wireless, etc.)

Bandwidth—The capacity of a transmission channel to move data among locations.

Cable modem—A device that enables a personal computer to be connected to a local cable TV line and receive and send data.

Dialup access—Refers to connecting to the Internet via a modem and standard telephone line.

Domain name—The unique name that identifies an Internet site and its address.

DS3 (Digital Signal 3)—A standard digital transmission rate of approximately 45 Mbps.

DSL (Digital Subscriber Line)—A technology which enables the ordinary copper component of telephone lines to carry data at rates much higher than ISDN.

E–commerce (Electronic commerce)— Commercial and non-commercial transactions facilitated through the use of networked technologies.

Gbps (Gigabits per second)—A measurement of the rate of speed at which data is transferred (e.g., 1 Gbps equals 1 billion bits per second).

Infrastructure—The communication networks that connect users to the Internet.

Internet—The collection of interconnected networks that use the IP protocols.

ISDN (Integrated Services Digital Network)—A service that allows for higher data transmission speeds and is capable of handling at least two services over one line simultaneously (i.e., voice and fax or voice and data).

ISP (Internet Service Provider)—A company or organization that provides users with connectivity to the Internet.

Kbps (Kilobits per second)—The rate of speed at which data is transferred (e.g., 1 Kbps equals 1,000 bits per second).

LAN (Local Area Network)—A network of interconnected workstations that share the resources of a single processor or server within a relatively small geographic area, such as an office.

Mbps (Megabits per second)—A measurement of the rate of speed at which data is transferred (e.g. 1 Mbps equals 1 million bits per second).

OC3 (Optical Carrier level-3)—An optical fiber line that supports digital signal transmissions at 3 times the base rate of 51.84 Mbps or approximately 155 Mbps.

OC12 (Optical Carrier level-12)—An optical fiber line that supports digital signal transmissions at 12 times the base rate of 51.84 Mbps or approximately 560 Mbps.

OC48 (Optical Carrier level-48)—An optical fiber line that supports digital signal transmissions at 48 times the base rate of 51.84 Mbps or approximately 2.5 Gbps.

OC192 (Optical Carrier level-192)—An optical fiber line that supports digital signal transmissions at 192 times the base rate of 51.84 Mbps or approximately 9.7 Gbps.

T1—A commonly used line for Internet connectivity that supports digital transmissions at 1.5 Mbps.

Usage—The extent to which business, government and household users utilize the Internet access and infrastructure available to them.

WAN (Wide Area Network)—A geographically dispersed telecommunications network.

Wireless access—A communications system in which radio-frequency or infrared waves carry a signal through the air, rather than along a wire.

xDSL (Digital Subscriber Lines)—One of many variations of DSL, the most common of which is ADSL, asymmetric digital subscriber line service.

Northeast Regional Workteam Members

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