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

Greater Dayton IT Alliance
Supporting Information Technology Growth

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

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Innovations in computing, networking, and education
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Statewide Steering Committee

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The Ohio Board of Regents

NCR

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).

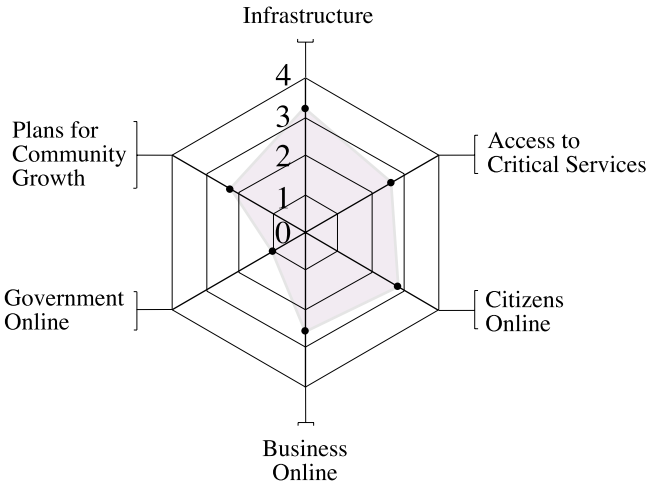
The Internet and growth of e-commerce as a way of doing business has thrust Ohio's industrial base into a time of turbulent change. Network traffic doubles every six months and forecasts show that business-to-business e-commerce will be a major driver of our state's economy in the next decade, generating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



West Ohio's Electronic Commerce Readiness

West 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

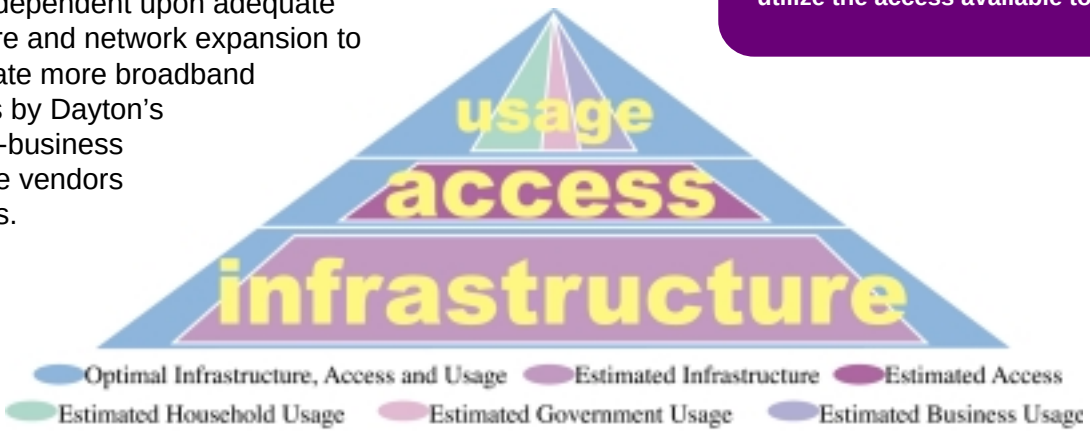
Components of E-Commerce

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

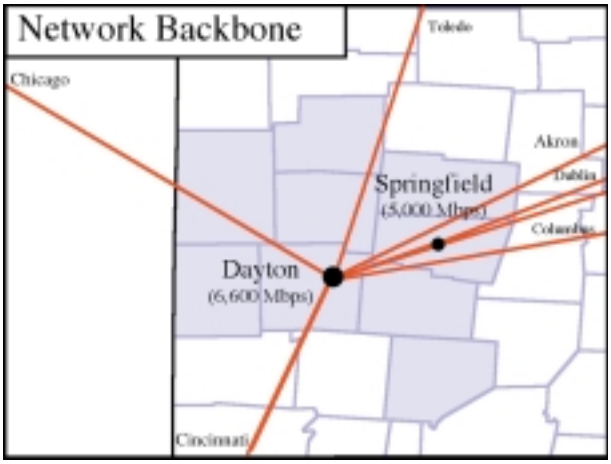
Access: The choices available by which users can connect to the public data network at the level they demand or need.

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

Today, the West Region has moderate business and household usage of the network infrastructure in place. Along with the Wright Patterson Air Force Base, companies enabling e-businesses have become strong performers in the local economy. However, their continued growth and retention will be dependent upon adequate infrastructure and network expansion to accommodate more broadband applications by Dayton's business-to-business e-commerce vendors and e-tailers.



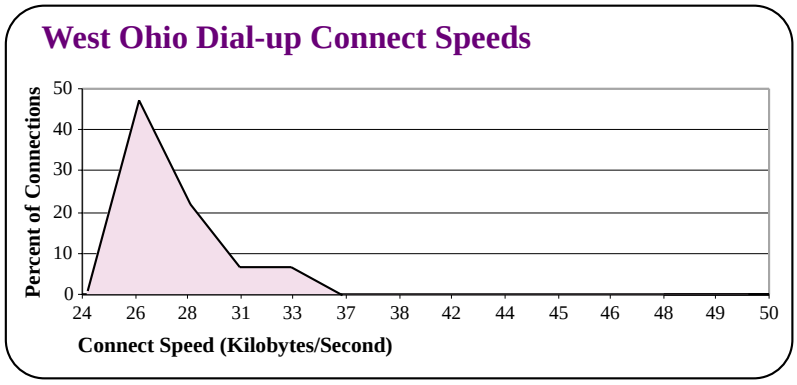
Available Local Backbone



Connectivity in the Dayton area is strong largely because of the demands of universities and military facilities in the region. Connections at 1.5 Mbps (T-1) speeds are available in most of the region's urban and suburban areas, with most access available in metropolitan regions. Access capacity from six service providers totals 6600 Mbps to points outside the region, providing some network redundancy. Wireless access to the Internet is not generally available.

Ability to Meet Demand

Connection attempts from the Dayton region typically do not experience tremendous disruptions; 90% of all connection attempts are successful. However, dialup connections are not robust enough to support high bandwidth applications. Network slowdowns do occur during peak hours, but rarely deny access. About 60% of Ohioans report interruptions in service at least once a month. West Ohio's data infrastructure is sufficient to support average levels of data traffic today but may not have the capacity to support steady growth in Internet traffic in the future.



The West region connectivity infrastructure is strong but lacks diverse broadband technology deployment, such as Digital Subscriber Line (DSL) or cable modem technology. For this reason, the infrastructure may not be sufficient to support future emerging high bandwidth applications, especially given the information-intensive nature of numerous strong Dayton area businesses, such as NCR and Reynolds & Reynolds.

Action Agenda

- Publicize the current infrastructure levels and regional deployment plans.
- Support programs to further define infrastructure needs.
- Support programs to better deploy high bandwidth infrastructure and access to high demand areas.

Access to Critical Services

Range of Services

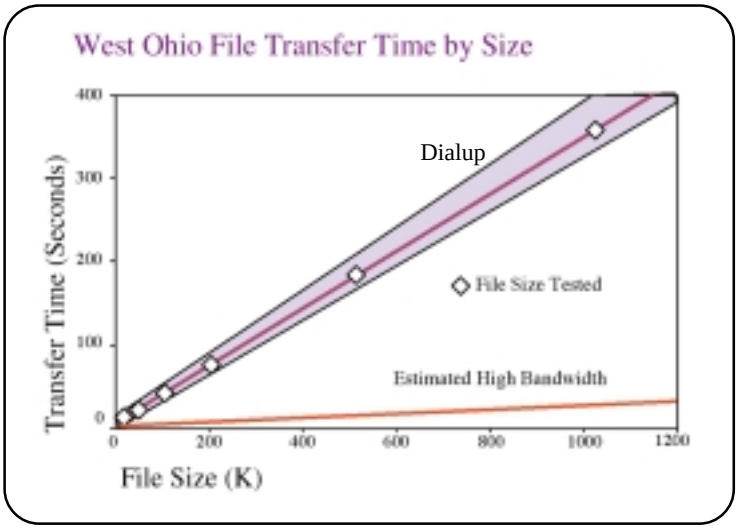
Dialup access at 56K is available throughout the region to residents and small businesses. Integrated Services Digital Network (ISDN) is available throughout the area, although cable and DSL are not widely deployed, particularly for home access. T-1s are available throughout the region and serve 13% of all West Ohio business users; 7.4% of the businesses use ISDN lines to connect to the Internet. High bandwidth access is available in limited areas: cable technologies support 3.7% of the business users and DSL connections are used by 1.9% of the businesses in the Dayton area. A wide range of payment and service options are available to these businesses.

Affordability

For residents and small businesses, flat dialup service options are available universally. Some service options based on usage are available on a limited basis from selected Internet Service Providers (ISPs) and service areas. Approximately 69% of the citizens and 88% of the businesses in West Ohio know of alternative service packages available. Higher bandwidth services are available through ISDN at flat rates based upon connection speeds, not actual usage. Large businesses have access to competitive pricing options for high bandwidth service.

Quality of Service

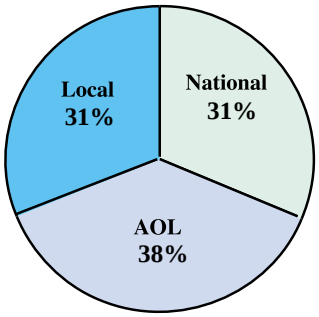
Dialup and higher bandwidth service setup times are nominal and statewide, most accounts are active within 7-10 days. Eighty-nine percent of the users in business and 85% of the users at home consider transmission speeds adequate for current levels of usage. Even though 57% of the residents and 51% of the businesses report disruptions in service at least once a month, most users rate service response as satisfactory.



Competition

For data services, several technologies and providers are available in urban and suburban areas, there is less choice in rural areas. The West region has a moderately competitive ISP market, although the providers available generally have only one level of service. Discriminating buyers can find alternative service packages from a large number of ISP providers, although rural areas of the region have fewer ISP options.

West Ohio Customer Usage by Type of ISP



Key Findings

The Dayton region's urban and suburban areas have limited broadband options for service. SBC/Ameritech has announced plans to deploy DSL services through much of the Miami Valley by the year end. Time Warner is also undergoing major upgrades to deploy cable modem access by late 2000 and early 2001 throughout much of the area. Once implemented, these actions will help the infrastructure grow in capacity and diversity. Rural areas within the region have more limited choices.

Action Agenda

- Support efforts to increase access to underserved consumers.
- Develop/support programs to provide discounted Internet access service to small businesses through chamber of commerce and industry trade associations.

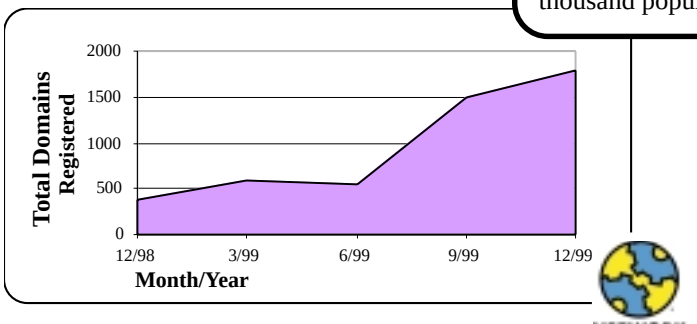
Business Online

Domains

Ohio's domain growth rate significantly increased during the last six months of 1999, making it the twelfth highest growth state in terms of newly registered domains. Montgomery County is among the top three Ohio counties in terms of domains per thousand capita in Ohio. The West region domain growth rate is 371%, almost twice the national average domain growth rate.

1.53
domains per thousand population

West Ohio Domains

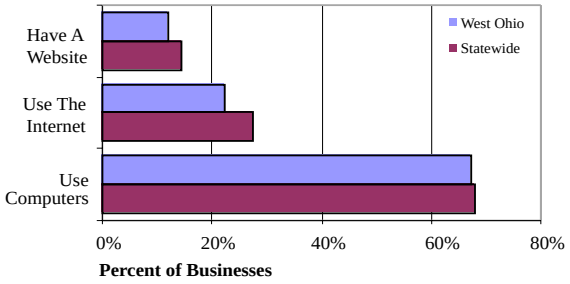


Source: Network Solutions Inc.

Websites

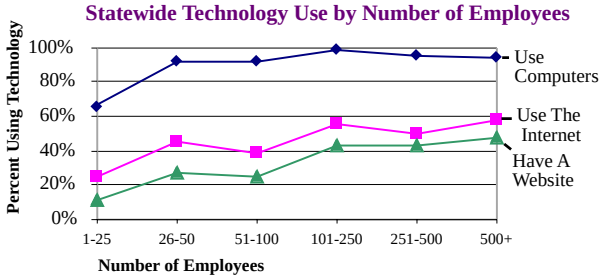
Twenty-seven percent of all West region businesses use the Internet and 16% of West region businesses have a website, which lags behind the national average. Among the Ohio businesses with more than 100 employees, website usage is substantially higher at 66%. Transportation, retail and financial service industries are more aggressive in 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.

Business use of technology . . .



. . . varies with the number of employees

Statewide Technology Use by Number of Employees



Market Development & Business-to-Business Transactions

Sixteen percent of Dayton region businesses have a website, but those that do cite competitive pressure and attracting new customers as primary reasons for creating a web presence. There are few significant business-to-business electronic transactions except in those West Ohio industrial sectors with strongly linked supply chain management systems, such as automotive Original Equipment Manufacturers (OEMs), logistics and distribution, and military procurement.

West Ohio Business Best Practice Sites

Reynolds & Reynolds:
www.reyrey.com
NCR:
www.ncr.com
Standard Register:
www.standardregister.com
IAMS Company:
www.iams.com
Dayton Air Credit Union:
www.dayaircu.com
Automotive Diagnostic Concepts:
www.adc-labscopes.com

Networking

Local Area Networks (LANs) are used in 31% of all West Ohio businesses. Even though many businesses are networked, only 7.5% depend on e-mail for their primary mode of business communication. Only 32.5% of the businesses in West Ohio have more than half of their employees using computers.

31% businesses have a LAN

11% businesses have a WAN

Key Findings

Businesses in the West region are not aggressive users of websites for marketing or selling. However, a positive trend shows that West region businesses are creating new domains more quickly than the national rate.

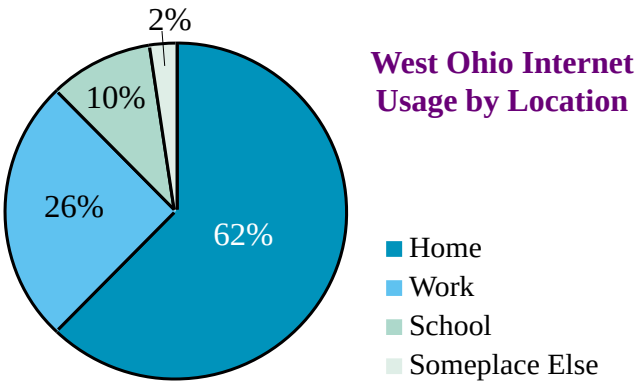
Action Agenda

- Use chamber of commerce and community outreach sources to stress critical needs and provide basic education to build online presence and master e-commerce skills.
- Develop a regional capability to assist small and medium-sized businesses in raising Information Technology (IT) competencies and enhancing their ability to compete.

Citizens Online

Internet Access at Home and at Work

The West region matches the national average in terms of computer ownership and Internet usage. Approximately 47% of West Ohio citizens own a computer and 33% are online and log on weekly. Eighteen percent of West region citizens cite lack of access as a barrier to getting on the Internet. The West region's gap between computers owned and those connected to the Internet is the largest in the state.



Schools

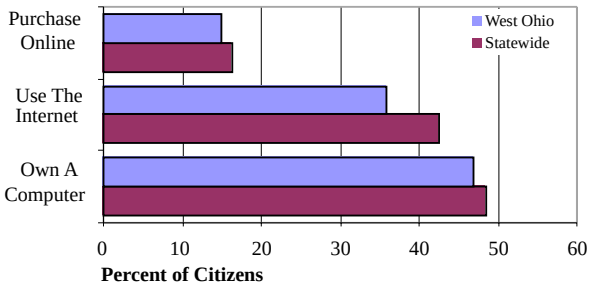
While over 90% of all Dayton area schools are well wired, some areas lack adequate updated hardware or facilities for effective educational use. Seven out of 10 schools in Ohio have every classroom connected to the Internet. About 91% of West area schools offer staff and teachers Internet training either on or off site but there is a perceived lack of computer skills mastery and full integration into curriculum offerings.

Libraries

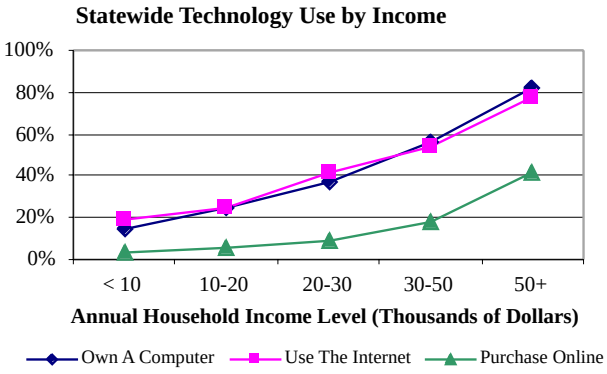
Through the Ohio Public Library Information Network (OPLIN), libraries in Ohio boast an outstanding array of network services and public access to information, data-bases, and resources. In the West region, the metropolitan Library system provides 73 buildings with access and 228 workstations with public access to the Internet, access to web-based e-mail for independent professionals, computer hardware, software, and training.

Ohio Citizens Online

Household Internet use . . .



. . . varies by income



Key Findings

The Dayton region needs to improve citizen Internet usage relative to other regions in Ohio and national averages. Public access through schools, community centers and libraries is above average and planning is in place to expand public access.

Action Agenda

- Encourage local/regional retail business applications to accelerate citizen usage.
- Explore alternatives for public access that leverage existing investments.
- Develop regional business and school partnerships that create increased use of IT as a tool for education.
- Support public/private partnerships that will enable the use of private sector computing facilities for training and seminars.

Community Planning

New Communities Created

West Ohio has a strong tradition of activist educational and governmental organizations working together to boost high technology opportunities. Notable in this regard is Dayton Area Graduate Studies Institute (DAGSI), a unique graduate studies program that links higher education institutions in the Dayton area. The Dayton area also has an active IT industrial network, the Greater Dayton IT Alliance. This group has served as the model for a similar statewide effort geared toward spurring information technology as an emerging sector of strength in Ohio's economy.

West Ohio
Websites of Interest

Greater Dayton IT Alliance:
www.daytonitalliance.org
Dayton Microcomputer Association:
www.dma.org
DAGSI:
www.dagsi.org

Employment Opportunities and Skills

Several local colleges and proprietary schools in the West region provide an IT curriculum and numerous degree programs. Local chambers and businesses are actively changing curriculum content to improve graduates' technology literacy and focus on workforce skills opportunities. Dayton area employment and training centers participate actively in OhioWORKS, the statewide job search and resume referral service. Local one stop centers provide job search and resume posting services.

Ohio WORKS .com
The number one site for Ohio employers and job seekers
www.ohioworks.com

Planning

The Greater Dayton IT Alliance, in affiliation with other regional development groups, is focusing on information technology and its potential to boost jobs and the economy in this region. These initiatives, groups and associations are actively working to become better integrated and set clear goals and timelines.

Government Websites

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

West Ohio Government Websites of Interest

City of Kettering:
www.ketteringoh.org

Key Findings

The West region has strong individual community technology planning efforts that are actively being coordinated to maximize their impact. There must be an aggressive effort to put local government units online.

Action Agenda

- Continue strong regional support of the Greater Dayton IT Alliance in coordinating and supporting local information technology planning efforts.
- Coordinate programs to develop/provide website access, content consistency, and formatting standardization for regional and local government agencies.

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.

West Regional Workteam Members

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