



MichNet News

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Merit Network, Inc.
<http://www.merit.edu>

Merit Advisory Council Extended

MAC Will Continue; 2000 Election Procedures

In 1997 the Merit Board, in order to advance Merit's relationship with K-12, library, community college, and other Affiliate communities, created an Advisory Council with the following charge:

Provide advice and recommendations to the Merit Board and staff on items of importance to their constituencies and to Merit, including broad matters of services offered and of policy.

The Merit Advisory Council (MAC) held its first meeting in June 1998.

At its January 25 meeting, the Merit Board decided to extend the MAC's two year charter for an additional two years, through July, 2002. To that end the MAC recommends the following election procedures for future council members. Terms are three years in length, with the expectation that the Merit Board will choose to extend the MAC beyond 2002.

Representation

Representatives are elected for three-year terms by current Merit Affiliates in each of the categories listed below. Terms are staggered to insure continuity on the Council.

- 3 from K-12 schools, one of which would be from a single organiza-

tion rather than a multi-site or group Affiliate (one open seat in 2000);

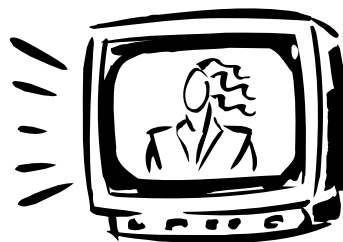
- 3 from libraries, one of which would be from a single organization rather than a multi-site or group Affiliate (one open seat in 2000);

- 3 from community colleges (one open seat in 2000);

- 2 from other colleges and non-member universities, including private institutions (sorry, no open seats in 2000);

- 2 from businesses (one open seat in 2000);

- 2 from others, including government, hospitals, and other not-for-profit agencies (two open seats in 2000, one for three years and one for one year).



Campaign for a council seat!

See Merit Advisory Council on page 5

2000 Election Calendar

12/01/99	Nominating Committee created
2/15/00	Nomination deadline
3/15/00	2000 Ballot finalized
3/31/00	Ballots distributed
4/21/00	Votes due
5/11/00	New MAC members attend first meeting

Internet2 Access for Merit Affiliates

Non-University Organizations Can Now Become Secondary Abilene Participants

The Internet keeps getting faster. It is easy to spot links along the MichNet Backbone that, in only two years, have gone from 3M bps (2 x T1) to 45M bps (T3). Unfortunately, however, today's Internet is too slow (and too crowded) for some high-performance academic and network research.

Internet2 is a collaborative effort among the nation's leading research universities, teamed with government and industry partners, to build the next generation of the Internet. The Internet2 community is committed to developing advanced applications using a new, high-performance network and enhanced TCP/IP networking protocols. Over time, these new capabilities will become part of the commercial Internet.

The University Corporation for Advanced Internet Development (UCAID), a non-profit consortium, serves as the lead for the Internet2 project. Among other things UCAID operates *Abilene*, a high-performance national backbone network. The Abilene backbone runs at 2.4G bps (OC48c) — 1600 times faster than a standard T1 line! Participants in Michigan are connected to Abilene via the Michigan GigaPoP, which is operated by Merit. The Michigan GigaPoP is connected to Abilene over a 622M bps (OC12c) link from Ann Arbor and a 155M bps (OC3c) link from East Lansing. In Michigan, the University of Michigan and Michigan State University are charter members of Internet2, Wayne State University and Michigan Technological University are members, and Merit is an affiliate member.

The rules for who may connect to and use Abilene were changed last October. In addition to the higher education institutions that are Abilene's primary participants, non-university organizations can now become secondary Abilene

participants at a reduced cost. The secondary participant must be collaborating with and sponsored by a primary Abilene participant. Secondary participants do not have a direct working relationship with UCAID, but instead they work through a primary participant or their GigaPoP. The new rules open Abilene access up to a much wider range of organizations at a lower cost than was previously possible. Community colleges, K-12 schools, libraries, research organizations, and even some for-profit firms can now obtain access to Abilene.

If your organization wishes to become a secondary Abilene participant, the first step is to contact Merit. Start with your Internet Consultant — he/she can help you through the Internet2 application process.

When thinking about connecting to Internet2, you may want to ask these questions:

1. What applications does your organization have that will benefit from a high-performance

The University Corporation for Advanced Internet Development (UCAID), a non-profit consortium, serves as the lead for the Internet2 project. UCAID's goals (as listed on the <http://www.internet2.edu/> website) include:

- First and most importantly, create and sustain a leading edge network capability for the national research community,
- Second, direct network development efforts to enable a new generation of applications to fully exploit the capabilities of broadband networks, and
- Third, work to rapidly transfer new network services and applications to all levels of educational use and to the broader Internet community, both nationally and internationally.

MichNet News

<http://www.merit.edu/michnet/mnn/>

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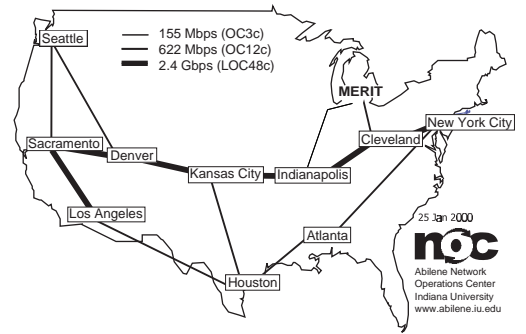
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Merit Network, Inc. is a non-profit corporation charged with promoting computer networking in Michigan and beyond. Merit is governed by all thirteen of Michigan's four-year, publicly supported universities. Offices are located at 4251 Plymouth Rd., Suite 2000, Ann Arbor, MI 48105-2785.

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Abilene core topology, with Merit's two connections.

network connection?

2. With which other organizations will your organization communicate?

3. Are those organizations connected to Internet2 (Abilene, the vBNS, one of the high performance federal agency networks, or a high performance international network)? If not, are they going to get such a connection?

For more information on high performance networking in Michigan, including Internet2, Abilene,UCAID, and the Michigan GigaPoP, check the Merit website: <http://www.merit.edu/i2/>



Usenet News and Web Traffic Study

Just as Moore's law predicts that the number of transistors on a silicon chip doubles almost every 18 months, one can safely predict that demand for network bandwidth will increase to fill existing capacity. Merit has seen the demand for network bandwidth double about every 12 months. While Merit will continue to add bandwidth to MichNet to keep pace with increasing demand, we have begun a project to better understand the makeup of TCP/IP traffic on the MichNet backbone. Initially we will focus on two of the largest sources of traffic, Usenet News and the web, looking for opportunities to improve the efficiency of these services. Efficiency in the context of this article means reducing the amount of bandwidth used without degrading the News and web services that many sites use today.

News and web provide different services and, as might be expected, operate very differently. Usenet articles are propagated throughout the entire Usenet network using a method known as store and forward. This is a technique in which a posted article is stored on one computer, which then sends a copy of that article to another computer. In turn, that computer sends a copy of the article to another computer, and so on. This process continues until every news server has a copy of the article.

Working with news administra-

tors in MichNet, including Merit's news administrator, our strategy involves optimizing the news article redistribution scheme between servers. By reducing redundant article transmissions to neighboring sites over the same backbone circuits, network bandwidth demands may be decreased.

The web does not redistribute documents between servers as Usenet News does. Instead each web server contains documents which may contain links to other documents located on different servers. Someone using a browser to read a web document on one web server may interact with different web servers while access-

ing different parts of the document.

A web caching proxy server can reduce the amount of traffic by caching locally popular documents. The proxy users benefit because they receive cached documents more quickly. Additionally, the organization itself benefits by reducing the amount of traffic imposed on its wide-area Internet connection. Our goal is to identify sites that would benefit from a caching proxy server and to work with them to explore caching strategies.

— Paul Howell, Merit



Sites interested in participating in either optimizing Usenet News traffic and/or exploring web caching proxy technologies should fill out this form.

- YES! My organization would like to decrease its bandwidth usage.
- Please include my organization in the following:
 - Usenet News Study
 - Web Traffic Study

Fax form to 734-647-3185, attention:

"UseNet News and Web Traffic Study," or call your Internet Consultant.

Name: _____

Organization: _____

Phone: _____

e-mail: _____

For-Profit Revenue Policy

A Change in Merit's For-Profit Revenue Policy

Effective immediately, Merit is replacing its ad hoc restrictions on revenue from for-profit firms with a new set of guidelines. Under the new regulations, Merit will continue to do business without restrictions with our existing for-profit customers, but in general will not accept new for-profit customers seeking ISP services. The revised policy applies only to Merit's Dedicated Connection, Dial-in, and Integrated Hosting Services customers.

The Merit Board has directed the staff to focus its efforts on education and support for educational, governmental, and non-profit institutions in Michigan and to make Michigan a showcase for high performance networking. The Board is not uncomfortable having some activities that generate revenue from for-profit firms, or even paying some unrelated business income tax (UBIT), so long as those activities do not put Merit's overall tax exempt status at risk.

The IRS provides no firm percentage that offers a guideline for non-profit organizations to indicate how much unrelated income is too much, and so would put an organization's tax exempt status at risk. In the absence of better guidance from the IRS, the Merit Board directed the staff to work to keep total unrelated revenue from for-profit organizations at or below 20% of total revenue.

Since the fall of 1998, Merit has limited growth in ISP revenue from for-profit organizations by not allowing new sales or upgrades if the sale or upgrade is for:

- Dedicated connections at speeds over 3M bps.
- Dial-in service that would result in more than \$10,000 of new revenue from the Affiliate during the coming year.

These ad hoc restrictions succeeded in limiting revenue from for-profit organizations, but are often awkward because:

- It is difficult to tell for-profit firms what their future with Merit is likely to be.
- For-profit firms with existing service from Merit that want to upgrade to speeds over 3M bps or add too many additional dial-in lines have to decide whether to forgo the upgrade, switch to a different provider, or obtain service both from Merit and some other provider.

Details of the New Policy

With all of the above in mind, starting immediately we will replace the existing ad hoc restrictions on for-profit revenue with the following revised approach.

In general, Merit will not accept new for-profit customers seeking ISP services. We will continue to do business without restrictions with our existing for-profit customers. Merit will only provide dedicated or dial-in MichNet access and Integrated Hosting Services to for-profit organizations that are not already buying ISP services from Merit when:

- a) The organizations are themselves educational institutions (for example, a for-profit college or charter school);
- b) Half or more of the organization's annual revenue comes from the support of educational institutions (for example, a firm that consults with educational institutions);
- c) The organizations are working in close cooperation with Merit's existing non-profit or governmental Members and Affiliates, the cooperative work will be

enhanced by a MichNet attachment, and the attachment is sponsored by the non-profit or governmental Member or Affiliate through a written request that explains the nature of the cooperative work and how it will be enhanced. If the cooperative work ends, the for-profit organization would be required to drop its MichNet attachment at the end of the current contract period; or

- d) The organizations demonstrate that they are unable to obtain services that Merit offers from other providers, or without having to pay a substantially higher amount (at least one-third higher and at least \$3,000 a year higher).

Merit will "grandfather" all existing for-profit Affiliates, allowing them to obtain new or additional ISP services without restriction.

While Merit will no longer accept for-profit ISPs as new Affiliates, we will continue to enter into non-transit peering arrangements with ISPs in an effort to keep local traffic local, improve network performance for the customers of both networks, and to reduce costs for both networks. In fact, whenever possible, we plan to increase our efforts to make these sorts of non-transit peering arrangements. In these cases, each party pays its own costs of making the interconnection and no money changes hands.

Please direct questions or comments about the revised policy to your Merit Internet Consultant or to the MichNet Dedicated Connection, Dial-in, and Integrated Hosting Services product managers.

— Eric M. Aupperle,
Merit



Merit Advisory Council

from page 1

In addition to these 15 members, each group will elect an alternate. Alternates will receive all MAC mailings and will be asked to attend meetings if an elected representative is unavailable. The alternate will be the next highest vote getter after all Council seats have been filled. An alternate will serve a term of one year. Should a Council member resign, the alternate will serve the remainder of that term.

Each Council member is to be a representative of his/her whole community or category (i.e., K-12, or libraries, or), not just his/her organization.

The "single organization" clause in the K-12 and library descriptions is intended to insure input from individual schools rather than just ISDs, REMCs, or regional Hubs, or from individual libraries rather than just library cooperatives.

People eligible to serve on the MAC must be from organizations that are directly-attached Merit Affiliates on their own or Full-service, Second-site Affiliates.

If a group Affiliate, such as a regional Hub, contains organizations that are in more than one category, that Affiliate must decide in which category it belongs. In general, there is a desire to be somewhat flexible, because the structure of Affiliates is both complex and changing.

2000 Election Procedures

Council elections will be held annually in April. New Council members will take their seats at the May MAC meeting.

At the December meeting the MAC Chair will appoint a nominating committee to develop the slate of candidates put forth to the membership for election. The slate must include at least two candidates per open seat.

The Nominating Committee will

e-mail the slate of candidates to the full council no later than March 15. The MAC will vote via e-mail to accept or reject the ballot.

Merit will distribute the ballot by mail, e-mail and via the web to all qualified Affiliates. Affiliates must vote by the deadline indicated on the ballot. Merit staff will put in place the necessary controls to insure each Affiliate votes only once, and in the appropriate category.

The chair of the Nominating Committee, in conjunction with Merit staff, will count the votes and announce the results of the election to the Council chair.

Questions or concerns? Contact Nominating Committee Chair Eileen Palmer, or your current MAC representative.

— Eileen Palmer
(The Library Network),
MAC Vice-Chair



Current Council Members

Note: Number in parenthesis is the year the council member's term ends.

K12

Matt McMahon, Gratiot-Isabella RESD (2000)
Norm Neher, Midland Public Schools (2001)
Rosemary Cary, Muskegon Area ISD - REMC4 (2002)

Libraries

Eileen Palmer, The Library Network (2000)
Becky Cawley, Northland Library Cooperative (2001)
Paul Groll, Library of Michigan (2002)

Community Colleges

Jim Lundberg, Bay de Noc Community College (2000)
Don Shikoski, Northwestern Michigan College (2001)
Michael Wahl, Kirtland Community College (2002)

Private Colleges

John Grden, Lawrence Technical University (2001)
Phil Warsop, Alma College (2002)

Business

Lorn Olsen, Standard Data Systems (2002)
open position (2003)

Government Agencies, Hospitals, and Other Non-profit Agencies

open position (2001)
open position (2003)

Six MAC positions need to get filled by the 2000 election. See available seats on the candidate form, below.

MAC Candidate Form

I would like to nominate another candidate or myself for the Merit Advisory Council. Please place this name on the ballot:

Name: _____

Organization: _____

For the following seat:

K-12 (3 years)

Business (3 years)

Library (3 years)

Governmental, Other Non-Profit (3 years)

Community College (3 years)

Governmental, Other Non-Profit (1 year)

Fax form to 734-647-3185, attention: "Merit Advisory Council Candidate," or contact Nominating Committee Chair Eileen Palmer (empalmer@tln.lib.mi.us).

Organizational Changes at Merit

User Services Group, Now Called "Member and Affiliate Services", Prepares for Major Changes

The Member and Affiliate Services Group (formerly User Services) is working to improve its methods for servicing and supporting Merit's Members and Affiliates. The first step in this transformation included some staffing changes. The next step will be a complete reorganization of Merit's Internet Consultants — a change that the new Member and Affiliate Services Manager, Elwood Downing, is spearheading.

The following staffing changes at Merit became effective on November 16, 1999:

Mosher Selected as First MichNet Dedicated Connections Product Manager

Mike Mosher is now the MichNet Dedicated Connections Product Manager. This is a new job at Merit. In the past most of the functions of this job were performed by Jeff Ogden. This change had been planned since last summer when Jeff took on the additional responsibilities of being a direct liaison with the Merit Member universities and taking a more active role in Merit's high speed networking activities, including Merit's GigaPoP and issues related to Internet2. Mike will report to Scott Gerstenberger, Associate Director for MichNet, in this new role.

Mike and Scott both have a lot to learn from Jeff about the Dedicated Connections area and that will take

some time. But generally, Mike is now responsible for:

- Defining Merit's dedicated connection services and pricing;
- Tracking Merit's Affiliate revenue and working with Scott on the associated budgets;
- Coordinating written and verbal communication about MichNet dedicated connection services; and
- Working with Brian Cashman, MichNet Backbone Manager, and Fred Rowe, MichNet Operations Manager, to make sure that the technical/infrastructure side of MichNet's operation is in sync with the services that Members and Affiliates need.

Rosenzweig Selected as First MichNet Dial-in Product Manager

Andy Rosenzweig is now the MichNet Dial-in Product Manager. This is also a new job at Merit. In the past Scott Gerstenberger performed the functions of this job. But given Scott's additional responsibility for MichNet dedicated connections as well as dial-in services, this change had been planned for several months. Andy will report to Scott.

Andy comes into this job with an exceptional understanding of how MichNet shared dial-in works. He's had years of experience with Merit's customers and is especially knowledgeable of the K-12 customer community. He has already taken over responsibility for doing the weekly hunt group configurations. This involves a lot of hands-on detail about how Merit's customers use dial-in services and several elements of capacity planning. Andy has also assumed responsibility for external communication regarding dial-in

services. Over time, he will take full responsibility for:

- Defining Merit's dial-in services and pricing;
- Tracking Merit's dial-in revenue and working with Scott on the associated budgets;
- Coordinating written and verbal communication about MichNet dial-in services; and
- Working with Bill Bulley, Interim Dial-in Production Manager; Fred Rowe; and others to make sure that the technical side of Merit's operation is in sync with the services that customers need.

Downing New Manager of MichNet Member and Affiliate Services Group

Elwood Downing is the new Manager of the MichNet Member and Affiliate Services group (formerly User Services), taking over for Mike Mosher. Elwood has previous strong management skills and as those of you who know him already realize, he is very hard working and well organized. Elwood is now responsible for directing all aspects of MichNet Member and Affiliate services, and will report to Scott.

Since August, Member and Affiliate Services had been planning a transition of the MichNet sales activities. Sara Peth and Ken Horning are now part of the Member and Affiliate Services group and report to Elwood. Elwood is working with them to integrate our MichNet sales activities into the Member and Affiliate Services group.

If you have any questions, feel free to contact your Internet Consultant.

— Scott Gerstenberger,
Merit



The Member and Affiliate Services group is working to improve its methods for servicing and supporting Merit's Members and Affiliates.

New Merit Website Design Includes Better Navigation

Merit's redesigned website (<http://www.merit.edu>) went live on December 15, 1999. With only minimal growing pains, Merit website users have adjusted to the new navigation, and in some cases, new locations for specific information. The good news is the website's new look makes finding information easier and faster . . . you might be surprised at how much information there really is!

The information on the site is divided into six main areas. As you enter a specific area, the navigation options expand to include more specific links.

1. MichNet Infrastructure — includes information for MichNet Members and Affiliates. This is where you will find MichNet statistics, policies, network maps, and announcements. Basically, any information that is important to Members and Affiliates can be found here. This section is divided into three parts: (1) general information, (2) direct connect

information, and (3) dial-in information.

2. MichNet User Help — this is a new section. It is intended to answer general questions for "end users." While a large number of these users never make it to the Merit site, you may want to share some of this information with your local help desk. This section also includes the dial-in phone numbers.
3. Education Technology — includes information relevant to schools and libraries. You will find Universal Service Fund information here, as well as news about Merit's Center to Support Technology in Education.
4. Global Routing & Operations — where you can read about Merit's invaluable contributions to the larger Internet.
5. Products & Services — a quick rundown of the products and services your organization can purchase from Merit. Want to find out if Merit can help with your

security issues? Start with this section (by the way, yes, we do offer network security consulting services).

6. About Merit — this contains the usual company information. Find out about our history, staff, board of directors, job openings, bylaws, and more.

The new design also includes quick links, a complete calendar, an extensive site map, and a search engine. Yes, we are still using the same search engine, but we plan to investigate how to get better search results within the next few months.

If you have any questions, suggestions (constructive!), or you just can't find the information you want, please e-mail Candice Russell (candiceqr@merit.edu). Glowing compliments are welcome too!

— Candice Russell,
Merit



No more frames! The complete URL will show in your address line, making it easier to bookmark and refresh pages.

Quick Links are available from every page.

The main topics expand to include additional relevant links.

Most pages are narrow enough to eliminate left to right scrolling.



DIALING INTO MICHNET

All MichNet shared dial-in users must authenticate with an Access ID issued by their organization. For information on how to obtain Access IDs, contact the network support staff at your site.

Dial-in users can connect to a network access server (NAS) by using Point-to-Point Protocol (PPP) or VT-100 terminal emulation programs. Terminal emulation users should set their **communication settings** to 8 data bits, no parity, 1 stop bit.

All MichNet sites support the v.34 (28.8/33.6 Kbps) protocol and older, slower protocols. More than half now support v.90 (40-52 Kbps actual).

MichNet modems support the error correction protocols v.42 and MNP4, as well as the data compression protocols v.42bis and MNP5.

Local Access Numbers:

Before configuring your modem to automatically dial a MichNet access number, check Merit's Dialaccess searchbase to make sure it is a local number. Merit's Dialaccess searchbase is available on the web at:

http://www.merit.edu/cgi-bin/db/dialaccess__new.pl

Note: Merit Network, Inc. is not responsible for any telephone charges that might occur should you dial a non-local number.

Recommended Settings:

The following settings are recommended for use with PPP and MichNet dial-in access numbers.

Flow Control	CTS/RTS	On
	XON/XOFF	Off

CTS/RTS flow control must be enabled in your modem and your modem cable must be able to pass CTS and RTS signals. Since XON/XOFF flow control may interfere with binary file transfers, it is not recommended.

DCE/DTE Speeds	DCE (phone line) speed	DTE (computer port) speed
	34,667 to 52,000 bps (v.90)	230,400 or 115,200 bps
	33,600 bps (v.34)	115,200 or 57,600 bps
	28,800 bps (v.34)	115,200 or 57,600 bps

The DCE speed is negotiated to the highest reasonable speed by the modems and is not usually set by the user. The v.34 standard supports a range of speeds from 19,200 to 33,600 Kbps. Since many phone lines are of insufficient quality to support 33,600 Kbps, v.34 modems will often negotiate to a lower speed. Similarly, the v.90 standard supports a range of speeds from 34,667 to 52,000 bps, but typically users will see speeds in the 40,000 to 46,667 bps range.

The DTE speed (computer port) should be set higher than the DCE (phone line) speed to take advantage of compression when using terminal emulation or PPP.

About the Shared Dial-in Listing


Online listing: For the most current listing of dial-in numbers, check: <http://www.merit.edu/michnet/dial-in/numbers/>


Terminal emulation users can find current numbers by entering **help** at the **host:** prompt and then selecting **MichNet Dial-in Numbers**.


Modem speeds: All MichNet dial-in sites are served by Network Access Servers (NASs). Details on NAS modems are contained in "Dialing Into MichNet." All dial-in sites support carrier speeds of at least 33.6 Kbps. Since many phone lines are of insufficient quality to support 33.6 Kbps, v.34 modems will often negotiate to a lower speed. More than half also support v.90, commonly called "56K." However, v.90 modems generally provide actual speeds in the 40 to 52 Kbps range.

Number of lines: The number of lines listed is the total number of priority and no-priority lines in a hunt group.

Limited Access Numbers: One number provides access primarily for Oakland University (OU) users and is so marked. This number provides limited access for other users.

MetroDetroit Numbers: A star (★) indicates numbers reaching a common hunt group called "Metro-Detroit." See "MetroDetroit" for the number of lines available to users dialing these numbers. 

SE Michigan Numbers: A number sign (#) indicates numbers reaching a common hunt group called "SE Michigan." See "SE Michigan" for the number of lines available to users dialing these numbers. 

Upper Peninsula Numbers: A plus sign (+) indicates numbers reaching a common hunt group called "Upper Peninsula." See "Upper Peninsula" for the number of lines available to users dialing these numbers. 

✓ 56K/v.90 ★ See MetroDetroit
 # See SE Michigan † See Upper Peninsula

MichNet Shared Dial-in Numbers

City	Phone No.	Lines	City	Phone No.	Lines	City	Phone No.	Lines
MICHIGAN			✓ Goodrich	810 230-8103	#	✓ Newberry	906 293-2982	†
Addison	517 547-5621	12	Grand Haven	616 846-2617	58	Northport	231 386-5029	7
✓ Adrian	517 265-6689	45	✓ Grand Rapids	616 224-7020	414	Onaway	517 733-8968	28
Albion	517 629-7450	56	✓ Grayling	517 348-9405	36	Ontonagon	906 884-6495	11
Allegan	616 686-0008	11	Greenville	616 754-6816	7	Oscoda	517 215-2200	43
✓ Alma	517 466-5322	72	✓ Hadley	810 245-0204	#	Ovid	517 834-2258	2
✓ Alpena	517 356-0704	150	✓ Harrisville	517 724-5989	55	Owosso	517 729-7205	37
✓ Ann Arbor	734 489-2200	345	Hart	231 873-7798	14	Petersburg	734 279-1839	7
✓ Atlanta	517 785-4927	48	Hastings	616 945-0348	28	Petoskey	231 347-1715	46
Au Gres	517 876-4180	10	Hillsdale	517 439-9102	29	Pinconning	517 879-6940	7
✓ Avoca	810 966-8812	#	Holland	616 355-0026	79	Pontiac	248 377-1586	101
Bad Axe	517 269-2693	11	✓ Holly	248 531-2200	#	Pontiac (OU)	248 370-4311	16
Baldwin	231 745-3182	8	✓ Hope	517 832-0144	#	✓ Port Huron	810 455-2200	#
✓ Battle Creek	616 963-9975	48	✓ Houghton	906 483-3120	84	Portland	517 647-5008	20
✓ Bay City	517 922-2200	#	✓ Houghton Lake	517 366-4125	32	✓ Powers	906 497-4081	†
Belding	616 794-1046	12	Howard City	231 937-6069	6	Prescott	517 873-4837	6
✓ Bergland	906 575-1035	†	✓ Howell	517 586-2200	#	✓ Rock	906 356-6691	†
✓ Big Bay	906 345-9496	†	Hudson	517 448-2087	7	Rogers City	517 734-3794	11
✓ Big Rapids	231 592-1040	84	Indian River	231 238-4962	20	Romeo	810 331-1212	★
Blissfield	517 486-2072	7	Ionia	616 527-0685	29	✓ Roscommon	517 275-5134	42
Boyerne City	231 582-7492	32	✓ Iron Mountain	906 776-1202	†	Rose City	517 685-2109	23
✓ Brevort	906 292-5522	†	✓ Iron River	906 265-4810	†	✓ Saginaw	517 921-2200	#
Bridgman	616 465-3590	19	✓ Ironwood	906 932-9914	†	✓ St. Clair	810 328-2200	#
Buchanan	616 695-0168	53	Jackson	517 788-6300	89	✓ St. Ignace	906 643-0077	†
Cadillac	231 779-0683	36	✓ Kalamazoo	616 387-2070	456	St. Johns	517 224-0502	28
Capac	810 395-4623	13	Kalkaska	231 258-8479	9	✓ St. Joseph	616 983-1965	96
Caro	517 673-1422	5	Kent City	616 678-4177	5	Sand Creek	517 436-3266	8
Carson City	517 584-6831	13	✓ Keweenaw	906 289-1045	†	Sandusky	810 682-2200	11
Caseville	517 856-9215	7	Lake City	231 839-6760	6	✓ Sanford	517 832-0144	#
Cassopolis	616 445-8618	15	Lakeview	517 352-7571	5	✓ Sault Ste. Marie	906 635-1533	†
Cedar Springs	616 696-4941	5	L'Anse	906 524-5644	4	Sidney	517 328-3300	17
✓ Central Lake	231 544-3056	20	✓ Lapeer	810 538-2200	#	South Haven	616 639-1909	25
✓ Charlotte	517 543-1631	44	Lawrence	616 674-3296	12	✓ SE Michigan		1196
Chatham	906 439-5901	5	✓ Lennon	810 230-8103	#	Sidney	517 328-3300	21
Cheboygan	231 627-2220	29	✓ Ludington	231 843-7167	114	South Haven	616 639-1909	32
Chesaning	517 845-2917	4	✓ Mackinac Island	906 847-0083	†	Springport	517 857-4336	7
Clare	517 386-4684	81	Mancelona	231 587-0545	7	Standish	517 846-1189	17
✓ Coldwater	517 279-7694	24	Manistee	231 398-0302	21	Stephenson	906 753-2185	48
Colon	616 432-3245	14	Manistique	906 341-5977	8	Stockbridge	517 851-7382	29
Concord	517 524-9047	9	Marcellus	616 646-2608	10	✓ Sturgis	616 659-0774	28
✓ Curtis	906 586-3257	†	✓ Marquette	906 226-3891	†	Tecumseh	517 424-4100	13
✓ Decatur	616 423-6023	19	Mason	517 676-7671	25	Temperance	734 847-6662	24
Detroit	313 203-1130	★	McBain	231 825-8232	7	✓ Three Rivers	616 279-5400	37
✓ Dowagiac	616 782-4568	47	Memphis	810 392-9964	20	✓ Traverse City	231 941-9826	89
Dryden	810 796-3333	21	✓ Menominee	906 863-1002	†	✓ Trenton	734 559-2200	#
Dundee	734 529-5614	17	Mesick	231 885-2962	5	✓ Trout Lake	906 569-0013	†
East Lansing	517 353-3500	876	Metro Detroit		384	Twining	517 867-4141	7
✓ East Lansing	517 432-7200	1219	✓ Michigamme	906 323-1001	†	✓ Upper Peninsula		240
Edmore	517 427-5957	10	✓ Midland	517 923-2200	#	Warren	810 838-1130	★
Edwardsburg	616 663-5502	7	✓ Mio	517 826-1229	48	✓ Watersmeet	906 358-9879	†
Elsie	517 862-4141	15	✓ Monroe	734 349-2200	#	Wayland	616 792-1211	17
✓ Engadine	906 477-8096	†	Montrose	810 639-4895	8	✓ West Branch	517 216-2200	#
✓ Escanaba	906 789-2034	†	Morenci	517 458-2206	7	Westphalia	517 587-4451	7
Ewart	231 734-6497	10	✓ Mount Clemens	810 840-1112	★	✓ Williamston	517 655-1370	12
Farmington	248 699-1130	★	✓ Mount Pleasant	517 774-2224	415	Yale	810 387-2157	23
Fennville	616 561-7111	9	✓ Munger	517 895-6493	#	NEW YORK CITY		
✓ Flint	810 249-0300	#	Munising	906 387-3245	5		212 509-5270	10
Frankfort	231 352-4134	10	✓ Muskegon	231 728-4253	78	WASHINGTON D.C.		
Fremont	231 924-5662	10	✓ New Baltimore	810 684-2200	#		202 484-4160	14
✓ Gaylord	517 732-1596	72	✓ New Boston	734 415-2200	#	MERIT FOR-FEE		
			New Buffalo	616 469-5907	19	800 NUMBER	800 232-3379	24

MichNet Backbone: Recent and Planned Upgrades

Upgrades Will Make MichNet a True GigaPoP

To stay ahead of increasing bandwidth demands, Merit is constantly upgrading the MichNet backbone with higher speed connections. Here is a Recent and Planned Upgrades report from MichNet Backbone Manager Brian Cashman.

Recent MichNet Backbone Changes

- The 45M bps (T3) ATM (Asynchronous Transfer Mode) link at Ypsilanti is complete.
- The long awaited 45M bps (T3) link between Flint and Saginaw is complete.
- The even longer awaited 155M bps (OC3c) link between Ann Arbor and East Lansing is also complete.
- Merit staff have begun to implement frame relay to connect with Affiliate ATM links in the Detroit LATA. Using frame relay for ATM links provides the same quality at, in most cases, a lower expense. Over time we'll migrate existing frame relay PVCs off point-to-point links and onto the ATM links. We have been using this facility with GTE in the Grand Rapids LATA for some time.
- The link between Big Rapids and Grand Rapids has been upgraded to 6M bps (4 x T1).

Planned MichNet Backbone Upgrades

Merit has ordered a 155M bps (OC3c) link from Ann Arbor to the Chicago Network Access Point (NAP).

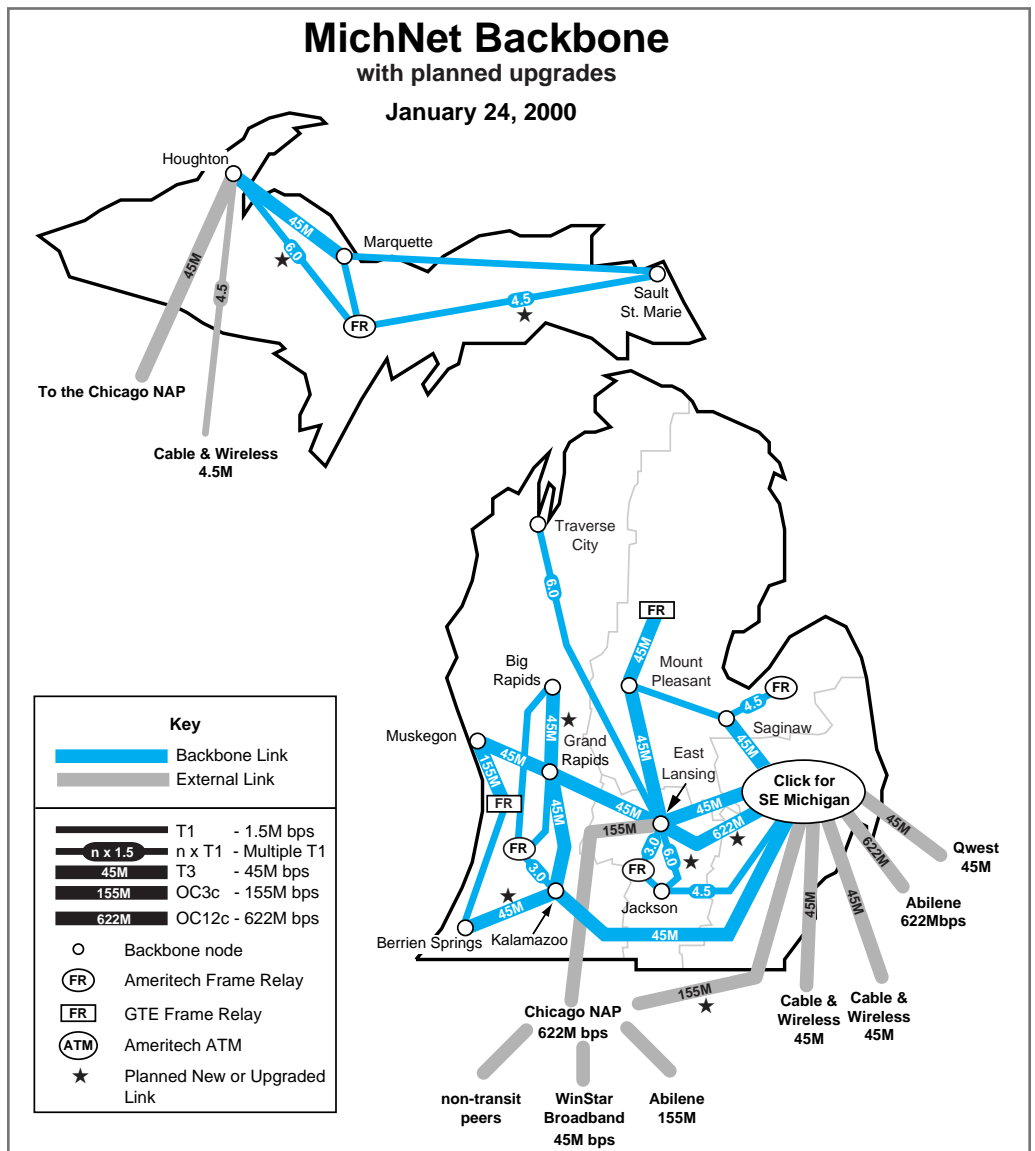
Related to this, we've ordered an upgrade for the link between our colocated switch at the NAP from a combination of 155M bps (OC3c and DS-3) to 622M bps (OC12c). Both of these links are scheduled for completion in early March.

Counting Merit's existing 622M bps (OC12c) link to Abilene, this new 622M bps (OC12c) link will give us over 1G bps of bandwidth

external to the state of Michigan, making MichNet a true GigaPoP.

If you have any questions, feel free to contact me at bsc@merit.edu or your Merit Internet Consultant.

— Brian Cashman, Merit



MichNet Adds Dial-in Locations and V.90 Upgrades

MichNet dial-in service, using v.34 (33.6 K bps), is now available in Prescott and Westphalia, increasing the number of MichNet shared dial-in locations to 163.

The Prescott location, initially funded by J&J Enterprises and Merit, can be reached at 517-873-4837. Prescott is a local call from telephones in the following exchanges:

Prescott 517-510
517-873
517-901

The Westphalia location, initially funded by SCNC and Merit, can be reached at 517-587-4451. Westphalia is a local call from only the 517-587 exchange.

Recently Merit upgraded the MichNet shared dial-in locations in Decatur and Sturgis to V.90 ("56K")

service. Users who have V.90 compatible modems will likely see increased connection speeds at those locations—though many factors, including the quality of local phone service, in-home wiring, and modem brand and age, can keep speeds well below speeds approaching 56 K bps. The absolute top speed of a V.90 connection is 52 K bps, and that quality is rarely achieved.

In the coming months, Merit expects to upgrade the large Metro Detroit and Pontiac dial-in locations to V.90 service. Other upgrades will follow in the future, at locations and dates that will be announced periodically as upgrades become possible.

The MichNet Shared Dial-in Network now comprises over 10,800 lines, in locations spread throughout Michigan. MichNet dial-in locations are within a local call of over 95% of Michigan's phones. In November, users made over seven million dial-in connections to MichNet, accounting for 3.7 million hours of use.

— Andy Rosenzweig,
Merit



MichNet Shared Dial-in Locations
February 3, 2000



Online Course Offers Teachers a Flexible Way to Learn About the Internet

When it comes to technology training, most K-12 schools are in the same predicament. School administrators want their teachers to be able to use technology effectively with students, but there simply isn't enough money in the current budget nor is there enough time allotted during school hours to provide adequate training. Reinforcing this time crunch are studies showing that teachers require 50 hours of instruction before they feel comfortable using a new technology in the classroom.* How will schools meet this very real need for more technology training?

One Teacher Who Has Joined a "Grass Roots" Effort

Meet Ginny Nightingale, a computer teacher at Stockbridge Middle School in Stockbridge, Michigan. Like most school personnel involved with technology, she has a busy and varied schedule. In addition to man-

aging the school's computer center and providing technology training to teachers at the district level, she teaches 7th and 8th graders semester-long courses that range from creative writing to multimedia. Last spring she heard about Teach for Tomorrow (TFT), a program developed by Merit's Center to Support Technology in Education that includes an online course and trains a local facilitator to assist teachers with learning about the Internet. TFT offers hands-on instruction in how to use Internet resources and activities in the K-12 classroom. It contains seven modules that range from learning how to conduct effective searches to web page creation for students.

Ginny first heard about the program from her district. The time was right for her because teachers in her district were about to gain widespread access to the Internet and most teachers required training on how to incorporate this tool into their curriculum.

750 Teachers Strong

Ginny is one of 75 Michigan educators facilitating the use of Teach for Tomorrow in a school or district this year. Each facilitator has agreed to work with approximately 10 teachers using a combination of face to face "mini-workshops," online materials, and discussion groups. In order to become a TFT facilitator, Ginny attended a two-day training session in Lansing in July, 1999. Facilitator training sessions were offered in Walled Lake, Lansing, and Escanaba. At the two-day session Ginny learned about the course content, how to plan for her own training sessions, and how to model the use of this tool for teachers attending her sessions. The session also gave her a welcome opportunity to meet other educators responsible for technology training.

In September, Ginny returned for a half day training session at Waverly Middle School in Lansing. Some of the facilitators had already held a few training sessions at their schools and they shared their experiences with the others. For Ginny, this day was a chance to ask questions and prepare for her first training session in early October. Her group of 10 is made up of teachers from the elementary, middle, and high school levels. These teachers have identified themselves as novice computer users. While it is a diverse group, Ginny expects it will be easy for each teacher to tailor the materials to his or her specific needs. Ginny has a passion for helping teachers use technology, but this zeal is mixed with reality.

"If teachers aren't comfortable using the Internet for their own needs, they won't want to integrate it into the classroom," said Ginny.

Ginny's first session met for two hours after school. With this session



The Teach for Tomorrow website is simple and easy to follow. Even novice web users can navigate through the course (<http://tft.merit.edu>).

now over, Ginny expects to hold nine additional sessions to cover the course materials. Ginny designed her training sessions so that teachers are encouraged to work through additional course material or to practice new skills on their own. Nearly all the teachers have Internet access either at their classroom computer or from home.

What Does the Online Course Prepare Teachers to Do?

As they progress through Teach for Tomorrow, Ginny expects her teachers will have mastered some Internet-related skills and implemented them in their classrooms. By the end of the course, she expects her teachers will know how to conduct effective searches and create basic web pages to structure their students' activities on the Internet. Teachers in her mini-workshops will have time for group discussion and personal reflections, providing essential peer-group support as they implement new skills in their classrooms. The online course contains a web-based portfolio where teachers can record notes and ideas. They can even add a web address by clicking on a button. Interested teachers can receive three graduate course credits from Central Michigan University for completing the online course under the supervision of a trained facilitator. What makes this project a true grass-roots effort is that teachers who complete TFT can facilitate a new group in their school or district.

Below is a brief outline of the seven modules:

- Module 1 - "Getting Started" covers using the Netscape browser.
- Module 2 - "Finding Educational Materials" covers conducting effective searches.
- Module 3 - "Internet Activities" categorizes the wide array of educational activities available.
- Module 4 - "New Ways of Learning" explains the benefits

of using the Internet in the classroom, as well as the changing role of the teacher.

- Module 5 - "The Internet & Your Curriculum" helps teachers to begin planning to use the Internet.
- Module 6 - "Getting Ready" covers teacher created web pages.
- Module 7 - "Students & the Internet" covers preparing students to use the Internet.

The History and Future of Teach for Tomorrow

Teach for Tomorrow is a direct outgrowth of Senator Carl Levin's interest in providing professional development opportunities for teachers so they are better prepared to teach using technology. The online course received initial sponsorship from Blue Cross Blue Shield of Michigan, the DeRoy Testamentary Foundation, and the Nora Lee and Guy Barron Foundation. TFT was piloted during the 1998-99 school year among 25 Michigan schools. Many of these facilitators or their participants are currently training new groups of teachers to use the Internet in the classroom. Funds from Technology Literacy Challenge Fund grants are making it possible



Merit trainer Carol Sherry works with Ginny Nightingale at the Teach for Tomorrow Facilitator Training session on September 23, 1999. The session was held at Waverly Middle School in Lansing, Michigan.

to create additional course materials. Two new modules will be added to the course by early spring of 2000. These modules will cover multimedia and lesson planning using the Michigan Curriculum Framework.

These online modules are available for use at no charge. To use Teach for Tomorrow, please register at the login page. Training is required to receive access to presentation materials and other resources designed for the TFT Facilitators. Merit staff will work on a "for fee" basis with school districts to train and support facilitators' implementation of this program throughout the district. For more information contact Merit's Center to Support Technology in Education.

— Ginny Thompson, Merit

**Refer to the Department of Education's 1994 Prisoners of Time Report*



Upcoming Training Session

In response to a number of requests for training of additional TFT Facilitators, Merit will hold a two-day Facilitator training at the Washtenaw ISD in Ann Arbor on Tuesday, February 15 and Wednesday, February 16th from 9am-3pm. The fee is \$200, which covers the two days of trainings, coffee, lunch and snacks, session materials, and access to the online Facilitator materials component of TFT. Graduate credit hours through Central Michigan University and CEUs are available. Training will be hands-on in a computer lab setting that offers a choice of PC or Mac platforms.

If you would like to register, please send your request to Gayle Terkeurst at Merit Network, Inc.

Mail: 4251 Plymouth Road
Suite 2000
Ann Arbor, MI 48105-2785
Email: gturkey@merit.edu
Phone: (734) 764-9430
Fax: (734) 647-3185

Merit Prepares 250 Quotes for USF Year 3

The Merit Member and Affiliate Services staff has once again survived the onslaught of Universal Service Fund (USF) applications from Michigan schools and libraries. Many of the Year 3 applications came from existing MichNet Affiliates wanting to renew, upgrade, or obtain new services. As of January 17 there were approximately 1888 applications filed in Michigan. This includes requests for all USF eligible services, such as new and existing contracts for telecommunications services, internal connections, and Internet access.

This year, Merit reviewed approximately 630 requests from Michigan schools and libraries for new contracts for Internet services. Of those, Merit responded to approximately 40% with quotes for a variety of Internet access services. The Schools and Libraries Division hopes to have all Year 3 Funding Commitment Decision Notifications mailed out by the first week of May.

The Year 3 filing period for Form 470s (Description of Services Requested) began on October 25, 1999. The equal application window for the USF Form 471 (Services Ordered) deadline ran from Nov 10, 1999 to January 19, 2000. For up-to-date information on Merit's USF efforts and funding commitments to Michigan schools and libraries, please see Merit's web site at <http://www.merit.edu/usf/>.

— Sara Peth,
Merit



USF: What Now?

Catch Your Breath; Next Steps

The Universal Service Fund (USF) program is an initiative that brings services like the Internet to K-12 schools and libraries. In the first two program years, Michigan institutions received \$57 million (Year 1) and \$79 million (Year 2) in funding. These funds are not awarded as a blanket amount for the entire state, but bit-by-bit as individual schools and libraries apply for and receive funding. The Year 3 equal applicaiton window closed on January 19, 2000.

Congratulations on making it to the end of the USF equal application window deadline for Year 3. Because there is no rest for the weary here is a list of next steps, but with one exception (item #2) there are no near term deadlines associated with any of these steps.

- 1) **Catch your breath.**
- 2) **Complete any remaining Year 1 Billed Entity Applicant Reimbursement (BEAR) forms and send them in to the Schools and Libraries Division (SLD).** Hopefully there aren't very many organizations that still need to send in Year 1 BEAR forms, but if you are in this situation send them in very soon. See: http://www.sl.universalservice.org/reference/011200_yr1invcs.asp

Congratulations on making it to the end of the USF equal application window deadline for Year 3.

Senator Levin Encourages TFT Facilitators

Teach for Tomorrow (TFT) facilitators met with US Senator Carl Levin, D-Detroit, on December 9, 1999, at Novi High School. From left, Laura Shultz, student intern at Hawkins Elementary School, Brighton, Chuck Wilbur, State Director, Office of Senator Carl Levin, Senator Carl Levin.



Photo by John Heider, Northville Record

- 3) **Catch up on your sleep** and the non-USF work that you didn't get to during the USF application process.
- 4) **Make sure that form 486s (Receipt of Service confirmation) have been filed** for all of your Year 2 funding commitments.
- 5) **Remember that even though the Year 3 equal application window has closed you can still file forms 470 (Description of Services Requested) and 471 (Services Ordered) for Year 3.** Applications received after the window closed will be processed on a first-come-first-served basis if funds remain after all of the applications received within the window have been processed. Even if you receive no funding commitment for Year 3, filing a Year 3 form 470 before you order new services will preserve your ability to obtain USF discounts on multi-year contracts that extend into Year 4 and beyond.
- 6) **Check to make sure your Year 2 and 3 service providers are properly registered with the SLD and if they are not, contact the provider and encourage them to file the required paperwork.** A problem can arise when a vendor has been assigned a SPIN number but has not followed through by completing the requisite E-rate registration filings (an initial Form 498 or an annual Form 473 certification). Unless a vendor is currently registered with the SLD, the vendor's discount reimbursement requests cannot be processed. As a result, the vendor's school and library customers may not get the discounts to which they are entitled. You can check to see if a provider is properly registered by checking on the SLD web site in the Vendor Area (<http://www.sl.universalservice.org/service.asp>) using the "Service Provider Information by SPIN" button. Although meant to provide funding request data to vendors, the information summarizes the certification status of the associated provider showing either the date the vendor was certified or "Not received" (referring either to the initial Form 498 registration or the annual Form 473 certification).
- 7) Check with your providers to see if they are using form 472 (BEAR) for Year 2. If they are, start filling those forms out. Get your providers to sign and return the forms to you so you can send the completed forms in to the SLD. See: '[http://www.E-RateCentral.com/ERC_Weekly_News/Weekly_News_68.htm#Form 486s, BEARs, and discounted bills](http://www.E-RateCentral.com/ERC_Weekly_News/Weekly_News_68.htm#Form%20486s,%20BEARs,%20and%20discounted%20bills)'
- 8) **Review and, if necessary, update your technology plan for Year 3.** No technology plan is required if you are only applying for basic local and long distance phone service. If your technology plan was approved more than three years ago or was approved for a period of less than three years, you will need to submit a revised and updated plan for approval. This needs to be done before you send in form 486s for Year 3 starting next June or July. Michigan schools and libraries should see:
Schools: <http://www.merit.edu/usf/action/k12.html>
Libraries: <http://www.merit.edu/usf/action/newlib.html>
- 9) **When you receive Year 3 Receipt Acknowledgement Letters (RALs) from the SLD** review the information, mark any necessary corrections on the RAL, sign and date it, make a copy for your records and send the marked up copy back to the SLD return receipt requested. See: <http://www.sl.universalservice.org/apply/5ral.asp>
- 10) **Sit back, put your feet up and wait for calls from the SLD Problem Resolution and/or Program Integrity Assurance groups.**
- 11) **If all goes according to the current schedule, sometime in early May you should receive your Year 3 Funding Commitment Decision Letter(s) from the SLD.**
- 12) **Think about ways you can let your community, the press, and government officials know about the USF discounts you have received or expect to receive in Years 1, 2 and 3 and what the funds have or will allow you to accomplish.**

— Jeff Ogden,
Merit



Think about ways you can let your community, the press, and government officials know about the USF discounts you have received or expect to receive in Years 1, 2 and 3 and what the funds have or will allow you to accomplish.



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Upcoming Events Calendar

- ▶ 2/15-16/00
Teach for Tomorrow Facilitator Training
Washtenaw ISD, Ann Arbor, MI.
- ▶ 3/14/00
Merit Joint Technical Staff Meeting
Michigan State University, East Lansing, MI.
- ▶ 5/11/00
Merit Advisory Council Meeting
Traverse City, MI.
- ▶ 5/23-24/00
MichNet Annual Meeting
Location TBD.
- ▶ 9/14/00
Merit Joint Technical Staff Meeting
Michigan State University, East Lansing, MI.
- ▶ 12/7/00
Merit Joint Technical Staff Meeting
Michigan State University, East Lansing, MI.