

ILLINOIS STATE
UNIVERSITY



Standard Operating Procedures for Managing Helpdesk Cases Assigned to Networking

November 2001
Telecommunications and Network Support Services

Standard Operating Procedures

1.0 Introduction

This document describes SOP (Standard Operating Procedures) for managing Helpdesk cases assigned to TNSS (Telecommunications and Network Support Services) at Illinois State University. These procedures apply to the University Computer Helpdesk, each DSCs (Distributed Support Cluster) affiliated with the University, and TNSS. The intent of this SOP is to coordinate the support of centralized network services among these organizations for the University community. It is expected that this process is evolutionary.

1.1 Relationship

This document defines the rights and responsibilities of the relationship between the University Computer Helpdesk (denoted as Helpdesk), DSCs, and TNSS (denoted as Networking). This relationship defines the Helpdesk as a support center for students, faculty, staff, and emeritus relating to residential networking connectivity issues (ie: off-campus or ResNet) and as a dispatch center for Networking relating to local, non-residential networking connectivity issues (ie: on-campus excluding ResNet). The Helpdesk agrees to provide adequate training for staff to support either role. Networking agrees to provide training to Helpdesk staff as needed to provide clear and concise information for assigned tickets. This relationship also defines Networking as a second level support group DIRECTLY relating to network connectivity issues for all constituents of the campus.

Networking is not a support center for desktop issues relating to production level services. However, assistance will be provided to the Helpdesk relating to desktop issues for services or technologies being piloted by Networking.

1.2 The Helpdesk as a Support Center

As a support center, the Helpdesk will accept calls through 438-HELP from any University affiliated patron. All problems reported to the Helpdesk that DIRECTLY relate to network connectivity will be assigned to Networking.

Every effort should be made by the Helpdesk to not assign tickets to Networking if the problem does not directly relate to network connectivity issues. Issues relating to OS (Operating System) based network connectivity configurations or problems will be directed to a unit that is responsible for desktop support.

1.3 The Helpdesk as a Dispatch Center

As a dispatch center, the Helpdesk will accept calls from designated support technicians from a DSC using the Helpdesk "batphone" for the purpose of reporting problems to centralized units including Networking. The "batphone" will be restricted to a finite list of technicians to ensure that it is not abused. All calls placed to the "batphone" during Helpdesk hours will take priority over other calls placed to the Helpdesk. All calls placed to the "batphone" after Helpdesk hours have a 15 minute best effort response by the Helpdesk.

For all calls placed to the "hotline", the Helpdesk will attempt generate a trouble ticket. The Helpdesk will direct this ticket to the centralized unit identified by the DSC. If the Helpdesk is unable to generate a trouble ticket, the on-call engineer will be directly contacted by pager. It is expected that DSC technicians have the expertise to make this determination. After receiving notification of a ticket assigned to Networking by page or email, an on-call engineer for Networking may contact the Helpdesk using the "hotline" to seek information about the ticket before contacting the DSC.

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1.4 Networking as Second Level Support

The role of Networking at the University is to support the campus network infrastructure known as ISUnet and related services for the entire campus community. This includes the following services:

- LAN (Local Area Network) – network electronics that provide desktop and server connectivity (including building networks, ResNet, debit card connectivity, and wireless ISUnet)
- CAN (Campus Area Network) – network electronics that provide interconnectivity between LAN environments (also known as the network backbone)
- WAN (Wide Area Network) – network electronics that provide Internet connectivity and connectivity for remote, affiliated LAN environments
- broadband residential – residential ADSL service
- RAS (Remote Access Service) - network electronics that provide analog dialup access to the campus network (on and off campus)
- Internet services – network services that support Internet connectivity and applications including DNS, DHCP, AAA, and NTP

The following services are not supported by Networking:

- Internet services - web services, email, LDAP, and WINS
- operating systems
- applications

Networking only supports the centralized services described above. All trouble tickets received by Networking that are not directly related to one or more of these areas will be directed back to the Helpdesk for reassignment. Networking does not provide desktop support for the campus community. However, Networking may assist the Helpdesk with determining the source of a problem.

2.0 Trouble Tickets

Networking is notified of problems by the Helpdesk or the DSC through the creation of trouble tickets. ALL tickets assigned or referred to Networking by the Helpdesk or a DSC are assigned to the Networking group and not an individual. When cases are assigned to Networking, these tickets automatically generate an alphanumeric page directed to the Networking group pager number AND regional pagers. In this manner, all network engineers can receive these pages either on-campus or at their residence. The Helpdesk to make every reasonable effort to ensure that the trouble ticket software properly generates this page at the time the ticket was assigned. In either event, this page will contain the following information:

- trouble ticket number
- ULID of the patron
- contact name and phone number
- location of the problem

All tickets assigned to Networking will also generate an email message to all engineers with the equivalent information.

2.1 Generating Tickets

Networking agrees to use the software that the Helpdesk provides for accessing these cases online. The Helpdesk agrees to provide application training for this product as needed to the Networking staff.

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A trouble ticket can be generated by one of four methods:

- A ticket can be created by the Helpdesk as the result of email directed to the Helpdesk.
- A ticket can be created by the Helpdesk as the result of a call placed to the Helpdesk main number (438-HELP).
- A ticket can be created by through the Helpdesk trouble-ticket software by an authorized DSC technician.
- A ticket can be created by the Helpdesk as the result of a call placed to the “batphone” by an authorized DSC technician.

When generating a trouble ticket, the Helpdesk or the DSC will make every reasonable effort to provide Networking with a specific set of information. A trouble ticket should contain the following information:

- who reported the problem (ULID)
- contact information for return call (phone number)
- form of access (ie: ethernet, ResNet, ADSL, dialup, public jacks, apartment complex networks, etc)
- location of problem (on-campus: building and room, off-campus: name and phone number)
- brief description of the problem
- preliminary triage (ie: error messages, the results from pings and traceroutes, or other information if available)
- additional information as applicable (ie: IP addresses, jack numbers, phone numbers, etc)

Preliminary triage and additional information is best suited in an attachment to the trouble ticket as identified in an action item. This format will provide Networking with enough information to perform preliminary research before contacting the user. All Helpdesk and cluster technicians and staff are authorized to generate tickets on behalf of Networking. Networking will not create tickets for internal events.

2.2 Point of Contact

Networking will advertise the Helpdesk as the primary point of contact on the TNSS public web site, in documentation, and within campus technology committees. Networking will redirect callers who have not been issued tickets back to the University Helpdesk or the appropriate DSC.

DSC technicians will be directed to use the Helpdesk software to issue trouble tickets directly to Networking (see Appendix A for procedures on how to create ticket). The “batphone” will also be available to DSC technicians for reporting connectivity problems to the Helpdesk. Both of these methods are suited for reporting cases that require an immediate response.

When appropriate, end users will be directed to the Helpdesk main phone number (438-HELP) or the DSC main number to report trouble. A Helpdesk or DSC technician will work with the end user to determine if it is appropriate to direct the resulting ticket to Networking. During business hours, the Helpdesk may direct callers back to the DSC.

An alternate point of contact for Networking is the email address of telecomweb@ilstu.edu. This mailbox is an alias for multiple engineers within TNSS for users that have informational questions. It is assumed that questions directed to this email group are not high priority. There is no requirement to generate a trouble ticket for these types of inquiries. If a user is reporting a problem relating to the services provided by Networking, the on-call engineer will respond to the problem as if a ticket was issued. All problems submitted to this mailbox that are not related to the services provided by Networking will be forwarded to the Helpdesk mailbox.

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Once a ticket has been established, it is expected that dialogue will directly occur between Networking and the caller or reporting cluster. Once the case has been closed, subsequent dialogue surrounding the same ticket will be redirected to the Helpdesk or the DSC. The Helpdesk or Networking can reopen an existing ticket as needed.

2.3 Severity Types Assigned by Networking

There are three severity types for trouble tickets. The first severity type called **normal** describes a ticket used to help a user find information about connectivity (ex: a user is seeking information about how to seek ADSL service through the University). The second severity type called **high** describes a problem that appears to impact a single user (ex: a jack is not working properly). The third severity type called **urgent** describes a problem that appears to impact multiple users (ex: a building network is offline, no Internet connectivity, dialup service is down, etc).

The Helpdesk will generate each ticket with a normal severity level. Once the ticket has been reviewed by Networking, the severity level will be altered to reflect the scope of the problem.

2.4 Helpdesk Trouble Tickets Reports

Once a month, the Helpdesk will generate a usage report indicating the following:

- number of tickets generated each month
- the average amount of time a ticket is open

Networking agrees to provide feedback on the effectiveness of this process and make recommendations for enhancing trouble ticket management.

2.5 Duplicate Tickets

If subsequent calls are placed to the Helpdesk or DSC referring to the same problem described on an existing, open case, this ticket should be amended indicating each caller that is reporting the same problem. Every reasonable effort should be made to prevent generating multiple trouble tickets for the same problem. A single ticket describing the same problem reported by multiple users can be managed more efficiently managed by Networking than multiple tickets for each caller. Subsequent callers can be identified as action items associated with a common ticket. Duplicate tickets that are assigned to Networking will be closed and referenced to the original case number.

3.0 The On-call Engineer

To manage the tickets that have been created by the Helpdesk, an on-call engineer within Networking is assigned to monitor incoming tickets. This responsibility is passed around a rotation of engineers on each Wednesday at noon. The on-call engineer has access to a local and regional pager and cell phone during their rotation during or after conventional working hours.

It is important to understand that the on-call engineer is not responsible for solving a reported problem. The on-call engineer is responsible for coordinating with other engineers within Networking to solve the problem depending upon the type of problem reported. However, the on-call engineer can resolve the problem without assistance from other engineers if the problem is within their field of expertise and responsibility.

The on-call schedule of engineers is only available to the Helpdesk. This information is restricted and may not be shared with other units. This practice prevents units or individuals from bypassing the trouble ticket process. All engineers within Networking participate within the on-call schedule. An on-call engineer will make every reasonable attempt to be reachable during or outside standard working

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hours. The on-call engineer will contact the Helpdesk manager regarding the impact of urgent problems.

3.1 Responding to Tickets

It is the responsibility of the on-call engineer to assess each trouble ticket. After assessing the ticket, the on-call engineer can redirect the ticket to another unit or the Helpdesk if the scope of the problem is outside the responsibility of Networking.

The on-call engineer accepts a trouble ticket by acknowledging ownership as an action item. The text of this action should state something like "Networking is researching the problem". As subsequent activities occur surrounding this ticket, any engineer within Networking can include additional action items. Trouble tickets relating to cabling issues will be directed to the structured cabling manager within TNSS.

It is the intent that all tickets created and assigned to Networking will be viewable by support clusters. This allows a cluster to monitor the status of an open ticket without contacting the Helpdesk or Networking directly.

3.2 The On-Call Process During Standard Hours

Standard hours are defined as 8:00am to noon and 1:00pm to 4:30 weekdays. Once a ticket has been generated AND Networking has received notification (ie: group page and email) within standard hours, the on-call engineer will review the ticket online to determine what action must be taken. The on-call engineer is responsible for assessing the problem described in the ticket and then contacting other engineers within Networking as necessary to troubleshoot and resolve the problem. The on-call engineer has 60 minutes to respond to the ticket and classify it as normal, high, or urgent. Networking reserves the right to reclassify the severity of a trouble ticket. Once classified, the on-call engineer has a fixed amount of time to get resources committed to researching and resolving the problem based upon the severity of the ticket:

- **normal** severity: the on-call engineer has 2 business days
- **high** severity: the on-call engineer has 120 minutes
- **urgent** severity: the on-call engineer has 60 minutes

In the event that an on-call engineer does not respond to a page within these time limitations, the area manager can be paged for assistance.

3.3 The On-Call Process Outside of Standard Hours

Weekends, holidays, before each 8:00a weekday, lunch hour, and after each 4:30p weekday are considered outside of standard hours. Once a ticket has been generated AND Networking has received notification (ie: group page and email) outside standard hours, the on-call engineer will either review the ticket online or contact Helpdesk "hotline" to seek more information about the ticket. The on-call engineer is responsible for assessing the problem described in the ticket and determining whether or not to seek resources after hours. This decision is dictated by the severity and scope of the problem. The on-call engineer has 120 minutes to respond to the ticket and classify it as normal, high, or urgent. Networking reserves the right to reclassify the severity of a trouble ticket. Once classified, the on-call engineer has a fixed amount of time to get resources committed to researching and resolving the problem based upon the severity of the ticket:

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- **normal** severity: the on-call engineer has 2 business days
- **high** severity: the on-call engineer has until 9:00a of the next business day
- **urgent** severity: the on-call engineer has 120 minutes

If an immediate response is warranted, the on-call engineer will attempt to contact appropriate resources within Networking after hours to respond to the reported problem. All senior engineers will make every reasonable effort to be available at all times. The on-call engineer will make a best effort attempt to contact the appropriate resources within the unit.

If the decision is to defer the problem to the next business day, the on-call engineer will update the ticket indicating that it has been deferred. As soon as possible during the next business day, the on-call engineer will contact the necessary resources in Networking to research and troubleshoot the problem.

4.0 Managing Cases

Once and an on-call engineer has reviewed a reported case, it is important to manage the ticket to provide updated information and closure. Networking will manage all tickets by updating them with action information and then closing them with resolution. Either the on-call engineer, an engineer assisting on the ticket, or the area manager can update a given ticket with additional information.

4.1 User Interaction

After doing preliminary research, one or more engineers from Networking will contact and work with the DSC or end user to obtain information to research and troubleshoot the problem. Networking will leave voice mail (when possible) for those callers who cannot be reached and update the ticket indicating the actions taken. If the user is a DSC technician, a call will ALSO be placed to the DSC phone number in an attempt to locate the caller.

4.2 Updating Tickets

Once the source of the problem has been identified, Networking will update the ticket with appropriate information including the action currently being taken to research or resolve the problem. It is expected that the DSC or end user will have access to view information surrounding a trouble ticket assigned to Networking. This process allows the DSC or end user reporting the problem to remain in touch with the status of the ticket.

4.3 Closing Tickets

Once a problem described in a trouble ticket has been properly addressed, the ticket will be closed as soon as practical. The resolution of the problem will be included within the ticket at the time it is closed. A trouble ticket may also be closed if three attempts have been made to contact the organization or end user without a response over three business days. At that point, it is assumed that the problem described in the ticket no longer exists.

Networking will notify the original unit or individual through voice mail or email upon closing the ticket. Only the engineer that worked the case is authorized to close a ticket. The Helpdesk or external clusters may not close a ticket assigned to Networking.

5.0 Notification

Although Networking will not create Helpdesk tickets for tracking internal problems, it is important that users be made aware of major network problems.

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5.1 Netaalert

Networking will be responsible for posting major network outages or notifications relating to network infrastructure to the **netaalert-1** listserv as needed. The Helpdesk may also post this information to netaalert on the behalf of Networking after the Helpdesk has confirmed with Networking that a problem exists.

5.2 Outages and Alerts

The Helpdesk may also post network outages or notifications to the Outages and Alerts web page. Again, the Helpdesk may also post this information after the problem has been confirmed with Networking.

5.3 MagicTSD Whiteboard Messages about Networking

There may be events when it may be appropriate for Networking to create a global whiteboard message. A whiteboard provides a scrollable message across the main Helpdesk website used to inform clusters about network or system outages with a scope beyond the confines of a single building. Multiple trouble tickets can also be associated with a common whiteboard message. This process simplifies the closing of many tickets related to the same problem. Only Networking staff can create global whiteboard messages surrounding network infrastructure events.

6.0 Planned Outages

There are times when Networking must perform network maintenance to ensure the integrity and viability of ISUnet. These activities usually create outages for defined periods of time. The scope and duration of these outages can vary substantially.

6.1 Maintenance Outages

Because ISUnet is continually evolving, there is a continuous need to introduce new hardware, software, or services on the network. Since much of this work would impact network connectivity, these tasks are performed during regularly scheduled maintenance outages.

A maintenance outage is pre-defined window in time where network services or connectivity for the University can be taken offline to perform maintenance. To minimize the impact of these outages, only one maintenance outage is scheduled per month. These outages typically begin at 8:00a until 4:00p on a designated Sunday unless otherwise noted. A reminder is posted to the **netaalert-1** listserv the week before the scheduled maintenance.

6.2 Emergency Outages

There are times when an emergency outage must be scheduled because a problem has emerged upon the network that requires immediate attention. Emergency outages are only scheduled because the problem cannot remain unattended until a subsequent maintenance outage.

An emergency outage is a window in time that is announced only a few hours in advance of the maintenance window. This announcement is posted to the **netaalert-1** listserv.


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Appendix A

This appendix describes the procedure for creating a ticket Helpdesk ticket and assigning it to TNSS for the purpose of reporting a connectivity problem.

- 1) Login to Magic by going to www.support.ilstu.edu using IE 5.5x (or higher) on a Windows computer.
- 2) Click on **Help Desk** (on the navigation bar on the left side of the window).
- 3) Enter your own ULID (or the ULID of the contact person for the problem) in the **ULID** box.
- 4) You must also complete the fields: **OS**, **Network**, and **Subject**.
 - Click the little gray button next to each of these fields to select the appropriate information.
 - Note: OS contains a choice called "NA", which can be used in the event that the problem does not relate to a specific computer or operating system.

Problem Information	
Status	<input type="text" value="OPEN"/>
OS	<input type="text"/>
Network	<input type="text"/>
Subject	<input type="text"/>
Subj Desc	<input type="text"/>

- 5) Click the **Save** icon  located at the top of the window.
 - Once the ticket is saved, it will be given a problem number, which is displayed in the **Problem Information** section of the window.
 - You may want to make note of this ticket number so you can reference it more easily in the future.
- 6) At the bottom of the form, right-click in the empty white space in the **Actions** section, and select **Add New Help Details** from the pop-up.

Actions : <input checked="" type="radio"/> User <input type="radio"/> System <input type="radio"/> All		
Date	Support Staff	
Add New Help Desk Details		

- Note: This pop-up will be 'grayed-out' if you have not Saved the ticket first.
- 7) Click the **Next** button to jump to the second page.
 - In the list, locate three items: **Location**, **User Phone Number**, and **Problem Info**.

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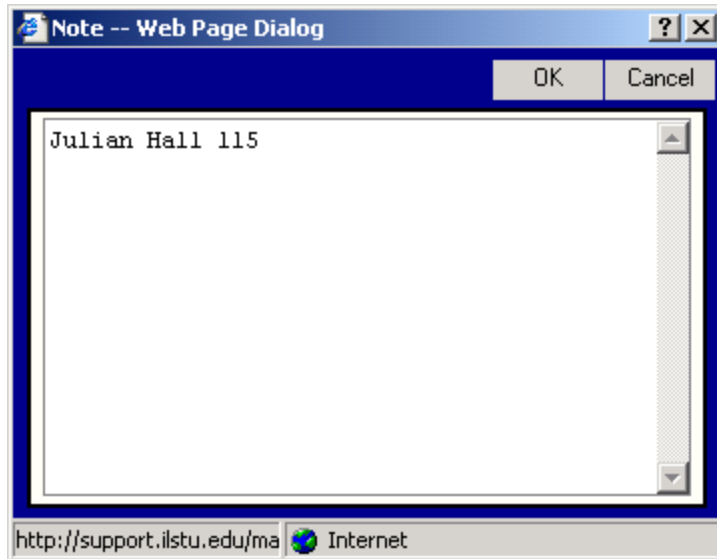
▪ You must add each of these three items to your ticket before you assign it to TNSS.

8) Select **Location** and click OK.



▪ A **Notes** box will appear. Delete the time/date stamp and your ULID and then type the location of the network problem.

▪ Be as specific as possible. If the problem appears to only be affecting the 3rd floor, for example, specify that information.

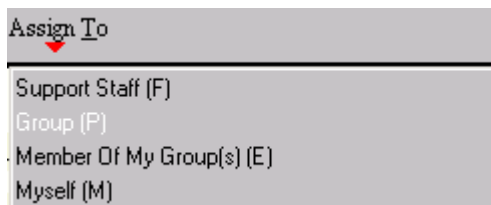


9) Repeat steps 6 - 8 to add **User Phone Number** and **Problem Description**.

▪ When adding **User Phone Number**, type the phone number of the contact person for the problem. Type your own phone number if you wish to be the contact person.

▪ When adding **Problem Info**, type a description of the problem, including jack numbers, IP addresses, etc., as appropriate.

10) Once you have added all appropriate information to the ticket, select **Assign To > Group** (at the top of the window).



11) Click **Next** several times until you see the Group, **TNSS_MAIN**. Select **TNSS_MAIN** and then click OK. The ticket will then be sent to TNSS.

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Appendix B

This appendix describes some of the information that Networking needs included on a trouble ticket when reporting problems.

- 1) on-campus ethernet (including ResNet): These tickets should include the jack number (or building and room number as an alternative) of the affected station (if the impact of the problem is limited to one or two devices), the IP address assigned or learned via DHCP, the results of a ping test to the gateway, and a traceroute to **www.ilstu.edu** (if the results of the ping test are positive).
- 2) analog dialup: These tickets should include the phone number of the pool dialed (ie: 8210 or 8200), whether the call took place on or off campus, ULID of account dialed, date and time stamp of failed call, and what message the user saw on their desktop that indicated that a failure occurred.
- 3) ADSL: These tickets should indicate whether or not the affected device is connected directly to the modem or a mini-hub, the brand of the modem, the IP address served via DHCP, results of a ping test to the gateway (if the IP address was successfully served), and a traceroute to **www.ilstu.edu** (if the results of the ping test are positive).
- 4) Greek House network: These tickets should include the name of the house, the IP address served via DHCP, results of a ping test to the gateway (if the IP address was successfully served), and a traceroute to **www.ilstu.edu** (if the results of the ping test are positive).
- 5) apartment complex network: These tickets should include the street address and apartment number, the IP address served via DHCP, results of a ping test to the gateway (if the IP address was successfully served), and a traceroute to **www.ilstu.edu** (if the results of the ping test are positive).

IP Address:

To determine the IP address of a Windows 98, NT, 2K, or XP platform, execute the **ipconfig** command at the command prompt:

Ethernet adapter 0:

```
Connection-specific DNS Suffix . :  
IP Address. . . . . : 10.2.11.3  
Subnet Mask . . . . . : 255.255.255.0  
Default Gateway . . . . . : 10.2.11.254
```

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Gateway Ping Test:

To determine if the (default) gateway of the IP address is reachable using Windows 98, NT, 2K, or XP, execute the **ping** command at the command prompt (use the default gateway with this command):

```
C:\WINNT>ping 10.2.11.254
```

```
Pinging 10.2.11.254 with 32 bytes of data:
```

```
Reply from 10.2.11.254: bytes=32 time=<10ms TTL=255  
Reply from 10.2.11.254: bytes=32 time=<10ms TTL=255  
Reply from 10.2.11.254: bytes=32 time=<10ms TTL=255  
Reply from 10.2.11.254: bytes=32 time=<10ms TTL=255
```

```
Ping statistics for 10.2.11.254:
```

```
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
    Approximate round trip times in milli-seconds:  
        Minimum = 0ms, Maximum = 9ms, Average = 2ms
```

The above is an example of a successful gateway test.

```
C:\WINNT>ping 10.2.11.254
```

```
Pinging 10.2.11.254 with 32 bytes of data:
```

```
Request timed out.  
Request timed out.  
Request timed out.  
Request timed out.
```

```
Ping statistics for 10.2.11.254:
```

```
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),  
    Approximate round trip times in milli-seconds:  
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

The above is an example of an unsuccessful gateway test.

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Traceroute Test:

To determine if there is connectivity beyond the gateway using Windows 98, NT, 2K, or XP, execute the **tracert** command at the command prompt:

```
C:\WINNT>tracert www.ilstu.edu
```

```
Tracing route to www.ilstu.edu [138.87.4.3]
over a maximum of 30 hops:
```

```
 1    <10 ms    <10 ms    <10 ms    10.2.11.254
 2    <10 ms    <10 ms    <10 ms    10.0.2.41
 3    <10 ms    <10 ms    <10 ms    10.0.0.33
 4    <10 ms    <10 ms    <10 ms    10.0.3.18
 5    <10 ms    <10 ms    <10 ms    www.ilstu.edu [138.87.4.3]
```

Trace complete.

The above is an example of a successful traceroute.

```
C:\WINNT>tracert www.ilstu.edu
```

```
Tracing route to www.ilstu.edu [138.87.4.3]
over a maximum of 30 hops:
```

```
 1    <10 ms    <10 ms    <10 ms    10.2.11.254
 2    <10 ms    <10 ms    <10 ms    10.0.2.41
 3    <10 ms    <10 ms    <10 ms    10.0.0.33
 4    <10 ms    <10 ms    <10 ms    10.0.3.18
 5           *          *          *          Request timed out.
```

The above is an example of a failed traceroute.