

SolarWinds

LANsurveyor

LANsurveyor Express

Administrator Guide

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About SolarWinds

SolarWinds, Inc develops and markets an array of network management, monitoring, and discovery tools to meet the diverse requirements of today's network management and consulting professionals. SolarWinds products continue to set benchmarks for quality and performance and have positioned the company as the leader in network management and discovery technology. The SolarWinds customer base includes over 45 percent of the Fortune 500 and customers from over 90 countries. Our global business partner distributor network exceeds 100 distributors and resellers.

Contacting SolarWinds

You can contact SolarWinds in a number of ways, including the following:

Team	Contact Information
Sales	1.866.530.8100 www.solarwinds.com
Technical Support	www.solarwinds.com/support
User Forums	www.thwack.com A customer account is required to access the Customer Support area of the website.

Conventions

The documentation uses consistent conventions to help you identify items throughout the printed and online library.

Convention	Specifying
Bold	Window items, including buttons and fields.
<i>Italics</i>	Book and CD titles, variable names, new terms
Fixed font	File and directory names, commands and code examples, text typed by you
Straight brackets, as in [value]	Optional command parameters
Curly braces, as in {value}	Required command parameters
Logical OR, as in value1 value2	Exclusive command parameters where only one of the options can be specified

SolarWinds LANsurveyor Express Documentation Library

The following documents are included in the SolarWinds LANsurveyor Express documentation library:

Document	Purpose
Administrator Guide	Provides detailed setup, configuration, and conceptual information.
Page Help	Provides help for every window in the LANsurveyor Express user interface
Release Notes	Provides late-breaking information, known issues, and updates. The latest Release Notes can be found at www.solarwinds.com .

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Chapter 1

Introduction

Thank you for purchasing SolarWinds LANsurveyor Express. LANsurveyor Express is network documentation software any network manager, administrator, engineer, or designer can use with Microsoft Visio 2007 to automatically map networks of any size.

Why Install LANsurveyor Express

Right out of the box, an installation of LANsurveyor Express (LANsurveyor Express) gives you the ability to draw maps showing the logical connectivity of your network devices and create status and inventory reports about mapped network devices. Once installed, LANsurveyor Express is integrated within Microsoft Visio, allowing you to immediately leverage the functionality of Microsoft Visio 2007 for your network documentation requirements. Used independently, the easy-to-use LANsurveyor Express interface and the improved LANsurveyor Network Discovery engine will quickly have you mapping your network and creating status reports.

How LANsurveyor Express Works

The improved LANsurveyor Express Network Discovery engine searches your network over a designated IP address range for devices of selected types. During network discovery LANsurveyor Express uses a very small amount of network bandwidth. For each type of device it attempts to discover, LANsurveyor Express sends one small (<300 bytes) UDP packet per IP address. In addition, LANsurveyor Express breaks up large IP address ranges into blocks of 30 addresses and waits several seconds for responses from those 30 addresses. By searching the network in this way, LANsurveyor Express minimizes its affect on your network devices or bandwidth. After discovering devices, LANsurveyor Express employs Microsoft Visio 2007 to generate a map of discovered devices matching your selected criteria.

You can configure LANsurveyor Express to discover any of the following types of devices:

ICMP (Ping)

LANsurveyor Express can be configured to use ICMP (ping) operations to discover and map network devices that are neither SNMP-enabled nor supported by responders or other third party client software.

NetBIOS

For network nodes that employ Microsoft Networking, LANsurveyor Express can use NetBIOS operations for device discovery and mapping.

SNMP-enabled Devices

SNMP-enabled devices, including servers, routers, printers, network-attached storage (NAS), UPS systems, and other managed network devices, may be shown on LANsurveyor Express maps.

Note: Maps drawn by users without required community string privileges to SNMP-enabled routers cannot show connectivity between network segments.

SIP Clients

SIP-based Voice-over-IP (VoIP) devices can be discovered and displayed on LANsurveyor Express maps. Reports can include SIP devices and SIP-specific information.

Note: If your site uses a non-default SIP UDP socket, click **Advanced** in the LANsurveyor Express configuration window to set the UDP socket number for your SIP-enabled network devices.

Responders

LANsurveyor Express can discover and map devices running the LANsurveyor Responder client software. LANsurveyor Responders are used by LANsurveyor applications to remotely control networked systems and create software and hardware asset management reports. For more information about LANsurveyor Responders, see the SolarWinds LANsurveyor Responder website at <http://www.solarwinds.com/products/LANsurveyor/responders.aspx>.

Retrospect and Timbuktu Clients

Retrospect and Timbuktu clients may also be included in LANsurveyor Express maps and reports. For more information about using Retrospect and Timbuktu clients on your network, see <http://www.retrospect.com> and <http://www.netopia.com>, respectively.

After configuring LANsurveyor Express for your network, click **Start Network Discovery**. LANsurveyor Express then builds your network map as follows:

Note: The map building and layout process may take a few minutes on larger networks. If all search options are enabled, allow at least four seconds per 30 IP addresses to complete discovery and mapping.

1. LANsurveyor Express sends network queries to discover nodes.
2. Items that respond to more than one type of query (for example, both SNMP and ICMP) are merged.

Note: The network name of a given device is determined by the first query type returned to LANsurveyor Express.

3. IP addresses and icons are assigned to each network object.
4. Managed switch and hub ports are mapped.
5. SNMP interfaces are mapped.
6. Discovered networks and nodes are arranged.
7. The network layout is completed in Microsoft Visio 2007

Note: Using Microsoft Visio 2007, you can also generate informative network status and inventory reports with the information discovered by LANsurveyor Express. For more information about creating reports with LANsurveyor Express and Microsoft Visio 2007, see “Creating Reports” on page 16.

Chapter 2

Installing LANsurveyor Express

Installing LANsurveyor Express is a straightforward process, and the system requirements are not extensive. The following sections provide required system specifications and the installation procedure.

Requirements

Hardware and software requirements for LANsurveyor Express are nominal. The following table presents minimum hardware and software requirements to ensure satisfactory performance:

LANsurveyor Express Requirements

CPU	Pentium-class
RAM	256MB
Hard Drive Space	35MB
Operating System	Windows Vista, XP, 2003 (professional, workstation, or server editions)
Microsoft Visio	2007 version
Network	IP-based

Additionally, some LANsurveyor Express features are only functional with SNMP-enabled nodes (SNMP agents). If you want to map and create reports for these devices, you must provide valid community strings, or passwords. The following SNMP agents are used by LANsurveyor Express:

- MIB-II SNMP agents available on most IP routers and many IP devices.
- Various Cisco-specific MIBs for determining user-defined interface names and switch ports.
- Bridge MIB SNMP agents for determining switch port connectivity.
- Repeater MIB SNMP agents for determining hub port connectivity.

Required Ports

If you are installing LANsurveyor Express on a computer that is operating behind a firewall or within any other type of network security framework, ensure that the following User Datagram Protocol (UDP) and Transmission Control Protocol (TCP) ports are open:

- SNMP: UDP port 161
- LANsurveyor Responders: TCP and UDP port 4347

- NetBIOS Clients: UDP port 137
- SIP (VoIP) Nodes: UDP port 5060
- Retrospect Clients: UDP port 497
- Timbuktu Clients: UDP port 407

Required SNMP MIBs

LANsurveyor Express uses the following standard Management Information Bases (MIBs) during network discovery:

- MIB-II that exists on nearly all IP routers and many IP devices
- Printer MIB that exists on some IP printers
- Bridge MIB to determine switch port connectivity (RFC 1493)
- Repeater MIB to determine hub port connectivity (RFC 2108)
- Various Cisco-specific MIBs for determining user-defined interface names and switch ports

Installing LANsurveyor Express

Complete the following procedure to install LANsurveyor Express.

To install LANsurveyor Express:

1. Navigate to your download location, and then launch the executable.
2. Click **Next** on the Welcome window.
3. **If you want to create shortcuts for LANsurveyor Express**, check the locations where you would like to provide them, and then click **Next**.
4. Select **I accept the terms in the License Agreement**, and then click **Next**.
5. Click **Browse** to find the folder in which you want to install LANsurveyor Express or type the folder path in the **Folder** field, and then click **Next**.
6. Click **Install** on the Ready to Install window to begin installation.
7. **If you do not want to launch LANsurveyor Express right now**, clear **Launch LANsurveyor Express**.
8. Click **Finish** to exit the Setup Wizard.

- 9. If you chose to launch LANSurveyor Express**, personalize your installation by providing your **Name**, **Organization**, and LANSurveyor Express **Serial Number**, and then click **OK**.

Note: The serial number is case sensitive, and it must be typed exactly as you received it.

- 10.** Provide the requested information to register your installation of LANSurveyor Express, and then click **Register Now**.

Note: The information you provide here may also be used as labels on generated maps and reports. For more information about personalized information, see “Configuring a Custom Logo” on page 9.

The LANSurveyor Express user interface displays, showing default settings for your network. For more information about configuring LANSurveyor Express and creating maps, see “Creating Maps” on page 10.

Chapter 3

Using LANsurveyor Express

LANsurveyor Express features an easy-to-use interface enabling you to quickly start mapping your network and generating status and inventory reports. The following sections present procedures for starting LANsurveyor Express, for creating network maps, and for generating reports.

Starting LANsurveyor Express

The following procedure provides required steps to start LANsurveyor Express.

Note: You must complete the installation procedure for LANsurveyor Express. For more information about installation, see “Installing LANsurveyor Express” on page 6.

To start LANsurveyor Express:

1. Launch Microsoft Visio 2007.

Note: Generally, you should be able to open Microsoft Visio 2007 by clicking **Start > All Programs > Microsoft Office > Microsoft Office Visio 2007**.

2. Click **Tools > Add-Ons > LANsurveyor Express**.

3. **If this is the first time you are starting LANsurveyor Express**, personalize your installation by providing your **Name**, **Organization**, and LANsurveyor Express **Serial Number**, and then click **OK**.

Note: The serial number is case sensitive, and it must be typed exactly as you received it.

4. **If you have not registered your installation of LANsurveyor Express**, provide the requested information, and then click **Register Now**.

Note: The information you provide here may also be used as labels on generated maps and reports. For more information about personalized information, see “Configuring a Custom Logo” on page 9.

The LANsurveyor Express user interface displays, showing default settings for your network. For more information about configuring LANsurveyor Express and creating maps, see “Creating Maps” on page 10.

Configuring a Custom Logo

When LANsurveyor Express creates your network map, the personalized information provided at startup is placed in the upper left-hand corner of the map.

In addition, LANsurveyor Express can put your logo in the upper left-hand corner of your network diagrams. LANsurveyor Express uses the logo identified as `YourLogo.bmp` in your installation directory, which is typically `C:\Program Files\SolarWinds\LANsurveyor Express`.

Launching LANsurveyor Express from Microsoft Visio

Because LANsurveyor Express installs as an integrated Microsoft Visio 2007 add-on, if you have already installed LANsurveyor Express, you can open it directly from within Microsoft Visio 2007, as shown in the following steps.

To launch LANsurveyor Express from within Microsoft Visio 2007:

1. Launch Microsoft Visio 2007.

Note: Generally, you should be able to open Microsoft Visio 2007 by clicking **Start > All Programs > Microsoft Office > Microsoft Office Visio 2007**.

2. Click **Tools > Add-Ons > LANsurveyor Express**.

Creating Maps

Once you personalize your software, the LANsurveyor Express window displays with your default network properties. At a minimum, SolarWinds recommends that you provide SNMP community strings to include SNMP-enabled devices in your network discovery. If you choose not to provide a valid SNMP community string, your LANsurveyor Express map will show neither connectivity outside your current subnet nor connectivity among managed switches and hubs.

Note: The only feature LANsurveyor Express cannot access without local administrative privileges is the discovery of nodes via ICMP ping. With the ICMP ping feature, LANsurveyor Express attempts to "ping" itself upon startup to ensure ICMP access. If your user account does not have sufficient ICMP privileges, LANsurveyor Express will give an error when launched. To test your access to ICMP ping, open a Windows command prompt and enter `ping 127.0.0.1`. This command attempts to ping the local machine. If this command fails, you do not have sufficient privileges to send ICMP packets.

Creating a New Map

Upon launch, the main LANsurveyor Express window displays a number of options that must be configured before you can discover and map your network. After you have configured your network mapping options, LANsurveyor Express is able to search your network for objects such as routers, subnets, and end nodes. Once the selected types of network objects are discovered, LANsurveyor Express automatically builds your network map. The following procedure gives the steps required to configure and start network discovery and mapping.

To create a network map with LANsurveyor Express:

1. In the Network Parameters area, provide the start and end IP addresses of the range in which the devices you want to map are located.

Note: LANsurveyor Express determines a default IP address range from the network settings of the computer running LANsurveyor Express.

2. **If you want LANsurveyor Express to also search external networks and subnets**, provide a number of allowed router hops to increase the extent of LANsurveyor Express network discovery.

Note: SNMP router access is required if you want to extend network discovery into subnets and external networks. Provide appropriate SNMP community strings in the Routers, Switches and Other SNMP Device Discovery area, as described in the next step.

3. **If you want to include SNMP-enabled devices in your map**, in the Routers, Switches and Other SNMP Device Discovery area check the types of SNMP devices (**SNMPv1**, **SNMPv2**, or **SNMPv3**) to include, and then provide required SNMP Community Strings.

Notes:

- LANsurveyor Express allows you to provide up to ten community strings. Strings should be separated by commas or single spaces, as shown below:

```
public, private, cstring1, cstring2
```

- If you check SNMP devices without providing a valid community string, LANsurveyor Express uses the strings `public` and `private` by default.

4. **If you check SNMPv3 Devices**, click **SNMPv3 Options** and then complete the following procedure to configure SNMPv3 options:

- a. Provide a **Configuration Name**.
- b. Provide an appropriate **User Name** and **Context** for this configuration.
- c. Select one of the following **Authentication Levels**:
 - **NoAuthNoPriv** designates an SNMPv3 configuration requiring neither an authentication password nor a privacy password.
 - **AuthNoPriv** designates an SNMPv3 configuration requiring an authentication password is required, but no privacy password.
 - **AuthPriv** designates an SNMPv3 configuration requiring both an authentication password and a privacy password.

- d. **If you specify AuthNoPriv as the Authentication Level**, select the **Authentication Type**, provide the **Authentication Password**, and then, if you also want the designated password to serve as the SNMPv3 authentication key, check **Treat Password as Key**.
 - e. **If you specify AuthPriv as the Authentication Level**, select the **Authentication Type** and the **Privacy Type**, provide the **Authentication Password** and the **Privacy Password**, and then, if you also want either of the designated passwords to serve as the SNMPv3 authentication or privacy keys, respectively, check **Treat Password as Key** as appropriate.
 - f. Click **Save** to save your SNMPv3 configuration, and then click **OK**.
5. **If you want to discover and map other types of network devices**, check the appropriate device types in the Other IP Service Discovery area. For more information about the network devices that LANsurveyor Express can discover and map, see “How LANsurveyor Express Works” on page 1.
 6. Set the discovery speed for LANsurveyor Express with the slider in the Mapping Speed area.

Note: The Mapping Speed slider applies to the current map. The timeout settings in the Advanced Options, described in the next step, affect mapping speed globally for all generated maps. As mapping speed increases, it becomes more likely that LANsurveyor Express may fail to discover older or slower network devices.

7. Click **Advanced** to set advanced options, as shown in the following steps:
 - a. Click the Network tab, and, in the appropriate fields, set search and SNMP query timeouts, and provide the SIP UDP socket number for your network.

Notes:

- Search and SNMP query timeouts are linked to the mapping speed slider in the Mapping Speed area of the LANsurveyor Express configuration window. Longer timeouts result in a slower mapping speed, but they may ensure that LANsurveyor Express discovers older or slower devices on your network.
 - The SIP UDP Socket number should match your VoIP environment.
- b. Click Logging and check the types of information that you want to include in available LANsurveyor Express performance logs, and then click **OK**.

Note: In the event of a performance-related issue with your installation, a SolarWinds support representative may request these logs. To view these logs, click **Start > All Programs > LANsurveyor Express > LANsurveyor Express Log**.

8. Once you have configured all discovery and mapping options, click **Start Network Discovery** to begin searching and mapping your network.

LANsurveyor Express searches your network for the selected devices over the specified IP address range. When Network Discovery is complete, LANsurveyor Express opens Microsoft Visio 2007 and displays the generated map as a Visio drawing. You can now edit and modify the generated map using available Microsoft Visio 2007 tools.

Viewing and Editing Device Properties

LANsurveyor Express automatically provides available device information to Microsoft Visio 2007. For most network devices, the information provided includes the fully qualified domain name, the IP Address, and the device Network Description, which is the node name as reported by SNMP, NetBIOS, or a LANsurveyor Responder during Network Discovery. The following procedure provides the steps required to view and edit device properties.

To view and edit device properties:

1. Click the device icon on your generated Visio drawing.
2. Click **View > Shape Data Window** to open the Shape Data window.
3. Scroll to view and edit properties as necessary. Entered values are saved automatically when you close the Shape Data window.
4. *If you want to edit the automatically generated device label that displays on the map beneath the device icon*, double-click the device icon label and edit as necessary.

Reading Maps

When LANsurveyor Express finishes discovering the designated portion of your network, a map is drawn in Microsoft Visio 2007. Maps generated by LANsurveyor Express contain the following types of network objects:

Networks

LANsurveyor Express represents both wired and wireless networks as lines. IP address ranges display below and to the left of these network lines.

Routers

LANsurveyor Express represents SNMP-enabled routers with custom icons. Network lines are drawn from router icons to directly connected networks. If a router type cannot be determined or if no icon is available, a generic router icon is used. Microsoft Visio 2007 tools allow you to change any icon, as needed.

Managed Switches and Hubs

Most end nodes connect to the network through hubs and switches. If the hubs or switches on your network are SNMP-enabled, LANsurveyor Express maps end nodes as they are connected to the appropriate SNMP-enabled hub or switch.

If you have entered the community string for these devices, the map will also display port connectivity information next to each device. If a hub or switch type cannot be determined or if no icon is available, a generic icon is used. Standard Microsoft Visio 2007 tools allow you to change icons as needed.

End Nodes

An end node is any device that does not behave like a router or a managed hub or switch. Examples of end node objects include servers, computers, printers, SIP phones, and unmanaged hubs and switches. LANsurveyor Express includes hundreds of icons to provide the most accurate representation of your network. Standard Microsoft Visio 2007 tools allow you to change icons as needed.

For any SNMP device with more than one interface (for example, routers and servers with more than one network connection), LANsurveyor Express also displays interface information.

Troubleshooting Maps

LANsurveyor Express provides specific icons to represent each of the different types of nodes and SNMP-enabled devices on your network. If the icon for a device on your generated network map is the generic "IP device" icon, one or more of the following may be true:

- The device does not support SNMP.
- SNMP is not enabled on the device.
- The SNMP community string provided in the initial LANsurveyor Express configuration is not correct for the device.
- The access control list of the device is not properly configured to accept SNMP requests from the LANsurveyor Express computer.
- A firewall blocking SNMP, ICMP, SIP, or other requests is preventing access to the device.

The following procedure may reveal a configuration issue regarding LANsurveyor Express and network discovery of the problematic "IP device". For more information about LANsurveyor Express configuration options, see "Creating Maps" on page 10.

To troubleshoot a network map:

1. Confirm that the network discovery options in the LANsurveyor Express configuration window are configured appropriately for your network.
2. Consider including additional options when defining network discovery. For example, provide more SNMP community strings or select additional IP services.
3. Confirm that the correct SIP UDP socket number is provided in the SIP (VoIP) area of the Advanced Options window.
4. Rebuild the network map using a slower, more accurate mapping speed.

For more information about troubleshooting SNMP access issues, see “Troubleshooting SNMP” on page 21.

Viewing and Editing Network Device Data

Microsoft Visio 2007 records data about network devices mapped with LANsurveyor Express. This data is useful for creating reports, and it is collected from your network devices if your network administrator has made it available. The following procedure provides the steps required to view and edit map object data in Microsoft Visio 2007.

Note: Microsoft Visio 2007 refers to all objects on a generated map, regardless of function, as shapes. This convention is used in the following procedure.

To view and edit shape data:

1. Click a shape on your network map.
2. Click **Data > Shape Data**. The Shape Data window displays, listing properties that may be defined for the selected shape.
3. **If you want to provide shape data in existing fields**, type appropriate values in the selected data fields, and then click **OK**.
4. **If a field does not already exist for the data you want to save for the selected shape**, click **Define**, and then define a new data field in the Define Shape Data window, as shown in the following steps:
 - a. Provide a label for the data in the **Label** field, select the **Type** and **Language** of your data value, select a **Format** for your data value, and then type an appropriate value for your new data field in the **Value** field.
 - b. **If you want to provide an explanatory note describing the data value you are defining**, type this information in the **Prompt** field. This information displays in the Prompt area of the Shape Data window when you click the corresponding data field.

5. **If you have completed configuration of your new data field**, click **OK**.
6. **If you have provided all required data for the selected shape**, click **OK**.

Creating Reports

When it generates a map, LANsurveyor Express stores network device information in the Shape Data window of Microsoft Visio 2007. Using the standard Microsoft Visio reporting engine, you can easily create reports of device data for your network. Your installation of LANsurveyor Express provides a number of predefined reports, but you can also define custom reports using the Visio Report Definition Wizard to best meet your network monitoring needs. These reports are available as Excel, HTML, or XML documents or as Visio objects.

Predefined Reports

LANsurveyor Express provides the following reports in Microsoft Visio 2007:

Inventory

This report provides a simple list of the devices and infrastructural components of your network. For each device or component, which are referred to as “shapes” within Microsoft Visio 2007, this report provides the number of corresponding shapes on your network map.

Network Device

This report provides a list of the devices on your network, including devices identified merely as IP devices. For each device, the Network Name, IP Address, and Network Description, if available, are presented. An additional column, titled Displayed Text, shows the full label accompanying each respective device icon on the generated map. By default, the Displayed Text label is a collection of the Network Name, IP Address, and Network Description for each device. Subnet Mask and MAC Address fields are also available for each device.

Network Equipment

The Network Equipment report displays the same default information presented in the Network Device report, except that the Network Equipment report only lists defined devices. Undefined “IP Devices” are not included. Additional fields are available for each device to record physical information, including Building, Room, Manufacturer, Product Description, Product Number, Part Number, Serial Number, and Asset Number.

PC Report

This report provides information related specifically to the PCs on your network. For each PC node, this report displays Network Name, Network Description, Operating System, Memory, CPU, Hard Drive Capacity, and the Displayed Text label accompanying each respective device icon on the map.

Report Formats and Options

LANsurveyor Express can generate custom and predefined reports in the following formats:

Excel

LANsurveyor Express allows you to create reports in Excel format. Reports generated in Excel format open directly as Excel worksheets. Select **Excel** in the Run Report window, and then click **Browse** to navigate to a save location or type your desired path and filename.

Note: To create reports in Excel format, you must have Excel installed on your LANsurveyor Express computer.

Visio Shape

As a Microsoft Visio 2007 add-in, LANsurveyor Express can create reports that behave as Visio shapes. Reports saved as Visio shapes appear as Excel spreadsheets embedded within the same network map. Select **Visio shape** in the Run Report window, and then select either of the following options:

- Select **Copy of report definition** to save the report definition with the generated Visio shape. With this option, changes to the original report definition are not reflected in the generated Visio shape. Save your report as a copy if you want to share it with other users.
- Select **Link to report definition** if you want the generated Visio shape to reflect future changes that may be made to the report definition.

Note: To save reports as Visio shapes, you must have Microsoft Excel installed on your LANsurveyor Express computer.

HTML

Reports may be saved as HTML documents for use in web applications. Select **HTML** in the Run Report window, and then click **Browse** to navigate to a save location or type your desired path and filename.

XML

Reports may be saved as XML documents. Select **XML** in the Run Report window, and then click **Browse** to navigate to a save location or type your

desired path and filename. Reports saved as XML files open directly in a browser.

Creating Predefined Reports

The following procedure presents the steps required to generate predefined network device reports in Microsoft Visio 2007.

Note: It is possible to create custom reports if available predefined reports do not meet your needs. For more information on creating custom reports, see “Creating Custom Reports” on page 18.

To create a predefined report in Microsoft Visio 2007:

1. Use LANsurveyor Express to generate a Visio drawing of your network. For more information about creating maps with LANsurveyor Express, see “Creating Maps” on page 10.
2. Click **Data > Reports** to open the Reports wizard.
3. *If you want to see all available predefined Microsoft Visio 2007 reports*, clear **Show only drawing-specific reports** on the Reports window.

Note: By default, Microsoft Visio 2007 provides a list of reports related to the object types on your network map. For more information about these provided reports, see “Predefined Reports” on page 16.

4. Select the title of the report you want to create, and then click **Run**.
5. Select the format of your report, specify available options, and then click **OK**. For more information about available report formats and options, see “Report Formats and Options” on page 17.

Creating Custom Reports

Microsoft Visio 2007 allows you to define your own reports using the Report Definition Wizard. The following procedure provides the steps required to generate your own custom reports.

Note: Ensure that the data you want to report is available for all network devices. This data is either made available by your network administrator or it may be entered for each device. For more information about providing network device data, see “Viewing and Editing Device Properties” on page 13.

To create a custom report in Microsoft Visio 2007:

1. Use LANsurveyor Express to generate a Visio drawing of your network. For more information about creating maps with LANsurveyor Express, see “Creating Maps” on page 10.
2. Click **Data > Reports** to open the Reports wizard.

3. Click **New**.
4. Select the option for the shapes you want to include in your custom report.
5. **If you want to define criteria to limit the size of your report**, click **Advanced**, and then specify conditions as appropriate. For more information about report limitations, see “Using Limitations in Microsoft Visio Reports” on page 20.
6. Click **Next**.
7. Check shape properties to display as columns in your report. If the property you need is not listed, check **Show all properties** and review the list.
8. Click **Next**.
9. Type a title for your report in the **Report Title** field.
10. **If you want to group results, provide subtotals, or calculate basic statistics on numerical data**, click **Subtotals**, and then complete the following steps:
 - a. Select a shape property for grouping your results in the **Group by** field.
 - b. **If you want to configure the way Microsoft Visio 2007 displays reported data**, click **Options**, and then select the values you want to display.
 - c. **If you want to exclude duplicate rows or show grand totals**, check the appropriate options, and then click **OK**.
 - d. **If you want to provide basic statistics on your report**, check the operations you want to perform for each property, and then click **OK**.
11. **If you want to sort your report results**, click **Sort** and complete the following procedure:
 - a. Configure the **Column Order** by selecting properties and clicking **Move Up** or **Move Down** as appropriate.
 - b. Configure the Row Order by selecting properties by which to sort sequentially, and then select either **Ascending** or **Descending** as the order of listed values within each column.
 - c. Click **OK**.
12. **If you want to set the precision of reported numerical values**, click **Format**, set the number of decimal digits to show in your report, designate whether or not you want to **Show units**, and then click **OK**.
13. Click **Next**.
14. Provide a **Name** and the **Description** of your custom report.

15. Select either of the following options:

- **Save in this drawing** embeds your report as an object within your generated map file.
- **Save in a file** saves your report externally as a Visio report in the location you specify in the associated field.

16. Click **Finish**, and then click **Run** in the Reports window.

17. Select the format of your report, specify available options, and then click **OK**. For more information about available report formats and options, see “Report Formats and Options” on page 17.

Using Limitations in Microsoft Visio Reports

If there are a large number of devices on your network map, the size of reports that you generate may easily become difficult to manage. To address this potential situation, Microsoft Visio 2007 provides a wizard in which you can define logical conditions to tailor your reports to your specific needs. The following procedure provides the steps required to define and apply logical conditions to your custom reports.

To use report limitations:

1. Select the **Property** on which your limitation depends.
2. Select a relational operation in the **Condition** field.
3. Provide a **Value** that is appropriate for the property and condition that you have entered.
4. Click **Add**.
5. *If your condition is case sensitive*, check **Case sensitive**.
6. *If you need to define additional conditions*, repeat the preceding procedure for each additional condition.
7. *If you have provided all required conditions*, click **OK**.

For example, if you want to create a report listing devices located in Austin and location information has been provided by your network administrator, select **Location** in the Property field and **equals** in the Condition field, and then type `Austin` in the Value field.

Appendix A

Troubleshooting SNMP Issues

LANsurveyor Express queries SNMP-enabled network equipment to gather important connectivity information for network maps. SNMP data allows LANsurveyor Express to identify routers, switches, and connectivity between networking hardware and other systems. LANsurveyor Express requires read-only access to SNMP for map drawing. Read-write access is not required.

LANsurveyor Express identifies switches using the SNMP Bridge MIB (RFC 1493), and it uses the SNMP Repeater MIB (RFC 2108) to identify hubs. Port connectivity can be mapped if LANsurveyor Express has access to these MIBs. If your routers and switches are not displayed on your map, use the following checklist to troubleshoot your SNMP access.

Does your device support SNMP?

SNMP-capable network devices may also be called smart or managed devices. Refer to the device manufacturer to ensure that the device is SNMP-capable.

Is SNMP enabled?

Some devices require specific configuration procedures to enable SNMP. Confirm that your device is configured for SNMP as directed by the device manufacturer. Instructions for enabling SNMP on Windows devices may be found by searching “`configure SNMP`” at www.microsoft.com. Instructions for enabling SNMP on Cisco devices may be found by searching “`configuring SNMP user`” at www.cisco.com.

Are you using the correct SNMP community string?

Community strings, like passwords, are case sensitive. Ensure that the correct community string is provided on the Network tab of the Advanced Options window. For more information, see “Creating Maps” on page 10.

Is the computer running LANsurveyor Express on the access control list for your device?

Many devices limit SNMP access to a specific IP address or address range. This access control list is generally configured using the switch management interface in a browser. Consult the device documentation or the device manufacturer for more information.

Is the device too busy to respond to SNMP queries?

If a device is operating at or near 100% utilization, it may not have the resources available to properly respond to SNMP queries.

Is there a firewall between you and the target device?

Some sites have established firewalls around their routers to prevent unauthorized access. If a port must be opened in a firewall, LANsurveyor Express uses UDP port 161 for SNMP queries.

Is the SNMP query timeout sufficiently long?

If the SNMP query timeout is not sufficiently long, the device may not have the opportunity to properly respond to SNMP queries from LANsurveyor Express. If queries are sent across particularly slow or busy links, increase the SNMP Query timeout on the Network tab of the Advanced Options window. For more information, see “Creating Maps” on page 10.

Appendix B

Troubleshooting LANsurveyor Express Issues

Though LANsurveyor Express functions as a fully integrated add-on to Microsoft Visio 2007, some issues with using Microsoft Visio 2007 may arise. The following FAQ addresses some of the more common issues.

Why is LANsurveyor Express having trouble exporting maps to Microsoft Visio?

LANsurveyor Express requires Microsoft Visio 2007 or later. If Microsoft Visio 2007 is not installed or if a version older than Microsoft Visio 2007 is installed, LANsurveyor Express can not render maps after network discovery completes.

Does LANsurveyor Express require administrator privileges?

The only feature that LANsurveyor Express can not enable without administrator privileges is the discovery of nodes via ICMP ping. Regardless of whether or not you think you are logged-in as an administrator, LANsurveyor Express attempts to "ping" itself when starting. If an error displays, the problem is usually insufficient user privileges.

You can confirm this diagnosis by opening a Windows command prompt and typing `ping 127.0.0.1`. This command attempts to ping the local machine. If this request fails, then Windows is indicating that you do not have sufficient privileges to send ICMP packets.

How does LANsurveyor Express assign shapes to nodes?

LANsurveyor Express assigns shapes to nodes based solely on the responses it receives when performing network discovery. The following is a list of response types and the corresponding icons that are assigned.

- ICMP: Generic IP icon
- NetBIOS: Generic PC icon
- LANsurveyor Responder: LANsurveyor Responder icon based on OS
- SNMP: Icon assignment is based on the SNMP ID of the discovered device. Each manufacturer is assigned a unique SNMP ID.

Note: LANsurveyor Express does not have the ability to differentiate between PC manufacturers. A DELL PC sends the same response as an HP PC. In addition, LANsurveyor Express can not tell which computers are running servers and which computers are not.

Can LANsurveyor Express discover and map nodes connected via wireless access points?

If the wireless access point is configured as a bridge, then LANsurveyor Express can map the nodes connected to it. If the wireless access point (or any other router) is configured to use network address translation (NAT), then no network analysis tool will be able to go beyond the device to examine the nodes connected to it because NAT is designed to hide multiple workstations behind a single IP address.

Can LANsurveyor Express use third party stencils and shapes?

The easiest way to use third party stencils and shapes on your network maps is to buy the full version of LANsurveyor. With the full version you can replace the icons of any of the devices with icons of your choice. When you export the LANsurveyor map to Microsoft Visio 2007 these icons will be converted into Visio shapes.

It is possible to replace shapes, but in order to do so you must configure your third party shapes and stencils so that LANsurveyor Express can recognize and use them. The following procedure provides the steps required to complete this configuration.

To use third party stencils and shapes with LANsurveyor Express:

1. Launch Microsoft Visio 2007.

Note: Generally, you should be able to open Microsoft Visio 2007 by clicking **Start > All Programs > Microsoft Office > Microsoft Office Visio 2007**.

2. Click **Tools > Options**, and then click the Advanced tab.
3. Clear the **Open each ShapeSheet in the same window** option.
4. Open the LANsurveyor Express stencil containing the shape you want to replace, and then open the stencil that contains the shape you want to use.
5. Right-click on the LANsurveyor Express stencil, and then click **Edit Stencil**.
6. Copy the shape you want to use into the LANsurveyor stencil.
7. Right-click on your shape, and then click **Edit Master > Master Shape**. Repeat for the LANsurveyor Express shape.
8. In the shape window, select your shape, and then click **Window > Show ShapeSheet**. Repeat for the LANsurveyor Express shape.
9. Edit the shapessheet of the new shape so that it matches the shapessheet of the old shape.

Note: Do not change the Shape Transform section or the User.ShapeType and User.SubShapeType rows of the User-defined Cells section.

10. Save the new shape.
11. Rename the old shape to *ShapeName-Old* where *ShapeName* is the current name of the shape. Rename the new shape to *ShapeName* where *ShapeName* was the name of the LANsurveyor Express shape.
12. Save the LANsurveyor Express Stencil.
13. Build a new map using LANsurveyor Express. Your new shape should replace the old shape.

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