

Peregrine

# Network Discovery Data Export Guide

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Version 5.1

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# 1

## About Exporting Data

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### CHAPTER

This book is for people who want to create custom reports of Network Discovery data.

Note that Network Discovery also has reports you can access from within its own interface (see the Reports menu by clicking the Reports button on the Toolbar).

Topics in this chapter include:

- *What you need to know before you start* on page 6
- *About the Network Discovery database* on page 6
- *What's in this book* on page 8

## What you need to know before you start

There are some skills you should have before attempting to follow the procedures in this book.

### For Microsoft Word

To export data into a Microsoft Word document, you should already:

- be comfortable with the environment in which you are working (Windows 95/98/2000/NT4.0)
- have a high level of expertise with Microsoft Word 97 or 2000

### For data access applications

To create custom reports with your own data access application, you should already be comfortable with:

- the environment in which you will be working (Windows 95/98/2000/NT/XP or UNIX)
- Microsoft Access 2000
- the Open Database Connectivity Standard (ODBC)
- the reporting application you want to use

## About the Network Discovery database

The schema of the database is optimized for reporting performance and human understandability rather than for real-time access and statistic storage. In particular, the tables and columns are clearly named and the schema is fully normalized.

The database includes inventories of:

- devices
- ports
- connections
- events

Peregrine's Express Inventory (WMI) collector gathers information about Windows workstations using Windows Management Instrumentation (WMI). This WMI information can also be added to the Network Discovery database. For information on setting up and using the WMI Collector, see your ServiceCenter Essentials documentation.

## Open database access

The Reports database is open. That means the schema is published in standard description languages and you can access and export the data in a number of ways by means of standard protocols.

The schema of the reports database is described using English, SQL and XML DTDs. All descriptions are available from the appliance.

The data can be accessed directly on the appliance (queries only, no updates) through the ODBC protocol. MySQL provides an ODBC driver for Windows. The ODBC driver is available on the appliance.

Using this driver, Windows-based applications can remotely access the Reports database.

## Creating your own reports

There are three ways to use Network Discovery data.

- 1) Network Discovery has its own reports accessible through the Network Discovery interface.
- 2) You can export Network Discovery data into Comma Separated Values (CSV) or into XML format for use with Microsoft Word documents or spreadsheets (see “[Exporting data into Microsoft Word documents](#) on page 9”).
- 3) A third option is to export Network Discovery data into a data access application that operates on the Open Database Connectivity (ODBC) standard. You can use a third-party data access application to customize the presentation of Network Discovery data, if your application operates on the ODBC standard. ODBC applications into which you can export Network Discovery data comprise (but are not limited to):
  - Microsoft Access
  - Crystal

- Cognos Impromptu
- PowerPlay OLAP tool

**Note:** The data imported into the data access application is read-only. You cannot manipulate Network Discovery or your network from within the application.

## What's in this book

The second chapter tells you how to import data into Microsoft Word documents. The third chapter tells you how to export data and make it available to data access applications. The remainder of the book describes the data that you have available to work with.



# 2 Exporting data into Microsoft Word documents

## CHAPTER

You can create custom Microsoft Word report documents with any text you want and include any graphs and pie charts that appear in Network Discovery. Because the graphs are actually linked to the Network Discovery appliance, they update automatically.

Topics in this chapter include:

- *What you need before you start* on page 10
- *Two Word files are included with Network Discovery* on page 11
- *Download the Word files* on page 12
- *The example file is a report you can customize* on page 14
- *Start a report from scratch with the template file* on page 15
- *Update the graphs in your report* on page 17

## What you need before you start

You must have either Word 97 or Word 2000 on one of the following operating systems:

- Windows 95
- Windows 98
- Windows 2000
- Windows NT 4.0

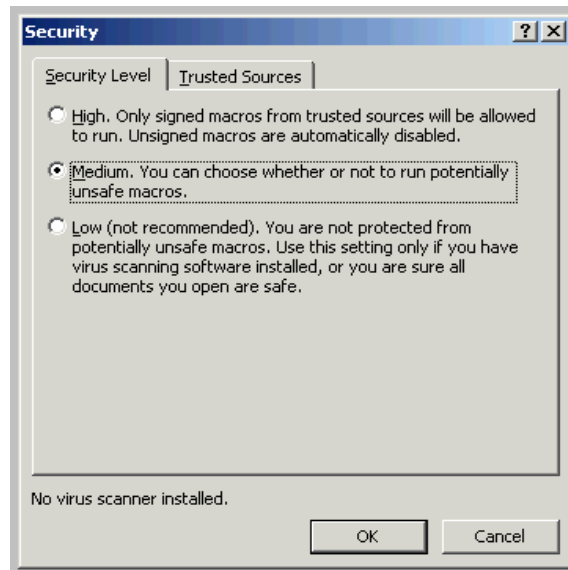
**Note:** You must have Internet Explorer (IE) on the computer you're working with. Even if you do not use IE with Network Discovery, you must have it loaded onto your management workstation for the Word file to work properly.

You must enable macros in Word.

### To enable macros

- 1 For example, in Word 2000, click **Tools > Macro > Security**.
- 2 In the **Security Level** tab, select one of the following security levels to enable macro execution:
  - **Medium**
  - **Low**

Figure 2-1: Word Security Level tab



## Two Word files are included with Network Discovery

Microsoft Word can import diagrams from URLs. Since most of the components of Network Discovery are web-based, they have URLs that Microsoft Word can reference. See your Microsoft Word documentation for a full explanation of how to create and manipulate a document with URL references.

To make it easier to prepare your Word report, Network Discovery comes with two documents for Microsoft Word that you can download.

The two files are:

- SumRepExample.doc, a sample Microsoft Word file
- SumRepTemplate.dot, a Microsoft Word template file

The first document is an example report framework for the intermediate Microsoft Word user. To use it, you use the Microsoft Cut and Paste commands to rearrange the built-in graphs. The second document, the template, is for an advanced Microsoft Word user who is comfortable with Word field codes and macro substitution.

Each document contains links to graphs on your Peregrine appliance. Once you customize the report with the name of your Peregrine appliance, you can easily update the graphs—to present at weekly meetings for example.

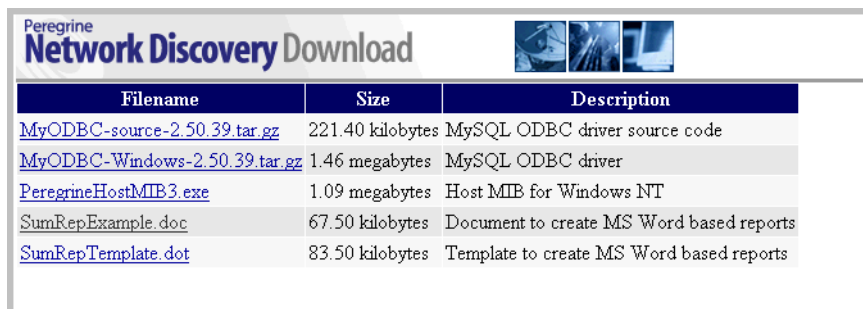
**Note:** To use the `SumRepExample.doc` report framework, you must download both files. You need the template file to be able to update the example file.

## Download the Word files

To download the example file

- 1 In Network Discovery, click **Home > Download**.
- 2 Right-click `SumRepExample.doc` > **Save Target As**. Save the example file in any directory that is convenient to you.

**Figure 2-2: The Network Discovery Download page**



The screenshot shows the 'Network Discovery Download' page. At the top, there is a header with the 'Peregrine' logo and the title 'Network Discovery Download'. To the right of the header are three small images: a globe, a server rack, and a computer monitor. Below the header is a table with three columns: 'Filename', 'Size', and 'Description'. The table lists five files for download.

Filename	Size	Description
<a href="#">MyODBC-source-2.50.39.tar.gz</a>	221.40 kilobytes	MySQL ODBC driver source code
<a href="#">MyODBC-Windows-2.50.39.tar.gz</a>	1.46 megabytes	MySQL ODBC driver
<a href="#">PeregrineHostMIB3.exe</a>	1.09 megabytes	Host MIB for Windows NT
<a href="#">SumRepExample.doc</a>	67.50 kilobytes	Document to create MS Word based reports
<a href="#">SumRepTemplate.dot</a>	83.50 kilobytes	Template to create MS Word based reports

Remember you also need the template file to use the example file.

To download the template file

You can use the template file either on its own or with the example file.

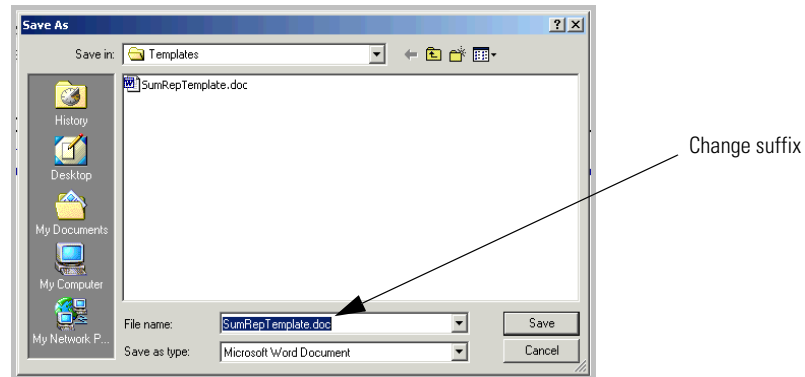
- 1 In Network Discovery, click Home >Download.
- 2 Right-click SumRepTemplate.dot > Save Target As. Save the template file in your local Word template directory. If you don't know where this directory is on your PC, see your Microsoft documentation.

---

**Important:** Before you save the file, change the file name suffix from .doc to .dot

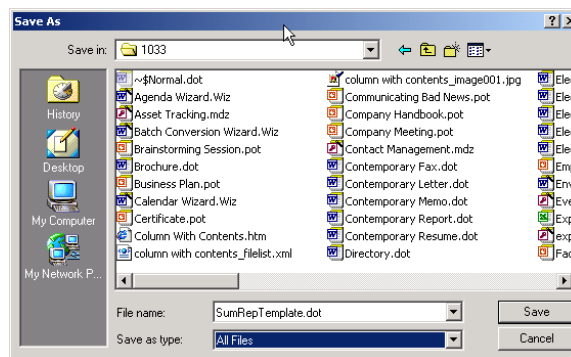
---

Figure 2-3: Change .doc to .dot when you save the template



In this example (Figure 2-4 on page 13, below), the path for saving the file is C:\Program Files\Microsoft Office\Templates\1033. This is using Microsoft Word 2000 on Windows NT 4.0.

Figure 2-4: Word 2000 on Windows NT 4.0 path for saving template file



In Word XP, the directory is C:\Documents and Settings\Application Data\Microsoft\Templates.

Your template directory may be in a different location, so refer to your Microsoft documentation.

- 3 Click Save.

## The example file is a report you can customize

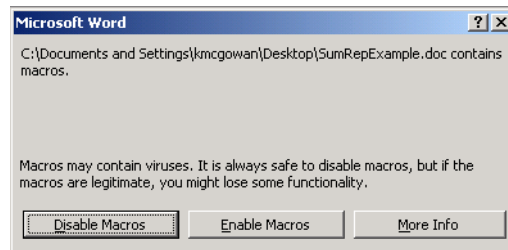
The example file includes all the graphical reports available on your Peregrine appliance. You can use the example report to create your own reports by deleting what you do not need, and by adding your own descriptive text.

### To work with the Example file

- 1 In Microsoft Word, click **File > Open**.
- 2 Select the file SumRepExample.doc.

A dialog asks if you want to enable macros.

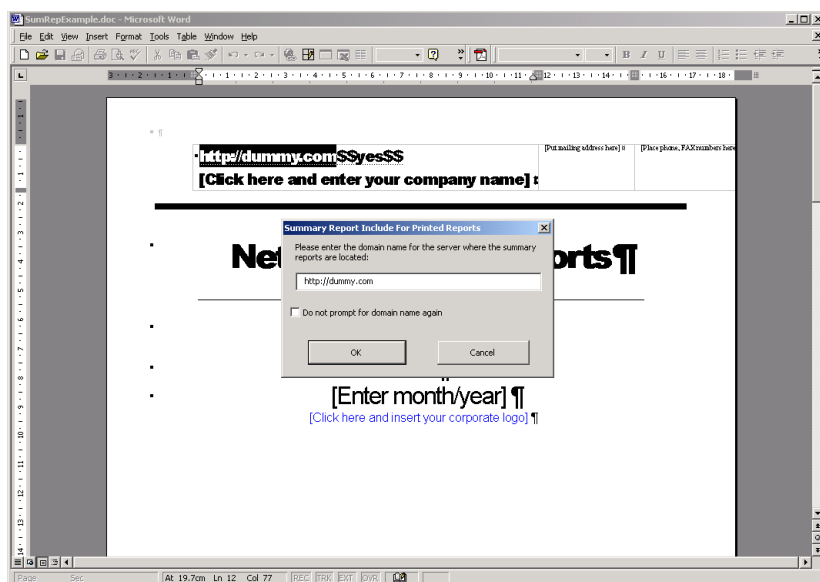
**Figure 2-5: Enable macros dialog**



- 3 Click **Enable Macros**.

A dialog box appears, called “Summary Report Include for Printed Reports.” The dialog allows you to connect to your Peregrine appliance to import the Network Discovery graphs.

Figure 2-6: “Summary Report Include for Printed Reports” dialog



- 4 Enter the IPv4 address or domain name for your Peregrine appliance.
- 5 Click OK.  
A dialog asks if you want to continue searching at the beginning.
- 6 Click Yes.  
You are prompted for your user name and password for the appliance.
- 7 Enter your name and password.  
Four more dialogs appear, asking if you want to search the document.
- 8 Click Yes to all of the dialogs.  
The Word document is now full of graphs from your appliance. Use Word’s Cut and Paste commands to make the example file your own report.

## Start a report from scratch with the template file

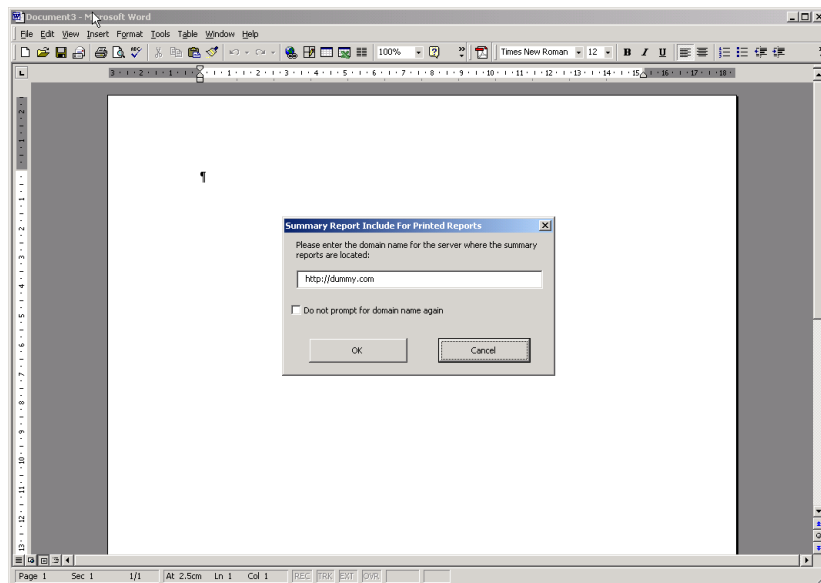
The template file allows you to create a report from scratch rather than cutting and pasting within a prepared document as you can do with the example file. It is for expert Microsoft Word users. You should be comfortable with Word field codes and macro substitution.

### To start a new Word report file

- 1 Open Word.
- 2 Click **File > Open**.
- 3 Select the file **sumreptemplate.dot**.
- 4 Click **Open**.

A dialog box, called “Summary Report Include for Printed Reports”, appears.

**Figure 2-7: “Summary Report Include for Printed Reports” dialog**



- 5 Enter the URI or domain name for your Peregrine appliance.
- 6 Click **Save**.

You can now create your document from scratch.

## You can use shortcuts to include graphs automatically

Instead of typing the exact URI for the graph stored on your appliance, you type a shortcut that translates automatically into the exact URI that INCLUDEPICTURE requires. The shortcut takes this form:

?graph(group,attr,stat,period,legend)?



Spaces are permitted between each element, but not within elements.

Once you have typed the shortcut into the template, you run a pre-recorded macro to translate the shortcut into a field code that loads a fresh graph right from the Network Discovery appliance.

**Note:** The available shortcuts and what graphs they map to are in the original example file.

**Figure 2-8: From the Word example report:**

This chapter provides statistics on network performance over various time periods. Graphs are included using the INCLUDEPICTURE field code. You insert a field code by selecting the Insert-Field... menu item. Under the Links and References category, pick INCLUDEPICTURE. After the INCLUDEPICTURE keyword, insert the URL for the graph you wish to include (make sure the URL is enclosed between double quotes). The required URLs are noted with every graph illustrated here.

**To translate a shortcut;**

- 1 Select the shortcut.

Do one of the following:

- a Click **Tools > Macro > Macros**.
- b Press **Alt + F8**.

## Update the graphs in your report

**To update the graphs**

- 1 In your Word report, click **Tools > Macro > Macros**.

(The shortcut is **Alt + F8**.)

- 2 Select **SumRepUpdate**.

- 3 Click **Run**.

A dialog asks you to confirm the name of the server you want the data to update from (the domain name of the Peregrine appliance).

- 4 Click **Yes**.

You are prompted for your user name and password for the appliance.

- 5 Enter your name and password.  
Four more dialogs appear, asking if you want to continue searching at the beginning.
- 6 Click **Yes** to all of the dialogs.  
The graphs in your report have updated.
- 7 Select the “SumRepUpdate” macro, then click **Run**.

When you open a document created with the template, the graphs update automatically.

# 3 Exporting Data into Data Access Applications

CHAPTER

This chapter contains a tutorial that walks you through a simple example of how to connect to the Network Discovery database from Microsoft Access 2000 by means of ODBC; how to link in the tables and perform two basic queries.

Topics in this chapter include:

- *Step 1: Set up Network Discovery to export data* on page 20
- *Step 2: Putting data into CSV format first works better* on page 20
- *Step 3: Select MYSQL as the data source (create an ODBC alias)* on page 20
- *Step 4: Create a new database in Microsoft Access 2000* on page 23
- *Step 5: Link in the Network Discovery tables* on page 23
- *Step 6: Create a basic license query* on page 27
- *Step 7: Create a basic assets and recognition query* on page 31

## Step 1: Set up Network Discovery to export data

To set up Network Discovery to export data:

- 1 In Network Discovery, click **Administration > System Preferences > Appliance Services**
- 2 Next to **MySQL access enabled**, click **Yes**.

## Step 2: Putting data into CSV format first works better

Putting Network Discovery data into “comma-separated values” (CSV) format first, allows you to export it into a Microsoft Word document or into a spreadsheet more successfully.

To export Reports data into CSV format

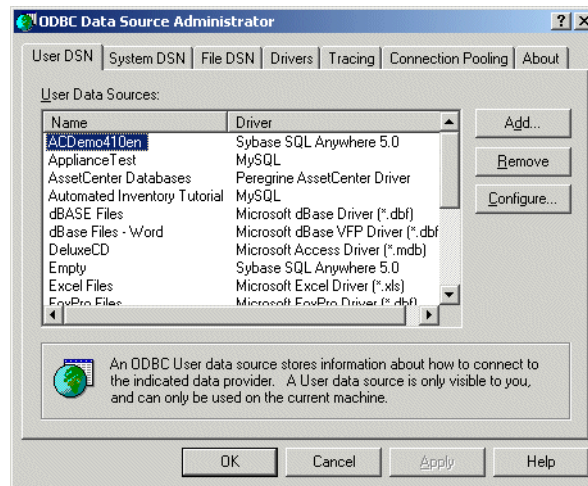
- 1 In Network Discovery click on the [Export] link in a Report list.  
A dialog box asks if you want to export the data to a file, or open the file from the Peregrine appliance.
- 2 Select **Export**.
- 3 Click **OK**.
  - If you select **Open the file from its current location**, the data is displayed in a spreadsheet using the default program designated by your system to display CSV files, such as Microsoft Excel.
  - If you select **Save this file to disk**, follow the prompts to save the CSV file for opening later.

## Step 3: Select MYSQL as the data source (create an ODBC alias)

Before you can use the Network Discovery data with Microsoft Access 2000 you need to create an ODBC alias for the database.

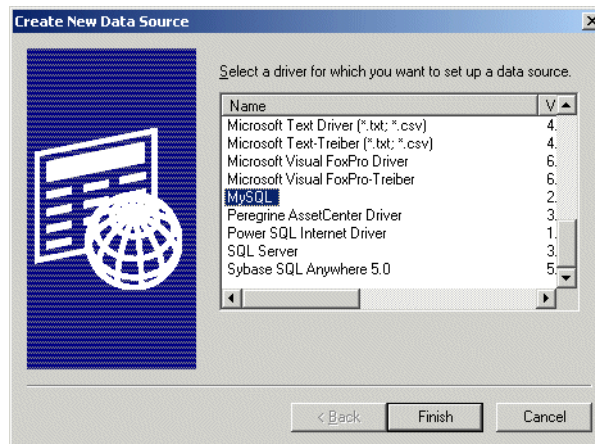
- 1 From the Windows **Control Panel**, select **Data Sources (ODBC)**.  
**Note:** In Windows 2000, select **Setting|Control Panel|Administrative Tools|Data Sources (ODBC)**

The ODBC Data Source Administrator appears.



2 In the User DSN tab, click Add.

The Create New Data Source dialog appears.



3 In the list box select MySQL.

4 If your computer does not already have a MySQL driver, you can do one of two things:

- a Go to <http://www.mysql.com>. Follow the directions on the web site to download the ODBC driver.

- b Download the MYSQL driver from the appliance. From **Home Base** click **Download**. On the **Download** page click the **MyODBC-Windows-2.50.39.tar.gz** link.

5 Click **Finish**.

The **TDX MySQL Driver default configuration** dialog appears.

The screenshot shows a dialog box titled "TDX mysql Driver default configuration". At the top, it states "This is in public domain and comes with NO WARRANTY of any kind" and "Enter a database and options for connect". The fields are filled with the following values: Windows DSN name: Automated Inventory Tutorial; MySQL host (name or IP): 172.22.5.24; MySQL database name: Aggregate; User: admin; Password: [REDACTED]; Port (if not 3306): 8108; SQL command on connect: [Empty]. Below these fields is a section titled "Options that affects the behaviour of MyODBC" with a grid of 16 checkboxes, all of which are currently unchecked. At the bottom are "OK" and "Cancel" buttons.

6 Enter the following information:

- The Windows DSN name (Data Source Name). In the following example we have called it **Network Discovery Tutorial**.
- The name or IP address of the Peregrine appliance. (Ask your network administrator if you are not sure of the IP address or name of your appliance).
- In the MYSQL database name field, enter the name of the database. Enter **Aggregate**.

7 For the name of the user, enter one of the following:

- “demo” for anyone
- “admin” for anyone who has the administrator password or
- the account name of anyone who has been set up with a user account

- 8 Enter the password for the above user.
- 9 For the number of the port, always enter **8108**.
- 10 Once you have entered these fields, click **OK**.

Now you are returned to the **UserDSN** tab in the **ODBC Data Source Administrator** dialog box.

- 11 Click **OK** to exit.

You are now ready to connect to the Network Discovery database with applications such as MS Access 2000 by means of ODBC.

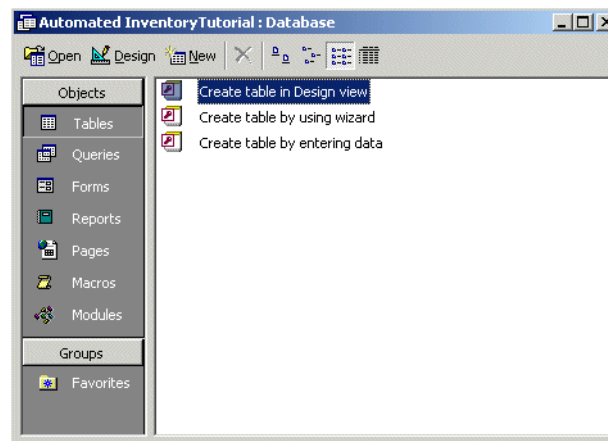
## Step 4: Create a new database in Microsoft Access 2000

- 12 Start Microsoft Access 2000.
- 13 Create a new blank database. Give it a name and save it.

The following screen is displayed. In this example, the database has been named **Network DiscoveryTutorial.mdb** and saved in the following directory

C:\Program Files\Peregrine\Network Discovery\

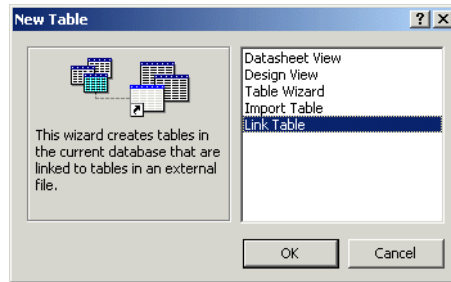
The following dialog is displayed.



## Step 5: Link in the Network Discovery tables

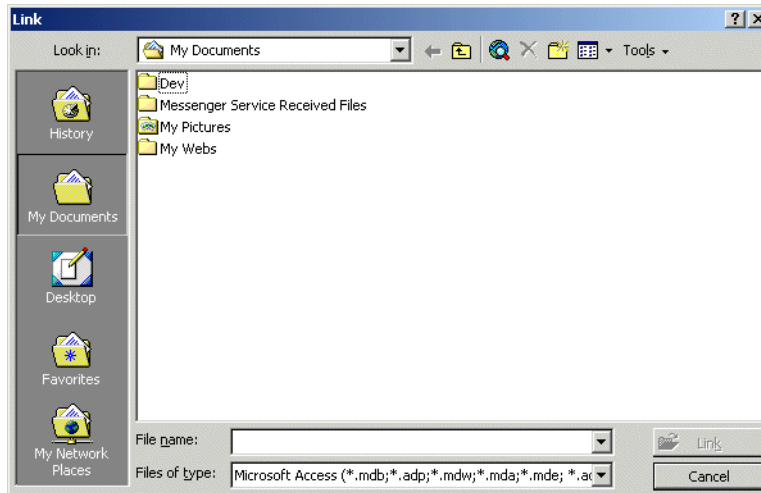
- 14 In the Objects menu, select **Tables** and click **New**.

The following dialog appears.



- 15 Select **Link Table** and click **OK**.

The following screen appears.

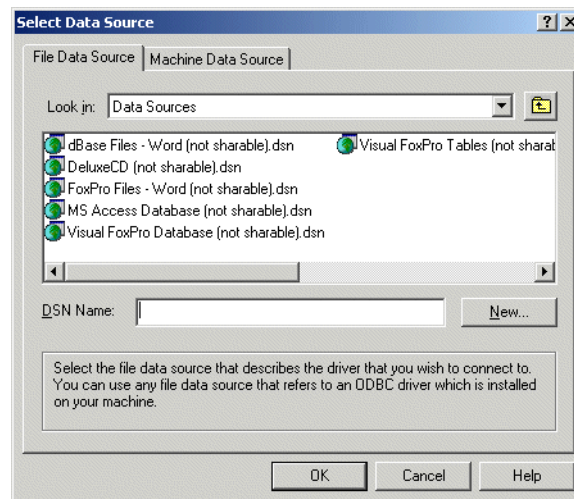


- 16 In the **Files of type** pull-down list select **ODBC Databases**.

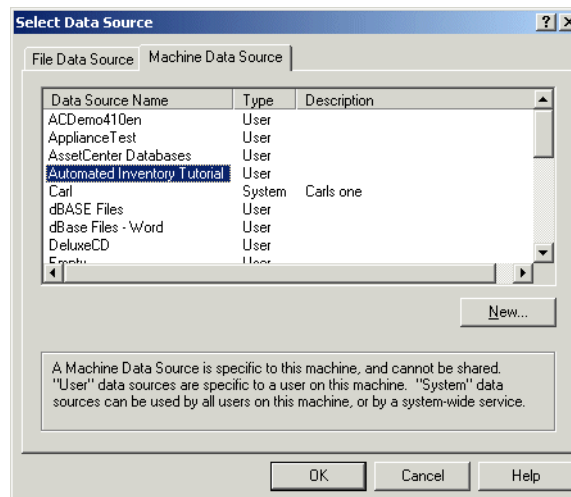
The following dialog appears.



**Note:** The **Network DiscoveryTutorial.mdb** file is not supplied with Network Discovery, but is the file that you created in step 13 on page 23.



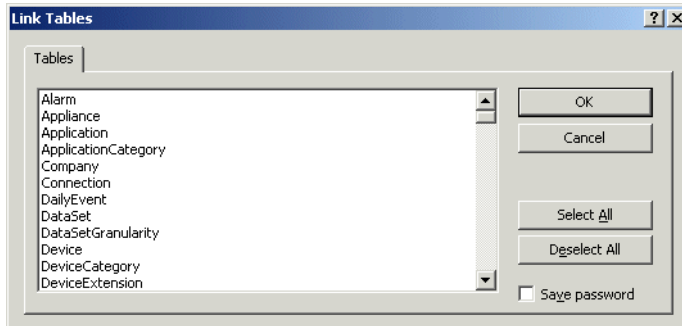
17 Click the **Machine Data Source** tab.



18 Select your entry (in this case **Network Discovery Tutorial**) and click **OK**. The **Logon to InterBase** dialog appears.

**Note:** Note, that this is the Tutorial data source name that you created in step 6 on page 22.

The following Link Tables dialog is displayed.

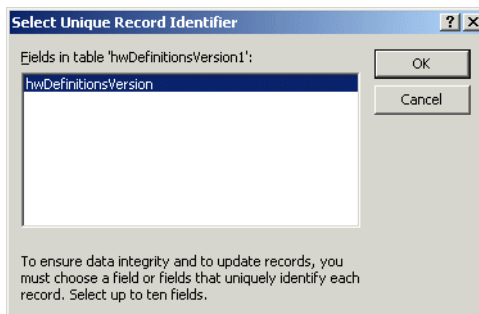


19 Click **Select All**.

All the entries are now highlighted.

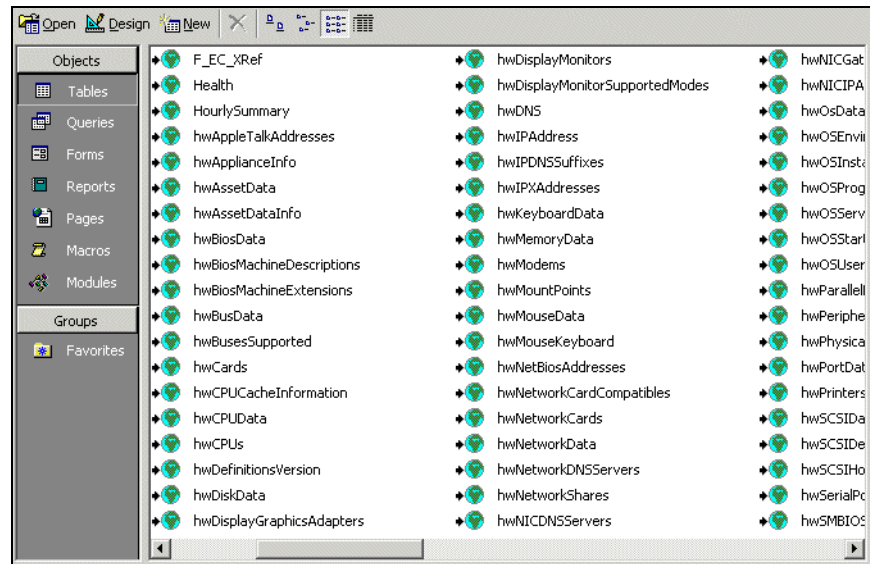
20 Click **OK**.

The **Select Unique Record Identifier** dialog for the 'hwDefinitionsVersion1' table appears.



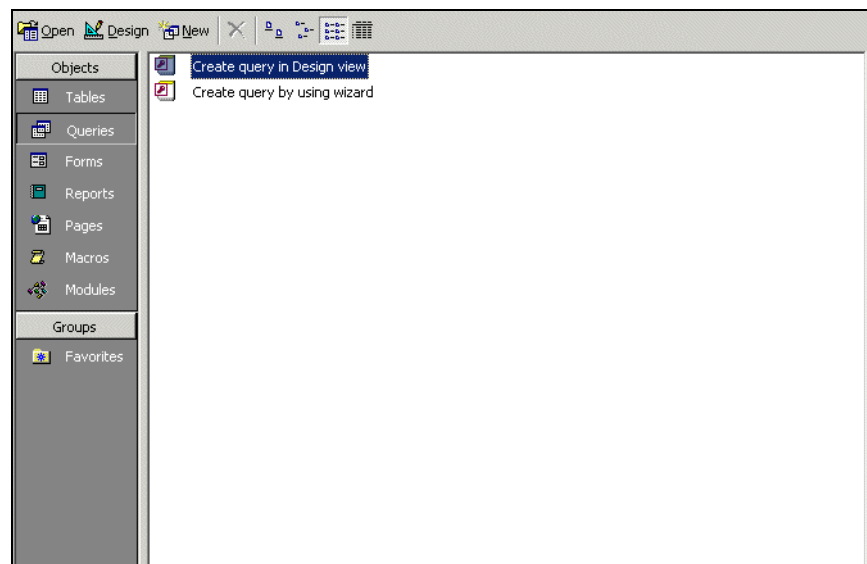
21 Select **hwDefinitionsVersion** and click **OK**.

You are returned to the Tables Tab which shows the newly linked Network Discovery tables.

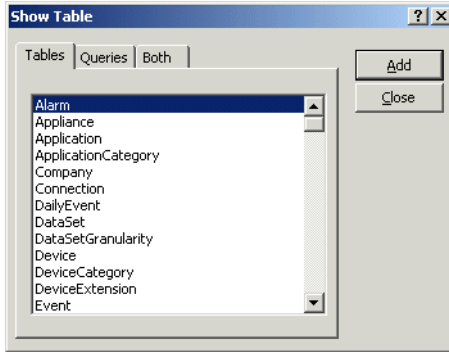


## Step 6: Create a basic license query

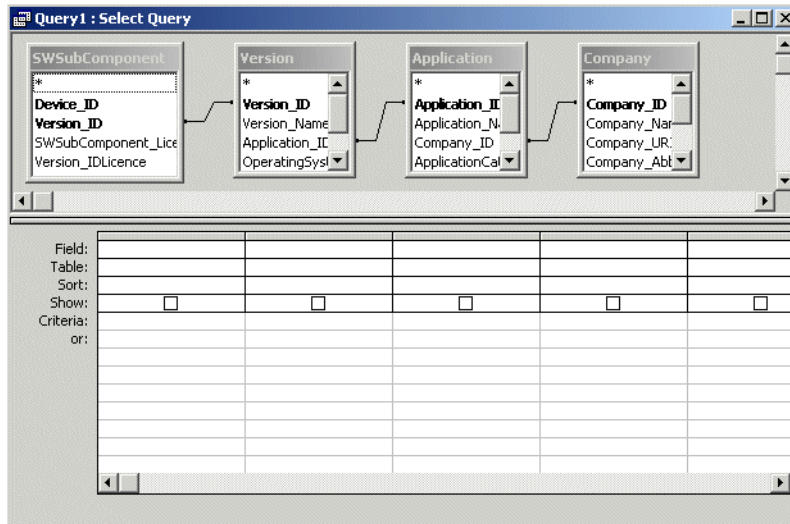
22 From the Objects list, select Queries.



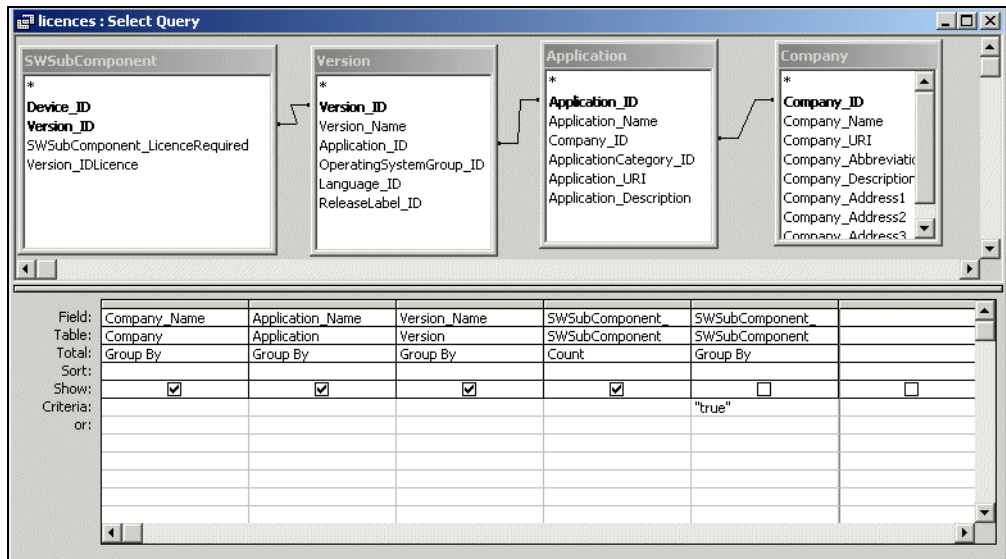
- 23 Double click Create query in Design view.  
The Show Table dialog appears.



- 24 In the Tables tab page, select:
  - SWSubComponent
  - Version
  - Application
  - Company
- 25 With the table selected, click Add, then Close.  
The table displayed is similar to this:



- 26 Go to **File > Save As** and save the query  
 In this example, we have called it **Licenses**.
- 27 Enter the query field parameters as shown below:



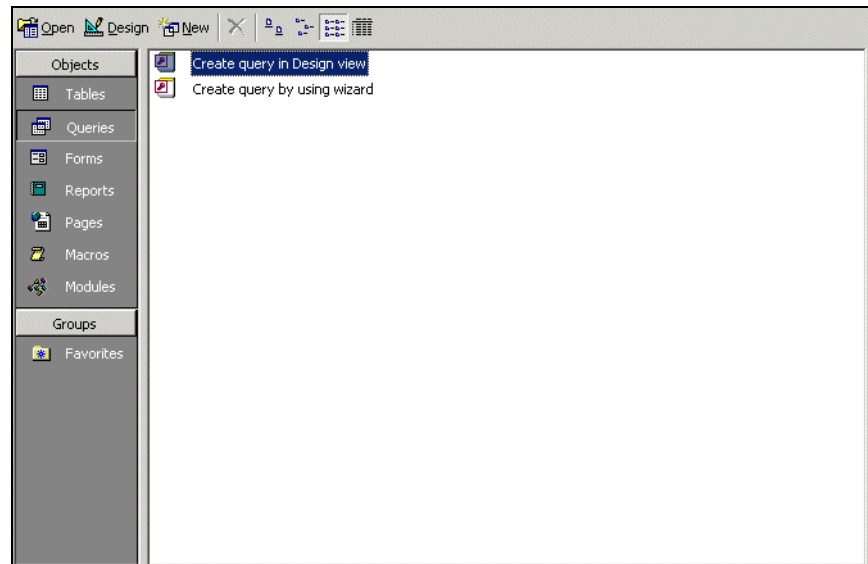
- 28 Run the Query. From the Query pull down menu, select the Run option. A query is generated, showing license data from the inventory scans in the Inventory Database.

Company_Name	Application_Name	Version_Name	CountOfSWSubComponent
Adobe	Acrobat Reader	4.0	1
Adobe	Acrobat Reader	4.05	2
Adobe	Acrobat Reader	5.0	4
AOL (Netscape Communications)	Netscape Communicator	4.73	1
AOL (Netscape Communications)	Netscape Communicator	4.74	1
AOL (Netscape Communications)	Netscape Communicator	4.75	2
Cinematronics	Pinball	4.0	1
Executive Software	Diskeeper	5.00.2195	2
Inprise	BDE	5.1.0	1
Inprise	Database Desktop	7.0	1
Interbase	InterBase Server	5.5	2
Macromedia	Shockwave Player	7.0	1
Macromedia	Shockwave Player	8.0	6
Microsoft	Access	2000	1
Microsoft	Excel	2000	1
Microsoft	FrontPage	2000 sr 1	2
Microsoft	Internet Explorer	4.01sp1	1
Microsoft	Internet Explorer	5.5	1
Microsoft	Internet Explorer	5.5 sp1	1
Microsoft	Internet Information Server	3.0	1
Microsoft	MS Dos	6.22	1
Microsoft	NetMeeting	3.01	4
Microsoft	Office	2000	1
Microsoft	Office	2000 sr 1	1
Microsoft	Outlook	2000	1
Microsoft	Outlook Express	4.72.3612	1
Microsoft	Photo Editor	3.01	1
Microsoft	PowerPoint	2000	1
Microsoft	Wallet	3.00	1
Microsoft	Windows	2000 pro	1
Microsoft	Windows	2000 pro sp2	3
Microsoft	Windows	2000 srv sp1	1
Microsoft	Windows	2000 svr sp2	1
Microsoft	Windows	95osr2	1
Microsoft	Windows	98	1
Microsoft	Windows	98 se	3
Microsoft	Windows	me	3

Record: 21 of 52

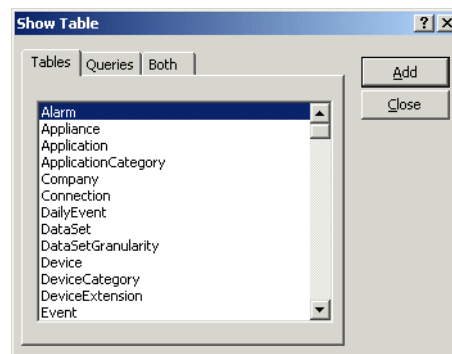
## Step 7: Create a basic assets and recognition query

29 From the Objects list, select Queries.



30 Double click Create query in Design view.

The Show Table dialog appears.



31 In the Tables tab page, from the list, select:

- hwAssetData
- Device

- hwCPUData
- hwSystemData

32 With the table selected, click Close.

The table appears.

33 Save the query. In this example we have called it **Assets and Recognition**.

34 Enter the query field parameters as shown below:

The screenshot shows a query builder interface with four tables: hwAssetData, Device, hwCPUData, and hwSystemData. The Device table is selected. Below the tables is a query grid with columns for Field, Table, Sort, Show, and Criteria.

Field:	Device_ID	hwAssetTag	hwAssetDescription	hwScanDate	hwCPUCount	hwFilesRecognisedF	
Table:	hwAssetData	hwAssetData	hwAssetData	hwSystemData	hwCPUData	hwSystemData	
Sort:						Ascending	
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Criteria:						>0	
or:							

35 Run the Query. From the Query pull-down menu, select Run.



A query is generated, showing asset and recognition data from the inventory scans in the Inventory Database.

Assets and Recognition : Select Query						
Device ID	hwAssetTag	hwAssetDescription	hwScanDate	hwCPUCount	hwFilesRecognisedPercent	
395	MachineE	QALAB () - Pentium Pro, 180MHz, 256Mb	3/24/2000	1		73
369	thedot6	TEST () - Pentium III, 550MHz, 128Mb	3/25/2002	1		76
13	CHN-ME_Post	GATEST () - Pentium II, 266MHz, 64Mb	3/21/2002	1		81
9	the104	TEST104 () - Pentium II, 333MHz, 192Mb	3/21/2002	1		87
10	QA35	TESTING () - Pentium Pro, 180MHz, 64Mb	3/25/2002	1		87
14	qa16	W2K () - Pentium II, 266MHz, 64Mb	3/21/2002	1		87
11	MachineC	QATES () - Pentium II, 401MHz, 256Mb	3/25/2002	1		91
371	Asset-1234567890	ESLIMI () - Pentium II, 400MHz, 128Mb	3/21/2002	1		91
370	6914CD64A087	TEST () - Pentium II, 450MHz, 128Mb	3/21/2002	1		93
1034	MB1_IND	QATESTING () - Pentium, 133MHz, 64Mb	3/21/2002	1		93
863	QAPDC	TESTING () - Pentium III, 550MHz, 256Mb	3/21/2002	1		95
1	qa25	TEST () - Pentium II, 300MHz, 192Mb	3/21/2002	1		96
15	CD4KH01	QA () - Pentium 4, 1300MHz, 128Mb	3/21/2002	1		96
1033	MachineD	QATESTING () - Pentium III, 451MHz, 256Mb	3/18/2002	1		96
1019	qatest	GATEST () - Pentium III, 451MHz, 384Mb	3/25/2002	1		97
93	QAtest	TESTING () - Pentium II, 333MHz, 64Mb	3/21/2002	1		97
232	QAtesting	QATESTING () - Pentium, 133MHz, 192Mb	3/21/2002	1		98
12	testing	QA () - Pentium II, 233MHz, 64Mb	3/21/2002	1		98
91	QA50	TESTING50 () - Pentium II, 401MHz, 256Mb	3/25/2002	1		98
233	Qa98	MYSURNAME () - Pentium II, 266MHz, 128Mb	3/21/2002	1		99
92	0010407362	IDDMACHINE (QA) - Pentium II, 300MHz, 64Mb	3/21/2002	1		99
*						
Record: 1 of 21						



# 4 How the Network Discovery schema is organized

CHAPTER

This chapter explains how the data has been named and how and why the data refreshes at different rates. It also gives a brief description of each type of data available.

Topics in this chapter include:

- *Naming conventions* on page 36
- *An entry can come from another table—foreign keys* on page 37
- *Data refreshes at different rates* on page 38
- *The data sorted by refresh rate category* on page 38
  - *The Classification sub-schema* on page 38
  - *The Network Configuration sub-schema* on page 40
  - *The Statistics sub-schema* on page 41
  - *The Control sub-schema* on page 41

# Naming conventions

The following conventions have been used to name tables and fields in the Aggregate schema to ease reading and understanding.

## Table Names

Table names start with a capital letter followed by lower case letters—“Device”, “Port”, or “Connection”—unless the name itself is an abbreviation. If the table name is an abbreviation, capital letters are kept for the acronym part of the name—“IPv4”, “MAC”, and so on.

Table names always use the singular form— “Connection” not “Connections”.

If the name of a table is formed by putting more than one word together, the words making up the name start with capitals to differentiate them— “DeviceCategory” or “PortCategory”.

## Field Names

As with table names, field names start with a capital letter followed by lowercase letters—“Index” or “Description”—unless the name itself is an abbreviation. If the name is an abbreviation, the acronym part of the name keeps its capital letters— “CIR” or “URI”.

If the name of a field is formed by putting more than one word together, the words forming the name start with capitals to differentiate them—“SpeedIn”, “SpeedOut”, or “IsFullDuplex”.

Field names are always prefixed by the name of the table to which they belong, followed by an underscore character, followed by the name of the field—“Device\_Label”, “Port\_Speed”, “MAC\_Address”.

Usually, primary keys of tables are simply sequential numbers (positive integers). In these cases, the name of the primary key field is “ID”, so the complete field (key) name becomes “<table name>\_ID – Device\_ID” (or “Port\_ID” or “Connection\_ID” and so on).

If a primary key field enters a table as a foreign key, it keeps its original name, thus indicating its origin. When two or more primary keys from the same table are imported into one table, a suffix follows each foreign key name to indicate the different purpose of the fields—“Company\_IDHardware” and “Company\_IDSoftware” or “DeviceCategory\_ID” and “DeviceCategory\_IDPreferred”.

## Abbreviations

Use of abbreviations has been limited to a few widely spread conventions, such as using **Dt** to abbreviate Date. Also, as explained above, industry wide acronyms were kept where it was felt that they would easily be understood:

- BIOS (Basic Input/Output System)
- CIR (Committed Information Rate)
- DNS (Domain Name System)
- FDDI (Fiber Distributed Data Interface)
- IP (Internet Protocol)
- MAC (Media Access Control)
- NMID (Network Management Identifier—the ID (key) of the Device or Port in the Appliance)
- PVCS (Permanent Virtual Connection)
- URI (Universal Resource Identifier)

## An entry can come from another table—foreign keys

The Network Discovery database is normalized. That means that information occurs only in one place so that it doesn't have to be updated more than once. For instance, if a company changes its name, the new name does not have to be updated in every table that uses the company name. Company\_Name is only “real” in the Company table. Any other table that refers to Company\_Name is using the Company table primary key, “Company\_ID”.

## Data refreshes at different rates

It is important to understand that Network Discovery collects and refreshes different kinds of data at different rates. Different layers of the underlying software are responsible for refreshing different areas of the data at suitable intervals. The data falls into four groups (or sub-schemas<sup>1</sup>), depending on the refresh rate:

- Classification
- Network Configuration
- Statistics
- Control

## The data sorted by refresh rate category

The sub-schemas only indicate how and how frequently the data is refreshed. They do not affect how *you* access and retrieve data.

However, the following list arranges the tables by their four sub-schemas, so that you can have a quick overview of the data available and understand which tables change more frequently than others.

## The Classification sub-schema

The Classification sub-schema contains generic information common to any network. For example, it contains the list of hardware or software manufacturers (Company), the various categorization of devices or ports (DeviceCategory & PortCategory) and so on. This information is quite stable. It only changes when you upgrade Network Discovery with a new Rulebase software component

The Classification sub-schema contains the following tables:

- **Application:** This table lists all the various applications that can be found on an end-user workstation or that can be run on network devices, such as Word, Excel, and Visio.

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<sup>1</sup> A schema or a sub-schema is a group of database objects such as tables that are logically connected

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- **ApplicationCategory:** This table lists all the categories used to regroup applications, such as Word Processors, Spread Sheets, and Accounting Packages.
- **Company:** This table lists information on companies that manufacture computer equipment and/or produce software. Other tables (for example, Device, Application) reference this table to indicate which company manufactures certain kinds of hardware (Device) or which company produces certain software (Application).
- **DeviceCategory:** This table lists various categories of devices, such as printers, workstations, switches, routers, and web servers. It also stores some attributes of these categories.
- **Family:** This table lists product families, such as hubs, routers, workstations, switches, and so on. The Device table is related to this table so that a specific device can be related to information about the product family to which it belongs.
- **Language:** This table lists all the various languages that exist. It tells what language an application supports.
- **MediaCategory:** This table lists the media category of the line, such as Ethernet, CSMA / CD, Token Ring.
- **Model:** This table lists various models of devices, such as Cisco's Catalyst X series, HP's LaserJet X series, Compaq's (DEC) AlphaServer X series.
- **NetworkFunction:** Sometimes you need workstations or server platforms set up with commercial operating systems for the specific purpose of deploying a software application or a set of applications. In such cases NetworkFunction identifies the software application that is identified by the SNMP MIB II (RFC 1213, RFC 2011, RFC 2012, RFC 2013) data fields within the device.
- **OperatingSystem:** This table lists all the various operating systems that exist for networked devices—such as Windows, Unix, or Mac OS.
- **Operating System Group:** This table groups all variants (releases) of a particular generic operating system—such as Windows 95, Windows 97, Windows 2000, or Windows NT.
- **PortCategory:** This table lists categories (and subcategories) of ports, such as Token Ring, Serial, Ethernet, FDDI. Records in the Port table are related to records in this table so that each port is associated with a specific port category.
- **ReleaseLabel:** This table lists major releases of applications—Word 97, Word 2000, Word XP are Release Labels of the Word application.

- **Version:** This table lists all the various versions that exist for a specific release. For example, the release, Word 97, could have the following versions—Word 97, Word 97sr1, Word 97sr2, Word 97 sr2a/v, Word 97.
- Note:** An application can have Versions, without necessarily having ReleaseLabels.

## The Network Configuration sub-schema

The Network Configuration sub-schema contains information about the configuration of a specific network. It is concerned with what equipment this network contains and how it is interconnected. This information is refreshed by the Network Discovery sub-system on an ongoing basis, but information is copied to the database on a daily basis (or sometimes on request, if it is determined that a more current view of that data is required).

The Network Configuration sub-schema contains the following tables:

- **Connection:** This table lists all the connections between devices or ports within a network. In other words, it represents the connectivity between nodes in a network.
- **Device:** This table lists all the hardware equipment found in a network, including end-user workstations and interconnecting devices.
- **DeviceExtension:** This table lists additional information about devices. It is used for support purposes and should be ignored.
- **Health:** This table lists all the devices showing alarms or warnings found in the Health Panel
- **IPv4:** This table lists IPv4 addresses linked to a particular device or port. Both may have several addresses.
- **MAC:** This table lists MAC or IEEE802 style addresses linked to a particular device or port. Both may have several addresses.
- **Metric:** This tables lists all the statistics shown in the statistical panel at the bottom of the Health Panel—such as Frames / sec, Errors / sec, Availability.
- **Port:** This table lists information about all the ports discovered on each of the network devices.



## The Statistics sub-schema

The Statistics sub-schema contains network statistics collected on an ongoing basis and summarized either hourly or daily to minimize the amount of disk space needed to hold them.

The data retention period is one year or 500 M Bytes of data—whichever limit is reached first—except for the event table where the limit is 45 days or 100,000 records—whichever limit is reached first.

The Statistics sub-schema contains the following tables:

- **Alarm:** This table gives objects' (device or port) alarms. It describes any alarm conditions that currently exist. If no alarms exist, the table is empty. To see alarms (and other events) that have occurred in the past, look at the Event table.
- **Event:** This table contains details about recent events for the specified object (device or port). To spare disk space, events are removed from this table after a certain period of time (currently set at 45 days).
- **HourlySummary:** This table contains summaries of certain statistics for certain pre-defined groups of devices summarized on an hourly basis. To spare disk space, HourlySummary records will be deleted after a certain period of time (currently set as 1 year).

## The Control sub-schema

The Control sub-schema is relevant when you have an Aggregator. It contains tables that control how the database is refreshed by multiple appliances.

The Control sub-schema contains the following tables:

- **Appliance:** This table lists all the appliances contributing to the Aggregate Database. It describes all remote appliances that are aggregated by this system. If the system is not licensed as an aggregator, then this table is empty. Note that an appliance acting as an aggregator has entries for all remote appliances in the Appliance table but does not have an entry for itself. Instead, a value of zero for Appliance\_ID is used to refer to the local appliance.
- **DataSet:** This table lists all the data components that can be imported into the Aggregate database along with their characteristics. The information found here closely matches the sub schemas listed in this section.

- **DataSetGranularity:** This table lists all the possible granularities (resolutions) (certain) data sets can have.
- **LastTime:** This table contains the last time a load operation was performed for a given appliance and data set.
- **NMID:** This table lists all the internal Network Manager IDs that contribute to populate the Aggregate database, along with their matching Appliance\_IDs and the corresponding Object\_IDs to which they are mapped. It also contains information stating when the last update was performed on a specific object as well as the status this object has in the source appliance.
- **Object:** This table lists all the Object\_IDs and which table (Connection, Device, IPv4, MAC, Port, SubComponent) they belong to. The Object table serves as a foreign key exported to these tables (Device, Ports, and so on.). This means that the primary keys of these tables can not overlap. For example, if the value 1 is assigned to the Device\_ID (key) of the Device table, then that value can not appear as the value of any primary key found in any of the other tables (such as Port\_ID, Connection\_ID).
- **RefreshRate:** Stores the various possible values for the data set refresh rate configuration parameter.
- **Schedule:** This table contains information related to scheduled jobs (jobs under the control of the sch\_schedule jobs scheduler).
- **ScheduleLog:** This table contains information and statistics about the status of jobs that have run or are currently running.
- **UpdateHistory:** This table gives the time a Network Configuration Sub-Schema update run was performed as well as how many objects were updated by that run. Note that update runs are performed on a per appliance basis.





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