A Driver-Independent Solution to All Your Printing Needs

EOL Universal Printer™ (version 3.0)

Installation, Usage, and Troubleshooting Guide

(2nd Revision)

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Read This First!!!

If the following products and versions are currently in use, please read the below information.

EOL Desktop Manager™ (versions 1.x and 2.x) Users: if EOL Desktop Manager™ 1.x or 2.x is currently in use, it MUST be upgraded to version 3.x before installing and using EOL Universal Printer™. Please note that both products utilize the same database, management utility (THINssentials™ Management Console), services, and COM objects.

EOL Universal Printer™ (versions 1.x and 2.x) Users: if EOL Universal Printer™ 1.x or 2.x is currently in use, upgrading to version 3.x will invalidate the license key. Customers who have purchased their license(s) after September 9th, 2001 are eligible for a free upgrade to version 3.x. The new license key replacements may be automatically generated by visiting http://www.99point9.com.

Compatibility with Previous Versions

Because version 3.x introduces advanced features such as page streaming and partial font embedding, it is NOT backwards compatible with versions 1.x or 2.x. As such, upgrading the server component to 3.x will necessitate a client-side upgrade as well.

In order to simplify the client upgrade process, it is recommended that the CAB-based client setup be utilized. By simply embedding the following line into a Web page, the CAB file will download and install automatically and silently:

<OBJECT CLASSID = "clsid:240EEE8D-91DB-4D74-A87E-671026601333" CODEBASE="eolupcli.cab#VERSION=3,0,0,0"></OBJECT>

If eolupcli.cab resides in a folder other the one serving the current page, then the CODEBASE must explicitly reference the full URL:

<OBJECT CLASSID = "clsid:240EEE8D-91DB-4D74-A87E-671026601333" CODEBASE="http://www.mycompany.com/eolupcli.cab#version=3,0,0,0"></OBJECT>

Moreover the VERSION must match that of the EOLUP client inside the CAB file. For example, if version 3.0.2 is the most current version, the line becomes:

<OBJECT CLASSID = "clsid:240EEE8D-91DB-4D74-A87E-671026601333" CODEBASE="http://www.mycompany.com/eolupcli.cab#version=3,0,2,0"></OBJECT>

Introduction

Designed for Windows Terminal Services (NT 4.0 and 2000) and Citrix MetaFrame, EOL Universal Printer™ (hereafter, EOLUP) is a single-driver printing solution aimed at simplifying the complexities that plague any organization's server-based printing needs. Like its predecessor (version 2.2.2), this new version fully enables client-side printing using a single PDF-compatible print driver, and supports both ICA and RDP 5.x Win32 clients <u>without</u> the need for the Adobe Acrobat Reader. Moreover, version 3.0 introduces a radically new approach to network-based printing by enabling ANY client device, regardless of platform or operating system, to print to ANY shared network printer, regardless of make, model, or print driver.

How It Works

Figure 1 depicts a typical network environment where EOLUP 3.0 has been deployed to fulfill the printing needs of both LAN-connected and remote users. A Terminal Services farm hosts and serves a variety of business applications to which LAN-based and remote clients connect using Microsoft RDP or Citrix ICA client software.

Client-Side Printing

For client-side printing, EOLUP creates a PDF-compatible printer on the Terminal Server, enabling Terminal Services and Citrix MetaFrame™ users to print to ANY client-side printer – anywhere, anytime.
Remote users could be home-based, mobile, or remote branch workers, or even outside partners requiring access to shared applications. In all cases, the users' computers are either equipped with locally attached printers or rely on client-side network printers to fulfill the printing requirements. To provide printing support from the Terminal Services side, the administrator simply installs EOLUP 3.0 on all the Terminal Services servers. On the client side, the users are only required to download and install the small-footprint (1.5MB) EOLUP 3.0 client software. Please note that, unlike other printing solutions available on the market, EOLUP does <u>not</u> require the Adobe Acrobat Reader.

Network-Based Printing

LAN-connected users typically rely on shared network printers to fulfill their printing needs. These printers are physically connected to either the print server's I/O ports (i.e., LPT, COM) or the LAN infrastructure (i.e., Ethernet.) In both cases, the system administrator makes these printers available to users by configuring and sharing corresponding printer resources on the designated print server. Figures 2-a, 2-b, and 2-c depict two distinct printer configurations commonly found in almost any network.
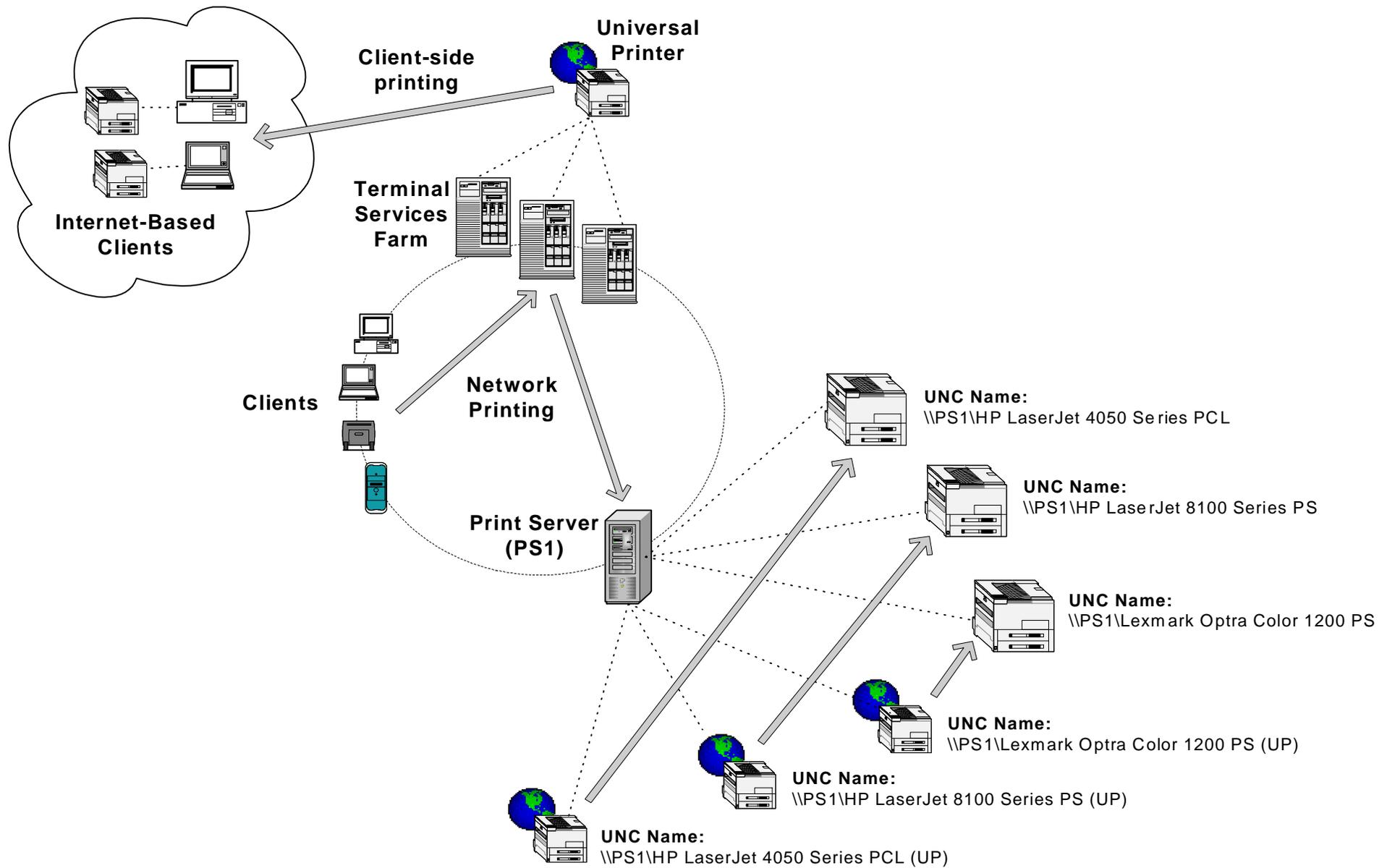
Figure 1 – EOL Universal Printer™ 3.0 offers a single-driver solution to all server-based printing needs, including client-side and network printing.
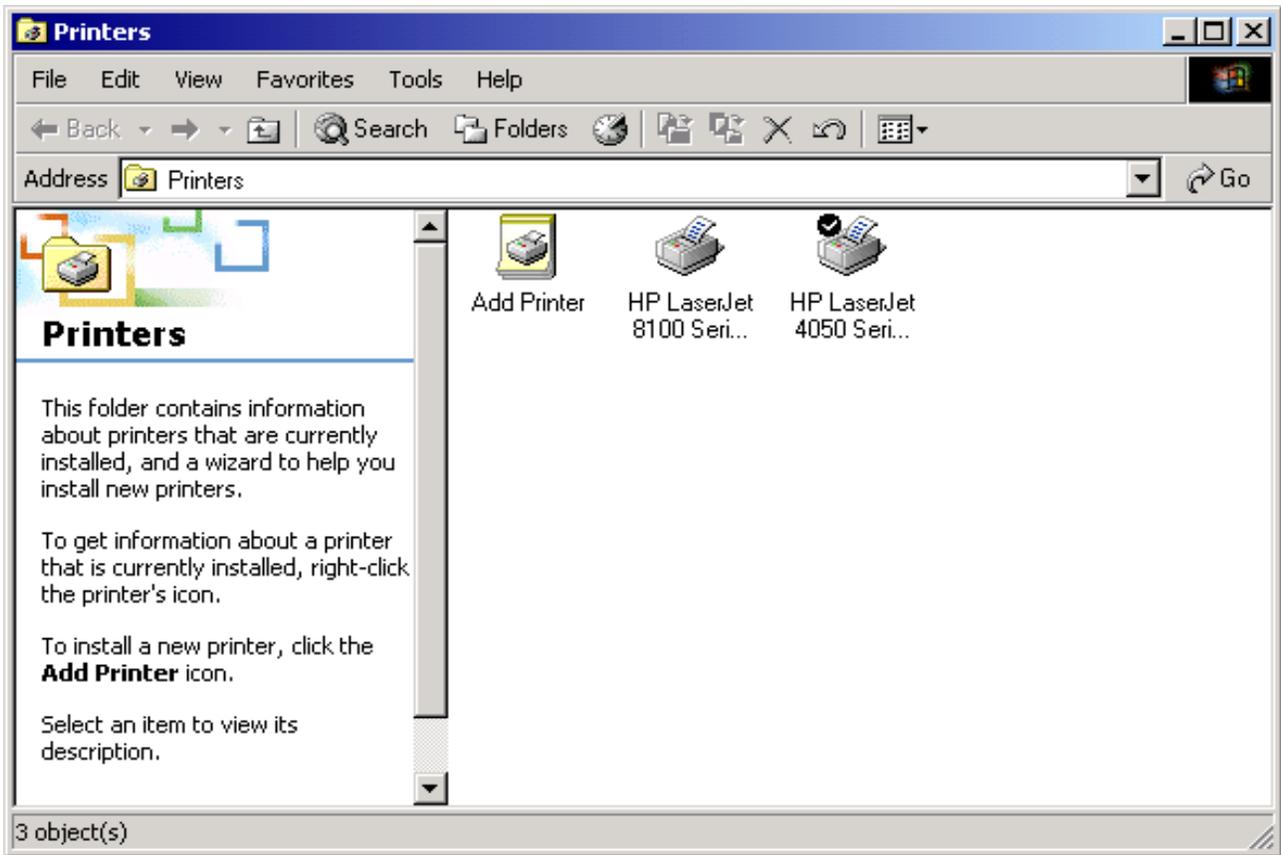
Figure 2-a – The administrator creates a shared printer resource for every physical printer.
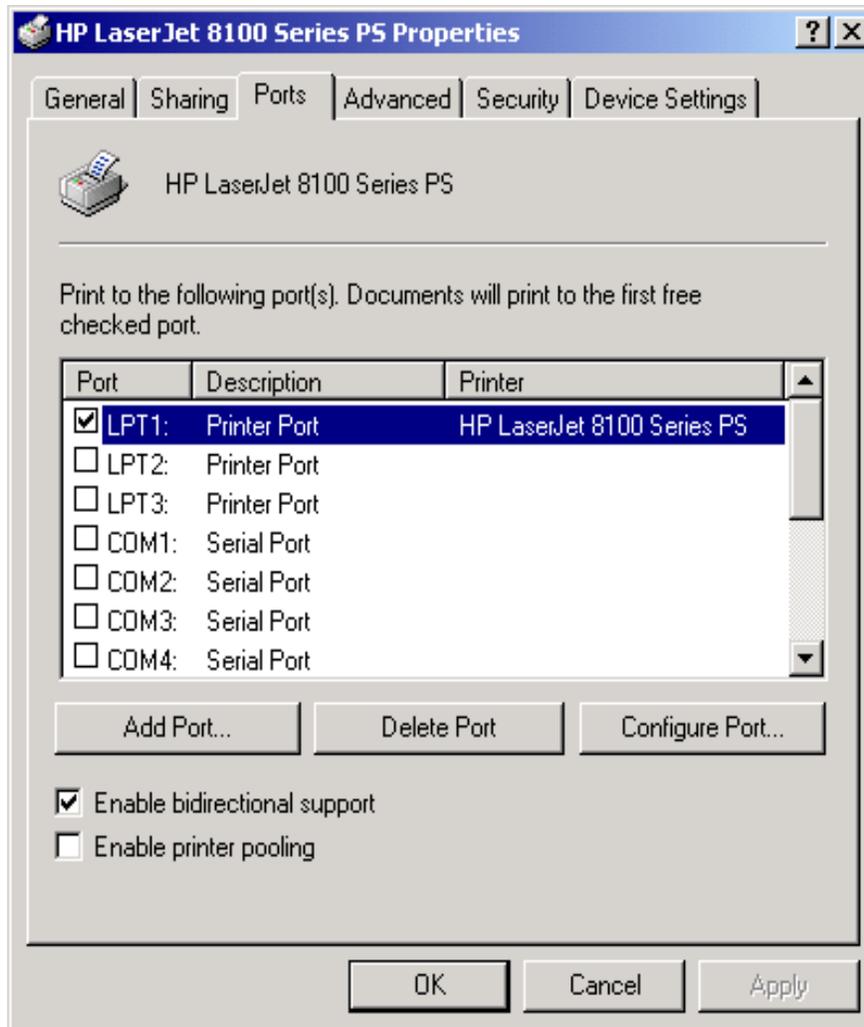
Figure 2-b – In this example, the HP LaserJet 8100 Series PS is physically connected to the LPT1 port of the print server. Users connect and print to the printer by means of a shared printer resource configured on the print server. The print server communicates with the physical printer through the LPT1 port.

HP LaserJet 4050 Series PCL Properties ? X

General | Sharing | Ports | Advanced | Security | Device Settings |

HP LaserJet 4050 Series PCL

Print to the following port(s). Documents will print to the first free checked port.

| Port	Description	Printer
☐ COM3:	Serial Port	
☐ COM4:	Serial Port	
☐ FILE:	Print to File	
☑ IP_10.0.0.100	Standard TCP/IP Port	HP LaserJet 4050 Series
☐ PDF:	PDF Port	
☐ IR	Local Port	

Add Port... | Delete Port | Configure Port...

☑ Enable bidirectional support
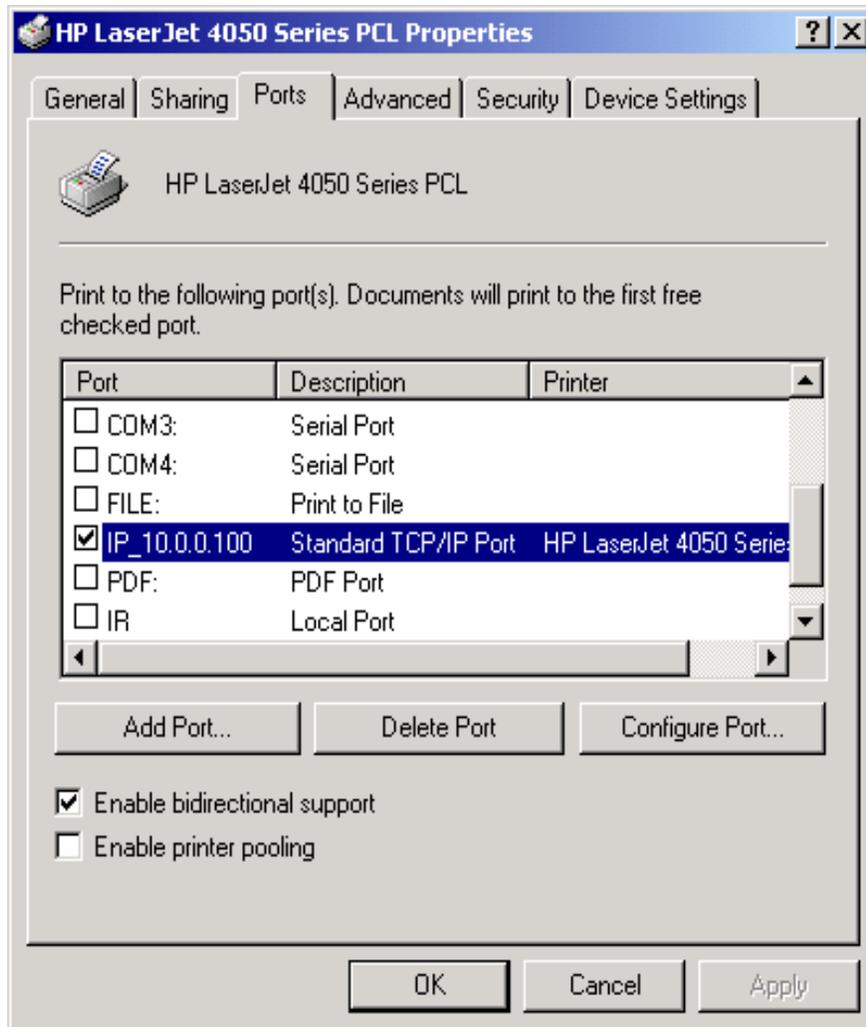☐ Enable printer pooling

OK | Cancel | Apply

Figure 2-c – In this example, the HP LaserJet 4050 Series PCL is physically connected to the LAN (i.e., Ethernet.) Users connect and print to the printer by means of a shared printer resource configured on the print server. The print server communicates with the physical printer using the TCP/IP protocol.

Without EOLUP, Terminal Services users must manually browse the network and connect to the desired shared printers. Moreover, the native print drivers of those printers must be pre-installed to the Terminal Services servers by the system administrator. Because most organizations support a wide variety of printer makes and models, managing a large set of print drivers and ensuring their stability and compatibility with the Terminal Services platform can rapidly become a daunting task.

EOLUP 3.0 solves this complex challenge using a single-driver approach. For each existing network printer (the "true" printer) defined on a particular print server, EOLUP creates and shares a "phantom" Universal Printer counterpart on that same Print Server. As such, users connect and print their documents to the Universal Printers instead of the original "true" printers. Once a particular document has been printed to a Universal Printer, the print job is automatically forwarded to the corresponding "true" printer using its native print driver. Figure 11 illustrates the process of printing from a server-based application to a Universal Printer.
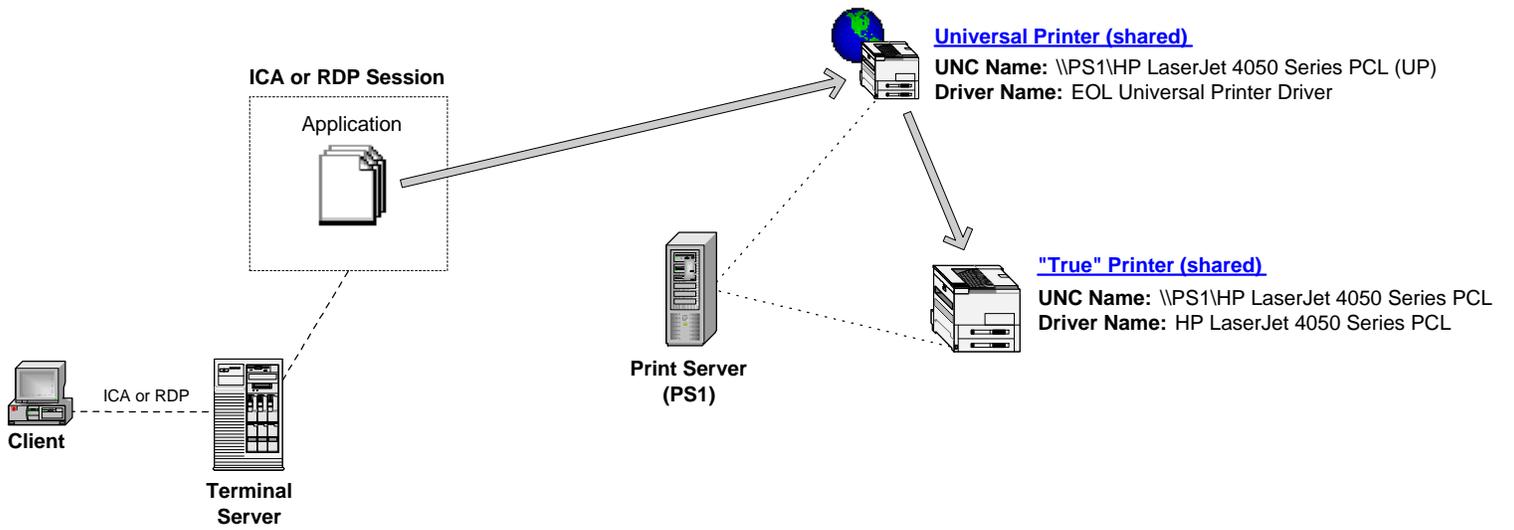
Figure 3 – a client prints from a server-based application to a shared Universal Printer (phantom printer). The EOL Universal Printer renders the print job and forwards it to the "true" print printer using its native print driver.

New UP 3.0 Features

Many valuable features have been added to this new version of EOLUP including:

1. **Single-driver solution** that satisfies all printing requirements, including **client-side** and **network printing**.

2. For client-side printing, a **new lightweight PDF viewer** built into the EOLUP client. As such, Adobe Acrobat Reader is no longer required on the client side.

3. The size of the EOLUP client download has been reduced to approximately 1.5 Megabytes. Five separate client downloads are currently available:

    *   **eolupcli.exe**: UP client

    *   **eolupcli_silent.exe**: UP client - Silent install

    *   **eolupcli_ica32.exe**: EOLUP client + Citrix ICA Full PN client

    *   **eolupcli_ica32a.exe**: EOLUP client + Citrix ICA PN Agent

    *   **eolupcli_ica32t.exe**: EOLUP client + Citrix ICA Web client

    *   **eolupcli.cab**: CAB-based EOLUP client

    Note: customers who wish to enable the auto-detection/download of the EOLUP client must add the following line to their Web page:

    <OBJECT CLASSID="clsid:240EEE8D-91DB-4D74-A87E-671026601333" CODEBASE="eolupcli.cab#version=3,0,0,0"></OBJECT>

4. The EOLUP popup window that prompts the user to either print directly to client, save to disk, email via SMTP or MAPI, has been implemented as a tab inside the properties of the printer to reduce the number of steps/clicks required by the user to complete a EOLUP-based print operation. In order to choose a particular delivery method, the user must invoke the printer selection box from within the app. For example, when using Microsoft Word, click on **File > Print > Universal Printer > Properties > Delivery Options**.

5. **Higher print quality and accuracy** through better PDF rendering. EOLUP v3.0 is based on the latest PDF conversion engine which supports resolutions of up to 2400 dpi.

6. The property tabs (Configuration, Image Compression, Advanced Options) of the printer have been simplified to only include the options and settings that are useful to the users.

7. **Improved memory management** and faster performance during server-side PDF conversion.

8. **Reduced memory requirements** when on the client side.

9. **Font Embedding** support. Font embedding is a feature that embeds non-standard server-side fonts into the PDF-converted print job in the event that the client PC doesn't have those same fonts installed locally. Generally, most documents are created with standard out-of-the-box Windows fonts (i.e., Arial, Times New Roman, etc). In such cases, font embedding is not required because the Windows client is expected to have those same standard fonts installed. However, many apps install additional fonts that aren't necessarily available on the client PC. In those cases, font embedding is necessary to ensure the accuracy of the print output. If print jobs with garbled characters are ever encountered, it is most certainly a case of font embedding. Check the font embedding option available at print time from the Advanced Options tab in the EOLUP properties.

10. Support for **Page Streaming** means that users no longer have to wait for the entire PDF-converted print job to be received before printing can begin. With version 3.0, pages are streamed down one by one to the client and automatically sent to the printer as they are being received.

11. Platform-specific print driver versions for Windows NT 4.0 Terminal Server and Windows 2000 Server. When installing EOLUP v3.0 to a Windows NT 4.0 Terminal Server (WTS), a **kernel-mode** version of the driver is installed (WTS does not support user-mode print drivers). In contrast, a **user-mode** version of the print driver is installed to a Windows 2000 Terminal Services server. The advantages of a user-mode driver is enhanced stability (no blue screens) and higher performance.

12. Support for **pass-through** sessions. Users can launch ICA or RDP sessions from within ICA or RDP sessions and take full advantage of EOLUP.

13. The client settings are now stored in an ini file (eolupclnt.ini) that resides in the Windows directory. Moreover, the client menu options and the system tray icon can selectively be hidden or shown. The client menu options are:

- Print to default printer

- Prompt for printer

- Preview job before printing

Sample eolupclnt.ini:

```
********************************************************************************
[Settings]
Default=1
Hide1=0 ; 0 or 1 shows or hides the "preview job before printing" option
Hide2=0 ; 0 or 1 shows or hides the "prompt for printer" option
Hide3=0 ; 0 or 1 shows or hides the "print to default printer" option
Hide4=1 ; 0 or 1 shows or hides the "passthrough mode" option
NoSysTrayIcon=0 ; 0 or 1 shows or hides the system tray icon
********************************************************************************
```

Note: to support pass-through (see item 8), the UP client must be installed on both the client PC and the pass-through server(s) from which additional ICA or RDP sessions will be launched to other servers. In this case, the Default and NoSysTrayIcon options in eolupclnt.ini (on the pass-through server) should be as follows:

```
*************************************************************************************
[Settings]
Default=4
Hide1=0 ; 0 or 1 shows or hides the "preview job before printing" option
Hide2=0 ; 0 or 1 shows or hides the "prompt for printer" option
Hide3=0 ; 0 or 1 shows or hides the "print to default printer" option
Hide4=1 ; 0 or 1 shows or hides the "passthrough mode" option
NoSysTrayIcon=1 ; 0 or 1 shows or hides the system tray icon
*************************************************************************************
```

This will automatically enables EOLUP pass-through mode when an ICA or RDP connection is launched from a server session to another server.

14. A new utility, eoldfprn.exe, is provided that automatically configures the EOLUP as the default for all Terminal Server and MetaFrame users.

15. Full support for ICA 3.0 and RDP 5.0.

Installing EOL Universal Printer™

Terminal Services Component

Download and install EOLUPSVR.EXE to your Terminal Services server(s). When asked whether "this server is a designated Universal Print Server," click NO (see figure 4.) The installation program performs the following functions:

- Installs the **EOL Universal Printer Driver**.

- Installs the **EOLUP Port Monitor**.

- Creates the **Universal Printer**.

- Installs and automatically starts the **EOL Universal Printer** service.

- Installs and automatically starts the **EOL Desktop Management** service.

- Adds EOLDM.EXE (the Desktop Management client) to the **AppSetup** registry value under **HKLM\Software\Microsoft\Windows NT\CurrentVersion\Winlogon**.

- Grants a 30-day trial license.

Generally, it is not necessary to reboot the server upon completing the installation, unless older versions of shared components (i.e., mfc42.dll, etc) were found on the server. However, if the "EOL Universal Printer" and "EOL Desktop Management" services start successfully upon completing the installation, users can immediately start using EOLUP.

Universal Print Server Component

Download and install EOLUPSVR.EXE to your print sever(s). When asked whether "this server is a designated Universal Print server," click YES (see figure 4). The installation program performs the following functions:

- Installs the **EOL Universal Printer Driver**.

- Installs the **EOLUP Port Monitor**.

- Installs and automatically starts the **EOL Universal Printer** service.

- The Universal Print Server component can be installed onto as many print servers as desired without requiring additional licensing as only Terminal Services servers require valid licenses. For further information about licensing, check the section titled "Licensing EOL Universal Printer™".
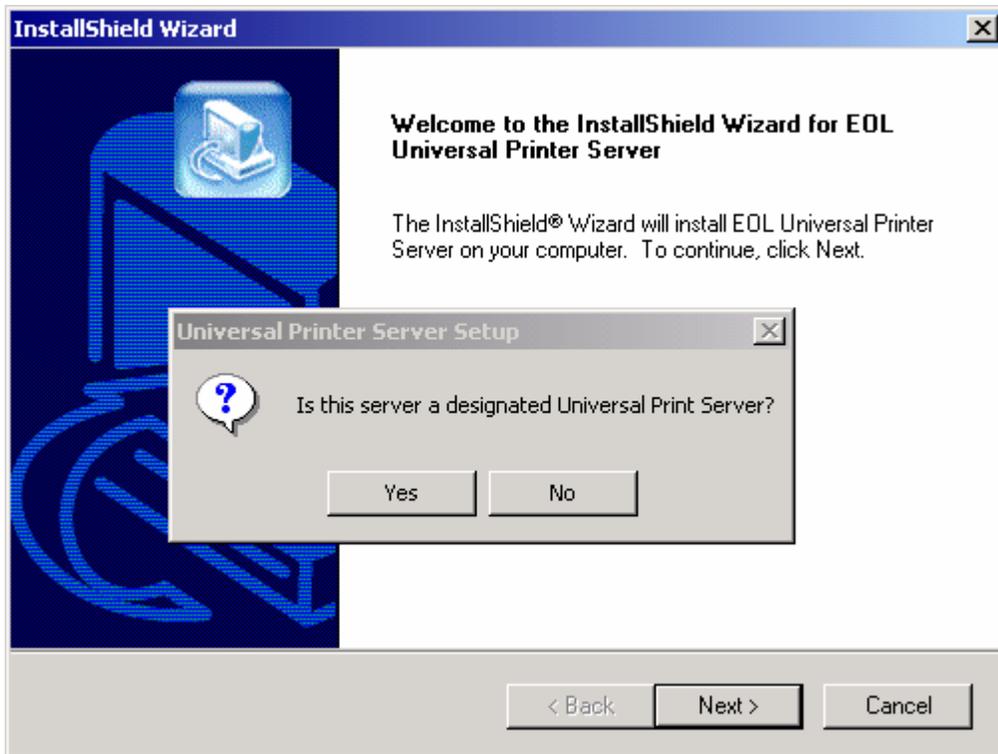

Figure 4 – Answer NO when installing to a Terminal Server. Answer YES when installing to a print Server.

Client Component

The client component is ONLY required for client-side printing. Both ICA 3.0 and RDP 5.x are supported on Win9x/Me, Windows NT 4.0, 2000, and XP client platforms. Support for RDP is only available when connecting to Windows 2000 Terminal Services because Windows NT 4.0 Terminal Server does not support the use of 3rd party virtual channels. Before installing the EOLUP client software, please ensure that at least the ICA (6.x or above) or the RDP 5.x Win32 client software is already installed to the client PC. Finally, download and install EOLUPCLI.EXE. The installation program performs the following functions:

- Copies and registers the Universal Printer's ICA and RDP 5.x client components to the user's PC.

- Configures the ICA and RDP 5.x clients to initialize the Universal Printer's virtual channel driver upon launching ICA and RDP 5.x connections.

Upgrading from Previous Versions

Server Component

Note: if you are upgrading from a previous version of EOLUP, please refer to the section titled **Licensing EOL Universal Printer™** before performing the upgrade.

- Uninstall the previous version of EOLUP.

- Set the **startup type** of the **Print Spooler** service to **Manual**.

- Reboot the server.

- Delete eoluppdf.dll, eolupui.dll and eoluppdf.txt from %SystemRoot%\System32\ Spool\Drivers\W32x86\2.

- Start the **Print Spooler** service and set it start type back to **Automatic**.

- Install the new version of EOLUP.

Client Component

- Ensure that no active ICA or RDP connections exist on the client PC.

- Install the new version of the EOLUP client.

- Reboot the client PC.

Client-Side Printing With EOL Universal Printer™

Upon launching and ICA or RDP 5.x connection, the Universal Printer icon appears in the client's system tray (printer + globe). Properly configured clients can now print to the Universal Printer from within their server-based applications as shown in figure 5.
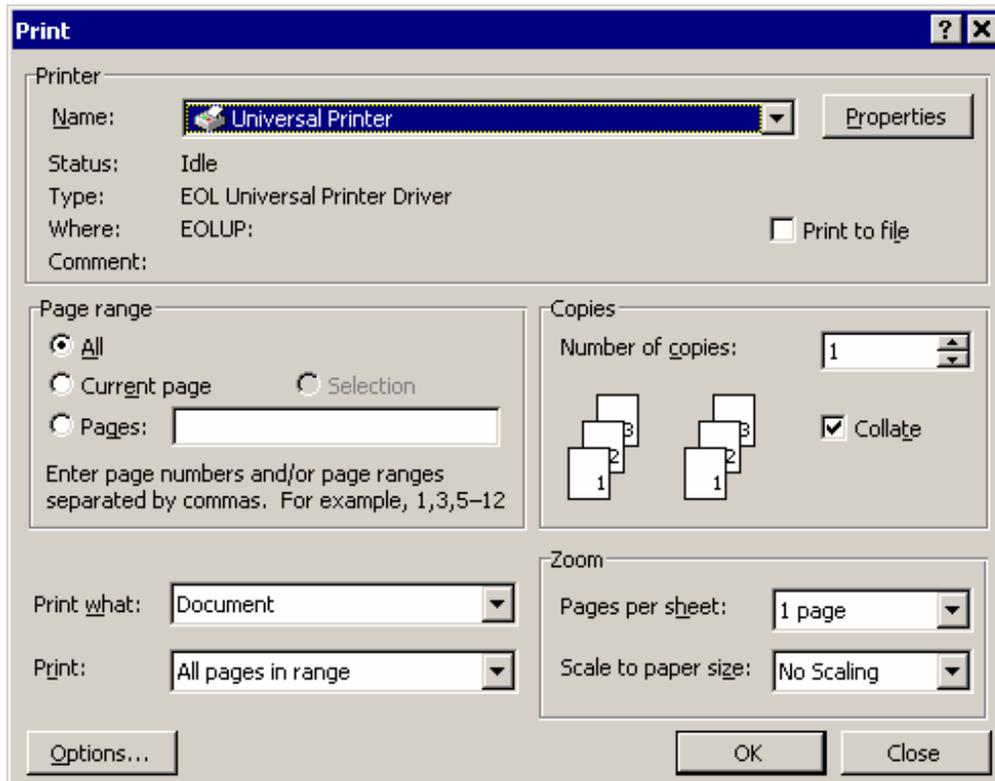

Figure 5 – Through the use of the EOLUP, ICA and RDP 5.x clients may print any server-side document to any client-side printer.

Moreover, by clicking the Properties button, users can access the properties of the Universal Printer and choose various print and delivery options (see figures 6 –a, b, c, d).
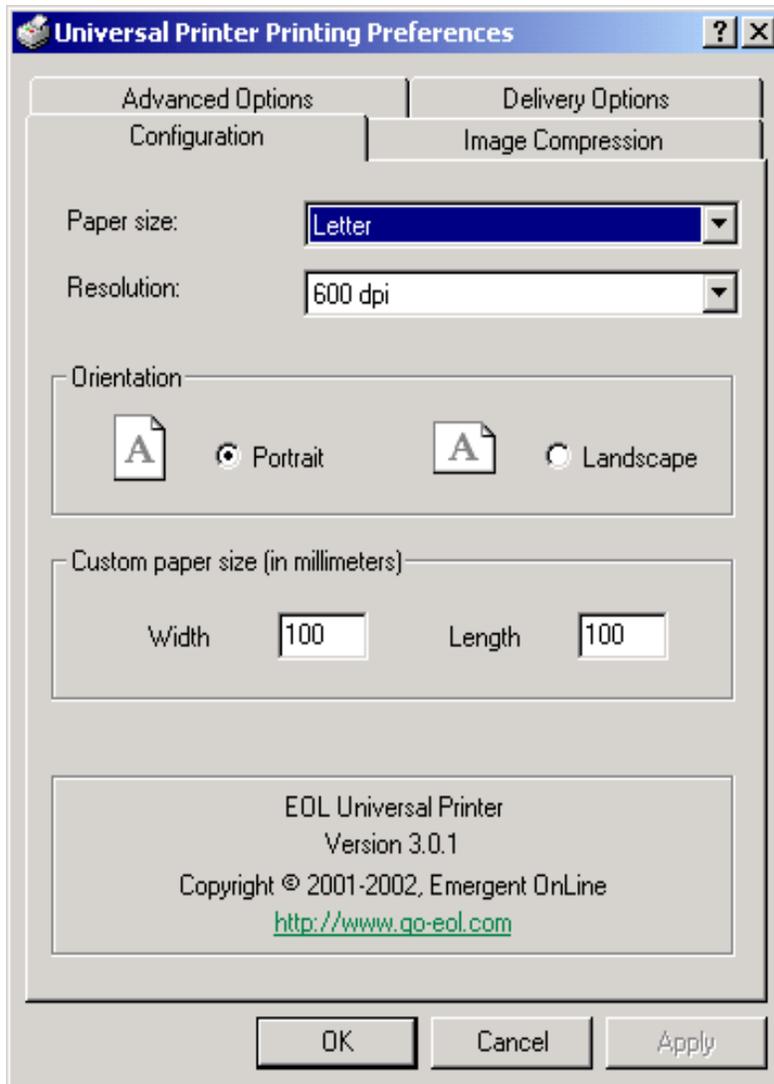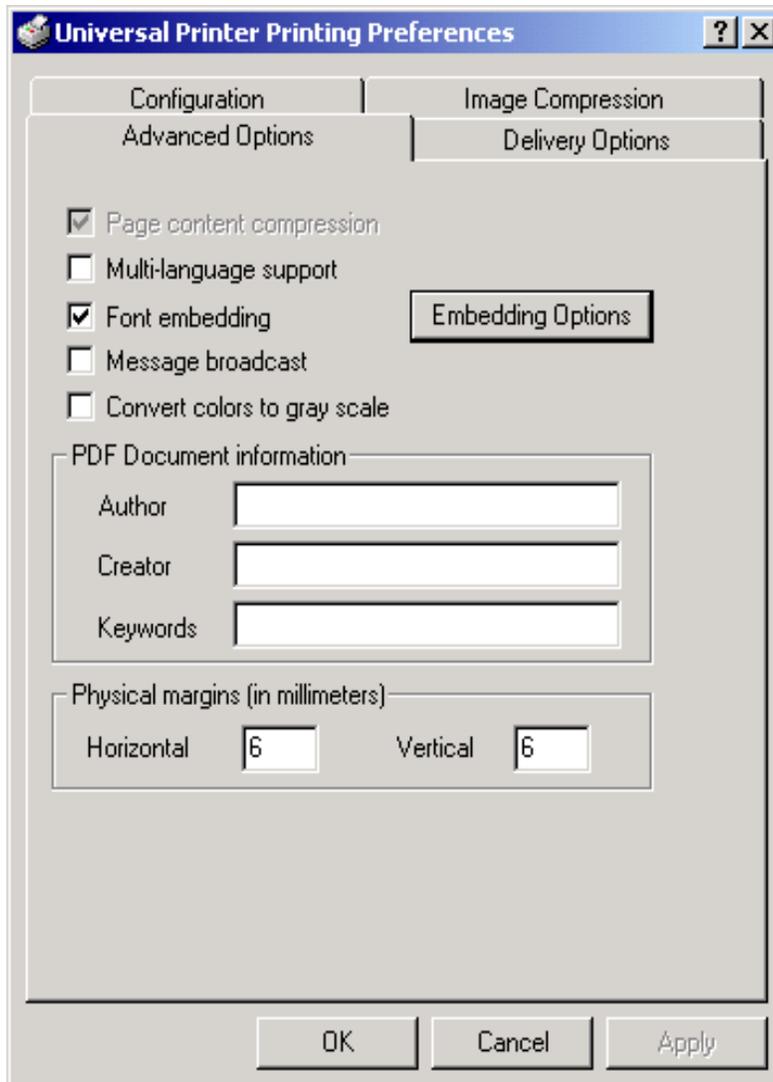
Figure 6-a – The Configuration Tab.

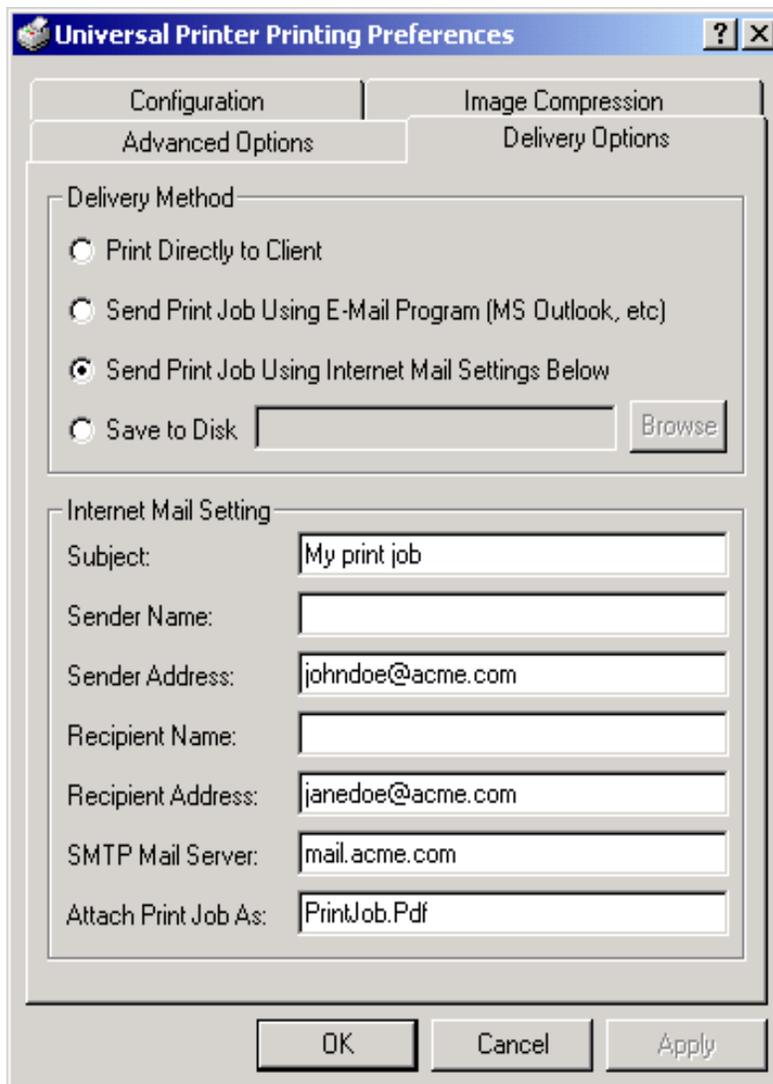Figure 6-b – The Advanced Options Tab.

Universal Printer Printing Preferences   ? ×

| Configuration | Image Compression |
| Advanced Options | Delivery Options |

Delivery Method

○ Print Directly to Client

○ Send Print Job Using E-Mail Program (MS Outlook, etc)

● Send Print Job Using Internet Mail Settings Below

○ Save to Disk [   ]   Browse

Internet Mail Setting

Subject:	My print job
Sender Name:	
Sender Address:	johndoe@acme.com
Recipient Name:	
Recipient Address:	janedoe@acme.com
SMTP Mail Server:	mail.acme.com
Attach Print Job As:	PrintJob.Pdf

OK   Cancel   Apply

Figure 6-c – The Delivery Options Tab.

Universal Printer Properties

Advanced Options | Delivery Options
Configuration | Image Compression

Algorithm   Default compression

Description

The default image compression algorithm makes use of color palettes to reduce the overall size of 24 bits images. This algorithm works well as long as the number of colors does not exceed 256.
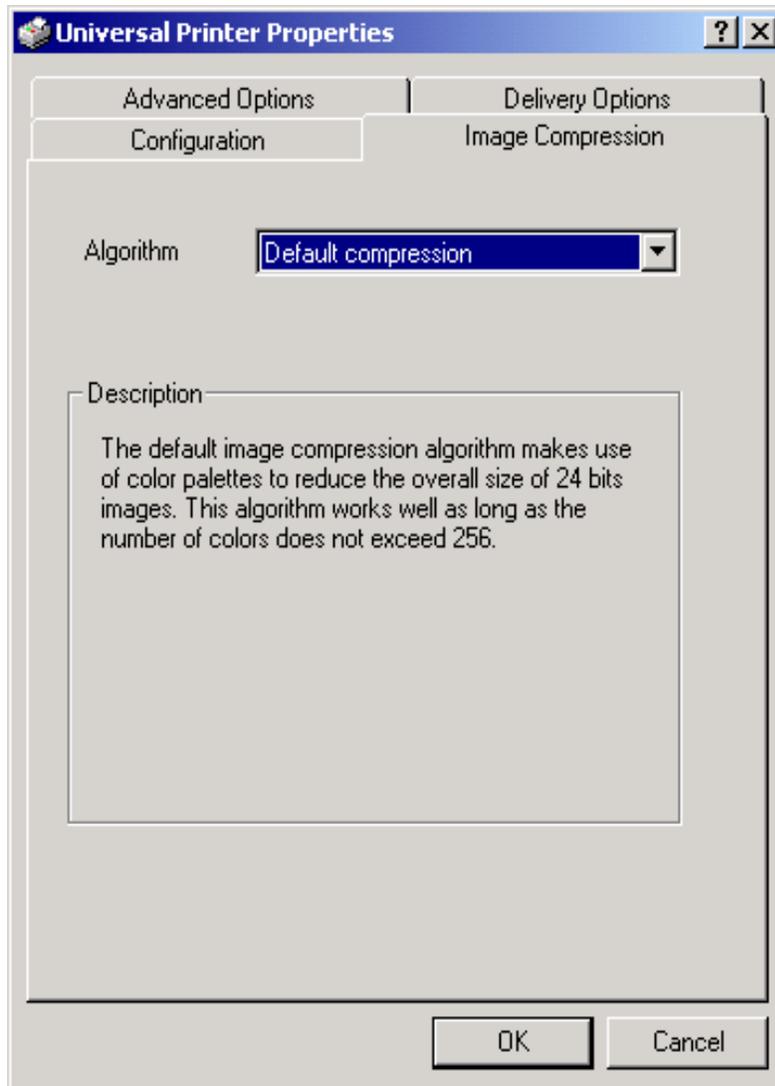
OK   Cancel

Figure 6-d – The Image Compression Tab.

Delivery Options

Print directly to client: when the user chooses this option, the document is PDF-converted and compressed, and then streamed down to the client PC. Depending on the currently set client option, the print job is either previewed before printing or sent to the client's default printer, or the user is prompted to choose the destination printer. Figure 7 illustrates the three possible client-side options.
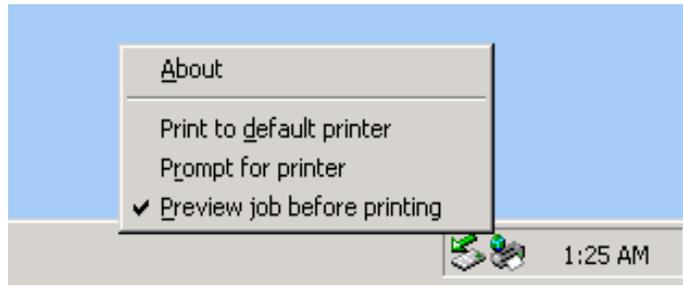

Figure 7 – In the system tray, click on the Universal Printer icon (printer + globe) to set the desired client preference.

Send Print Job Using E-Mail Program: when users choose this option, the server-side MAPI-compliant email software (MS Outlook, Lotus Notes, Novell GroupWise, Eudora, etc) is automatically invoked and the PDF-converted print job attached. Next, the user must choose the intended e-mail recipient(s) and optionally populate the Subject line (see figure 8).
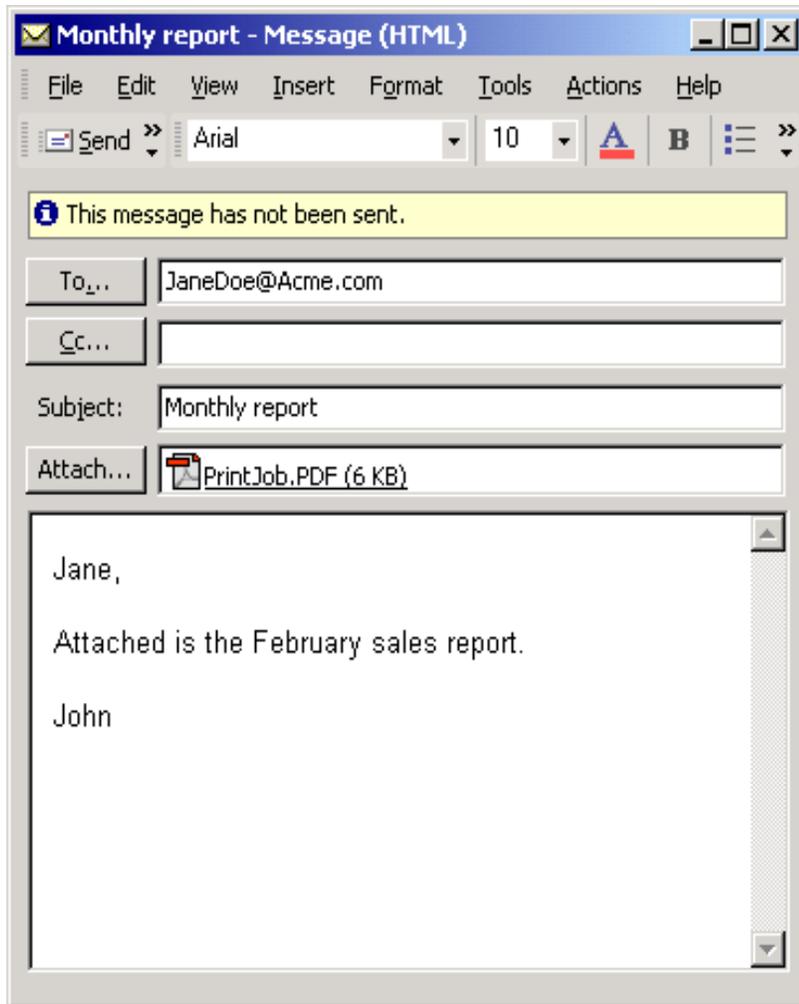
Figure 8 – Sending a print job as an e-mail attachment

Send Print Job Using Internet Mail Settings Below: when users choose this option, the PDF-converted print job can be emailed using SMTP. No email client is necessary in this case. Instead, a mail server that accepts SMTP relay requests is all that is required. A user must key in his/her email address, the recipient's email address, a subject line, and the name of the file attachment (see figure 6-c). The IP address or FQDN of the SMTP server can either be keyed in by the user or pre-configured by the administrator.

Save to Disk: when users choose this option, they simply specify the path name of the PDF-converted print job. Consequently, the PDF file can either be opened for viewing using Acrobat Reader or stored for future access.

Note: Only the **Print directly to client** option requires the Universal Printer client on the user's PC.

Customizing the Delivery Options Tab

Administrators have total control over which delivery options they make available to users.

Policy Template

A policy template called EOLUP.ADM is copied to the server during the installation of the EOLUP server component. This template can be used with either Windows NT 4.0 domain policies (figure 9-a) or Active Directory Group Policy Objects (figure 9-b).

Note: when used in conjunction with Group Policy Objects (GPO), the policy template must be imported by right-clicking on **Administrative Templates** and choosing the **Add/Remove Templates…** option (figure 9-b). Also, right-click on **Administrative Templates,** choose **View,** and uncheck **Show Policies Only** and **Show Configured Policies Only**. Finally, expand the **Emergent OnLine** node and configure the various delivery options as desired (figure 9-c).
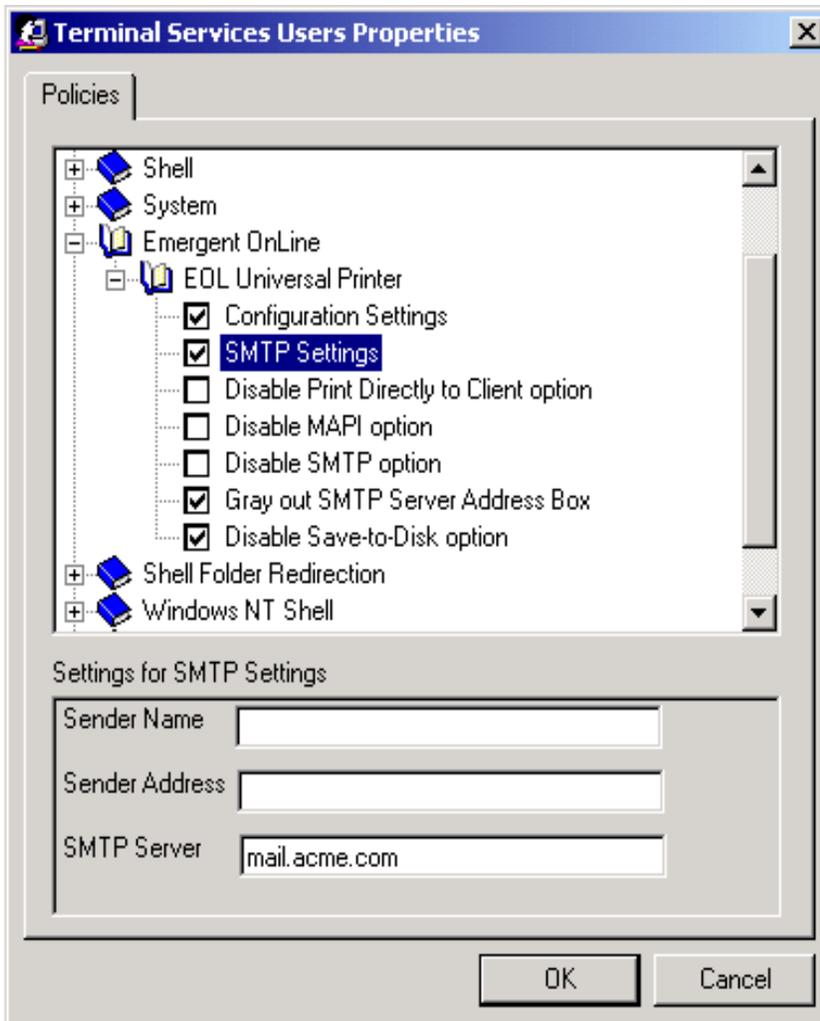
Figure 9-a – Delivery options can be controlled on a per user or group basis using a domain policy in conjunction with the EOLUP policy template.
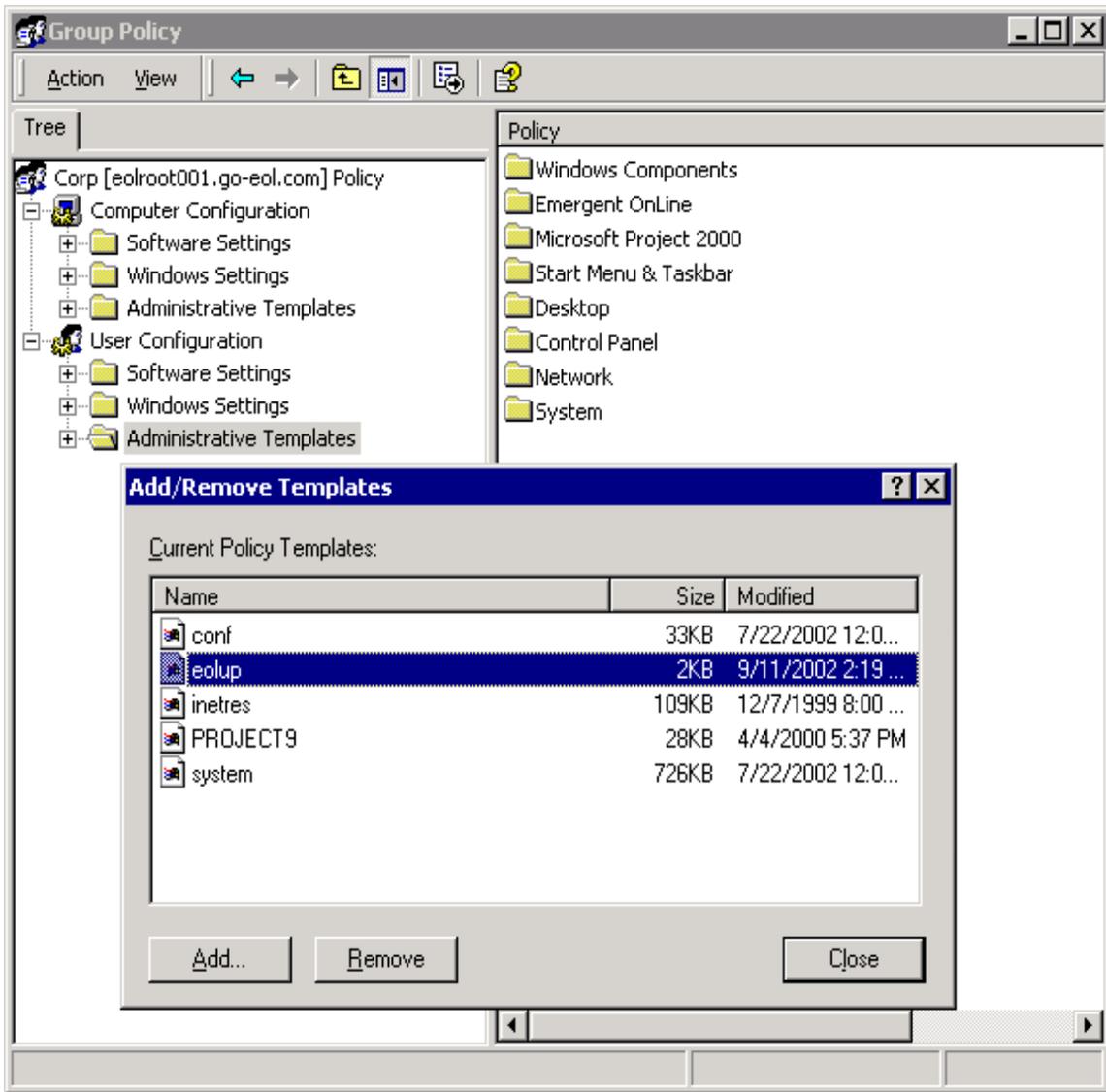
Figure 9-b - Delivery options can be controlled on a per-user or group basis using Group Policy Objects (GPO) in conjunction with the EOLUP policy template.
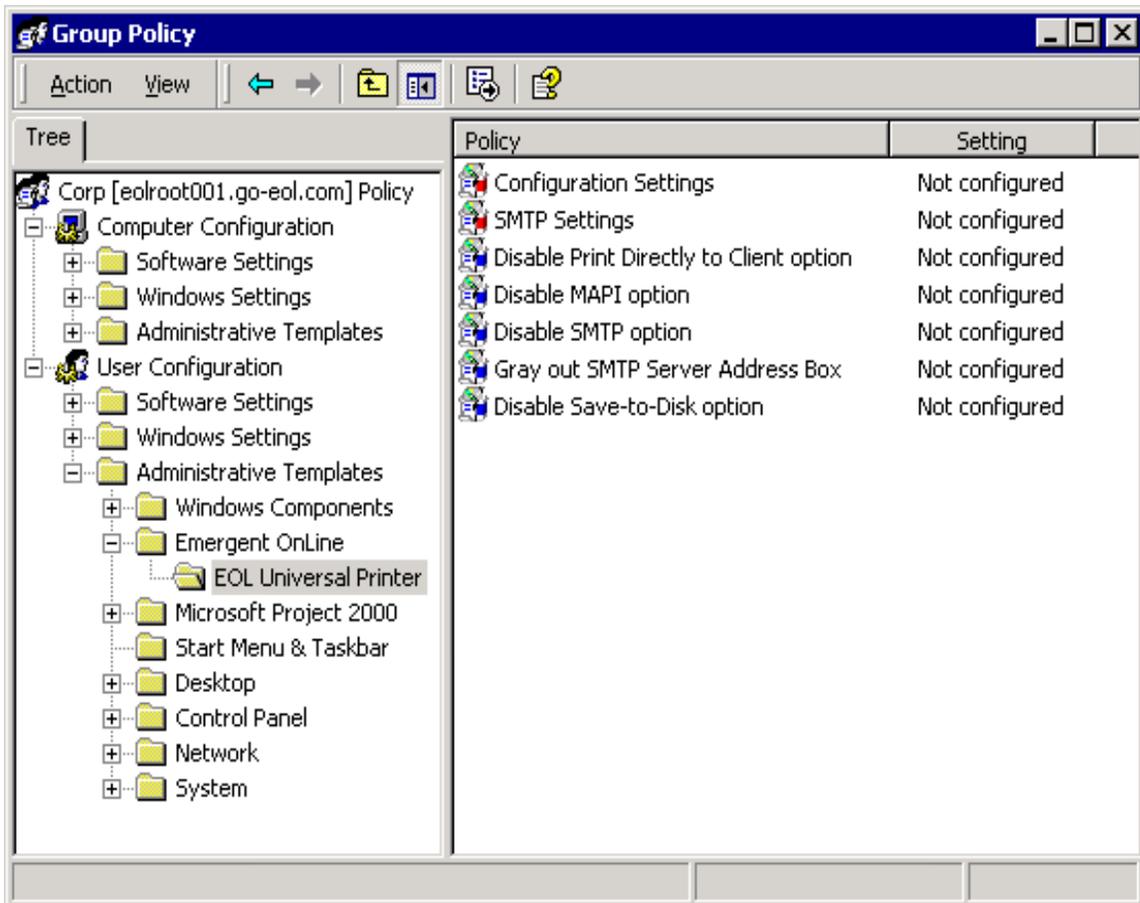
Figure 9-c – The configurable delivery options are accessible by accessing the EOL Universal Printer node Administrative Templates > Emergent OnLine.

Scripting

Savvy system administrators often exploit the power of scripting to effect user environment settings during logon. Most of these settings are registry values written to each user's own registry hive (HKCU). As such, EOLUP was designed to allow system administrators to control the availability of the various EOLUP delivery options by means of scripting. The configurable registry key and values are:

Sub-key: HKCU\Software\Emergent OnLine\Universal Printer

Value name: DeliveryOption
Value type: REG_DWORD
Description: specifies the default delivery option
Possible values: 1 (print directly to client), 2 (MAPI), 3 (SMTP), 4 (save to disk)

Value name: Attachment
Value type: REG_SZ
Description: the name of the file attachment to use when e-mailing the print job
Possible values: any valid file name (.pdf extension recommended)

Note: the user can override this option at print time

Value name: Subject
Value type: REG_SZ
Possible values: no restrictions
Description: specifies the string to use in the e-mail subject field
Note: the user can override this option at print time

Value name: FilePath
Value type: REG_SZ
Description: the file name to use with the save-to-disk option
Possible values: any valid file name (.pdf extension recommended)
Note: the user can override this option at print time

Value name: RecipientAddr
Value type: REG_SZ
Description: the recipient's e-mail address (for use with the SMTP option)
Possible values: any valid e-mail address (i.e., jdoe@acme.com)
Note: the user can override this option at print time

Value name: RecipientName
Value type: REG_SZ
Description: the e-mail recipient's full name (for use with the SMTP option)
Possible values: any valid e-mail address (i.e., John Doe)
Note: the user can override this option at print time

Value name: SenderAddr
Value type: REG_SZ
Description: the sender's e-mail address (for use with the SMTP option)
Possible values: the user's own e-mail address (i.e., jdoe@acme.com)
Note: the user can override this option at print time

Value name: SenderName
Value type: REG_SZ
Description: the sender's full name (for use with the SMTP option)
Possible values: the user's own full name (i.e., John Doe)
Note: the user can override this option at print time

Value name: SMTPServer
Value type: REG_SZ
Description: the IP address or Fully Qualified Domain Name (FQDN) or the SMTP relay server (i.e., mail@acme.com)
Possible values: any SMTP server capable or relaying e-mail requests
Note: the user can override this option at print time

Sample VB Script:

```
Dim oShell

Set oShell = CreateObject("Wscript.Shell")
oShell.RegWrite "HKCU\Software\Emergent OnLine\Universal Printer\ DefaultOption",  1, "REG_DWORD"
oShell.RegWrite "HKCU\Software\Emergent OnLine\Universal Printer\ SMTPServer",  "mail.acme.com", "REG_SZ"
```

Client Options

As shown in figure 10-a, a system tray icon on the client side indicates that the EOLUP client is currently active and ready to receive print jobs from the server. The user can configure the EOLUP client by clicking on the icon and choosing one of the three options:

- **Print to default printer**: the print job is automatically redirected to the client's default printer.

- **Prompt for printer**: the Printer Selection box appears and the user is prompted to choose the desired destination printer.

- **Preview job before printing**: the print job is opened in preview mode on the client. The user may then choose to send it to a destination printer, save it to disk, or e-mail it (see figure 10-b).
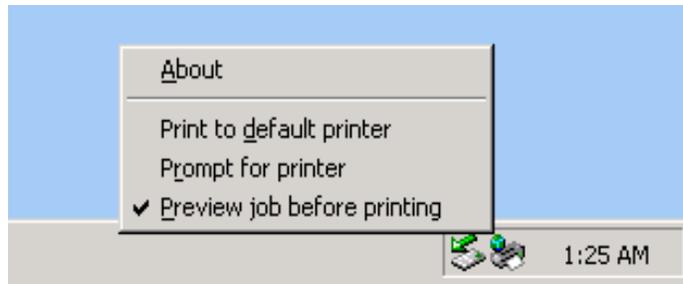

Figure 10-a – In the system tray, click on the Universal Printer icon (printer + globe) to set the desired client preference.
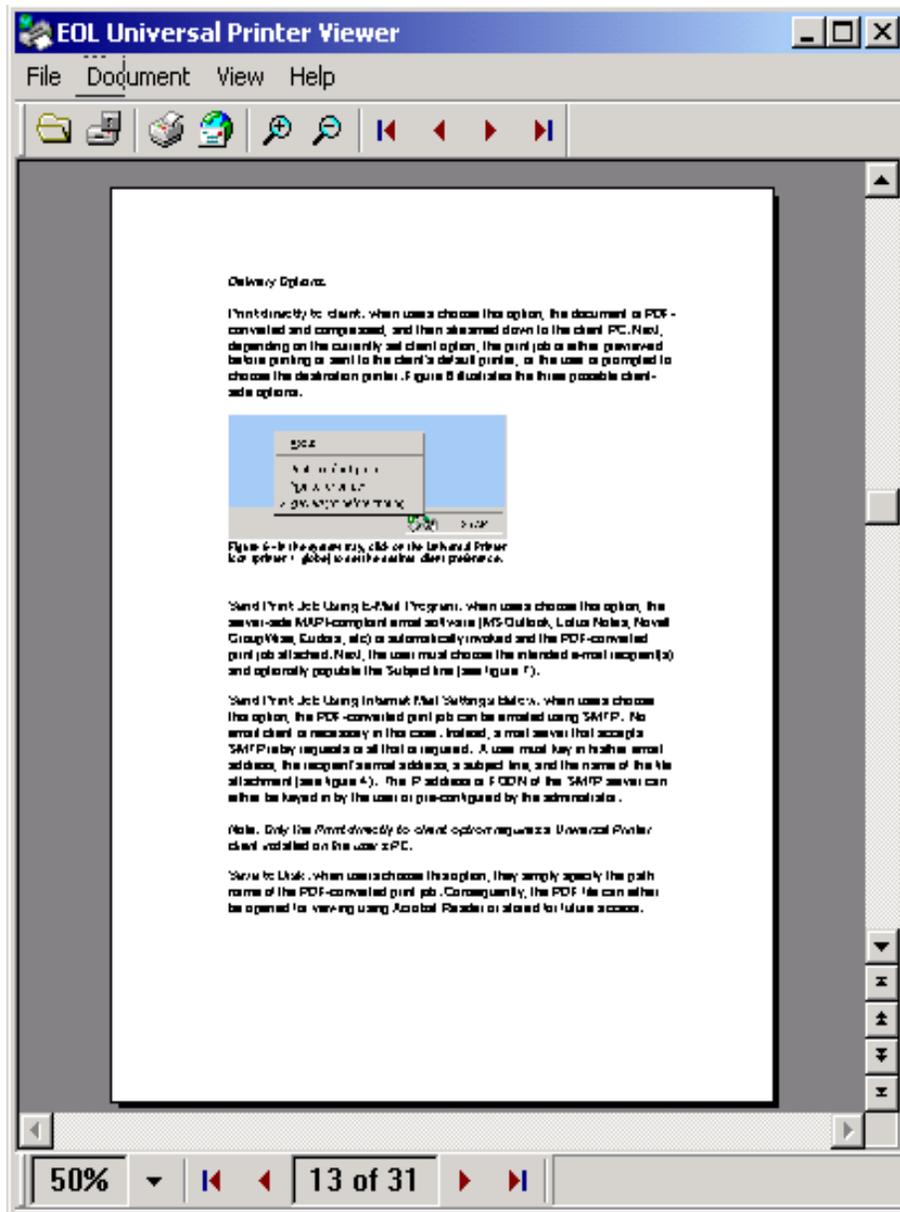
Figure 10-b – The EOLUP Viewer.

Network Printing With EOL Universal Printer™

In addition to client-side printing, EOLUP 3.0 enables driver-independent printing to any shared printer on the network. For each existing network printer (the "true" printer) defined on a particular print server, EOLUP creates a shared a "phantom" Universal Printer counterpart on that same Print Server. As such, users connect and print their documents to the Universal Printers instead of the original "true" printers. Once a particular document has been printed to a Universal Printer, the print job is automatically forwarded to the corresponding "true" printer using its native print driver. Figure 11 illustrates the process of printing from a server-based application to a Universal Printer.

Universal Printer (shared)
UNC Name: \\PS1\HP LaserJet 4050 Series PCL (UP)
Driver Name: EOL Universal Printer Driver

ICA or RDP Session

Application

"True" Printer (shared)
UNC Name: \\PS1\HP LaserJet 4050 Series PCL
Driver Name: HP LaserJet 4050 Series PCL

Print Server (PS1)

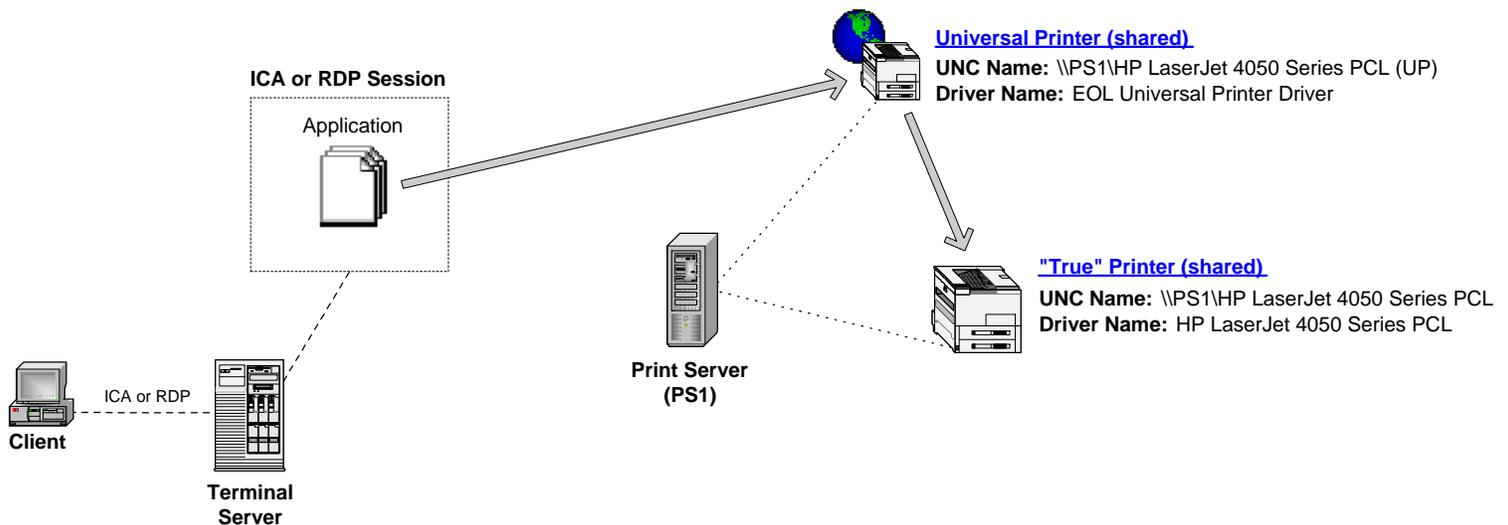**Client**

ICA or RDP

Terminal Server

Figure 11 – a client prints from a server-based application to a shared Universal Printer (phantom printer). The EOL Universal Printer renders the print job and forwards it to the "true" print printer using its native print driver.

EOLUP 3.0 stores all defined Universal Printers in a physical database. This database must be accessible to all print servers and Terminal Services servers in the enterprise. Any ODBC-compliant database should work fine with EOLUP, although only Microsoft SQL 7.0/2000 and Access have been tested at this time. To reduce network traffic, a Windows NT/2000 service called "EOL Desktop Management" is installed on every Terminal Services server. This service is tasked with creating a local database cache that mirrors the central database. Periodically, the "EOL Desktop Management" service checks the central database for new updates and refreshes the local database cache accordingly. By default, the refresh period is set to 2 minutes, but can be adjusted as desired.

Note: the EOLUP client is NOT required for network printing.

Requirements

- Existing Windows NT 4.0 or 2000 print server(s).

- One or More Terminal Services server with or without Citrix MetaFrame (or other 3rd party add-on).

- MDAC 2.6 SP1 (or higher) on all print servers and Terminal Services servers. MDAC is downloadable from http://www.microsoft.com/data.

- An ODBC-compliant relational database management system. In the case of Microsoft Access, the database file must reside on a central server in a shared folder (i.e., *servername**sharename*) that is accessible to all print servers and Terminal Services servers.

Configuring a Microsoft Access Data Source

First Server and One-Time Database Setup

The below steps MUST be performed on ONE server ONLY. This server can be either a print server or Terminal Services server onto which the EOLUP 3.0 server component has already been installed.

- Create a shared folder on a central file server (i.e., C:\THINssentials). This folder must be accessible to all print servers and Terminal Services servers using a UNC path (i.e., \\FS1\THINssentials).

- Invoke the **ODBC Data Sources Administrator** tool by clicking **Start > Administrative Tools > Data Sources (ODBC).** In the case of Windows NT 4.0 Server, invoke **Control Panel** and launch the **ODBC Data Sources** applet.

- Click on the System DSN tab and create an ODBC data source as illustrated in figures 12(a, b, c, e).

- Launch the **THINssentials™ Management Console** and configure it to use the newly created ODBC data source as illustrated in figures 12(f, g, h).

- Close the **THINssentials™ Management Console**.

Remaining Servers

The below steps must be performed on the remaining print servers or Terminal Services servers onto which the EOLUP 3.0 server component has already been installed.

- Invoke the **ODBC Data Sources Administrator** tool by clicking **Start > Administrative Tools > Data Sources (ODBC).** In the case of Windows NT 4.0 Server, invoke **Control Panel** and launch the **ODBC Data Sources** applet.

- Click on the <u>System DSN</u> tab and create an ODBC data source as illustrated in figures 12(a, b, d, e).

- Launch the **THINssentials™ Management Console** and configure it to use the newly created ODBC data source as illustrated in figures 12(f, h).
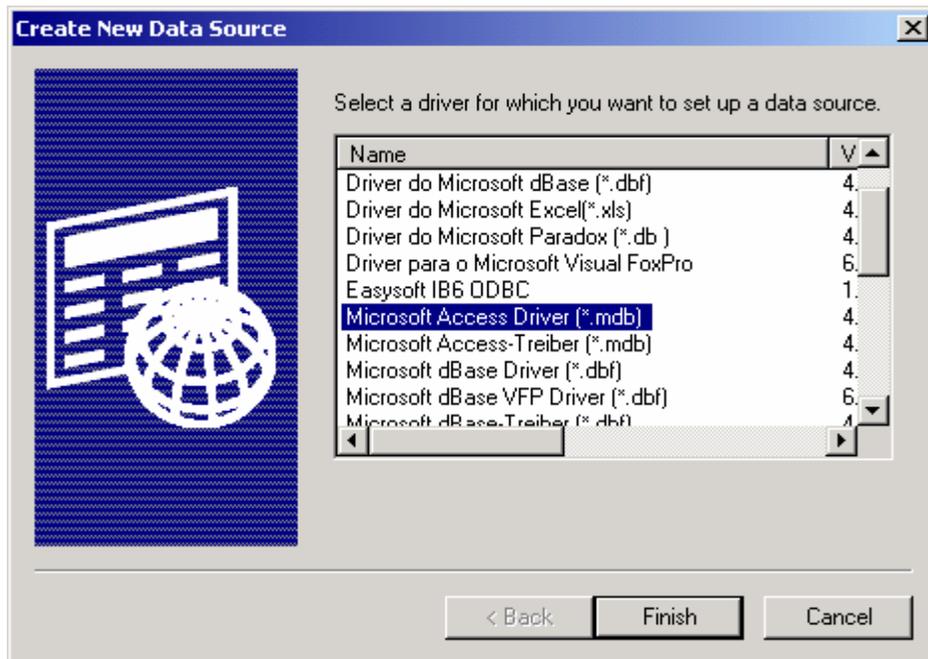

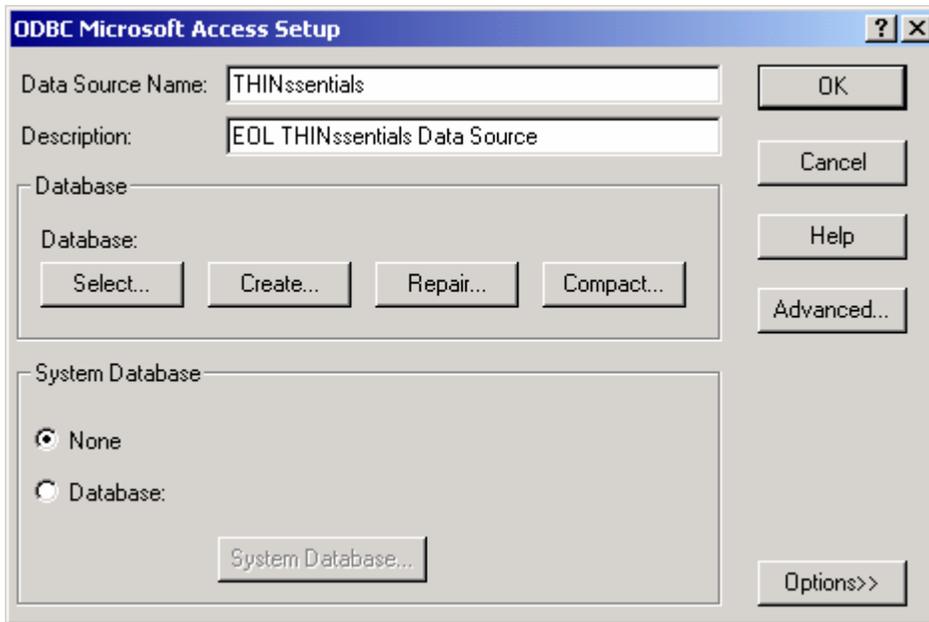Figure 12-a – Choose the Microsoft Access Driver.

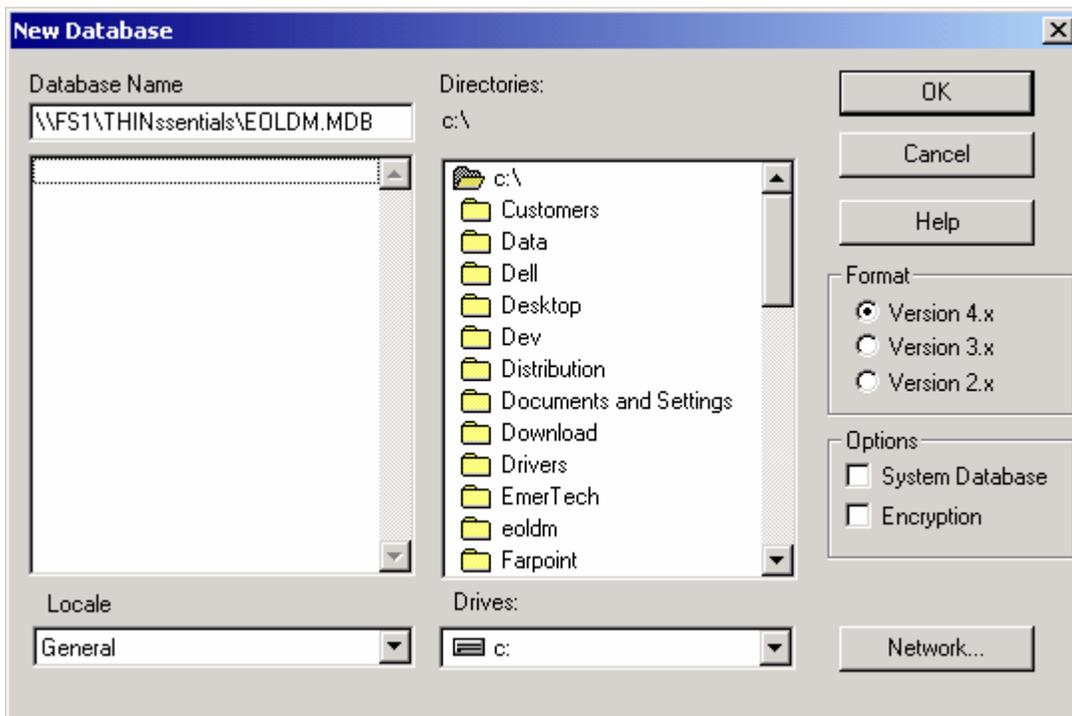Figure 12-b – Fill in the **Data Source Name** and **Description** fields.

Figure 12-c – Click the **"Create…"** button (see figure 12-b) and populate the **Database** Name field with the full UNC path of the Microsoft Access database to be created.   **EOLDM.MDB** (EOL Desktop Management) is the recommended database name. Click **"OK"** to create the database.
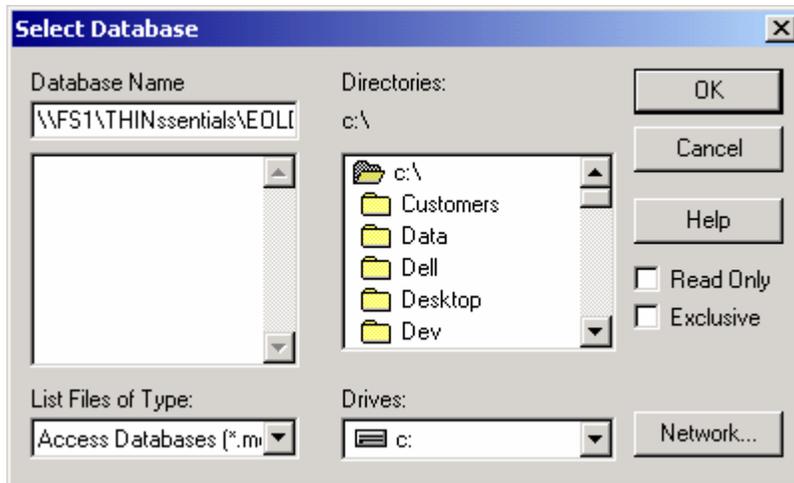
Figure 12-d – for all subsequent servers click the "Create…" button (see figure 12-b) and populate the **Database Name** field with the full UNC path of the Microsoft Access database. Upon clicking **"OK"**, the database will be automatically created.
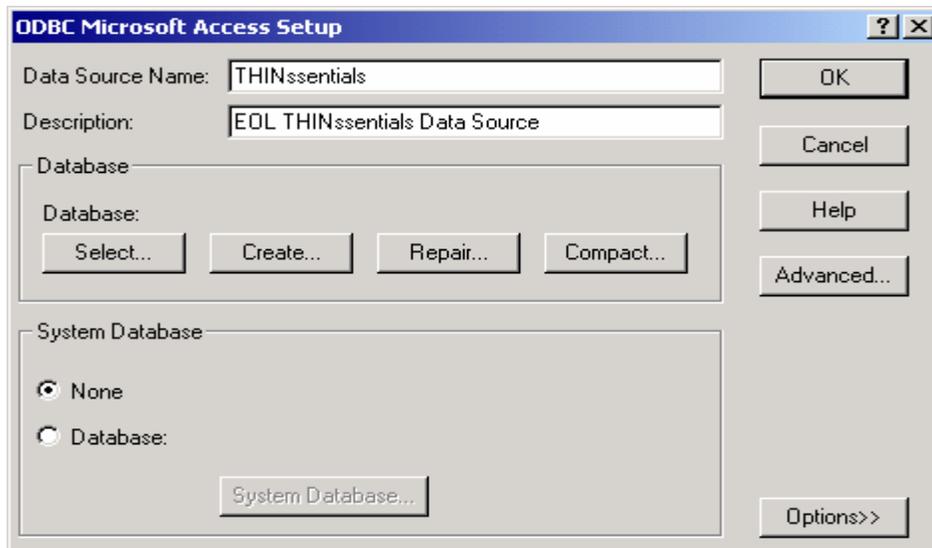

Figure 12-e – Click **"OK"** to complete the creation of the ODBC data source.
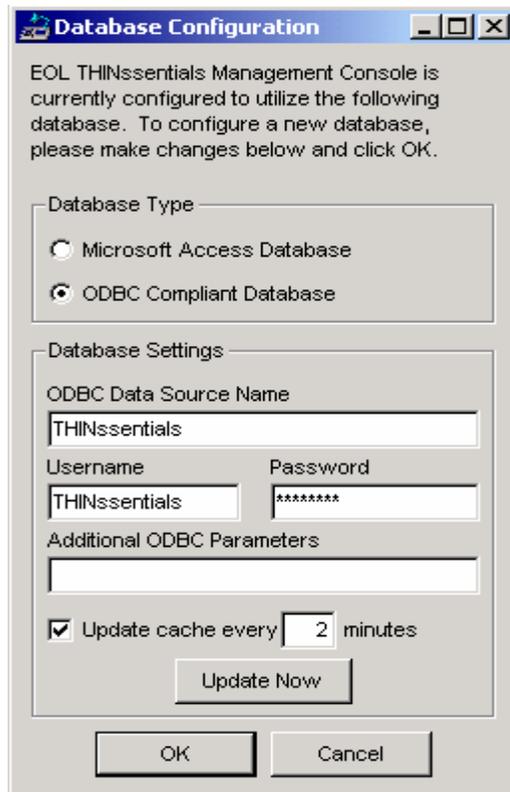
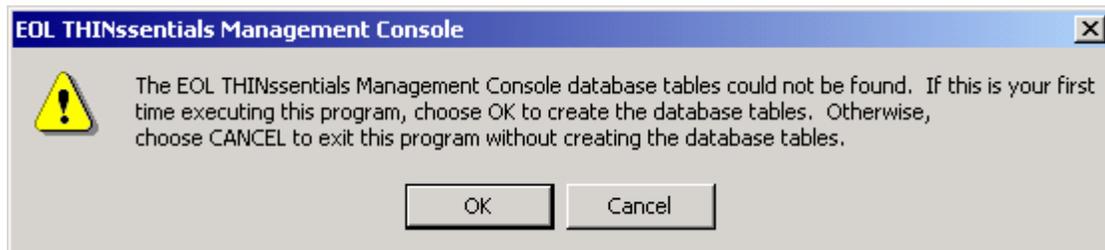Figure 12-f – Fill in the ODBC Data Source Name, Username, and Password fields and click **"OK"**.

Figure 12-g – Click **"OK"** to populate the database with the necessary tables.
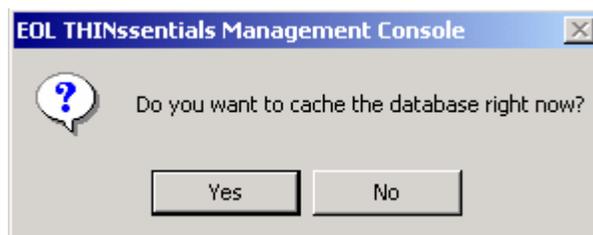

Figure 12-h – Click **"Yes"** to create a local database cache.

Configuring a Microsoft SQL Server Data Source

Microsoft SQL Server

Launch the **SQL Enterprise Manager** and create a new database as shown in figures 13-a, b, c, d.

First Server and One-Time Database Setup

The below steps MUST be performed on ONE server ONLY. This server can be either a print server or Terminal Services server onto which the EOLUP 3.0 server component has already been installed.

- Invoke the **ODBC Data Sources Administrator** tool by clicking **Start > Administrative Tools > Data Sources (ODBC).** In the case of Windows NT 4.0 Server, invoke **Control Panel** and launch the **ODBC Data Sources** applet.

- Click on the System DSN tab and create an ODBC data source as illustrated in figures 14(a, b, c, d, e, f).

- Launch the **THINssentials™ Management Console** and configure it to use the newly created ODBC data source as illustrated in figures 12(f, g, h).

- Close the **THINssentials™ Management Console**.

Remaining Servers

- Invoke the **ODBC Data Sources Administrator** tool by clicking **Start > Administrative Tools > Data Sources (ODBC).** In the case of Windows NT 4.0 Server, invoke **Control Panel** and launch the **ODBC Data Sources** applet.

- Click on the System DSN tab and create an ODBC data source as illustrated in figures 14(a, b, c, d, e, f, g, h).

- Launch the **THINssentials™ Management Console** and configure it to use the newly created ODBC data source as illustrated in figures 12(f, h).

- Close the **THINssentials™ Management Console**.
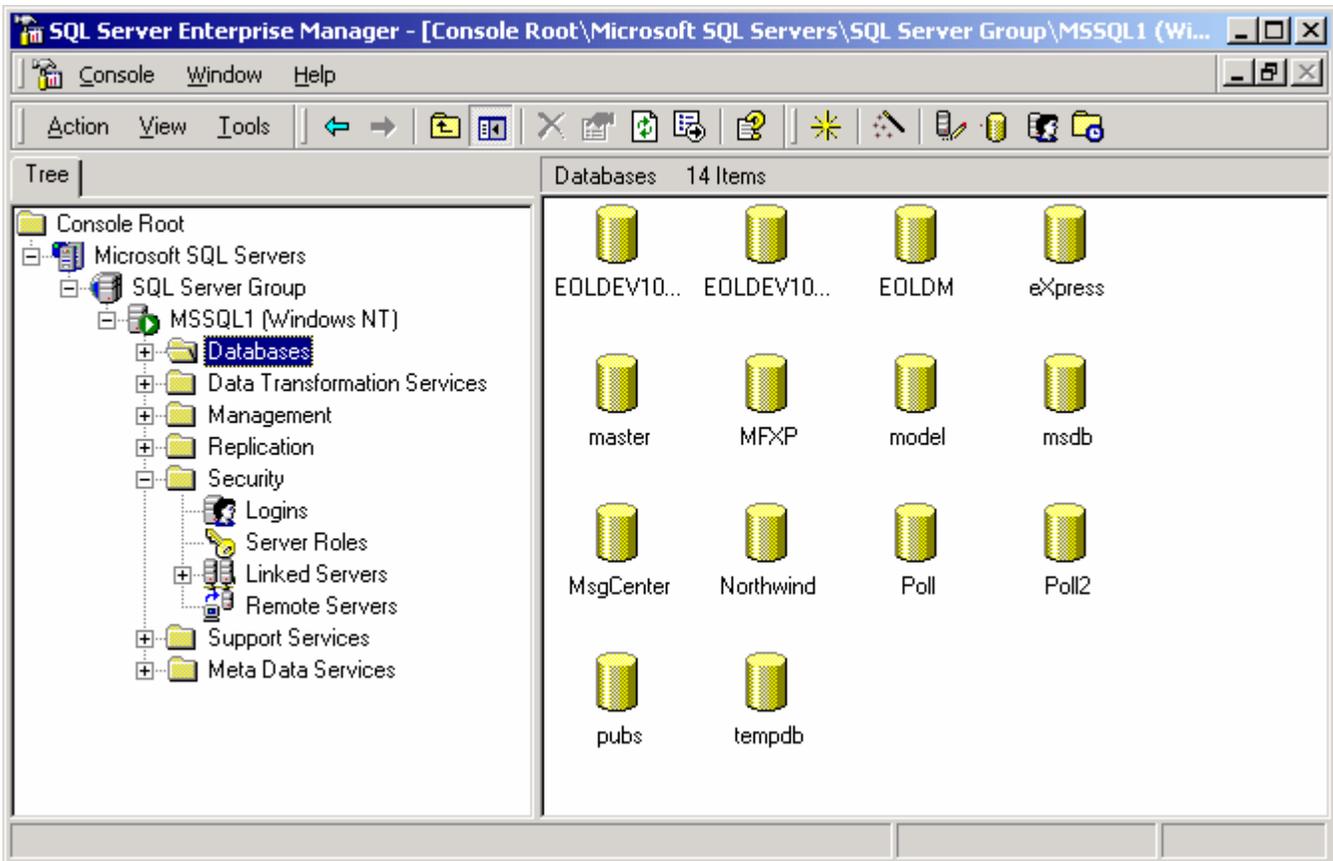
Figure 13-a – Microsoft SQL Server Enterprise Manager. Right-click on the **Databases** node and choose the **"New database…"** option.
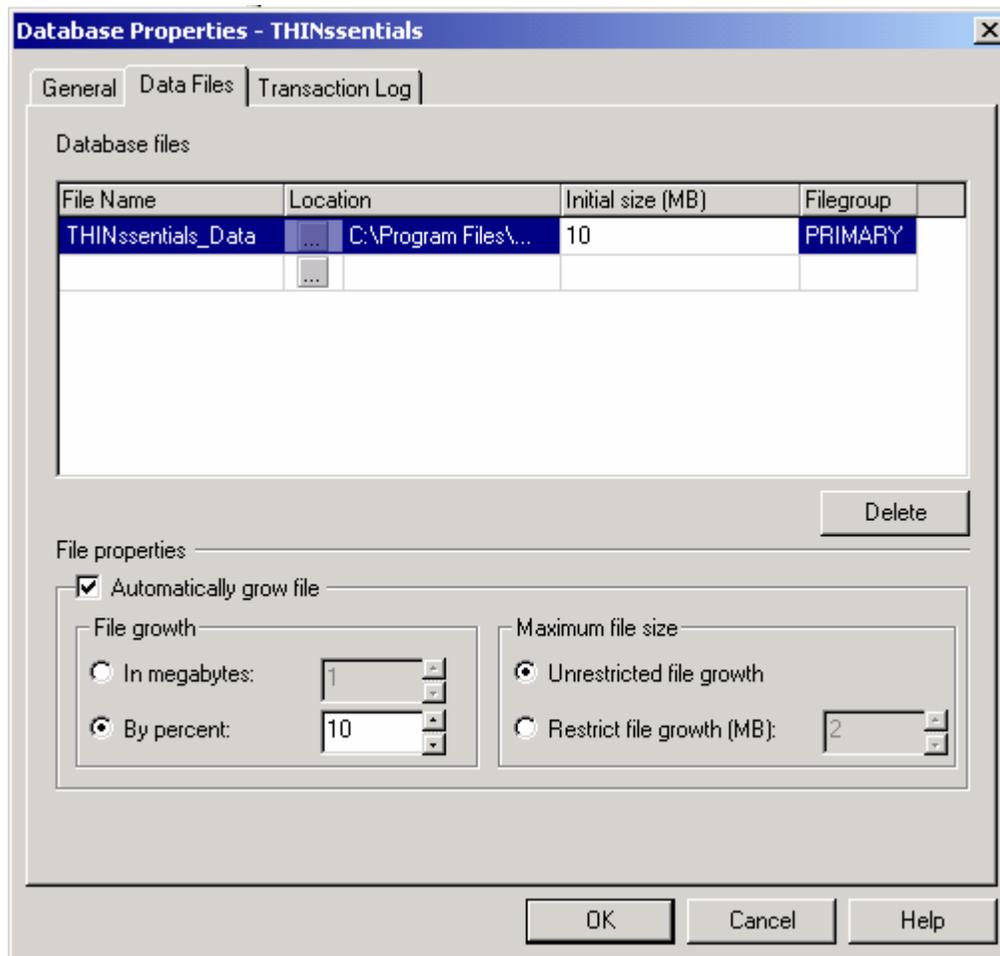
Figure 13-b – Create a database named **THINssentials** with an initial size of 10MB as shown above.
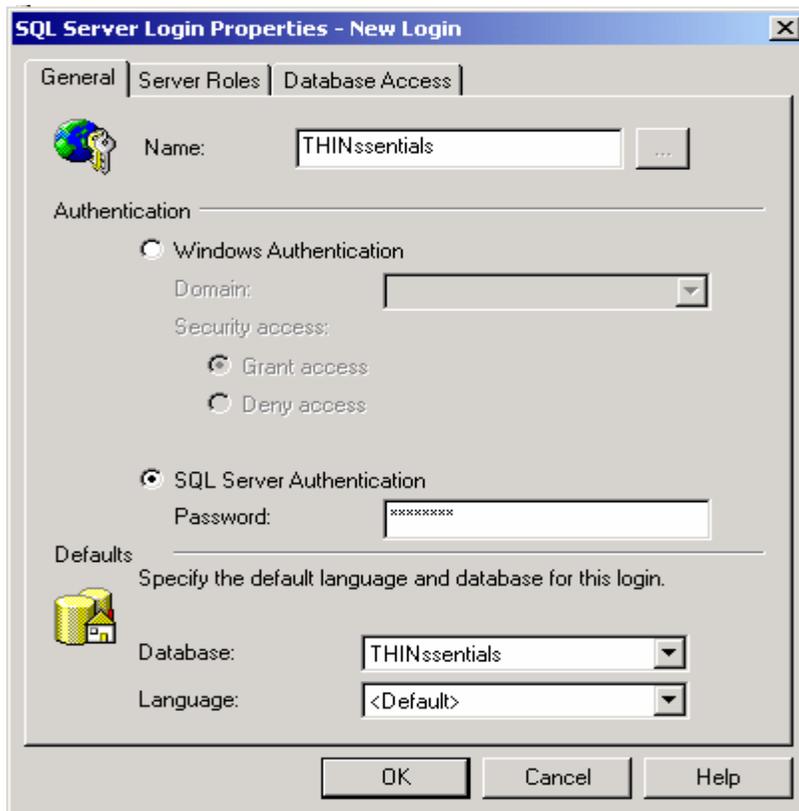
Figure 13-c – Right-click on the **Security > Logins** node in the SQL Enterprise Manager and choose the **"New login"** option. Create a new login named **THINssentials** and set its default database to **THINssentials** (see 13-a, b).
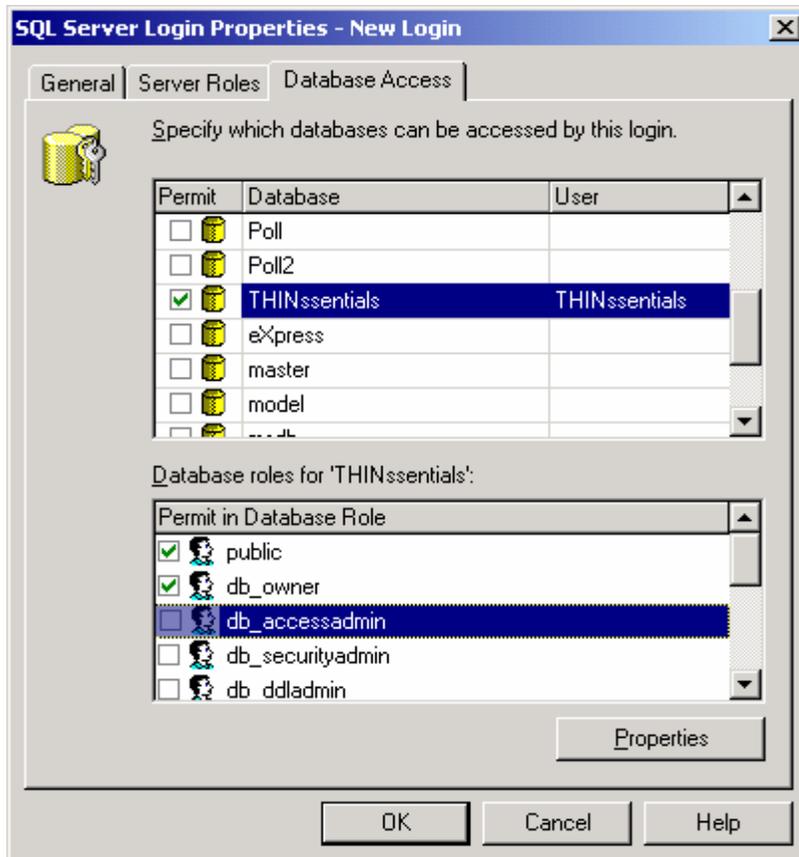
Figure 13-d – Choose the **Database Access** tab and highlight the **THINssentials** database. Check the **public** and **db_owner** checkboxes.
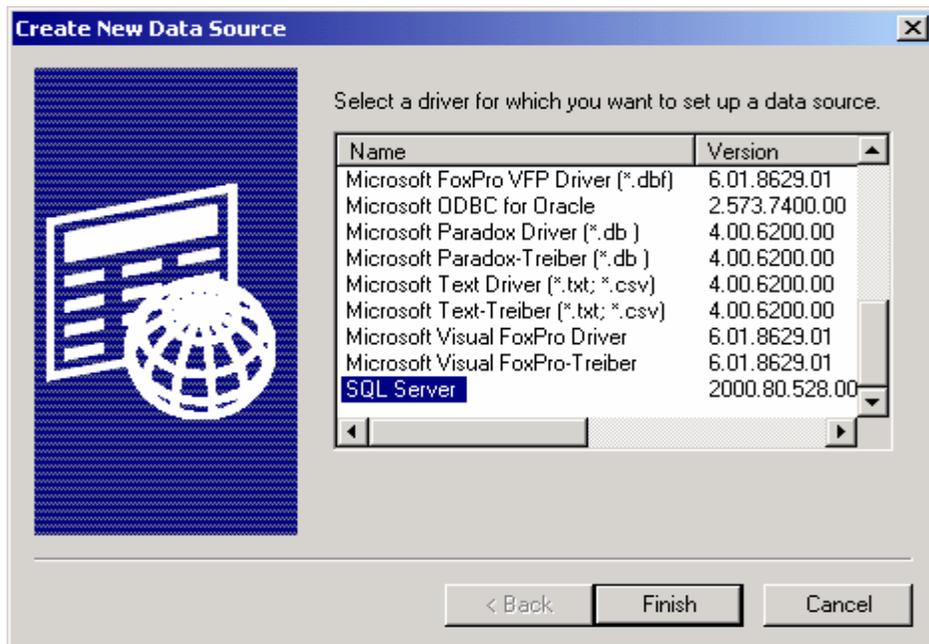
Figure 14-a – Choose the Microsoft SQL Server Driver.
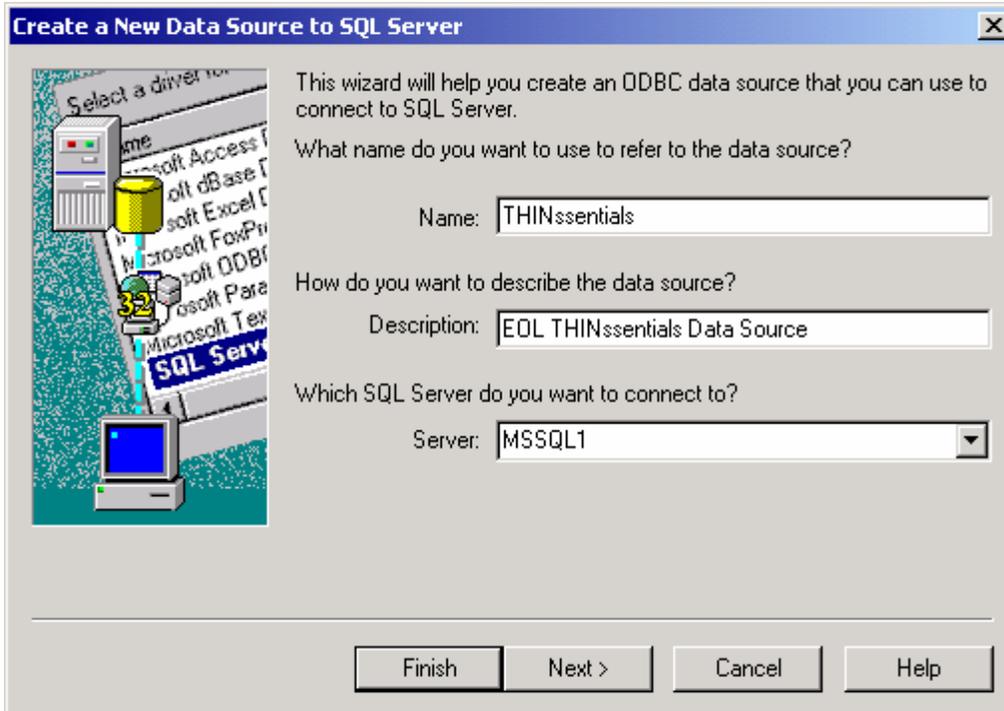
Figure 14-b – Fill in the **Name** and **Description** fields. From the **Server** dropdown box, choose the database server (see figure 13-a) hosting the newly created **THINssentials** database. Click **Next**.
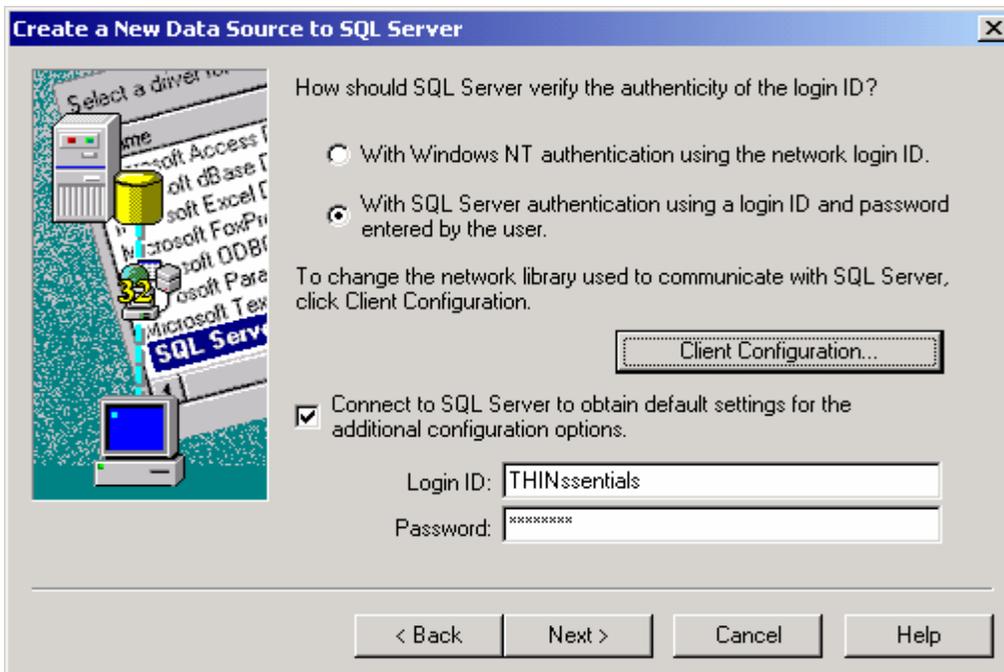
Figure 14-c – Fill in the **Login ID and Password** fields using the credentials of the **THINssentials** login account (see figure 13-c).   Click the **"Client Configuration…"** button and choose the TCP/IP network library option. Click **Next**.
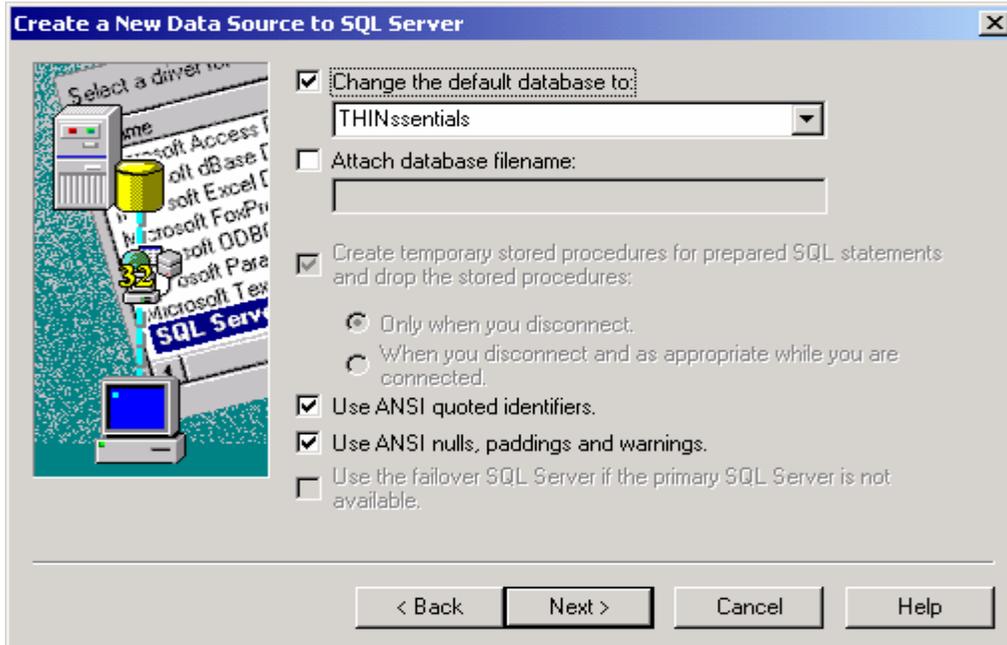
Figure 14-d – Check the **"Change the default database to"** option and choose the **THINssentials** database from the dropdown box. Click **Next**.
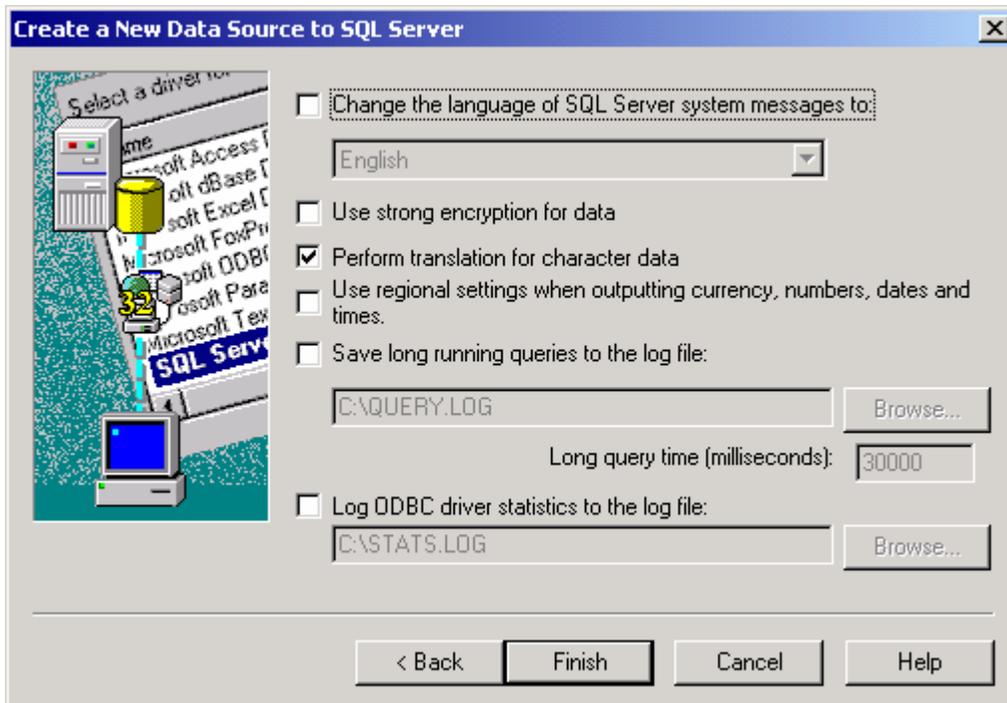
Figure 14-e – Accept the default settings and click **Next**.

```
SQL Server ODBC Data Source Test                        ×

 Test Results

 ┌──────────────────────────────────────────────────┐ ▲
 │ Microsoft SQL Server ODBC Driver Version 03.80.0528│
 │                                                    │
 │ Running connectivity tests...                      │
 │                                                    │
 │ Attempting connection                              │
 │ Connection established                             │
 │ Verifying option settings                          │
 │ Disconnecting from server                          │
 │                                                    │
 │ TESTS COMPLETED SUCCESSFULLY!                      │
 │                                                    │
 │                                                    │
 │                                                    │
 │                                                    │
 │                                                    │
 │                                                  ▼ │
 └──────────────────────────────────────────────────┘

                      [   OK   ]
```
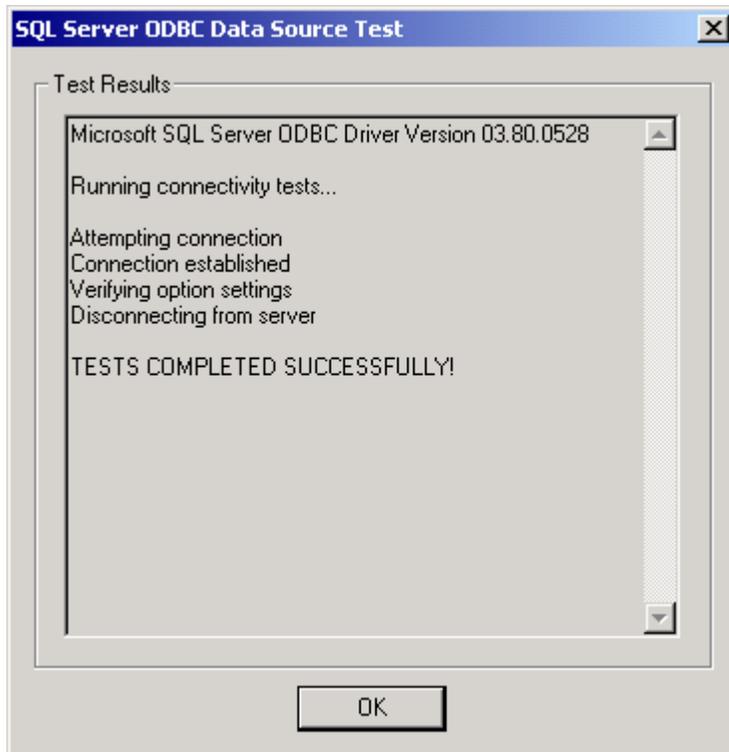
Figure 14-f – Click the **"Test Data Source…"** button to run the connectivity tests. Verify that the tests have completed successfully.

Configuring Network Universal Printers

- Simply launch the **THINssentials™ Management Console** from any EOLUP-enabled print server or Terminal Services server. Because all servers are configured to point to the same central database, it doesn't matter which server you launch the THINssentials Management Console from (see figure 15).

- Click the **Printer Management** Tab.

- Click the **Add Item** toolbar button on the **Printer Management** Tab.

Figure 15 – The THINssentials Management Console.

- In the **New Printer** configuration window (see figure 16), click the **Printer Type** dropdown box and choose the **Network Universal Printer** option.

- Click the **Server Name** dropdown box and choose the desired EOLUP-enabled print server.

- Click the **Printer Name** dropdown box and choose a printer for which a Network Universal Printer counterpart is to be created. The **Universal Printer Name** field will be automatically populated with the recommended name for the Network Universal Printer.

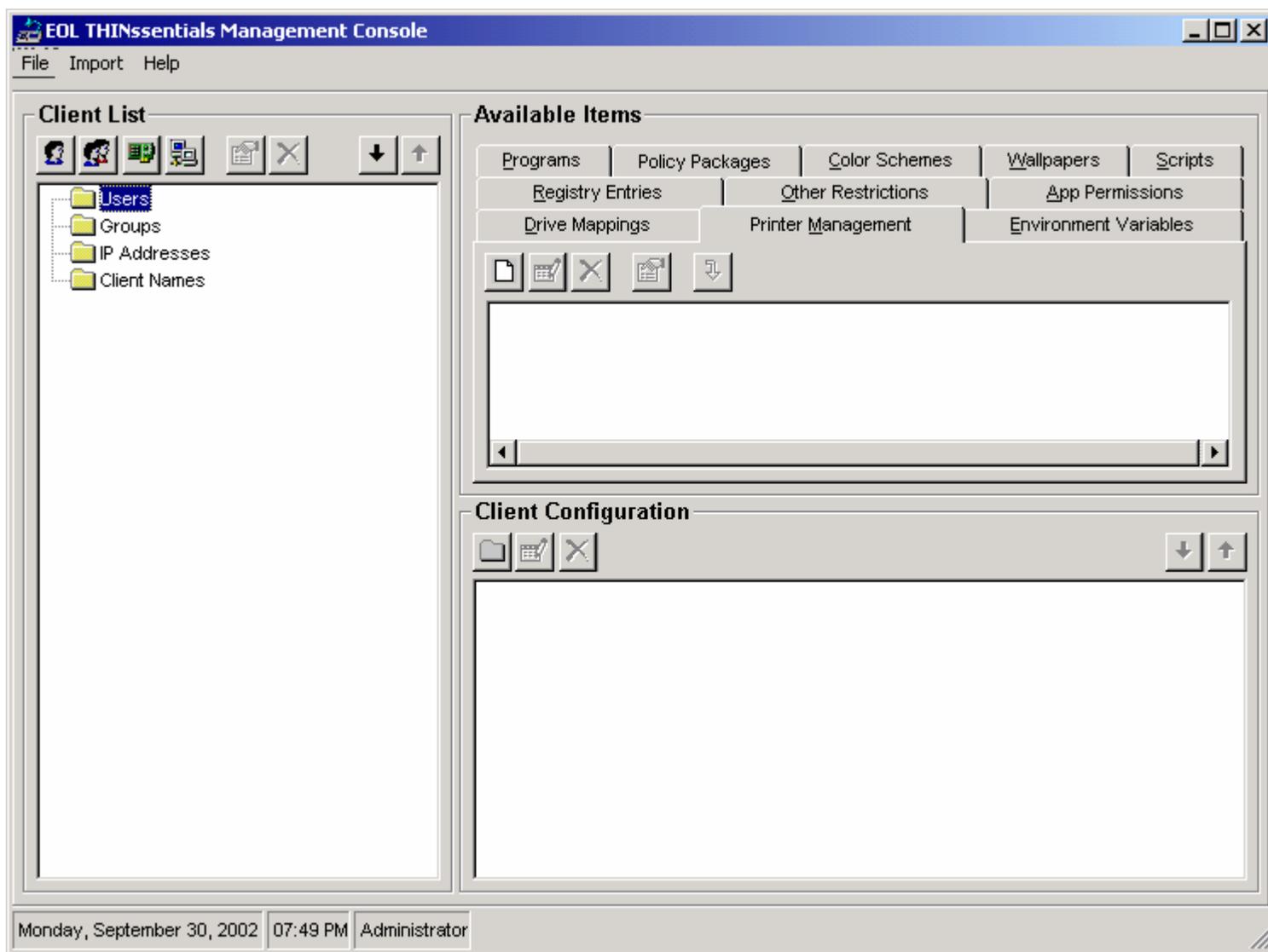- Upon clicking **OK**, the Network Universal Printer will be automatically created and shared on the target print server. Moreover, the Network Universal Printer permissions list will be set identically to the native printer.

- Repeat the above steps for all the desired printers and print servers.
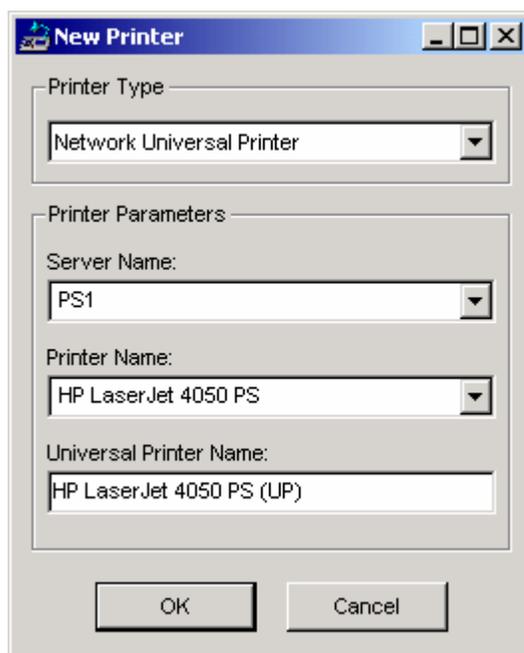
Figure 15 – The **New Printer** configuration window.

Assigning Network Universal Printers

In figure 17, four Network Universal Printers have been created for illustration purposes. Next, these Network Universal Printers will be assigned so that network printer connections will be automatically established when users logon to the Terminal Services servers. With EOLUP, Network Universal Printers may be assigned to individual users, groups, client device names, and client device IP addresses.

- In the left-hand pane, simply click one of the four toolbar buttons (Add User, Add Group, Add IP Address, Add Client) or right-click any node in the tree and click the desired "Add" option (figure 16).

- Choose the desired domain user accounts and groups to whom Network Universal Printer will be assigned (figure 17).

- Choose the desired client IP address or address range (wildcard are permitted. Figure 18).

- Choose the desired client name or name range (wildcard are permitted. Figure 19).
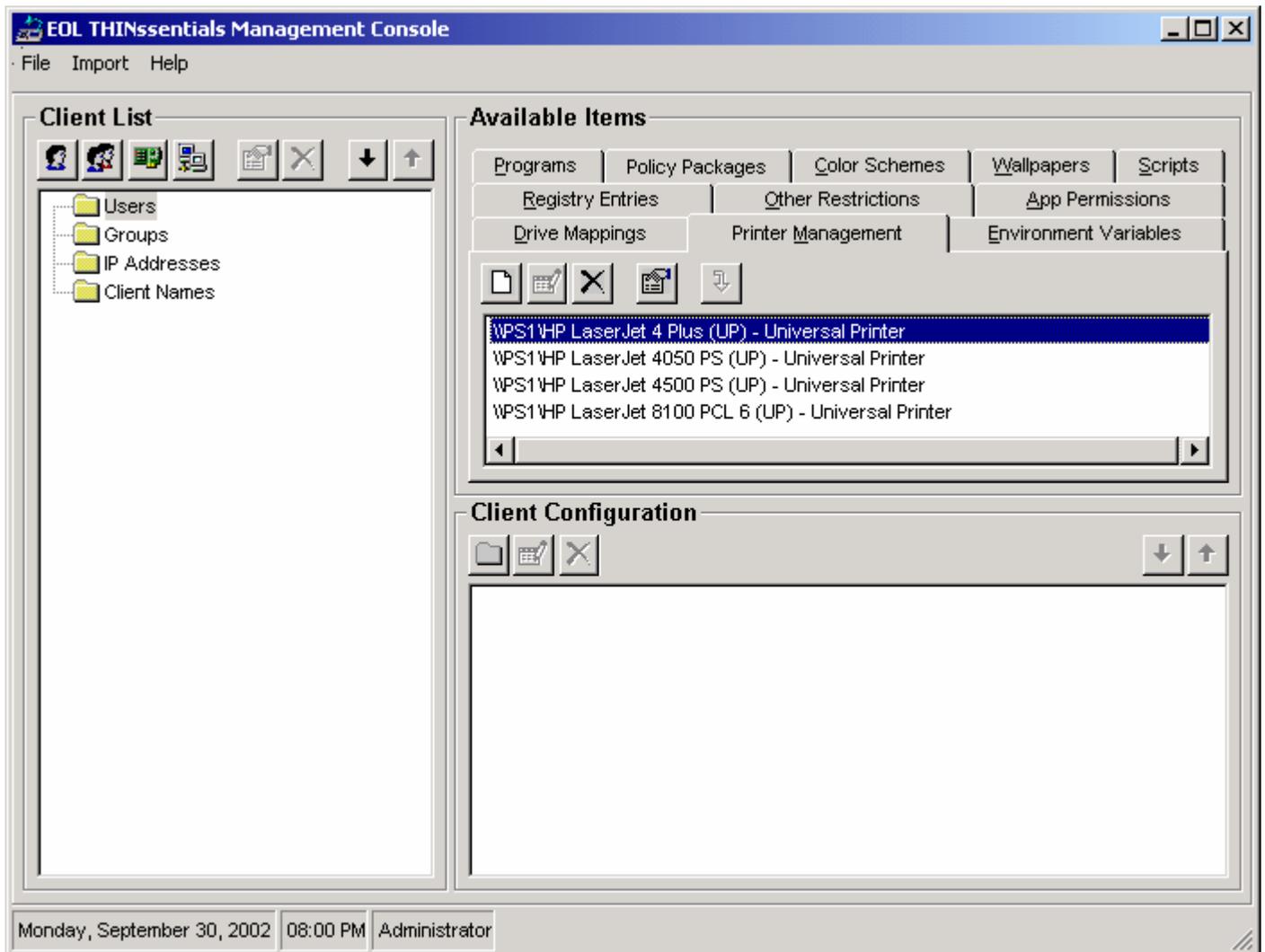
Figure 16 – A configuration depicting four Network Universal Printers. There is no limit to the number of Network Universal Printers that may be created.
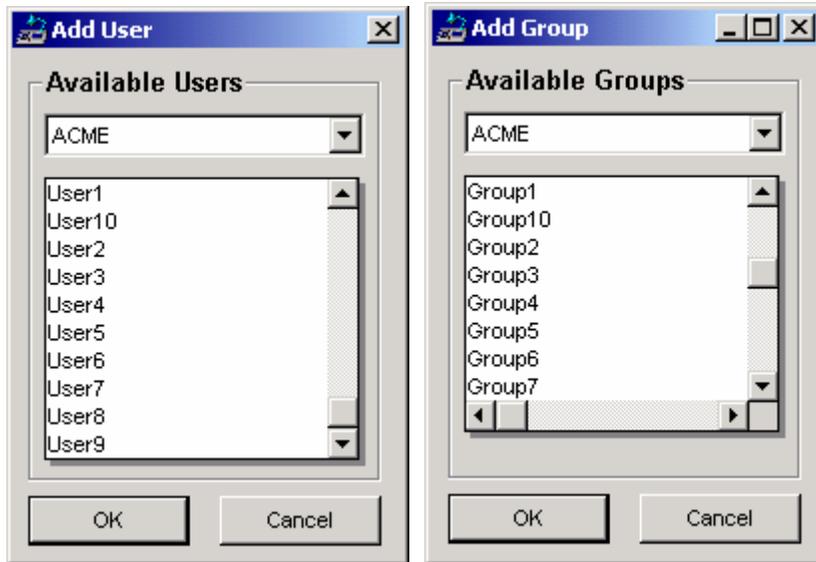
Figure 17 – Add domain users and groups.

Figure 18 – Add a single IP address or address range.

Figure 19 – Add a single client name or client name range. Wildcards are also supported (i.e., Winterm*).
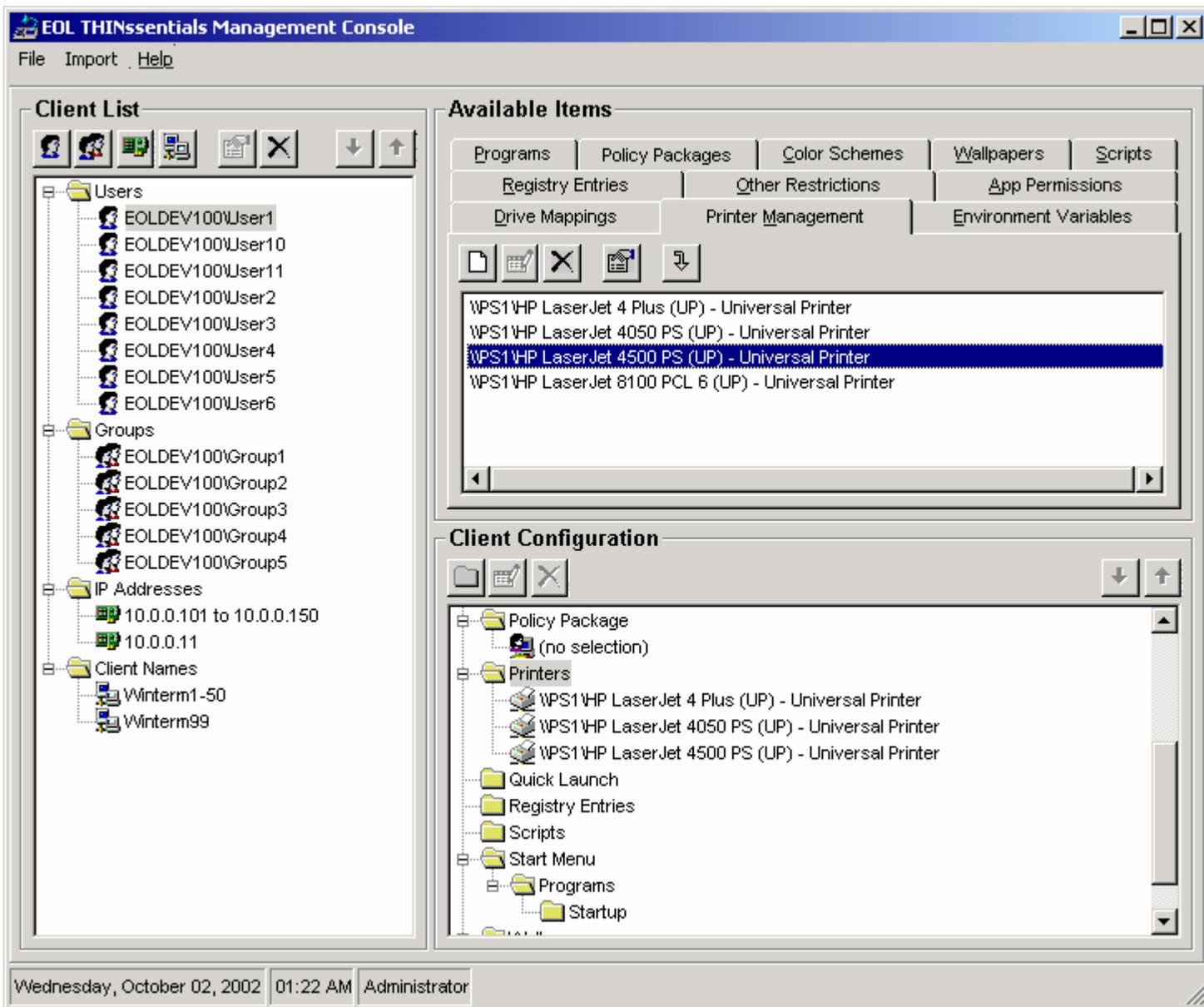
Figure 20 – Highlight a particular user, group, IP address/range, or client name/range. Click the **Printer Management** tab in the right-hand pane and make the desired printer assignments by clicking the **Assign** toolbar button or right-clicking each individual printer and choosing the **Assign** option.

Applying Printer Assignments Cumulatively

By default, when users logon to Terminal Services sessions, EOLUP applies Network Universal Printer assignments on a first-match basis. The tree is systematically parsed in the downward direction looking for the first matching user name, group membership, client device name, or client device IP address. Once the first match is found, the assigned Network Universal Printers are applied the user's profile. Any other potential matches are subsequently ignored.

If so desired, Network Universal Printer assignments can be configured to apply cumulatively. The tree is systematically parsed in the downward direction looking for all user name, group membership, client device name, or client device IP address matches. Once all the matches are identified, the cumulative list of Network Universal Printers is subsequently applied to the user's profile.

To apply network printer assignments cumulatively, click **File > System Settings** in the **THINssentials™ Management Console** and click the **"Apply network printer mappings cumulatively"** in the General tab (figure 21).
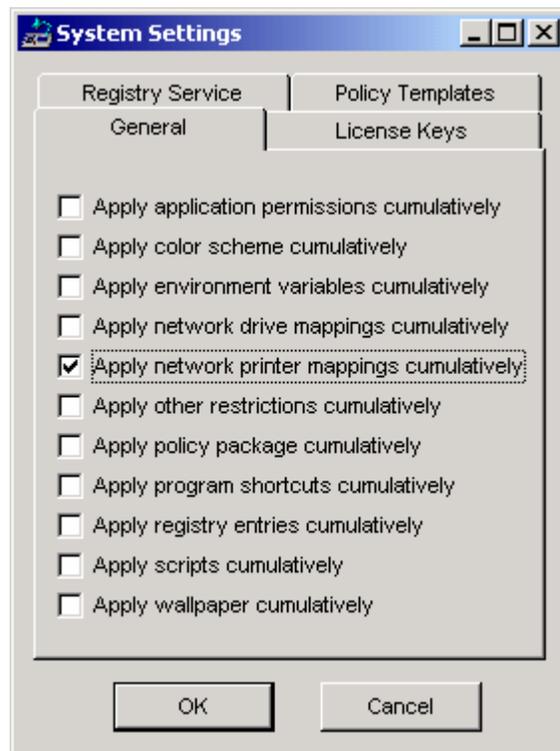
Figure 21 – The System Settings Window

How EOLUP Applies Printer Assignments

When EOLUP is installed onto a Terminal Services server, the setup program adds **EOLDM.EXE** to the **AppSetup** registry value under **HKLM\Software\Microsoft\Windows NT\CurrentVersion\Winlogon**. When users logon to a Terminal Services session, EOLDM.EXE connects to the database and applies all printer assignments associated with the user account name, group memberships, client device name, and client device IP address. Immediately upon applying the printer assignments, EOLDM.EXE terminates. Printer assignments may be applied cumulatively or on a first-match basis as described in the previous section.

Assigning Network Universal Printers through Citrix MetaFrame XP

If so desired, MetaFrame XP's printer management capability may be used to assign Network Universal Printers to users during logon. In this case, EOLDM.EXE may be removed from the **AppSetup** registry string.

To assign Network Universal Printers to MetaFrame XP users, simply import the shared Network Universal Printers through the Citrix Management Console. This can be accomplished by right-clicking the **Printer Management** Node and choosing the **Import Print Server** option (figure 22). The imported Network Universal Printers may then be assigned to domain users and groups.
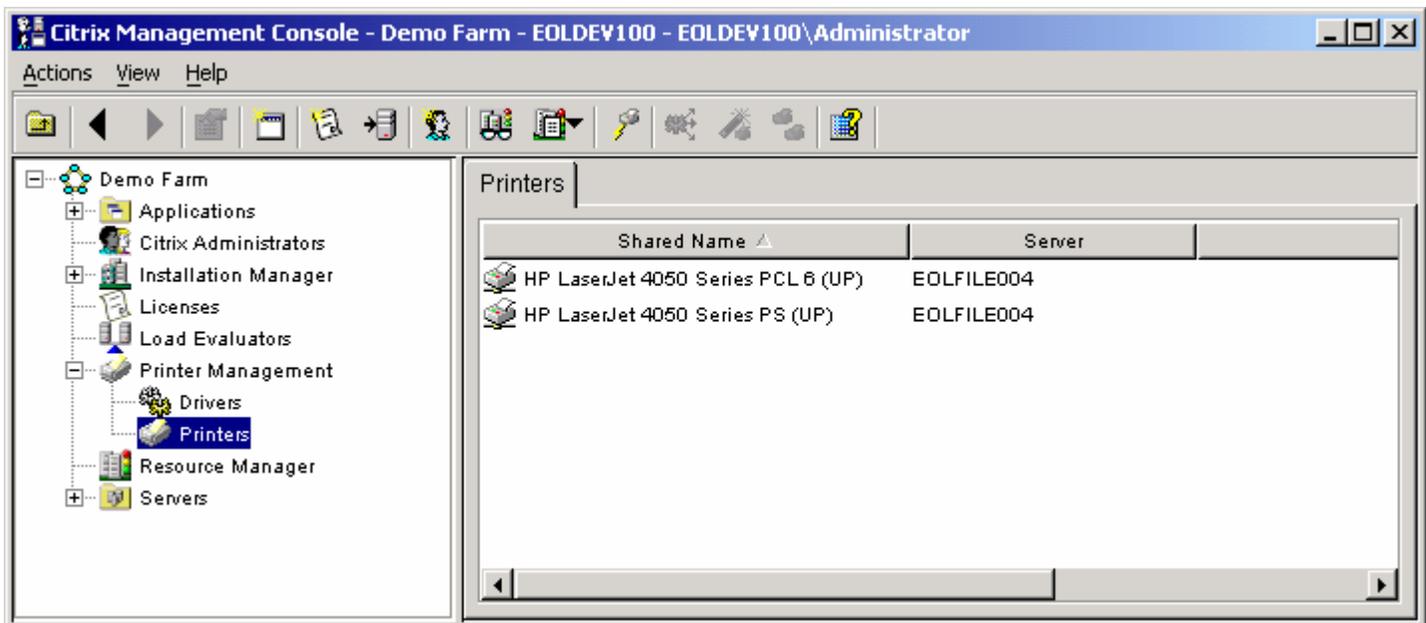
Figure 22 – The Citrix Management Console.

Integration with EOL Desktop Manager™

If EOL Desktop Manager™ 1.x or 2.x is currently in use, you MUST upgrade to version 3.x before installing and using EOL Universal Printer™. Both products utilize the same database, management utility (THINssentials™ Management Console), services, COM objects, and the EOLDM.EXE component.

Troubleshooting Guidelines

The purpose of this section is to provide system administrators and integrators with the necessary guidelines for troubleshooting the operation of the EOLUP. Both server and client components are covered in this document.

Server-Side Troubleshooting

The EOLUP v3.0 Server setup program (eolupsvr.exe) installs the following files and services as follows:

EOLUP.EXE: EOLUP service. This file is copied to the System32 directory. It is dated 8/14/2002 12:16p.

EOLUPMON.DLL: EOLUP port monitor. This file is copied to the System32 directory. It is dated 8/14/2002 12:16p.

EOLUPPDF.DLL: EOLUP print driver (PDF conversion engine). This file is copied to %SystemRoot%\System32\Spool\Drivers\W32x86. It is dated 8/14/2002 12:16p.

EOLUPUI.DLL: EOLUP print driver user interface. This file is copied to %SystemRoot%\System32\Spool\Drivers\W32x86. It is dated 8/14/2002 12:16p.

EOLUPPDF.TXT: EOLUP driver data file. This file is copied to %SystemRoot%\System32\Spool\Drivers\W32x86. It is dated 11/11/2001 9:24p (unimportant).

EOLUPS2D.EXE: EOLUP save-to-disk sub-system. This file is copied to %SystemRoot%\System32 and dated 8/14/2002 12:16p.

EOLUPMAPI.EXE: EOLUP Mail API sub-system. This file is copied to %SystemRoot%\ System32 and dated 6/18/2001 1:11p.

EOLLM.DLL: License Manager. This component is shared by various EOL THINssentials products. It is copied to %SystemRoot%\ System32 and dated 6/18/2001 1:11p.

REG.OCX: EOL Registry interface. This component is shared by various EOL THINssentials products. It is copied to %SystemRoot%\ System32 and dated 6/28/2001 7:48p.

FLP32X20.OCX: Fairpoint Listbox control. This component is shared by various EOL THINssentials products. It is copied to %SystemRoot%\ System32 and dated 6/28/2000 3:21p

EOLSVCMGR.EXE: EOL THINssentials Service Manager. This shared component is for managing product license keys and starting/stopping various services. The latest version is downloadable from ftp.go-eol.com/public/ thinssentials/shared. The current version is 2.05.

EOLDEFPRN.EXE: General-purpose EOL utility for setting the user's default printer. This tool is independent of EOLUP and can be freely distributed.

Example: to set the users' default printer to the Universal Printer, add the following line to the logon script: EOLDEFPRN "Universal Printer".

EOLDPUSR.CMD: Sample script calling EOLDEFPRN.EXE to establish the Universal Printer as the default printer for a group called "UP Users". It is recommended that you copy this file to %SystemRoot%\Application Compatibility Scripts\Logon and add the statement, Call EOLDPUSR.CMD, to the end of USRLOGN1.CMD.

Upon copying the above files to their appropriate locations, the setup program executes the command "EOLUP –i". This command performs the following tasks:

- Starts the Print Spooler service if stopped.

- Installs the EOLUP Driver by calling the AddPrinterDriver Windows API function. This automatically copies EOLUPPDF.DLL, EOLUPUI.DLL, and EOLUPPDF.TXT from %SystemRoot%\System32\ Spool\Drivers\W32x86 to %SystemRoot%\System32\Spool\Drivers\ W32x86\2. Please note that unless the files already exist in %SystemRoot%\System32\ Spool\Drivers\W32x86, the AddPrinterDriver call will fail.

- Creates the "Universal Printer" in the Printers folder of the server, provided that the print driver was installed successfully.

- Installs and starts the "EOL Universal Printer Service".

Troubleshooting Tips

If the server administrator mistakenly deletes the "Universal Printer" from the Printers folder, he/she can perform the following tasks to resolve the problem:

- Execute: EOLUP –u (ensure that the Services applet is closed during this operation).

- Verify that EOLUPPDF.DLL, EOLUPUI.DLL, and EOLUPPDF.TXT still exist in %SystemRoot%\System32\Spool\Drivers\W32x86. Otherwise, copy them from %SystemRoot%\System32\Spool\Drivers\W32x86\2.

- Execute: EOLUP -i

- Verify that all versions of the files are consistent with the aforementioned versions (see "Server Components" section).

- Verify that the license key is still valid and permanent.

- Verify that the "EOL Universal Printer Service" has started.

Client Components

The EOLUP client copies the following files to a Windows 9x/Me, NT 4.0, Win2K, or WinXP client PC:

EOLUPCLNT.EXE: EOLUP client executable. This file is copied to the Windows\System (or WINNT\System32) directory. The file version is 3.0.

VDRDPUP.DLL: EOLUP Virtual Channel Driver for Microsoft RDP 5.x client support. This file is copied to the Windows\System or (WINNT\System32) directory.

VDICAUP4.DLL: EOLUP Virtual Channel Driver for Citrix ICA Win32 client version 4.x support. This file is copied to the Citrix ICA client directory.

VDICAUP6.DLL: EOLUP Virtual Channel Driver for Citrix ICA Win32 client version 6.x support. This file is copied to the Citrix ICA client directory. Note: this virtual channel driver supports Citrix ICA client versions 6.0 and above.

Below are additional notes concerning the client setup:

- The location of the Citrix ICA client directory (installation path) is determined by examining the path specified in the "Default" registry value of the following sub-key:

  HKEY_CLASSES_ROOT\WinFrameICA\Shell\Open\Command

- The version of the Citrix ICA client is determined by examining the VERSION.DAT file in the client directory. Depending on the version of the client (4.x or 6.x), either VDICAUP4.DLL or VDICAUP6.DLL is copied to the ICA client directory. The MODULE.INI file is consequently modified for purpose of loading the virtual channel driver when launching ICA connections.

- Future upgrades of the Citrix ICA client will overwrite the existing EOLUP-modified MODULE.INI. However, shortly following a new release of the ICA Win32 client family, Emergent OnLine always posts updated bundles of the ICA Win32 and EOLUP clients. As such, administrators are recommended to download the latest EOLUP-enabled ICA Win32 clients from Emergent OnLine's Web site (http://www.99point9.com).

- For reference purposes, a sample module.ini is shown below. The EOLUP-specific modifications are outlined in **oversized bold** typeface. Those are the modifications that the EOLUP client setup program makes to the various sections of Module.ini.

```
[ICA 3.0]
DriverName = WDICA30.DDL
DriverNameWin16 = WDICA30W.DLL
DriverNameWin32 = WDICA30N.DLL
ProtocolSupport = Modem, RFrame, Frame, Reliable, Encrypt, Compress
VirtualDriver =Thinwire3.0, ClientDrive, ClientPrinterQueue,
ClientPrinterPort,
Clipboard, ClientComm, ClientAudio, ClientManagement, LicenseHandler,
ProgramNeighborhood,VFrame,TWI,ZL_FONT,ZLC, ICACTL,VDICAUP
BufferLength = 2048
XmsReserve = 0
LowMemReserve = 51200
ConnectTTY = On
ConnectTTYDelay = 1000
Reducer = ICAREDU.DDL
ReducerWin16 = ICAREDUW.DLL
ReducerWin32 = ICAREDUN.DLL
VDICAUP =vdicaup6.dll

[VirtualDriver]
Thinwire3.0 =
ClientDrive =
ClientPrinterQueue =
ClientPrinterPort =
Clipboard =
ClientComm =
ClientAudio =
TWI =
```

ClientManagement =
LicenseHandler =
ProgramNeighborhood =
VFrame =
ZL_FONT =
ZLC =
ICACTL =
VDICAUP =

In addition, the following section is added to the end of MODULE.INI:

[VDICAUP]
DriverNameWin32= vdicaup6.dll

- Support for the RDP 5.0 (and above) protocol is provided through the VDRDPUP.DLL virtual channel driver which is copied to Windows\System (Win9x) or WINNT\System32 (NT 4.0/2000). The virtual channel driver is automatically loaded upon launching an RDP 5.0 connection. The UP client setup program registers this driver in the registry under the sub-key, HKCU\Software\Microsoft\Terminal Server Client\Default\AddIns, and makes the following registry modifications:

  New sub-key: VDRDPUP
  New value name: Name (REG_SZ)
  New value: VDRDPUP.DLL

Troubleshooting Tips

- Verify that EOLUPCLNT.EXE is in the Windows\System (or WINNT\System32 for Windows NT 4.0, 2000, and XP clients).

- Verify that the virtual channel driver (VDICAUP4.DLL or VDICAUP6.DLL) is present in the Citrix ICA client directory and is consistent with the version of the installed ICA client.

- Verify that MODULE.INI contains the necessary EOLUP entries (see previous section)

- Verify the "true" location of the Citrix ICA client as "seen" by the EOLUP client. This can be done by comparing the client directory path to the path specified in:

  HKEY_CLASSES_ROOT\WinFrameICA\Shell\Open\Command

  Note: An interesting scenario often occurs when more than one version of the Citrix ICA client software (i.e., full PN, Web client, PN Agent) exist on the client PC. For example, if both the full PN client and Web client were installed (in this order), installing the EOLUP client will only modify the Web client installation. As such, launching ICA connections using the full PN client will not initialize the EOLUP client. This is the case because the ICA file type is associated with the most recently installed ICA client, which, in this case, is the Web client. Should more than one version of the ICA

client be required, Emergent OnLine recommends that the EOLUP-enabled versions of the desired ICA clients be downloaded and installed from http://www.99point9.com.

- For RDP support, verify that the EOLUP is installed to a Windows 2000 server, not WTS 4.0 (unsupported). Also, verify that the installed RDP client is version 5.0 (or above), and that the Universal Printer virtual channel registry entries exist (see above). Although RDP support is only available for Windows 2000 servers, client platforms supported include Win9x/Me, NT 4.0, Win2K, and WinXP.

Using EOL Universal Printer™ with the TSAC

Organizations that rely on the Terminal Services Advanced Client (TSAC) to Web-enable the delivery of server-based applications can easily UP-enable their Terminal Services implementations. To accomplish this, edit the connection page of your Terminal Services Web application on your Web server and use the PluginDlls property of the "Advanced" settings interface to specify the vdrdpup.dll virtual channel driver. For illustration purposes, a sample Connect.asp file is shown below. The UP-enabling statement is outlined in **oversized bold**:

```
<html>
<head>
<title> Terminal Services Connection to <%Response.Write Request.QueryString("Server")%></title>
</head>

<body>

<script language="vbscript" >
<!--
const FullScreenWarnTxt1 = "Your current security settings do not allow automatically switching to fullscreen mode."
const FullScreenWarnTxt2 = "You can use ctrl-alt-pause to toggle your terminal services session to fullscreen mode"
const FullScreenTitleTxt = "Terminal Services Connection "
Const ErrMsgText        = "Error connecting to terminal server: "

sub window_onLoad()
    If not "<%Response.Write Request.QueryString("Server")%>" = "" then
       srvName = "<%Response.Write Request.QueryString("Server")%>"
    else
       srvName = Document.location.hostname
    end if
    MsTsc.Server         =  srvName
    Document.all.srvNameField.innerHtml = srvName
    MsTsc.Domain     =    "<%Response.Write Request.QueryString("Domain")%>"
    MsTsc.UserName     =    "<%Response.Write Request.QueryString("UserName")%>"
    MsTsc.AdvancedSettings.PluginDlls = "vdrdpup.dll"
    if  "<% Response.Write Request.QueryString("FS") %>" = "1" then
      if MsTsc.SecuredSettingsEnabled then
        MsTsc.SecuredSettings.FullScreen = "<% Response.Write Request.QueryString("FS") %>" = "1"
      else
        msgbox (FullScreenWarnTxt1  & vbCrLf & FullScreenWarnTxt2 )
      end if
    end if

    MsTsc.FullScreenTitle = FullScreenTitleTxt & "(" & "<%Response.Write Request.QueryString("Server")%>" & ")"
    MsTsc.Connect()
end sub
-->
</script>
<center>
    <table>
    <tr>
    <OBJECT language="vbscript" ID="MsTsc"
    CLASSID="CLSID:1fb464c8-09bb-4017-a2f5-eb742f04392f"
```

```
        CODEBASE="mstscax.cab#version=5,0,2221,1"
        WIDTH=<% resWidth = Request.QueryString("rW")
          if  resWidth < 200 or resWidth > 1600 then
            resWidth = 800
          end if
          Response.Write resWidth %>
        HEIGHT=<% resHeight = Request.QueryString("rH")
          if  resHeight < 200 or resHeight > 1200 then
            resHeight = 600
          end if
          Response.Write resHeight %>>
        </OBJECT>
        </tr>
        <tr>
        <br>
        <font size="1" color="#000000" face="Verdana, Arial, Helvetica">
        You are logged in to <i><span id="srvNameField"></span></i></font><br>
        </tr>

<script language="VBScript">
<!--
sub MsTsc_OnDisconnected(disconnectCode)
  if not disconnectCode = 2 then
    msgbox ErrMsgText & MsTsc.Server
  end if
    'redirect back to login page
    Window.Navigate("default.htm")
end sub
-->
</script>
</table>
</center>
</body>
</html>
```

Available EOL Universal Printer™ Client Bundles

EOLUPCLI.EXE: EOLUP client (ver. 3.0) w/built-in PDF viewer (no Adobe Acrobat Reader required).

EOLUPCLI_SILENT.EXE: Same as EOLUPCLI.EXE, but installs silently.

EOLUPCLI_ICA32.EXE: ICA Full PN client (ver. 6.30.1050) + EOLUP client (ver. 3.0). This will install the ICA client and the EOLUP client, respectively.

EOLUPCLI_ICA32A.EXE: ICA PN Agent (ver. 6.30.1050) + EOLUP client (ver. 3.0). This will install the ICA client and the EOLUP client, respectively.

EOLUPCLI_ICA32T.EXE: ICA Web client (ver. 6.30.1050) + EOLUP client (ver. 3.0). This will install the ICA client and the EOLUP client, respectively.

EOLUPCLI.CAB: Cab-based EOLUP client (ver. 3.0).

Web-Based EOL Universal Printer™ Client Installation

The UP client delivery can be Web-enabled in two ways:

ICA/EOLUP Client Bundles

This method allows organizations with NFuse-enabled MetaFrame systems to deliver both the ICA and UP clients as a single download for first-time users, as well as users with outdated ICA clients. Implement this method by replacing **ica32.exe**, **ica32t.exe**, and **ica32a.exe** in the NFuse server's Inetpub\wwwroot\ Citrix\ICAWEB\EN\ica32 with the UP-bundled equivalent files downloadable from http://www.99point9.com. Specifically, download and rename the following files as follows:

EOLUPCLI_ICA32.EXE: rename to **ICA32.EXE**
EOLUPCLI_ICA32A.EXE: rename to **ICA32A.EXE**
EOLUPCLI_ICA32T.EXE: rename to **ICA32T.EXE**

Finally, copy the renamed files to Inetpub\wwwroot\Citrix\ICAWEB\EN\ica32 overwriting the original files.

CAB-Based Delivery

This method enables the auto-downloading of the UP client to first-time users. Implement this method by downloading the CAB version of the UP client, **eolupcli.cab**, from http://www.99point9.com, and copy it to the Web server. Finally, add the following object tag to the Web page. Below is a sample HTML file. The UP-enabling lines are outlined in **oversized bold**:

```
<HTML>
<HEAD></HEAD>
<OBJECT CLASSID="clsid:240EEE8D-91DB-4D74-A87E-671026601333"
CODEBASE="eolupcli.cab#version=3,0,0,0">
</OBJECT>
<BODY>
<H1>This page auto-downloads the UP client</H1>
</BODY>
</HTML>
```

Below is a UP-enabled version of Default.htm that the TSAC installation copies to the Web server:

```
<html>
<head>
<title>Connect to Terminal Server</title>
<style type="text/css" media="screen">
p { color:"#000000"; font-family: "Verdana, Arial, Helvetica"; font-size:"65%"}
h1 { font-size: 100%; font-family: verdana, arial, helvetica; font-weight: bold;
                margin-top: 0em;}
```

```
p.indent { margin-left: 3em; margin-top: .5em; line-height: 1.25em; margin-bottom: .2em; margin-right: 1em;}
.button {
        FONT-FAMILY: Verdana, Helvetica, Arial, San-Serif;
        font-weight:normal;
        font-size:70%;
        color:#000000;
        background-color:#ffffff;
        border-color:#6699ff;
        margin-top:6pt;
        margin-left: .5em;

}
.topspace {margin-top: .08em; }
</style>
</head>

<OBJECT CLASSID="clsid:240EEE8D-91DB-4D74-A87E-671026601333"
CODEBASE="eolupcli.cab#version=3,0,0,0">
</OBJECT>

<body bgcolor="#ffffff">
<script language="vbscript">
sub checkClick
    if Document.all.Check1.Checked then
      Document.all.tableLogonInfo.style.display = ""
      Document.all.editUserName.Disabled = false
      Document.all.editDomain.Disabled = false
    else
      Document.all.tableLogonInfo.style.display = "none"
      Document.all.editUserName.Disabled = true
      Document.all.editDomain.Disabled = true
    end if
end sub

sub btnLogin
  'Create connection URL and redirect to login page
  conUrl = "connect.asp"

  'server
  if not Document.all.Server.value = "" then
    conUrl = conUrl + "?Server=" & Document.all.Server.value & "&"
  else
    conUrl = conUrl + "?Server=" & Document.location.hostname & "&"
  end if

  bAutoLogon = FALSE
  if Document.all.CheckBoxAutoLogon.checked then
    bAutoLogon = TRUE
  end if

  if bAutoLogon then
      conUrl = conUrl + "UserName=" & Document.all.UserName.Value & "&"
      conUrl = conUrl + "Domain=" & Document.all.Domain.Value & "&"
  end if
```

```
   'resolution width-height
   select case document.all.comboResolution.value
   case "1"
      conUrl = conUrl + "FS=" & 1 & "&"
      resWidth  = screen.width
      resHeight = screen.height
   case "2"
      resWidth  = "640"
      resHeight = "480"
   case "3"
      resWidth  = "800"
      resHeight = "600"
   case "4"
      resWidth  = "1024"
      resHeight = "768"
   case "5"
      resWidth  = "1280"
      resHeight = "1024"
   case "6"
      resWidth  = "1600"
      resHeight = "1200"
   end select

   conUrl = conUrl + "rW=" & resWidth & "&"
   conUrl = conUrl + "rH=" & resHeight & "&"
   'go to the login page
   Window.Navigate(conUrl)
end sub

</script>

<!--
-->



<a href="http://www.microsoft.com/windows2000"><img border="0" src="win2000l.gif" align="left" alt="Windows2000 logo"
width="198" height="124"></a><a href="http://www.microsoft.com/windows2000"><img border="0" src="win2000r.gif"
align="top" width="253" height="76" alt="Windows2000 logo"></a><br>
<h1>Terminal Services Web Connection</h1>
<br>

<table border="0" width="640" cellspacing="0" cellpadding=0 style="margin-top: -1em;">
<!-- Graphic bar row  -->
<tr>
<td width="50%"></td>
<td colspan=3 align="left" valign="middle"><img src="bluebarh.gif" alt="blue bar graphic" width="325" height="8"></td>
</tr>
<!-- Row 1 -->
   <tr>
<!-- Column 1 spans 4 rows -->
   <td valign="top" width="50% "rowspan=4>
      <p class=indent>Type the name of the Terminal server you want to use, select the screen size for your connection, and
then click <b>Connect</b>.</p>
      <p class=indent>When the connection page opens, you can add it to your Favorites for easy connection to the same
Terminal server.</p>
   </td>
```

```html
<!-- Column 2 spans 4 rows-->
        <td rowspan=4 valign="top" align="left"><img src="bluebarv.gif" alt="blue bar graphic" border=0 width="8" height="330">
        </td>

<!-- Column 3 -->
   <td width="10%" valign="middle">
       <label accessKey="S" for="editServer">
       <br><p align="right"> <u>S</u>erver:</label></p>


        </td>

<!-- Column 4 -->
        <td width="40%" valign="bottom">
        <br>  <input type="text" name="Server" size="41" id="editServer">

        </td>
        </tr>
<!-- Row 2 -->
<tr>
<!-- Column 3 -->
<td valign="middle">
<p align="right"><label accessKey="Z" for="comboRes" class="sizespace">Si<u>z</u>e:</label></p></td>
<!-- Column 4 -->
<td valign="bottom">  <select size="1" name="comboResolution" id=comboRes class="topspace">
        <option selected value="1">Full-screen</option>
        <option value="2">640 by 480</option>
        <option value="3">800 by 600</option>
        <option value="4">1024 by 768</option>
        <option value="5">1280 by 1024</option>
        <option value="6">1600 by 1200</option>
       </select> </label>
</td>
</tr>
<!-- Row 3 -->
<tr>
<!-- Column 3 -->
<td></td>
<!-- Column 4 -->
<td align="bottom">
        <p class=topspace> <input type="checkbox" name="CheckBoxAutoLogon" ID=Check1 value="OFF" onclick =
"checkClick"><label for="Check1" accesskey="l">Send <u>l</u>ogon information for this connection </label><br>

<span ID="tableLogonInfo" style="display: none">

      <p align="right" class=topspace>
                      <br>
                      <u>U</u>ser name:
        <label accessKey="U" for="editUserName"><input type="text" name="UserName" id=editUserName
size="25"></label><br>
                      <u>D</u>omain:
      <label accessKey="D" for="editDomain">
      <input type="text" name="Domain" id=editDomain size="25"></label></p></span>
             <input type="submit" value="Connect" name="ButtonLogin" OnClick=BtnLogin class="button">
</td>
</tr>
```

```html
<!-- Row 4 -->
<tr>
<!-- Column 3 -->
<td  height="215"> </td>
<!-- Column 4 -->
<td> </td>
</tr>


</table>


</body>
</html>
```

Licensing EOL Universal Printer™

Upon installing EOLUP 3.0 onto a Terminal Services server, a 30-day trial license is automatically granted. Beyond the trial period, users who attempt to print using EOLUP will be notified of the license expiration. As such, the EOLUP will cease to function until a permanent license has been acquired. You may purchase a permanent license by contacting Emergent OnLine as follows:

Phone: 703.709.9210
Fax: 703.709.9219
Email: sales@go-eol.com
Web: www.go-eol.com

EOLUP 3.0 is licensed on a per Terminal Services server basis. Simply invoke the THINssentials Service Manager from Start > Programs > EOL THINssentials as shown in figure 23. You must submit the MAC address of your server as reported by the THINssentials Service Manager to obtain a permanent license.
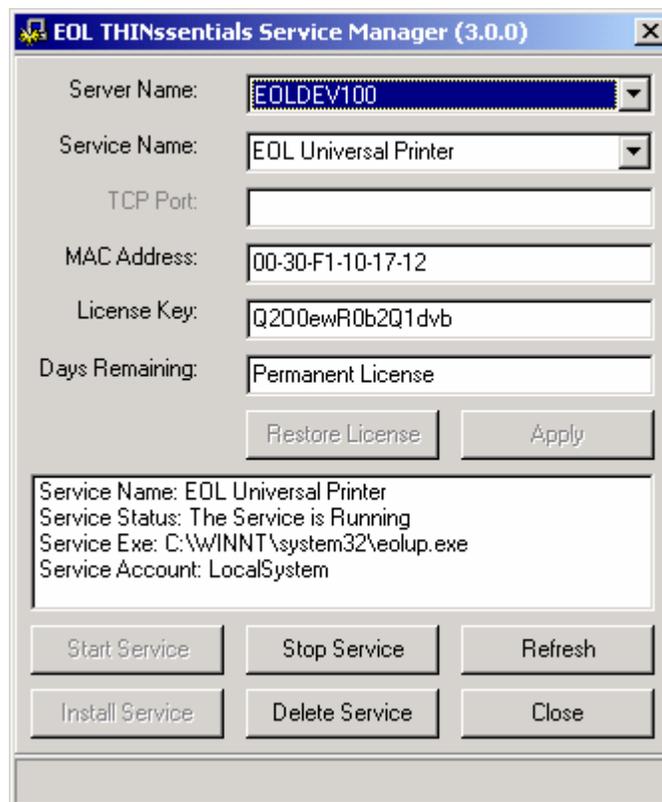
Figure 23 - EOL THINssentials™ Service Manager

When installed onto the designated print servers, EOLUP 3.0 does not require any licensing. It may be installed onto as many print servers as desired.

Upgrading from Previous Versions

If upgrading from EOL Universal Printer™ version 1.x or 2.x, installing version 3.x will invalidate the license key. Customers who have purchased their license(s) after September 9th, 2001 are eligible for a free upgrade to version 3.x. The new license key replacements may be automatically generated by visiting http://www.99point9.com.

Upgrade Protection and Technical Support

Emergent OnLine offers free software maintenance and technical support for a period of one (1) year from the date of purchase. Following the first year, the maintenance and support option can be renewed at the cost of 20 percent of the product's list price.

For additional information, please contact Emergent OnLine's sales and technical support as follows:

Phone: 703-709-9210
Technical Support E-mail: support@go-eol.com
Sales Support: sales@go-eol.com
Web site: www.99point9.com