Pcounter

LPR & OS X Integration Guide

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0.0 - Introduction

This guide covers how to setup Pcounter's LPD Server for unauthenticated Windows and OS X printing as well as how to create and test LPR printer objects on Windows and OS X workstations.

Also covered in this guide is setup and testing of the Pcounter Client for OS X (PcounterClient.dmg).

1.0 - Pcounter LPD Server

Pcounter for Windows includes a LPD server for receiving LPR print jobs. The Pcounter LPD Service replaces the Windows LPD Service and thus the Windows LPD Service must be disabled.
The Pcounter LPD server allows normal, shared Windows print queues to be accessed via LPR. This allows non-domain Windows PCs and OS X workstations to print to the print queues on the Windows Print Server.

1.1 - Pcounter LPD Server Setup

The Pcounter LPD Service replaces the Windows LPD Service and thus the Windows LPD Service must be disabled.
Also, the port 515 must be opened in the Windows Firewall and any other firewalls so the Pcounter server can receive LPR print jobs, which almost always uses port 515.

1.1.1 - Disable Windows LPD Service

1) On the Pcounter print server that will be accepting LPR print jobs, open 'services.msc' to view all installed services.
2) Locate the Windows LPD Service in list, it may be called LPDSVC, LPD Service, Windows LPD Service, or something similar.
3) Right click the Windows LPD Service in the list of services and choose 'Properties'.
4) Stop the service, then change startup type to 'disabled' and click apply or OK at the bottom.

1.1.2 - Configure Windows Firewall

1) On the Pcounter print server that will be accepting LPR print jobs, open the Windows Firewall interface.
2) Right click 'Inbound Rules' and choose 'New Rule'.

3) Choose Port and click next.

4) For port type, use TCP.
   For port number, use 515.
   Click next.

5) Choose ‘allow the connection’ and click next.
6) Check the boxes for Domain, Private, and Public and click next.
7) Finally, define a name and click finish to create the firewall rule and open the port.

8) Port 515 is now open in the Windows Firewall and the server should now be able to receive LPR print jobs. Please note though that other firewalls may be present on the server or network that block port 515. Other firewalls must be managed by a site representative.

1.1.3 - Configure Pcounter LPD Server

1) On the Pcounter server that will receive LPR print jobs, open Pcontrol and choose Pcounter>Configure Pcounter Server to open the main server configuration window.
2) Choose the LPD Server Bullet to display the Pcounter LPD Server settings.
3) Check the box at the top for ‘enable LPD Server’ and make sure the text at the bottom right is in black and reads “LPDSVC Status Stopped (Startup=Disabled)”. If the text is in red, see previous section 1.1.1 for instructions on how to disable the Windows LPD Service.

4) Check the box for each Windows print queue to allow LPR received jobs.
   After checking the box, set the 'LPR Queue Name' or use the default.
   The 'LPR queue name' is what workstations will use to print to a specific queue.

5) Click OK after making all necessary changes, then restart the Pcounter Printer Control service before testing.
6) Make note of the server's IP address as it will be used to create LPR printers on both OS X and Windows.

2.0 - LPR Printing

Both Windows and OS X can print via LPR though each have a distinctly different setup process.

2.1 - Windows LPR Printing

Windows printing via LPR is helpful in certain scenarios such as non-domain workstation printing, generic user printing with popup, and many, many other scenarios.

2.1.1 - LPR Printer Setup

To create a LPR printer on a Windows workstation, use the following step by step procedure:

1) Install any print drivers that will be needed for LPR printing on the Windows Workstation.
2) On the Windows workstation, open 'devices and printers' and click on the 'add a printer' button.

3) Choose 'add a local printer'

4) Choose 'create a new port'.
   For type of port choose 'Standard TCP/IP Port' and click next.

5) For Hostname/IP address, use the IP address of the Pcounter server that is running the Pcounter LPD Server. Uncheck the box for 'query the printer…' and click next.

6) Use the default 'generic network card' and click next.

7) <u>Choose the needed driver</u> and click next.
For generic printing and/or testing purposes, use the 'HP Color Laser Jet 2800 Series PS' driver.

8) Set a printer name as needed and click next. This is what the workstation users will see as the printer's name.

9) Set sharing to 'do not share this printer', click next, and finally click finish to create the printer.

10) Immediately go into the newly created printer's printer properties and choose the port tab. Click on 'Configure Port'.

11) Change the following settings as needed, then click OK and Close:

- 'Printer Name or IP Address' should be set to the IP address of the server that is running the Pcounter LPD Server.
- Protocol should be set to 'LPR'.
- 'LPR Queue Name' should be set to the LPR Queue Name the Pcounter LPD Server has set for the corresponding print queue. Refer to section 1.1.3 of this guide for more info about the LPR Queue Name.

2.1.2 - Windows Testing

Testing a Windows LPR print queue requires access to the Pcounter Server, the workstation in question, and the physical printer itself.

To start:

1) <u>On the Pcounter Server</u>, open Pcontrol and locate queue that will be tested in the main window.
2) Right click the print queue and choose 'pause printing'. This will pause the queue at a Windows level and prevent all jobs from printing, thus allowing us to view an LPR received job.
   When the little check mark symbol is visible, printing is paused on that queue.

3) <u>On the Windows Workstation</u> that has the LPR printer setup, open printer properties and click on 'print test page'.
   (For help setting up a LPR Printer on a Windows workstation, consult section 2.1.1 of this guide)

4) If the job is received by the server successfully, it will be displayed in the Pcontrol print queue view. Look at the time submitted to confirm.

5) Make note of the job owner. It may not always be what is expected or needed as LPR printing is unauthenticated.
To change the owner of the job, likely the Pcounter Popup will be needed.
For more info on the Pcounter Popup, consult our Pcounter Popup Training Video here.

6) If the LPR job was not received, consult the LPR Troubleshooting section of this guide.

2.1.4 - Windows LPR Command Line

Windows has an optional LPR command line tool that can be helpful in testing or troubleshooting LPR printing without creating a print queue.
The LPR command line tool can be installed on any Windows server or workstation.
For installation and syntax, please consult Microsoft's articles.

2.2 - OS X LPR Printing

OS X can integrate with Windows print server's by printing LPR to the Pcounter LPD Server.
For Pcounter LPD Server, please see section 1.0 of this guide.

2.2.1 - LPR Printer Setup

To create a LPR printer on an OS X workstation, use the following step by step procedure:

1) Install any print drivers that will be needed for LPR printing on the OS X Workstation.
2) On the OS X workstation, open System Preferences, then choose 'Printers and Scanners'.
3) Click on the little + button to open the add printer window.

4) At the top of the Window, select 'IP'.

5) For 'Address' enter the IP address of the server running the Pcounter LPD Server.
   For 'Protocol' choose LPD.
   For 'Queue' enter the LPR Queue Name as defined in the Pcounter LPD Server configuration.
   For 'Name' enter the name that will be displayed to the user as the printer's name.

6) To choose a print driver, click the blue arrow button next to the 'Use' field to open the driver selection window.

7) For basic printing, use the Generic PostScript or Generic PCL driver options.
For advanced printing, choose a full featured driver using the 'Select Software' option to open the list of installed print drivers on the OS X Workstation then choose a driver, or use the 'Other' option to manually select a driver file (.PPD) from a local or network location.

2.2.2 - OS X Testing

Testing a Windows LPR print queue requires access to the Pcounter Server, the workstation in question, and the physical printer itself.

To start:

1) On the Pcounter Server, open Pcontrol and locate queue that will be tested in the main window.
2) Right click the print queue and choose 'pause printing'. This will pause the queue at a Windows level and prevent all jobs from printing, thus allowing us to view an LPR received job.
When the little check mark symbol is visible, printing is paused on that queue.

3) On the OS X Workstation that has the LPR printer setup, open the print queue, then click up at the top and choose printer>print test page to submit a test page to the queue.

4) If the job is received by the server successfully, it will be displayed in the Pcontrol print queue view. Look at the time submitted to confirm.

5) Make note of the job owner. It may not always be what is expected or needed as LPR printing is unauthenticated.
   To change the owner of the job, likely the Pcounter Popup will be needed.
   For more info on the Pcounter Popup, consult our Pcounter Popup Training Video here.

6) If the LPR job was not received, consult the LPR Troubleshooting section of this guide.

3.0 - LPR Troubleshooting

If LPR jobs are not being received here are some of the most common troubleshooting steps:

1) The LPR Queue Name could be incorrect or mismatched. Check both the Pcounter LPD Server and Windows Printer port configuration to ensure the LPR Queue Names match.
2) Spaces, special characters, numbers, or long names can sometimes prevent the LPR Queue Names from working. Start simple, such as using 'test' for the queue name, then once it is working make changes as needed.
3) The Pcounter Server's IP must be used in the LPR Print Queue's port configuration, ensure it is correct.
4) Port 515 must be open between the workstation and server. If anything blocks this port, such as a hardware or software firewall, LPR printing will fail.

4.0 - Pcounter Client for OS X

The Pcounter Popup Client for OS X has a unique setup and configuration process in comparison to the Pcounter's Popup Clients for Windows.

4.1 - Pcounter Client Server Setup

4.1.1 - Configure Windows Firewall

Before the client can be used, TCP Ports 6442 6443, 7442, & 7443 must be opened.

1) On the Pcounter server that will be running popup, open the Windows Firewall interface.
2) Right click 'Inbound Rules' and choose 'New Rule'.

3) Choose Port and click next.

4) For port type, use TCP.
5) For port number, use 6442, 6443, 7442, 7443, and click next.
6) Choose 'allow the connection' and click next.
7) Check the boxes for Domain, Private, and Public and click next.
8) Finally, define a name and click finish to create the firewall rule and open the port.
9) Ports 6442, 6443, 7442, & 7443 are now open in the Windows Firewall and the server should now be able to utilize the PcounterClient.exe and PcounterClient.dmg.
   Please note though that other firewalls may be present on the server or network that block ports 6442, 6443, 7442, & 7443. Other firewalls must be managed by a site representative.

4.2 - Install Client

1) Manually copy the PcounterClient.dmg from the Pcounter Server to the OS X Workstation. By default, the PcounterClient.dmg should be located on the Pcounter server at:
'C:\Program Files (x86)\Pcounter for NT\NT\Client'
The very latest version of the client can be downloaded at:
www.pcounter.com/supportfiles/PcounterClient2016.3.14.zip

NOTE: Use PcounterClient.DMG for OSX 10.7 and newer.
Use PcounterClient.2012.04.11.DMG for OSX 10.6 and older.

2) When the PcounterClient.dmg is launched, drag the PcounterClient app icon into the 'applications' directory on the OS X workstation.

3) When the client is launched, it will display a printer icon in the task bar.

4) To view the client's configuration window, hold the special 'options' or 'command' or 'control' key down on the OS X keyboard then, with the key still held down, launch the client to display the Pcounter Client Configuration Window.

5) Click the + button on the right towards the top to manually specify the Pcounter Server's IP.

6) All preferences are discussed in this guide in the section 'Client Preferences'.

7) For help configuring the .dmg to launch at OS X startup, please refer to Apple support.

4.3 - Client Configuration Options

Below is a full list of the options in the Pcounter Client Configuration window:

Servers – To specify a Pcounter server that the Client should poll, click the + sign, enter the server name or IP address and click OK. (The – button removes a server from the list.

HTTPS Port – By default, the OS X Client is set up to use the SSL secure port: 7443. This setting appears on the Services and Ports tab in Pcontrol, running on the Windows Print Server, and can be customized.

Poll Interval - When the *OS X Client* Preferences menu is selected, the user will see a list of servers to which printer connections have been made. The *OS X Client* will poll each of these servers for popup jobs once per specified interval (in seconds). Each poll consists of only one HTTPS request. However, any servers that are not running Pcounter or are hosting print queues where popups are not required can be deselected, in order to save network bandwidth.

Match username on job – The default behavior for Popup polling is for Pcounter to respond to the name of the computer that originates a print job. When *Match username on job* is checked, Pcounter responds to the username logged into the computer, rather than the computer name. This option should be checked if you are printing from the OS X through a Remote Terminal Session.

Keychain Login at Launch – This option will add authentication information entered the first time the OS X Client is run to the Keychain so that it does not need to be re-entered.

Popup Profile - Popup configuration profiles are useful in situations where different configurations of *OS X Client* are required for different types of users or locations, etc. For example, an academic site may require students to have a simple confirmation of the print job while staff is required to enter a client code. After configuring a Popup profile on the Popup Tab of the Pcounter Pcontrol application, this profile can be assigned to a computer by entering the Profile name in this box.

Idle Cancel – Sets the time interval for the *OS X Client* to be displayed on the screen before closing due to non-response from the user.

Mode – Sets the mode for *OS X Client* operation.
'Normal' displays both the authentication prompt and Pcounter notification messages
'Notifications Only' suppresses the authentication prompt, displaying only notifications.
'Popups Only' suppresses notifications and displays only the authentication prompt

Hide Status Icon – If checked, hides the *OS X Client* icon in the Menu Bar when the Client is running.

Hide Close Menu – If checked, disables the Close option when the *OS X Client* is running in the Menu Bar.

Hide Diagnostics– The *OS X Client* is able to display diagnostic information about the network connection to the server. (This feature is enabled by holding down the Option key and clicking on the Client option while it is running on the menu bar.) If Hide Diagnostics is checked in the Client preferences, then the Diagnostics display is always disabled.

Disable Keychain – When checked, disables storage of *OS X Client* login credentials in the OS X keychain settings**.**

Preload Client Codes – If check marked, preloads Client Codes from Pcounter Administrator database, speeding up performance in some network configurations.

Overwrite Preferences – If checked, overrides any Preferences set on-the-fly (when user right-clicks the Pcounter Client in Menu Bar and chooses Preferences). On-the-fly Preference settings are overwritten with the Preference settings saved from the Pcounter Configuration menu.

Lock Preferences - This option will lock the *Mac Client* preferences, as with standard OS X *System Preferences*, but it will allow an administrator to unlock the preferences again, as long as the "Lock Configuration" option has not been check marked and saved.

Lock Configuration – If checked, this option prevents the Pcounter Client Configuration screen from <u>ever</u> being opened again by pressing the Option or Control key. If changes are needed after applying this setting, a new copy of the PcounterClient.dmg will be needed.

4.4 - Pcounter Client Preferences 'Lock Configuration'

OS X Client preferences and configuration can be saved directly into the program, allowing an administrator to deploy a standardized, pre-configured version of the application.

If **Lock Configuration** option checked and save is clicked, the Client Preferences and Configuration settings will no longer be accessible for further changes, ever.

If changes are needed after applying the 'Lock Configuration' setting, a new copy of the PcounterClient.dmg will be needed.

Once the OS X Client has been configured as desired, it can be copied to other workstations and will retain the saved configuration.

4.5 - Pcounter Client for OS X Troubleshooting

If the *Mac Client* Popup window does not appear on the desktop after you print a job, check the following:

1. Verify that the Pcounter *Printer Control service* is running on the Pcounter Server. Verify the Port specified on *the Ports and Services* tab in Pcontrol is the one being used to communicate to the Popup client.
2. On the Macintosh workstation, right-click the *PcounterClient* icon on the Finder menu bar and choose *Preferences*.

3. Verify that the Pcounter Server you are printing to is listed in the Server List with OK status.

   Verify that the Port listed in the *Preferences* matches the secure port used by the Pcounter *Printer Control service* to connect to the Popup client. (By default, the port used by the service is 7443.)

4.6 - Advanced Configuration Scenarios

Below are several advanced configuration scenarios for the OS X Pcounter Client.
Several of these scenarios utilize the SessionXML registry settings on the Pcounter server.

4.6.1 - Non-AD, With SessionXML

The OS X client can be configured to pop up on a one-time basis after being launched to request ADS credentials. After the user logged into the Mac enters ADS credentials into the Client window, all print jobs submitted to Pcounter printers in that session are attributed to that ADS user account. The user is not subsequently required to answer the Popup for jobs submitted to a Pcounter printer during that session.

If client codes/subcodes are being used, the *OS X Client* can **also** be configured to automatically display at login for user authentication—and appear subsequently only to request client code input for submitted print jobs.

<u>If only one user ever logs onto the Mac …</u>

Checkmark the **Keychain Login at Launch** option and **Save**.

Once the ADS credentials are saved in the Keychain, the *OS X Client* will remember the credentials. The user will not be required to re-authenticate in future sessions.

<u>If multiple users will log onto the same Mac …</u>

Leave the **Keychain Login at Launch** option unchecked.

When the *Mac Client* is added to the *Login items* in the Mac *Account preferences*, the *Client* window will appear at login. Each user may enter their personal ADS Credentials, which will be remembered for that session when the Pcounter Server is configured as described below.

<u>Set *Mac Client* to request authentication upon startup (and automatically submit recorded ID with each Pcounter print job):</u>

A small registry modification must be made on the Pcounter print server for the *OS X Client* to automatically display an authentication request upon startup:

1) Open Regedit on the Pcounter server and navigate to `HKLM\Software\PCounter` (or `HKLM\Software\Wow6432\PCounter` on x64 platforms).

2) Create a new **String Value** in the PCounter key if the *Default* Popup Profile is being used. If an additional Profile has been created for Mac users, expand the PCounter key and create the **String Value** in the named Profile key under PCounter.

   Name the **String Value** *SessionXML* and enter (or paste in) the following value:

   `<SessionType>2</SessionType><LoginPromptType>3</LoginPromptType><DisplayBalance>0</DisplayBalance><AutoID>0</AutoID><NoPopup>1</NoPopup>` then click **OK** to close.

(See the reference section at the end of this document for a list of all parameters available for the *SessionXML* value and the way these values affect *OS X Client* performance.)

3) Set the *Window type* on the *Popup* tab in Pcontrol to **ID and password**.

The first time the *Client* is launched, it will open to request entry of an ADS **UserID** and **Password**. After this information is entered, the *Client* will autoreply on all print jobs submitted to Pcounter printers—without appearing onscreen to request user credentials.

(See the reference section at the end of this document for a list of all parameters available for the *SessionXML* value and the way these values affect *OS X Client* performance.)

Note: If you do not wish the credentials for the last authenticated user to be displayed in the initial *Client* Login prompt, then answer **Not Now** or **Never** when prompted to save the Password to the Keychain. Alternatively, you can checkmark the **Disable Keychain** option in the *OS X Client Preferences and Configuration Options*.

Note: If multiple users will print from the OS X during a single session conducted under a generic user login (such as “Student”), then the auto-authenticate options described in this section should not be used. The Mac Client should be left at its default settings: to pop up after each print job—so that the individual user currently sitting at the machine can be requested to authenticate to the Pcounter server with their own ADS credentials.

4.6.2 - Notifications and User Balances Only, With SessionXML

1) On the Pcounter print server, open Pcontrol, choose **Pcounter→Configure Pcounter server** and set desired notification options on the *Data Server* tab. (Pcounter will also display certain basic notifications, such as insufficient credit notification and rule-based messages without enabling the additional *Data Server* tab options.

2) Open the OS X *Keychain Access* application and remove all entries for the *Pcounter Client*.

3) Before launching the *OS X Client* for print job tracking, access the *Preferences and Configuration* options by holding down the **Option** key as you launch the *Client*. (If the *Client* is already running in the Finder menu, close it first and reopen, holding down the **Option** key.)

4) Set the *Mode* to **Notifications Only**.

5) Leave the option for **Keychain Login at Launch** unchecked.

6) Checkmark the **Disable Keychain** option and **Save**.

7) On the Pcounter print server, open Regedit, locate the PCounter key or Profile subkey as described above. Modify an existing or create a new *SessionXML* **string value** as follows:
```
<SessionType>2</SessionType><LoginPromptType>3</LoginPromptType>
<DisplayBalance>0</DisplayBalance><AutoID>0</AutoID><NoPopup>1
</NoPopup>
```
then click OK to close.

8) The first time that the *Client* is launched during a session, an authentication window will appear. Enter your username and password, then click the **Login** button.
For the remainder of the session, while the *Client* is running, it will pop up to display Account Balances and Pcounter Notification messages, only.

4.6.3 - Client codes/Subcodes Only, With SessionXML

If you wish to enter only client codes/subcodes during a session where a non-ADS user account is logged into the OS X, set the Popup window type in Pcontrol to the desired option (**Client code list**, **Entry list**, or **Matter number list**).

1) On the Pcounter print server, open Regedit, locate the PCounter key or Profile subkey as described above. Modify an existing or create a new *SessionXML* **string value** as follows:
```
<SessionType>2</SessionType><LoginPromptType>3</LoginPromptType>
<DisplayBalance>0</DisplayBalance><AutoID>1</AutoID>
<NoPopup>0</NoPopup>
```
then click OK to close.

2) The first time that the *Client* is launched during a session, an authentication window will appear. Enter your username and password, then click the **Login** button. For the remainder of the session, while the *Client* is running, it will pop up to display the list of client codes (and optionally, subcodes) for the user to select.

All print jobs submitted while the *OS X Client* is running will include selected client codes/subcodes and be assigned to the ADS user account that initially authenticated in the *Client*.

4.7 - SessionXML Reference Guide

The SessionXML **string value** added to the PCOUNTER key (or Profile subkey) under HKEY_LOCAL_MACHINE\SOFTWARE, in the Registry on the Pcounter print server, can be used to control the behavior of the *Pcounter Macintosh Client* as indicated below:

<SessionType>
0 = No session, only popup, desktop username is meaningless, never assume we have any identity, no account balance display
1 = Always persistent, use desktop login name
2 = Prompt for credentials, persistent until logout

<LoginPromptType>
0 = No prompt
1 = Prompt when a print job is available
2 = Manual login from menu (turn icon red if session inactive to get attention, or similar)
3 = Active prompt, always display login if session inactive

Options in session:
<DisplayBalance>
(Boolean) Is Account balance display available

<AutoID>
(0 or 1) Auto reply ID on all print jobs that are seen

<NoPopup>
(0 or 1) Never have a popup prompt. Only account balance display and/or receive messages (like Wbalance, should do another API to only receive notification messages).

<SessionTimeout>
(Integer) Auto-logout inactivity timer. Zero disables.