

PaperCut Fast Release (Network Card Reader) Manual

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This manual covers the Fast Release (Network Card Reader) setup. For general PaperCut MF documentation, please see the [PaperCut MF manual](#).

1 Overview

PaperCut provides an end-to-end solution for print and copy management. This setup guide provides instructions for integrating network card readers with two popular PaperCut MF features:

- **Secure Printing** – print jobs are released when a user presents their access card at a print device
- **Find-Me Printing** – users print to a virtual print queue, then release jobs at any associated printers.

To provide a cost-effective and universal secure print release solution, PaperCut leverages commodity off-the-shelf proximity card readers available from multiple manufacturers. The Fast Release solution works as follows:

The User:

1. A user's card number is associated with their network domain/directory login (via an LDAP field)
2. The user prints to a hold/release queue or a Find-Me virtual queue
3. The user presents their card at a reader located next to the printer
4. If the card is valid, jobs are released and print. Users receive feedback (e.g. invalid authentication) via audible tones and/or LED flashes

The System:

1. Card readers are located next to printer(s) and connect to the Ethernet network
2. Each reader is allocated an IP address
3. Readers are associated with a print queue via the PaperCut administration interface
4. Card swipes are validated against the card numbers stored in PaperCut's database (which in turn may be sourced from AD or LDAP)
5. Jobs associated with the user account are released for printing

Using the network card reader for print release is economical because it uses standard card-reader hardware. It is simple to install and configure requiring only a network connection and a power supply. There is no need for any complicated integration with the printer/copier hardware or custom hardware.

This approach has advantages over alternatives, because:

1. It works with any printer (independent of hardware as queue integration is at the server layer)
2. No complex integration with the printer/copier is required (often requiring expensive add-on options from the MFP manufacturer).
3. Hardware is off-the-shelf and offered at a commodity price. There is no vendor lock-in.

1.1 Supported Network Card Readers

Currently PaperCut supports the following network card readers, with more planned:

Elatec (<http://www.elatec-rfid.com/>)

Part 1 of 2: Elatec TWN3 USB proximity readers (Mifare/125khz/HID/Legic/Inditag/MultiISO)

Part 2 of 2: with the Elatec TCP Converter

RFIDeas (http://rfideas.com/products/pcprox_readers/)

Part 1 of 1: RFIDeas proximity readers (any type) with the Lantronix Ethernet connector.

These are readers with RFIDeas part numbers ending in “AKE”.

RFIDeas “Ethernet 241” (http://www.rfideas.com/products/converters/ethernet_241/)

Part 1 of 1: RFIDeas Ethernet 241 requires a RFIDeas pcProx card reader with part numbers ending in AK5

Readers from both manufactures have been extensively tested with common card formats (Mifare and HID) and have proven reliable.

The Elatec and RFIDeas “Ethernet 241” address environments that don’t have a spare network port located next to each printer. These devices have a built-in network switch. This allows it to be connected to the network in-line using the same physical network connection as the printer/copier, eliminating the need for an additional network connection.

PaperCut has a generic interface that can be integrated with many common network/TCP/Ethernet card reader devices. If you have another brand of network card reader, please contact PaperCut support to discuss the options.



The Elatec TCP Converter
(The TWN3 reader connects to this via USB)



Elatec Proximity Reader

2 Installation

Installing and configuring a network card reader for print release is a simple three-step process.

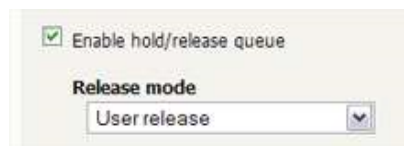
1. Confirming correct print queue configuration.
2. Configure the readers with a network IP address and port.
3. Create a device in PaperCut with the network address and associating with the print queue.

2.1 Setting up Hold/Release queues

A print queue associated with the printer where card reader is to be located needs to be configured as a hold/release queue. This means that jobs printed to this queue don't print immediately but instead hold until released via card swipe (or manually via the web interface or a release station PC).

Enable hold/release queue on a printer as follows:

1. In PaperCut, select the "Printers" tab.
2. Select the print queue that this card-reader will control.
3. Enable the "Hold/release queue" option. Note: Release mode should be set to "User release".



4. Press OK/Apply to save the changes. All printing to this queue will now be held until the user authenticates at the reader (or jobs are manually released).

TIP: You can view jobs pending release via Printers -> Jobs pending release. Jobs can also be manually released via this interface. You may like to test this now.

2.2 Configuring Network Card Reader

The network card reader must be assigned an IP address to allow PaperCut to identify and control the device on the network. An IP address can be assigned as a static IP address on the device or by using a fixed DHCP reservations.

By default the Elatec network card readers are configured to use a static IP address of 192.168.0.98. The RFIDeas Ethernet 241 uses a DHCP assigned address on the "Network RJ45" ethernet port, not the "Printer RJ45" ethernet port. We recommend changing to using DHCP and using a DHCP reservation if you will be assigning static IP addresses to a large number of devices. Assigning static addresses with DHCP is usually simpler to configure and is more flexible to manage when networking changes are required in the future.

TIP: Sites installing many devices may wish to allocate IP addresses in advance to rollout (e.g. a subnet range). Best practice suggests writing the IP address on each reader allowing quick installation and configuration.

Please follow the instructions below for your network card reader type.

2.2.1 Elatec TWN3 Reader and TCP Converter

The Elatec devices can be configured with tools provided by Elatec. These files are available for download here:

<http://www.papercut.com/anonftp/pub/mf/hardware/elatec/ElatecToolsAndDrivers.zip>

Download and extract these files on a 32-bit Windows PC. These drivers are suitable for use on 32bit systems only.

2.2.1.1 Configure Elatec Card Reader

Note 1: If this hardware has been supplied in a “Fast Release Pack” from PaperCut Software or a PaperCut Authorized Solution Centre then this section may be skipped as the hardware is preconfigured.

Note 2: Older firmware versions (earlier than 1.02) for the TCP Converter only support USB: Intelligent Virtual COM Port. Newer firmware version (1.02 and newer) are compatible with USB: Intelligent Keyboard Emulation (the default setting for the readers). Please test your card reader and TCP Converter before performing the following changes.

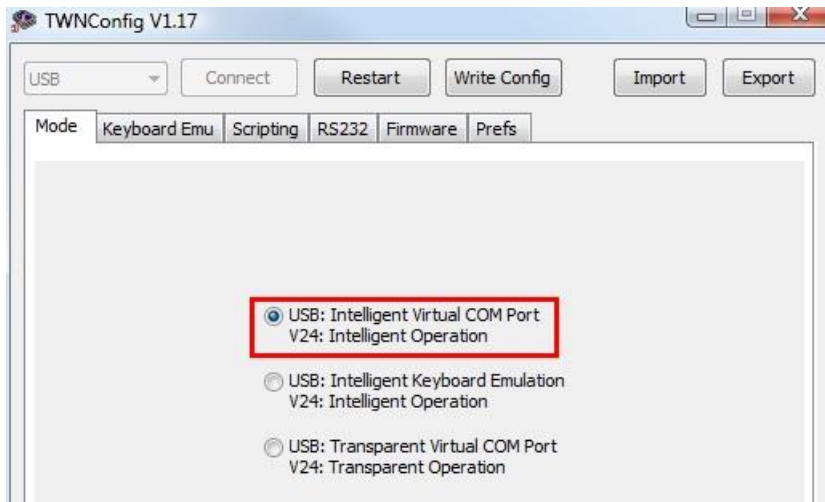
Note 3: When in USB: Intelligent Keyboard Emulation mode the feedback to the user about successful card reads, no jobs available or jobs released is unavailable. You will need to use USB: Intelligent Virtual COM Port mode.

To configure the Elatec card reader:

1. Connect the Elatec card reader to USB port on a 32-bit Windows PC where the Elatec tools and drivers were installed.
2. Windows will require the Elatec device driver to be installed. The driver is included under the ElatecToolsAndDrivers/Driver directory where the zip file was extracted. If you require a driver, you'll usually be prompted by Windows when the reader is first connected, or during step 3 below.
3. After installing the driver, run the “TWNConfig.exe” tool, and press the “Connect” button

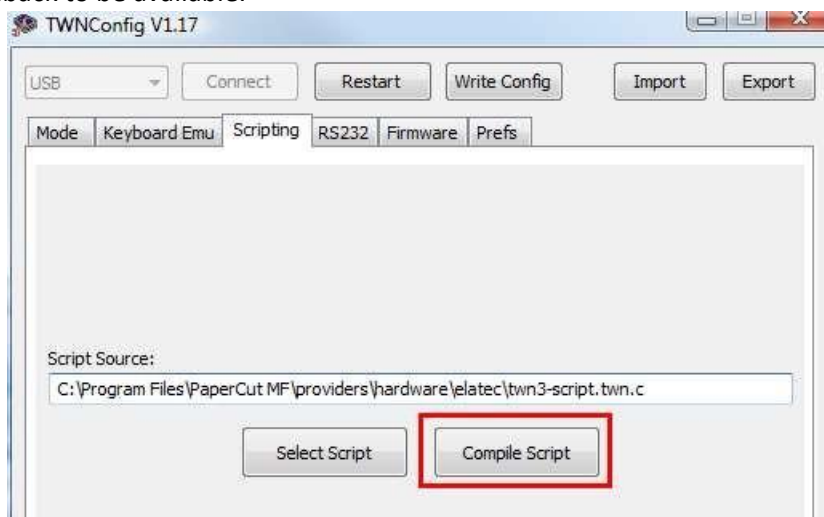


4. If your TCP Converter has a firmware prior to version 1.02, verify that the mode is set to “USB: Intelligent Virtual COM Port” after the connection is made.



5. The Elatec reader uses a custom script to allow PaperCut to provide feedback to the user on login success and failures. To install this script, select the “Scripting” tab, then select the “twm3-script.twn.c” file located in “[app-path]\providers\hardware\elatec\” in your PaperCut installation. Then press the “Compile Script” button.

Note: The Card Reader must be in USB: Intelligent Virtual COM Port mode for the user feedback to be available.



6. Save the new configuration to the reader by pressing the “Write Config” button.



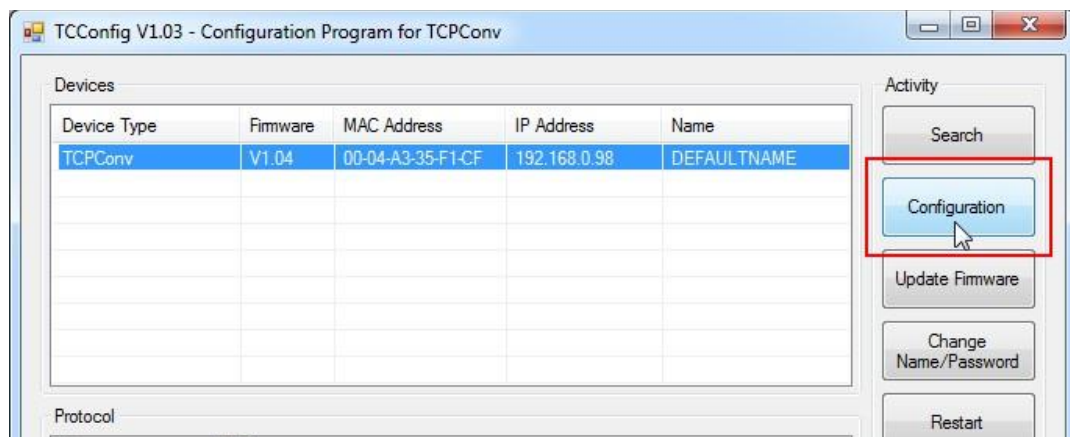
7. Press the “Restart” button to complete the configuration.

2.2.1.2 Configure the TCP Converter

A custom firmware script must be loaded into the TCP Converter to enable advanced bi-directional communication – allowing the reader to accept commands as well as report card numbers. This allows PaperCut to send signals to the card reader, for example such as commands to flash lights when no jobs are available for release.

To configure the network address and port of the Elatec TCP Converter:

1. Plug the TCP Converter into power and into your network via a network cable.
2. From a 32-bit Windows machine (not a VM), run the TCConfig.exe utility. This will search the local network for the attached TCP Converter. If your device is not found, check that it is connected to the network and press the "Search" button to re-search the network. Also ensure the device is on the same subnet as your local machine, or that your network supports broadcasting. Some Wi-Fi networks may also not be compatible, please use a wired network connection. If the search does not find the device you have attached, you might have several network adapters configured in Windows and the utility is using the wrong one for its search. To work around this, temporarily disable all network adapters in the Control Panel except for the one that is connected to the LAN that the TCP Converter is also connected to.
3. Select the device and press the "Configuration" button.

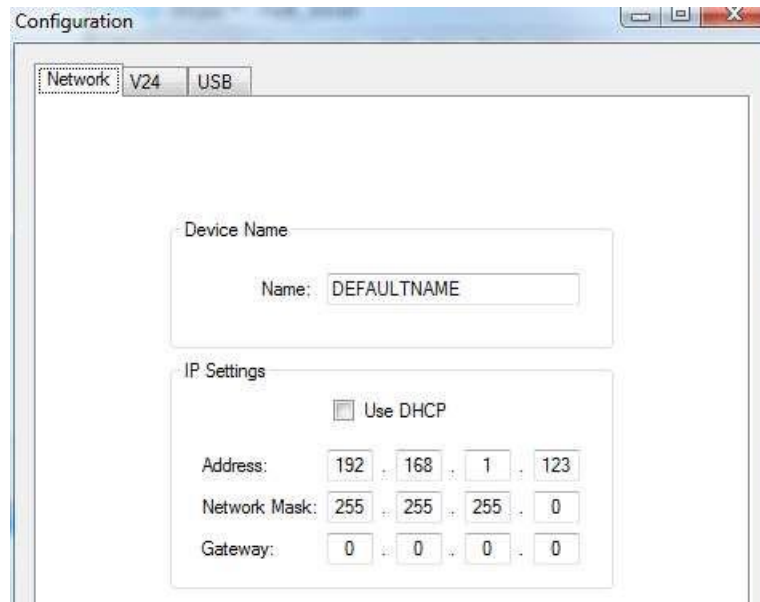


4. When first connecting to the device it may request a login. This login protects the device from being re-flashed (e.g. by a user to install their own script/firmware). Recent devices from Elatec have a default username of "admin" and a blank password.

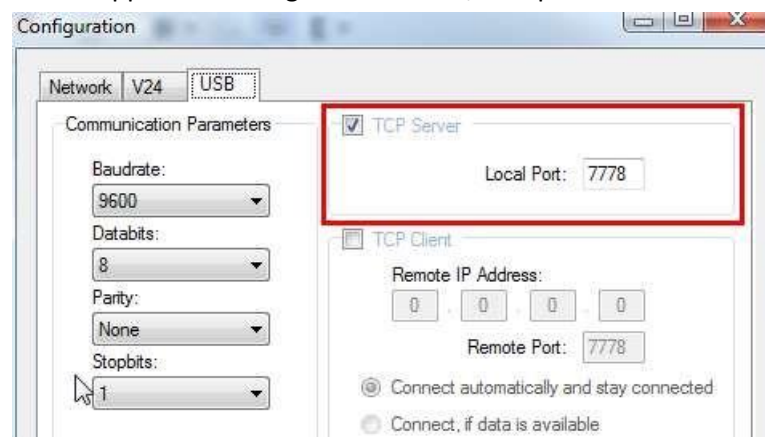


The "Change Name/Password" button may be used to change these credentials. Note that even if changing to a blank username and password the login dialog will still be displayed (in which case pressing OK with no credentials is required).

5. On the Network tab, change the network settings as required. To use DHCP reservations enable the "Use DHCP" option. To set a static IP address on the device disable "Use DHCP" and set the IP address settings.



6. Select the USB tab to configure the network port used to read card data from the USB card reader. By default this is set to 7778. You will only need to change the port number if it conflicts with another application using the same TCP/UDP port on the network.



7. Press **OK** to save the configuration changes.
8. For the changes to have an effect, press the **Restart** button. The device will restart with the new network settings.

The card reader is now ready to be connected to the TCP Converter and the network, and mounted next to the printer. See section “2.3 - Adding the device to PaperCut” to configure PaperCut to connect to the reader.

2.2.2 RFIDeas (Lantronix)

The RFIDeas network card reader is based on a Lantronix Xport serial to Ethernet device. It can be configured using the DeviceInstaller tool available from the Lantronix website:

<http://www.lantronix.com/device-networking/utilities-tools/device-installer.html>

Download the DeviceInstaller to a Windows PC and run the setup program to install the tools.

Note: You may need to install the Microsoft .Net 4 environment as part of the DeviceInstaller process.

To configure the network settings for the RFIDeas/Lantronix device:

1. Plug the device into power and into your network via a network cable.
2. Run the DeviceInstaller tool. This will search the local network for the attached device. The device will appear in the tree view on the left:
 - a. Select the device from the left.
 - b. Select the “Web Configuration” tab.
 - c. Press the **Go** button to load the device web config page.
 - d. Select the “Configure” link, and enter the username “admin” and an empty password when prompted.



3. Select “Network” from the left menu, and select the DHCP or static IP address settings as required. Press **OK** to save.
4. This card reader uses port number 10001 by default. You will only need to change the port number if it conflicts with another application using the same TCP/UDP port on the network. To change the port number select the “Connection” link from the left menu, change the Endpoint->Local Port option and press **OK** to save.

The screenshot shows the 'Connection Settings' page for Channel 1. The left sidebar contains a navigation menu with the following items: Network, Server, Channel 1 (with sub-items Serial Settings and Connection), Advanced Setup, Apply Settings, and Apply Factory Defaults. The 'Connection' item is highlighted. The main content area is titled 'Connection Settings' and includes the following fields and options:

- Channel 1**
- Connect Protocol**: Protocol: TCP
- Connect Mode**
 - Passive Connection:**
 - Accept Incoming: Yes
 - Password Required: Yes No
 - Password:
 - Active Connection:**
 - Active Connect: None
 - Start Character: 0x0D (in Hex)
 - Modem Mode: None
 - Mdm Esc Seq Pass Thru: Yes No
- Endpoint Configuration:**
 - Local Port: 10001
 - Remote Port: 0
 - Remote Host: 0.0.0.0
 - Auto increment for active connect

- To apply the changes select “Apply Settings” from the left menu.

The card reader is now ready to be connected the network, and mounted next to the printer. See Section 2.3 - Adding the device to PaperCut to configure PaperCut to connect to the reader.

2.2.3 RFIDeas Ethernet 241

The RFIDeas Ethernet 241 manual is available on the RFIDeas website here:

http://www.rfideas.com/Software/Manuals/Ethernet241_Manual.pdf

A minimum firmware of v2.00.3 is required for correct operation with PaperCut. The firmware and upgrade instructions can be sourced from RFIDeas.

To configure the network settings for the RFIDeas Ethernet 241 device:

- Connect a Null Modem cable to the Serial Port on the RFIDeas Ethernet 241 device
- Connect the ethernet cable to the “Network RJ45” network port. Note: Connecting the ethernet cable to the “Printer RJ45” will not work.
- Connect the Power Supply
- Open a serial communication program (HyperTerminal / putty) and connect to the appropriate COM port
- Press the recessed restart button and you should now see an {RF IDEas} prompt in your HyperTerminal / putty window.
- Configure the IP address of the device:

Run the following command if you are using a DHCP reserved IP address:

```
set ip_addr_mode = dhcp
```

Run the following commands if you are using a static IP address:

```
set ip_addr_mode = static set ip_addr
= xxx.xxx.xxx.xxx set ip_mask =
xxx.xxx.xxx.xxx set gw_addr =
xxx.xxx.xxx.xxx set dn1_addr =
xxx.xxx.xxx.xxx
```

Please consider the following commands:

```
set password = somepassword set
telnet_port = 240 set ssh_enabled
= no set ssl_enabled = no set
web_serv_port = 241
```

7. Connect the ethernet cable for the print to the “Printer RJ45”
8. Confirm the configuration of the device by typing in “net_status”
9. Disconnect the Null Modem Cable and plug in the configured RFIDEas card reader. Please note: The configuration of the reader is not covered in this manual.

The card reader is now ready to be connected the network, and mounted next to the printer. See Section 2.3 - Adding the device to PaperCut to configure PaperCut to connect to the reader.

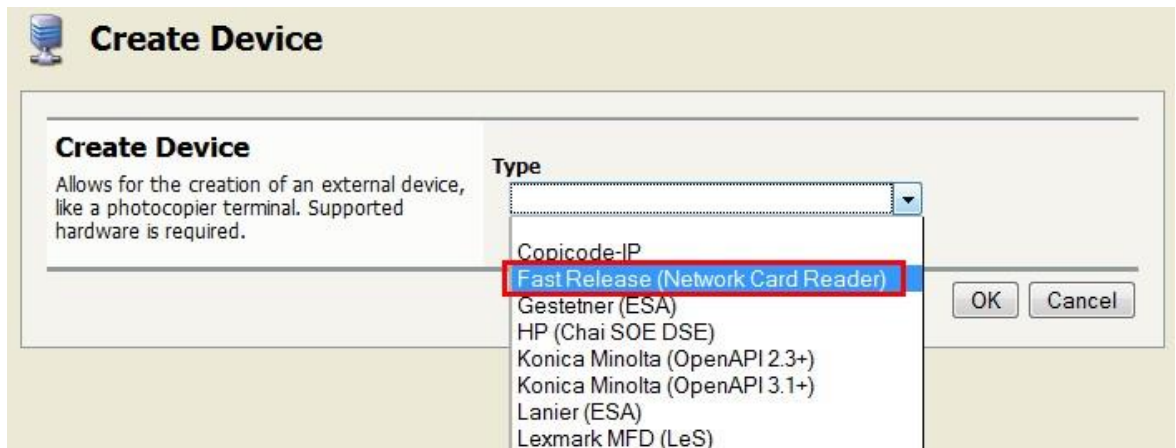
2.3 Adding the device to PaperCut

Configure the network card reader in PaperCut as follows:

1. Log in to the PaperCut Admin Console (<http://papercut-server:9191/admin>).
2. Navigate to “Options -> Advanced” and ensure the option “Enable external hardware integration” is enabled.



3. Press **Apply**.
4. Navigate to the ‘Devices’ tab.
5. Click “Create Device” on the left “Action” menu.
6. In the “Type” drop-down menu select “Fast Release (Network Card Reader)”.



7. Enter a descriptive name for the device in the “Device name” field (e.g. PrinterABC Reader)
8. Optionally enter location/department information.
9. Select any one any one of the following **Connection Modes**:
 - **Generic** - This is the default mode and requires a valid and unique **Hostname / IP** of your network adapter (switch) and **Network Port** of your card reader. For more information on the ports used by different card readers, see [Fast Release Card Reader Terminal Network Protocol](#).
 - **RF Ideas 241 (Client Mode)** - Select this mode only if you are using a compatible RFIDEas Ethernet 241 device with Serial or USB card reader connected. This requires only a valid and unique **Hostname/IP** of your Ethernet 241 device.
10. Select the printer queues (hold/release queues) that this reader will control. This is usually a single queue associated with the printer where the card is mounted, but it also may be a global find-me printing queue. When a user authenticates with their ID card at this reader, jobs awaiting release for the assigned printer queues will be printed. NOTE: Find-me printing settings can be enabled after the device is created.
11. Press **OK** to create the device.

The device will be created, and PaperCut will establish a connection to the card reader. Check the “Device Status” field to verify that the connection is established. Use the “[Refresh]” link to refresh the status if necessary.

When the connection is successful the status will display “Started – Awaiting user login” (see below).



When the connection is established the LED on both the Elatec and RFIDEas readers change color from red to green indicating that the server connection is established. See “Appendix A: Card reader feedback” for a table of LED status indicators.

If there are connections problems, check the following:

- Check that the network card reader is connected to the network and powered on.
- Verify that the network IP address assigned to the device is correct.

- Try pinging the IP address of the device from the server.
- Check that the network port is set correctly (i.e. the defaults are 7778 for Elatec and 10001 for RFIDeas/Lantronix).
- Open ports on the PaperCut primary server firewall.

3 Testing and Familiarization

After completing installation and basic configuration it is recommended to perform some testing of the network card reader in order to ensure that the embedded application is working as expected and to familiarize yourself with the features and functionality of the device.

3.1 Test Preparation

To perform testing you will require cards compatible with your chosen card reader.

Begin by ensuring that hold/release queue is enabled on the print queue associated with your test printer.

1. In PaperCut, select the “Printers” tab.
2. Select the print queue that this card-reader will control.
3. Enable the “Hold/release queue” option. Note: Release mode should be set to “User release”.



4. Press **OK** or **Apply** to save the changes. All printing to this queue will now be held until the user authenticates at the reader.

Verify that the network card reader is configured to release jobs for the queue enabled above:

1. In PaperCut, select the “Devices” tab.
2. Select the network card reader device.
3. Verify that the correct print queue is selected for print release.



Associate the card number of your test cards with the login that you will use for the test:

1. In PaperCut, select your test user from the “Users” tab.
2. Enter the card number into the “Card/Identity Number” field of the test user.

Other Details
Provides additional information about the user, like their office, department or identity card/identity number.

Department

Office

Card/Identity Number

Card/ID PIN (digits only)

Note: If you don't know the card number you can swipe the card on the network card reader and check the "App Log" tab in the PaperCut Admin Console for a warning log that looks like this:

Level	Message
Warning	Unknown Card/ID number entered on external device. Card/ID No: C5C5732B

The ID number is at the end of the message as highlighted above. Enter this number in the "Card/Identity Number" field for your test user.

3. Press **OK** to save the changes.

3.2 Print Release Testing

This will test a user authenticating at the network card reader, and then release all jobs waiting for the printer.

1. Login to a workstation as the test user, send a test print job to the printer configured above.
2. Confirm that the job is being held by checking the Printers->Jobs Pending Release.

Jobs Pending Release

Printer List | **Jobs Pending Release** | Notification Options | Job Log | Charts | Refunds

Release All | Cancel All | Refresh Now | Auto refresh (Refresh in: 41)

▼ Show Filter

	Submit Time ▼	Printer	User	Document	Client	Pages	Cost	Action
⊖	Aug 5, 2010 2:19:57 PM	server\printer	matt	Budget - OpenOffice.org Calc	mansfield	76	\$7.60	[print] [cancel]
⊖	Aug 5, 2010 2:19:50 PM	server\printer	matt	research paper.pdf	mansfield	74	\$7.40	[print] [cancel]

3. At the network card reader, swipe the card associated with your test user.
4. If the login is successful and there are jobs to be released, the job will begin printing and the card reader will provide feedback by displaying a flashing green light. If the LED displays any other color or sequence please refer to "Appendix A: Card reader feedback" for a table of LED status indicators. The device status window on the PaperCut Admin Console will also display the login name of the authenticated user and the number of print jobs released. The device status window also shows the details of the last user login.


```
Device status
-----
Started (in use) - User 'matt' has logged in. 5 jobs released.
Type: Elatec (GM4.07)
Last login: matt at 05/08/2010 2:41:41 PM
[Refresh]
```

If everything worked correctly, the jobs awaiting release will be printed on the associated printer. You can confirm that the job is no longer listed in the Printers->Jobs Pending Release list.

3.3 Print Release Testing (No jobs pending)

This test shows what happens when a user authenticates to the card reader when no jobs are pending.

1. Login to PaperCut and check the Printers->Jobs Pending Release screen to verify that there are no jobs awaiting release for your test printer. If there are jobs pending, clear them by selecting the “print” or “cancel” link.
2. At the network card reader, swipe the card associated with your test user.
3. To indicate that there are no jobs ready for release the readers will provide the following feedback:
 - Elatec: Displays a solid red light and sounds 2 beeps
 - RFIDeas: Displays a flashing orange light

4 Product Images

4.1 RFIDeas "Ethernet 241"



4.2 Elatec TCP Converter and Reader

