Equitrac Office and Express 5.6 Planning Guide

Document History

<table>
<thead>
<tr>
<th>Revision Date</th>
<th>Revision List</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 21, 2016</td>
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</tr>
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<td>Updated for Equitrac Office and Express 5.3</td>
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<td>Updated for Equitrac Office and Express 5.0</td>
</tr>
</tbody>
</table>

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Symbols Used In This Guide

The following symbols are used in the margins of this guide:

- **Note**: The accompanying text provides cross-reference links, tips, or general information that can add to your understanding of the topic.

- **Caution**: The accompanying text provides key information about a step or action that might produce unexpected results if not followed precisely.

- **Warning**: Read the accompanying text carefully. This text can help you avoid making errors that might negatively affect program behavior.
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Introduction

Why Plan for an Equitrac Office or Express Deployment?

Equitrac Office and Express are highly customizable solutions that can help your organization reduce costs and improve efficiencies related to document output. As with any software solution, there are many different installation and configuration variables that can affect how you deploy, license, and use the product.

Creating a deployment plan is essential for a scalable, well-executed installation of Equitrac Office or Express. This guide will help you plan:

- the features and components you will license
- the physical installation location (topology) of the Equitrac services across servers
- the number of print servers you need
- the environment variables that will affect product configuration
- security requirements strategies for integrating and maintaining user accounts

This guide does not provide a comprehensive requirements checklist. Instead, this guide thoroughly examines the variables you should consider before you install the product. Use this guide to select the appropriate combination of variables to support the needs of your organization.

While this guide provides summary information and general details that will affect the installation plan, it does not provide specific configuration details. This guide is intended to help customers design and plan an Equitrac Office or Express deployment strategy. It can also assist Network Administrators and IT personnel who are responsible for specific installation and configuration tasks.

This guide provides information to help determine deployment variables such as, the number of Core Accounting Servers (CAS) needed, the amount of network bandwidth required, the number of dedicated print servers, and how many Scan Processing Engines (SPE) are needed for scan load balancing with OCR processing.

Some sections this guide assume substantial knowledge of networking, clustering, database management, and print servers. If you do not possess skills and knowledge comparable with an MCSE designation, consult an MCSE regarding your deployment plan prior to performing the installation.
Database Requirements

All Equitrac Office and Express installations require at least one Core Accounting Server (CAS) that connects to a pre-installed database. Equitrac Office and Express 5.6 support Microsoft SQL Server and Oracle databases (versions are listed in the Server Requirements table).

Two-way trust is required when the CAS and database servers are on different domains. The SQL Server or Oracle database can be on a separate domain from the CAS server, however, two-way communication between domains is required in order for information to be added to the database (e.g. users, departments, billing codes), and for reporting purposes.

Microsoft indicates that the maximum size of a SQL 2008 Express Edition database is 10 GB. If you are deploying Equitrac Office or Express to support a large number of users (>1000) and anticipate a large volume print and copy jobs (>10 million pages per year) considering implementing a Microsoft SQL Server or Oracle database only.

System Requirements

All servers running Equitrac Office and Express services (CAS, DRE, DCE, DME, SPE), require the following hardware and software. Before you install Equitrac Office/Express ensure that the client and server machines you plan to use meet the minimum operating requirements outlined below. To maximize performance in high-volume print environments, you require additional disk space and memory, and a faster processor.

**NOTE:** .Net Framework package 4.5 must be installed on Windows 8, 8.1 and 10 prior to installing the Windows Client.

Server and Client Requirements

The following table lists minimum operating requirements only. To maximize performance in high-volume print/scan environments, you require additional disk space and memory, and a faster processor.

<table>
<thead>
<tr>
<th>Components</th>
<th>Supported Platforms¹</th>
<th>Minimum Hardware²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Accounting Server (CAS)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Device Control Engine (DCE)</td>
<td>• Windows Server³ 2008, 2008 R2, 2012, 2012 R2 (x64)⁶</td>
<td>• Processor: 2 GHz or greater</td>
</tr>
<tr>
<td>Device Monitoring Engine (DME)</td>
<td>• SharePoint Server 2007 SP3 (or higher), 2010 and 2013</td>
<td>• Memory: 2 GB or greater</td>
</tr>
<tr>
<td>Scan Processing Engine (SPE)</td>
<td>• RightFax Server 9.4 and higher</td>
<td>• Hard disk: 1 GB or greater</td>
</tr>
<tr>
<td>Core Accounting Server (CAS) – Database</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Microsoft SQL Server 2008 and 2008 Express SP3 (or higher)</td>
<td>• Processor: 2 GHz or greater</td>
</tr>
<tr>
<td></td>
<td>• Microsoft SQL Server 2008 R2 and 2008 R2 Express SP1</td>
<td>• Memory: 2 GB or greater</td>
</tr>
<tr>
<td></td>
<td>• Microsoft SQL Server 2012 and 2012 Express</td>
<td>• Hard disk: 1 GB or greater</td>
</tr>
<tr>
<td></td>
<td>• Microsoft SQL Server 2014 and 2014 Express</td>
<td>• Hard disk: 2.2 GB required for SQL Server 2012 or higher</td>
</tr>
<tr>
<td></td>
<td>• Oracle® 11g R2, 12c</td>
<td></td>
</tr>
<tr>
<td>Document Routing Engine (DRE)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• SUSE Linux SLES 11 SP3 for Novell OES11 SP2 iPrint (x64)⁶</td>
<td>• Memory: 2 GB or greater</td>
</tr>
<tr>
<td></td>
<td>• Red Hat Enterprise 6.5 and 7.0 (x64)⁸</td>
<td>• Hard disk: 1 GB + allocation for print jobs</td>
</tr>
</tbody>
</table>

¹ Supported Platforms: Windows Server, SUSE Linux SLES 11 SP3 for Novell OES11 SP2 iPrint, Red Hat Enterprise 6.5 and 7.0.
² Minimum Hardware: Processor, Memory, Hard disk.
⁴ x64: 64-bit architecture.
⁵ Processor, Memory, Hard disk.
⁷ Processor, Memory, Hard disk.
⁸ Processor, Memory, Hard disk.
## Chapter 1: Introduction

### Components

<table>
<thead>
<tr>
<th>Components</th>
<th>Supported Platforms&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Minimum Hardware&lt;sup&gt;2&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Accounting Server (CAS)</td>
<td>• Windows Server 2008, 2008 R2, 2012, 2012 R2 failover cluster&lt;sup&gt;6&lt;/sup&gt;</td>
<td>• Processor: 2 GHz or greater</td>
</tr>
<tr>
<td>Device Control Engine (DCE)</td>
<td>• Windows Server 2012, 2012 R2 Hyper-V cluster&lt;sup&gt;6&lt;/sup&gt;</td>
<td>• Memory: 2 GB or greater</td>
</tr>
<tr>
<td>Device Monitoring Engine (DME)</td>
<td>• Windows Server 2008, 2008 R2 failover cluster&lt;sup&gt;6&lt;/sup&gt;</td>
<td>• Hard disk: 1 GB or greater</td>
</tr>
<tr>
<td>– Cluster Server</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Document Routing Engine (DRE)</td>
<td>• Windows Server 2008, 2008 R2 failover cluster&lt;sup&gt;6&lt;/sup&gt;</td>
<td>• Processor: 2 GHz or greater</td>
</tr>
<tr>
<td>Print Server</td>
<td>• Windows Server 2012, 2012 R2 Hyper-V cluster&lt;sup&gt;6&lt;/sup&gt;</td>
<td>• Memory: 2 GB or greater</td>
</tr>
<tr>
<td>– Cluster Server</td>
<td></td>
<td>• Hard disk: 1 GB + allocation for print jobs</td>
</tr>
<tr>
<td>Device Web Service (DWS)</td>
<td>• Windows Server&lt;sup&gt;3&lt;/sup&gt; 2008, 2008 R2, 2012, 2012 R2 (x64)&lt;sup&gt;6&lt;/sup&gt;</td>
<td>• Processor: 2 GHz or greater</td>
</tr>
<tr>
<td>Note: DWS is only supported on 64-bit systems</td>
<td></td>
<td>• Memory: 2 GB or greater + 2 GB dedicated to DWS</td>
</tr>
<tr>
<td>System Manager</td>
<td></td>
<td>• Hard disk: 1 GB or greater</td>
</tr>
<tr>
<td>Accounts Manager</td>
<td>• Windows Server&lt;sup&gt;3&lt;/sup&gt; 2008 (x86, x64)&lt;sup&gt;6&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Department Manager</td>
<td>• Windows Server&lt;sup&gt;3&lt;/sup&gt; 2008 R2, 2012, 2012 R2 (x64)&lt;sup&gt;6&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Reports Manager</td>
<td>• Windows 7 Professional/Enterprise/Ultimate (x86, x64)</td>
<td></td>
</tr>
<tr>
<td>Release Station</td>
<td>• Windows 8 Professional/Enterprise (x86, x64)</td>
<td></td>
</tr>
<tr>
<td>Device Monitoring Console</td>
<td>• Windows 8.1 Professional/Enterprise (x86, x64)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Windows 10 (x86, x64)</td>
<td></td>
</tr>
<tr>
<td>Workstation Client</td>
<td>• Windows 7 Professional/Enterprise/Ultimate (x86, x64)</td>
<td>• Processor: 2 GHz or greater</td>
</tr>
<tr>
<td>Print Assistant (Equitrac Express feature)</td>
<td>• Windows 8 Professional/Enterprise (x86, x64)</td>
<td>• Memory: 2 GB or greater</td>
</tr>
<tr>
<td></td>
<td>• Windows 8.1 Professional/Enterprise (x86, x64)</td>
<td>• Hard disk: 50 MB or greater</td>
</tr>
<tr>
<td></td>
<td>• Windows 10 (x86, x64)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Citrix/Terminal Server&lt;sup&gt;5&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Mac OS 10.8 to 10.11</td>
<td></td>
</tr>
</tbody>
</table>
## Workstation Client Requirements

<table>
<thead>
<tr>
<th>Client Tools</th>
<th>Software Platforms(^1)</th>
<th>Minimum Hardware(^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Server Requirements</td>
<td>• Windows Server 2008 (x64 with IIS 7.0 and .NET 4.5)(^6)</td>
<td>• Processor: 2 GHz or greater</td>
</tr>
<tr>
<td></td>
<td>• Windows Server 2008 R2 (x64 with IIS 7.5 and .NET 4.5)(^6)</td>
<td>• Memory: 2 GB or greater</td>
</tr>
<tr>
<td></td>
<td>• Windows Server 2012 (x64 with IIS 8.0 and .NET 4.5)(^6)</td>
<td>• Hard disk: 1 GB or greater</td>
</tr>
<tr>
<td></td>
<td>• Windows Server 2012 R2 (x64 with IIS 8.0 and .NET 4.5)(^6)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Import an SSL certificate(^7) and use the HTTPS protocol (recommended)</td>
<td></td>
</tr>
<tr>
<td>Supported Web Browsers</td>
<td>• Latest version of Google Chrome</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Latest version of Mozilla Firefox</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Internet Explorer 11</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Microsoft Edge (for Windows 10)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Mac Safari</td>
<td></td>
</tr>
<tr>
<td>Note:</td>
<td>Supported browsers must have JavaScript and cookies enabled. In Internet Explorer, the Web Client root URL must be added to the Trusted Sites list</td>
<td></td>
</tr>
<tr>
<td>Additional Requirements for Web Deposit</td>
<td>• Microsoft SQL Server 2008 and 2008 Express SP3 (or higher)</td>
<td></td>
</tr>
<tr>
<td>(Equitrac Express feature)</td>
<td>• Microsoft SQL Server 2008 R2 and 2008 R2 Express SP1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Microsoft SQL Server 2012 and 2012 Express</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Equitrac External Data Connector license for each server offering Web Deposit services</td>
<td></td>
</tr>
</tbody>
</table>

### Footnotes:

1. For all software platforms, ensure that the latest service packs are applied.

2. This column indicates minimum hardware requirements only; high printing volumes and/or large installations may require substantially higher performance hardware.

3. Users/Site Network Administrators are responsible for securing Microsoft Client Access Licenses as required.

4. x86 refers to 32-bit architecture; x64 refers to 64-bit architecture (IA64 chip set is not supported).

5. Tracking Direct IP Printing via DRC is not supported on Citrix/Terminal Server.

6. Windows Server 2008 Server Core and Windows Server 2012 Server Core are not supported.

7. The default communication between the Client web browser and the IIS server is unencrypted, therefore, Equitrac recommends implementing Secure Socket Layer (SSL) security on the IIS server to ensure that all communication is encrypted and secure. Purchase an SSL certificate from a trusted Certificate Authority (CA), and install it on the IIS server. The CA can be a locally implemented Microsoft Enterprise CA or a third party CA. Refer to your certificate provider's documentation for complete installation and deployment.

8. Supported with LPR and CUPS.
NOTE: The system operating requirements are updated regularly. Please refer to the latest Equitrac Office or Express Technical Specifications document available from the Equitrac Partner Portal for the most up-to-date information.

For requirements when deploying Equitrac Office/Express in a clustered environment, see Deploying in a Clustered Environment on page 29.

If you plan to install client features on a Mac platform, note the following:

- Each Mac workstation must have the Mac Client component installed.
- All Mac network printing must use printers created using the Equitrac Administration Tools, or DRC must be installed to track Direct IP Printing.
- Desktop Printing, Message Client and Interactive Print Rules are not supported on Mac clients.

NOTE: Although Equitrac Message Client is not supported for Mac users, the Mac Client has its own message popup capability. The Mac popup will display Equitrac messages except those generated by Interactive Print Rules.

Additional Documentation

To learn more about the advanced features and functionality of Equitrac Office and Express, refer to the table below for an outline of the product guides.

<table>
<thead>
<tr>
<th>Resource</th>
<th>Description/Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation Guide</td>
<td>• Use this guide to perform an initial installation or upgrade of all Equitrac services.</td>
</tr>
<tr>
<td></td>
<td>• Includes information to install Equitrac Office and Express on a Windows print server</td>
</tr>
<tr>
<td>Administration Guide</td>
<td>• After installing Equitrac Office or Express, use this guide to configure Equitrac for use in your organization or campus.</td>
</tr>
<tr>
<td>Cluster Deployment Guide</td>
<td>• Use this guide if you are deploying Equitrac Office or Express in an existing cluster environment.</td>
</tr>
<tr>
<td>Print Server Module Guides</td>
<td>• If your deployment utilizes a Linux or UNIX print server, use these guides to configure the print server after the installation is complete.</td>
</tr>
<tr>
<td>• Linux iPrint</td>
<td></td>
</tr>
<tr>
<td>• Red Hat Enterprise</td>
<td></td>
</tr>
<tr>
<td>Embedded Guides available for various manufacturers</td>
<td>• Use these manufacturer specific guides for Equitrac embedded clients.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Help</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release Station Help</td>
<td>Instructions and reference information about using Release Station to release print jobs.</td>
</tr>
</tbody>
</table>
**Nuance Combined Client**

Nuance offers a Combined Client component that integrates Equitrac print and AutoStore scan functionality on specific embedded client-configured MFPs. The Combined Client should be used if you plan to use the embedded client in both Equitrac and AutoStore environments.

The Nuance Combined Client is configured through the Nuance Device Registration Service (DRS). DRS is a single interface used to manage applications, register, unregister and update devices or groups of devices, and to perform other administrative tasks, such as:

- Manage applications, device groups, and devices in a central location
- Manage updates to multiple devices through a single interface
- Implement and configure device authentication methods

When a user logs into a Combined Client enabled device, the client connects to the embedded web server hosted by Equitrac or AutoStore. The embedded web server uses the device IP address to retrieve device configuration data from DRS. This data determines how the Combined Client behaves and how it contacts the Equitrac or AutoStore servers. The device properties determine the print and scan functions that are available to users.

**NOTE:** Equitrac and AutoStore can both be installed and run on the same server, however, depending on your environment and current server set-up, they may need to be installed on separate servers.

**Prerequisites: Before Setting up Combined Client**

Before setting up and registering a Combined Client in DRS, you must first configure the Equitrac embedded device in System Manager. Refer to the specific embedded device documentation for setup and configuration options.

To configure the Combined Client for Equitrac and Autostore, do the following:

1. Install and configure Equitrac Office or Express.
2. Configure the embedded client in System Manager.
3. Obtain the DRS software and Installation Guide from the Equitrac Partner Portal.
4. Install and configure DRS as per the DRS Installation Guide.
5. Once installed, open DRS and click the Help button, and then navigate to the "Device and application setup" section for general setup and configuration instructions.

Refer to the specific Nuance Combined Client sections within DRS Help for client setup and configuration instructions.

**NOTE:** DRS is not supported on an Oracle database.
About Equitrac Office and Express

Product Overview

Equitrac Office is a software solution that controls access to printers, copiers, scanners, and multi-function devices, and manages cost allocation for the purpose of reporting, budgeting, and usage pattern analyses. Equitrac Office is designed to create a secure document output environment that helps your organization gather usage data to control costs and minimize waste.

Equitrac Express is an educational software solution that controls student and staff access to networked output devices such as printers, copiers, scanners, and multi-function devices. The solution manages payment methods, tracks usage, and provides a secure document output environment across the entire campus. Equitrac Express provides vendor-neutral support for multiple print workflows, database types, and operating systems.

Integrating Equitrac Office or Express into your document output environment offers the following benefits to your organization:

<table>
<thead>
<tr>
<th>Benefit</th>
<th>Description</th>
</tr>
</thead>
</table>
| Ensure Document Security    | • devices are accessible to authorized users only for all print/fax/copy/scan functionality  
• secure print queues hold documents in a virtual queue until the user releases the documents via a control mechanism (Release Station, Web Release Station, PageCounter, PageControl Touch, and Embedded software)  
• the user is on-hand at the output device to retrieve their document as it is printed, ensuring privacy of document content  
• each user can see only their own documents in the secure queue; other users documents are not visible  
• provides a comprehensive audit trail of all document input and output activities, whether printing, copying or scanning |
## Chapter 2: About Equitrac Office and Express

### Reduce Expenses
- reduce waste and uncollected prints
- set up rules to limit the type of printing each user is granted; control access to color devices
- establish least-cost routing rules to proactively route print jobs to the most appropriate output device, based on certain criteria such as the group membership of the originating user, the size and other attributes of the job
- silent print tracking to assess printer usage by user, or department
- secure print queues eliminate cases where jobs are sent to a printer and never retrieved and eliminates the need to print banner pages as a means to identify personal output
- analyze usage patterns to determine the correct purchasing solution to support user needs
- establish a color quota system to set allowable limits for color output on a per-user basis
- measure cost savings via a Savings Report which details how much money was saved by not releasing all jobs from the printer, or by forcing monochrome and duplex printing. Additionally this report details the environmental savings—such as the number of trees and amount of water saved, plus the volume of CO2 not released into the atmosphere

### Improve Workflow
- allow the user to pull their job to a specific output device (Follow-You Printing)
- configure Multi-server Follow-You Printing to support retrieval of jobs securely queued on any print server in the organization without imposing heavy network traffic; enables users to release their print job on any printer within the organization, regardless of where it was originally destined, enhancing the print workflow throughout the enterprise
- use DME-based routing to eliminate user frustration – and reduce IT helpdesk calls – when devices go offline due to paper jams, low toner, or insufficient paper. Automatic routing allows users to (be informed where to) get their jobs quickly from an alternate printer without impeding their workflow
- users can preview their print job attributes (including cost, number of pages and more) before they release a job to a printer
- single sign-on delivers non-repudiation for the scan to e-mail function of certain supported MFPs and operates in conjunction with certain scan and fax server providers to personalize workflows
- use the Send To printing feature to let authorized users distribute print jobs to another user or a distribution list. The distributed print job is held in a secure print queue on the server, and can be released by the recipient. For example, the HR department may send pay slips to employees. Or a teacher may send a workbook to all students in its class and choose to accept or pass on the costs
- assign a user to act as a delegate to release another user’s print jobs. For example, an assistant can be assigned to a manager’s account, thus allowing the manager to send a job for printing, and the assistant (delegate) can then release the job via Follow-You Printing for the manager.
- students can self-replenish their printing accounts at any time with the Pay Station Deposit Centre feature (Equitrac Express only)
- use the Equitrac Capture & Send feature for select manufacturer devices to allow users to quickly and easily send scanned documents to email, fax, network folders or Microsoft SharePoint

<table>
<thead>
<tr>
<th>Benefit</th>
<th>Description</th>
</tr>
</thead>
</table>
| Reduce Expenses | • reduce waste and uncollected prints  
|               | • set up rules to limit the type of printing each user is granted; control access to color devices  
|               | • establish least-cost routing rules to proactively route print jobs to the most appropriate output device, based on certain criteria such as the group membership of the originating user, the size and other attributes of the job  
|               | • silent print tracking to assess printer usage by user, or department  
|               | • secure print queues eliminate cases where jobs are sent to a printer and never retrieved and eliminates the need to print banner pages as a means to identify personal output  
|               | • analyze usage patterns to determine the correct purchasing solution to support user needs  
|               | • establish a color quota system to set allowable limits for color output on a per-user basis  
|               | • measure cost savings via a Savings Report which details how much money was saved by not releasing all jobs from the printer, or by forcing monochrome and duplex printing. Additionally this report details the environmental savings—such as the number of trees and amount of water saved, plus the volume of CO2 not released into the atmosphere  

| Improve Workflow | • allow the user to pull their job to a specific output device (Follow-You Printing)  
|------------------|• configure Multi-server Follow-You Printing to support retrieval of jobs securely queued on any print server in the organization without imposing heavy network traffic; enables users to release their print job on any printer within the organization, regardless of where it was originally destined, enhancing the print workflow throughout the enterprise  
|                  | • use DME-based routing to eliminate user frustration – and reduce IT helpdesk calls – when devices go offline due to paper jams, low toner, or insufficient paper. Automatic routing allows users to (be informed where to) get their jobs quickly from an alternate printer without impeding their workflow  
|                  | • users can preview their print job attributes (including cost, number of pages and more) before they release a job to a printer  
|                  | • single sign-on delivers non-repudiation for the scan to e-mail function of certain supported MFPs and operates in conjunction with certain scan and fax server providers to personalize workflows  
|                  | • use the Send To printing feature to let authorized users distribute print jobs to another user or a distribution list. The distributed print job is held in a secure print queue on the server, and can be released by the recipient. For example, the HR department may send pay slips to employees. Or a teacher may send a workbook to all students in its class and choose to accept or pass on the costs  
|                  | • assign a user to act as a delegate to release another user’s print jobs. For example, an assistant can be assigned to a manager’s account, thus allowing the manager to send a job for printing, and the assistant (delegate) can then release the job via Follow-You Printing for the manager.  
|                  | • students can self-replenish their printing accounts at any time with the Pay Station Deposit Centre feature (Equitrac Express only)  
|                  | • use the Equitrac Capture & Send feature for select manufacturer devices to allow users to quickly and easily send scanned documents to email, fax, network folders or Microsoft SharePoint |
Core Server Components

Equitrac Office and Express are comprised of a set of core services that reside on one or more network servers. Each component communicates with the other services on a designated port.

The following diagram illustrates the key function of each service:

- **The Core Accounting Server (CAS)** communicates with the central database containing all Equitrac Office or Express accounts, transaction tracking and device information. Considered the central core of all print and copy tracking activity, CAS handles user authentication requests and tracks activity forwarded by DRE and DCE.

- **The Document Routing Engine (DRE)** tracks print jobs originating from network printers.

- **The Device Control Engine (DCE)** manages and tracks walk-up secure document release, copy, scan, and fax jobs.

- **The Device Monitoring Engine (DME)** is an optional service that continually monitors the status of MFPs, print, or copy devices to proactively alert Administrators of potential problems.

- **The Scan Processing Engine (SPE)** is an optional service required to run the Equitrac scanning features.

Core Accounting Server

The Core Accounting Server (CAS) verifies users, calculates transaction charges, and assigns those charges to an appropriate user or group account. CAS calculates charges using page count and job attribute information received from DRE, along with printer costs defined by the administrator.

CAS primarily handles user authentication requests for network print jobs (forwarded by DRE) and for copy/scan/fax jobs (forwarded by DCE). The CAS server is the only component with access to the database. All other component/services must communicate with the CAS server to send data to or receive data from the database.

Every Equitrac Office and Express installation requires a pre-installed database. CAS uses the database instance to create an accounts database that contains all printer, user, department, billing code, transaction, and balance information. The database can reside on the same machine as CAS, or on a separate server if needed. See **Database Requirements** on page 6 for information about supported databases.
Document Routing Engine

The Document Routing Engine (DRE) is the print server. If you plan to enable document flow from user workstations to networked output devices and capture the document characteristics of all output, you need to implement one or more DRE print servers. DRE integrates with the print server, and manages all communication with physical printing devices. Each time a user releases a print job, DRE communicates the job characteristics to CAS.

For installations that require secure document printing, you can configure DRE to hold documents in a print queue until the user releases them from a release device (such as PageCounter, Release Station, Web Release Station or embedded device). See Establishing a Secure Print Environment on page 21 for details.

The following diagram shows a typical DRE workflow. First, a user generates a print request. DRE intercepts the request before it gets to the printer and “holds” the print job while it waits for a user validation response from CAS. CAS checks its database and either validates the user, or denies the request. The response is sent back to DRE, and the print job is forwarded to the printer if the user was validated. If denied, the user receives a notification message on their desktop (if configured). After the job is printed, the page count and job attributes are forwarded to the CAS database for tracking.

Although DRE is a core component, it is not required in all deployments. DRE manages communications with physical printing devices. If you are only tracking photocopy transaction on devices with embedded devices (rather than tracking printing), you do not need to install the DRE component.

The number of DREs you require depends upon the number of devices you need to control, and the anticipated print volume. See Print Server Platform on page 32 for details.
**Device Control Engine**

The Device Control Engine (DCE) provides communication with copy, scan, and fax devices and with multi-function devices that provide scan and fax features. If you plan to control access to copy, scan, and fax functionality, you require at least one DCE. DCE communicates with control mechanisms such as PageCounter terminals or Equitrac embedded software, to authorize access to and track document output on devices that provide copy, fax and scan features.

DCE communicates with CAS to verify user credentials, and forwards the copy, scan, fax information generated by these devices for tracking in the accounting database.

The following diagram shows a basic DCE workflow. First, a user requests access to a multi-function device via a PageCounter terminal or a terminal keypad. The request is handled by DCE, which then forwards a user validation request to CAS. CAS checks its database and either validates the request, or denies it. After the user completes their photocopy, fax, or scan, the job attributes are forwarded to CAS for tracking.

Although DCE is a core component, it is not required in all deployments. If you intend to track printing from workstations only, and do not need to track photocopy, scan, or fax jobs, you do not need to install the DCE component. Instead, you need the DRE component only.

The number of DCEs you require depends upon the number of devices you need to control, and the number of transactions per day that you anticipate.

**Device Web Service**

The Device Web Service (DWS) is an optional feature of DCE, and is required to manage and control embedded applications on web-based MFPs. When a user logs in at a web based device, the login data is sent to DWS, which communicates with DCE, and then DCE contacts CAS to verify the user credentials, and forwards the information generated by these devices for tracking in the accounting database. Currently, DWS and DCE must reside on the same server.

**NOTE:** The Device Web Service is only supported on 64-bit systems.
Scan Processing Engine

The Scan Processing Engine (SPE) is responsible for managing and controlling the scan features once authentication has taken place. When a scan request is received by DCE, all information relevant to the request is passed to SPE to process. SPE then sends the scans to the appropriate scan destination, and sends the scan information to CAS for costing and reporting.

An SPE requires at least one DCE to operate, and multiple SPEs can be deployed per DCE to manage the scan load requirements. Scanning requirements for organizations differ based upon the amount of scanning performed, and how much OCR processing is used during the scanning process. If minimal scanning or OCR processing is used, then SPE can be installed on the same server as other Equitrac Core Components. Typically, a separate SPE server option is selected only if OCR processing is used. See SPE and Load Balancing on page 36 for deployment options.

SPE is required for Equitrac’s Scan-to-Me and Capture and Send workflows. Scan-to-Me allows users to scan a document and email it to their own address, and optionally to other addresses via the CC field (if enabled).

Capture and Send uses SPE to scan documents to a particular URL on the Internet via SharePoint, a telephone fax number via RightFax, network folders on your local area network, and email through your server. In the case of SharePoint and RightFax, there must be as many SharePoint or RightFax destinations as there are SharePoint or RightFax servers (one destination per server). A Capture and Send license is required per device and must be assigned to each device to enable the advanced scan features.
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Device Monitoring Engine

The Device Monitoring Engine (DME) is an optional component that monitors physical device status and faults. Installed on a server station, DME monitors selected devices for SNMP status changes and logs the status changes. You can view the current status of any monitored device in the Device Monitoring Console. If you want to monitor a device for a particular type of fault (e.g. offline status or paper jams), you can create Alert Rules that send notifications when the fault occurs.

IT Managers can run standard or custom device status reports to proactively identify devices requiring service or replacement. These reports track the historical status of a device over time, allowing you to understand the performance history of the device.

Document Routing Client

The Document Routing Client (DRC) is a component of the Equitrac workstation client which provides DRE printing behavior for sites that prefer to print via direct IP printing instead of to a print server. A physical device appears in System Manager the first time a workstation prints using DRC. As other DRC clients print to the same printer, additional ports and queues associated with each workstation name appear under the same physical device. This is repeated for each printer accessed by a DRC client. Reporting is the same as if they had printed to DRE printers.

DRC has all the same capabilities as DRE, such as tracking, rule sets, and secure document release. DRC supports the same workstation popup features as DRE (e.g. billing code, cost preview, interactive rules).

DRC is part of Nuance I-Queue Printing solution. There are no print servers involved with DRC I-Queue Printing, resulting in reduced network traffic and lower hardware cost and setup. Although similar to standard direct IP printing in its capabilities, the main difference is that I-Queue printing utilizes the I-Queue printer which is auto-created on the client workstation when DRC is installed.

The I-Queue printing solution eliminates the need for the user to select the appropriate printer for their print jobs, but rather allows the users to send their print requests to the I-Queue printer, and then release their jobs through any available Equitrac configured MFP through secure document release.
Web Client

Web Client is an optional feature that offers a package of web applications. These allow both users and system administrators to perform Equitrac-related tasks using a web browser. Web Client consists of Web System Manager, Scan Client, User Dashboard, Web Reports and Web Deposit. See the Web Client help for details.

Web System Manager provides a web-based interface to manage Equitrac accounts with certain sets of the standard System Manager functionality accessible via a web browser. Web System Manager allows for the management of system operations.

The Scan Client component allows monitoring and managing the scan jobs of an Equitrac user. It displays user scans sent to all available scan destinations (e.g. email, network folders, SharePoint servers and RightFax servers) via Equitrac controlled devices.

The Scan Client offers the following features:

- view the status and details of users’ scan jobs
- set the priority for scans in the queue
- access and download partially completed scans
- delete failed scan jobs

User Dashboard enables users to access and manage their personal account via a web browser.

Web Reports are special reports that display data in table, pie or bar graphs, and are viewed on a web browser.

The Web Deposit component enables organizations, such as colleges and universities, to accept deposits into an Equitrac Express system—from credit and debit cards to direct banking, direct debits, e-wallets, m-payment, commercial pre-paid cards, and vouchers through a web-based user interface.

**NOTE:** It is recommended not to run the Web Client on server operating systems. Do not run the Web Client in a web browser, only host it there. Do not disable the Internet Explorer Enhanced Security Configuration (IE ESC) in the Internet Explorer Enhanced Security Configuration window with administrator privileges.
Copy & Print Control Mechanisms

There are several ways to track copies and network print jobs when using Equitrac Office or Express. The following section outlines each method and describes the benefits to consider when selecting one method or combining methods.

Control Terminals

Control terminals are small network devices that are installed on or near printers, copiers, or multi-function devices. Control terminals enable users to release print jobs securely at the printer. Control terminals can also track copy transactions through a copy control cable connected to the copier.

Equitrac Office and Express support the following control terminals:

- Equitrac PageCounter
- Equitrac PageCounter with keyboard
- PageCounter Mini – this device can only be configured for Release all or Release all and enable copier and does not support full use of Follow-You Printing across print servers.
- Nuance ID Controller (Single Function Terminal) – this device is configured to release print jobs after authentication, and does not support Follow-You Printing.
- PageControl Touch (PCT) – this device provides copy control and secure printing on single-function and multi-function printers (MFPs). See the Equitrac PageControl Touch Setup Guide for details.

Users must authenticate at the terminal before they can access the device to perform scan, copy, or fax or secure document release jobs. The terminal communicates with a specified DCE server to perform user authentication. The terminal can optionally collect job attribute information, which it forwards to the DCE server (which in turn forwards the information to CAS for inclusion in the database).

Terminals can be configured to allow authentication while the CAS is offline. See CAS Offline Planning on page 40 for more information.

Embedded Devices

Embedded devices are manufacturer-specific software bridges that eliminate the need for a central print server, since the MFP devices themselves track and report activity. Embedded devices handle the transfer of user authentication and transaction details between these devices and your accounting server database. Embedded solutions offer streamlined workflow for the user because the interface is accessed via the familiar device panel, eliminating the need for an external keyboard.

Equitrac has developed embedded solutions to support select Canon, Fuji-Xerox, HP, Konica Minolta, Kyocera, Lexmark, Oce, Ricoh, Samsung, Sharp, and Xerox devices. With embedded functionality installed, these devices prompt users for valid user and account ID information for walk-up copy, scan, and fax jobs. Users can also release jobs from secure print queues directly from the MFP front panel.

**NOTE:** A manufacturer-specific Embedded Device license is required to enable communication between the MFP and DCE.
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Release Station Terminal

Release Station for Equitrac Express is a software application that resides on a client workstation and controls virtual print queues. When the user prints to a controlled device, the print job is held in a secure queue until the user walks to the device and releases their print job. A simple user interface provides an easy way to view and access documents held in the secure queues. Release Station can be located near the printers and accessible to the public, or located in a secure area accessible only to authorized users, such as print desk staff.

Release Station software controls network print jobs only, and is not used for copy/scan/or fax control. A Release Station license is required to enable this communication.

Web Release Station

Web Release Station is a software application that allows the user to log on to a web-based Release Station. Users can access the web page from their workstation, a laptop, or a conveniently located public workstation near a release printer. Web Release Station provides a simple user interface to select and access documents held on a secure print queue. Each printer using this feature requires a Web-based Release license.

Mobile Web Release

Mobile Web Release is an application that allows users to use smartphones or tablets to initiate print jobs that are currently held in a secure print queue. Mobile Web Release provides a simple user interface to select and access documents from a mobile device. Mobile Web Release allows users to release a print job from any location using Equitrac’s Follow-You Printing functionality, and then walk up to the printer to retrieve their documents. Any mobile device capable of connecting to the organization’s WiFi network through a web browser can use Mobile Web Release.

QR Code Scans

You can create a QR (Quick Response) code that allows users to access Mobile Web Release more quickly. If a QR code is displayed on a particular printer, the user can scan the code using their camera-equipped smartphone or tablet, and be directed immediately to the Mobile Web Release login screen.

Pay Station Deposit Center

Pay Station Deposit Center is an Equitrac-supplied hardware unit that enables Equitrac Express users to add value to their network accounts to pay for print and copy transactions.

The Pay Station Deposit Center requires users to enter an account number and, if configured in Accounts Manager, a password. When a user inputs this account information, the Pay Station Deposit Center contacts Equitrac Office to verify the account and obtain an account balance. Upon successful verification, the terminal accepts currency until the user either ends the transaction or reaches the maximum value for the account. Equitrac Express then credits the user’s account by the appropriate amount, and makes the additional funds available to the user for performing print or copy transactions within the Equitrac Express environment.

**NOTE:** The Pay Station Deposit Center unit requires a dedicated External Data Connector license. Equitrac Express does not recognize unlicensed terminals.
Establishing a Secure Print Environment

In environments where users print proprietary or confidential documents, secure printing gives users the power to control the timing of their output. Equitrac Office and Express hold documents sent to registered devices in DRC and DRE’s secure print queue. Through a client application or control terminal, users can view documents in the queue, then select, delete, or release documents for printing.

Depending on the needs of your organization, you can set up basic secure printing only or extend the functionality to use Follow-You Printing and/or Send To printing. In a basic setup (illustrated in the diagram below), the print job is held in a secure queue until released to the destination printer. Secure printing prevents private or sensitive materials from sitting unattended and unclaimed at remote printers.

In an advanced Follow-You Printing setup, the user can choose a different destination printer at the Release Station or control terminal—they do not have to release the job to the printer originally selected at the user workstation. In a Send To printing setup, the user can release a job to the secure queue on behalf of other users, and the print job appears in the secure queue for each user selected.
Follow-You Printing

Follow-You Printing extends the basic secure printing setup by allowing users to release print jobs to compatible printers from any Release Station or control terminal. The administrator creates custom pull groups, which are logical groups of printers that share output capabilities. When a user submits a print job to a printer within a pull group, the job is held in a secure print queue. The user can walk to a Release Station or control terminal, authenticate, then select any printer within the pull group to produce the job. If your organization is spread across multiple buildings, Follow-You Printing offers the flexibility to release documents at networked devices whenever convenient, and ultimately improves productivity because users can avoid out-of-service printers, or submitting jobs to a busy printer.

Equitrac Office and Express also offer multi-server Follow-You Printing, which allows users direct print jobs across print servers.

Delegate Printing

In Delegate printing, users can be assigned to act as a delegate to release another user’s print jobs. For example, an assistant needs to release a manager’s print jobs from a device, therefore the assistant is assigned to the manager’s account as a delegate. The manager (delegator) sends a job for printing, and the assistant (delegate user) logs in to the device with their user credentials to release the job via Follow-You Printing. The delegate is presented with a list of their documents, followed by a list of the delegator’s documents. The jobs released by the delegate are charged to the delegator’s account. A delegator may have multiple delegates, and a delegate may be assigned to multiple delegators.
Send To Printing

In a Send To printing setup, the user can submit a job to the secure queue on behalf of other users, and the print job appears in the secure queue for each user selected. The user who submits the print job (called the originating user), can select any combination of User Accounts, Departments, or Windows Active Directory Groups as the recipients. Alternatively, in Equitrac Express, the user can set an identifier (called a release key) for the job that must be entered before the job can be released from the secure queue. The originating user can also assign charges or accept costs for the print job.

NOTE: Send To printing is not supported in Mac environments.
Workstation Client Support

The Workstation Client provides four distinct features: Client Billing, Desktop Printing, Cost Preview, and User Authentication. These features provide job information or prompts to the user when they request a print job from a networked workstation.

- **Client Billing** prompts users to assign billing codes when they print their documents.
- **Desktop Printing** tracks print jobs sent to a locally-connected printer. Desktop Printing records user ID, page count, document title, and workstation information. Desktop Printing supports simple pricing on a per-page basis, and advanced price lists tracking, but does not enforce account limits. Charging for color attributes is also possible but depends on the properties of the printing application and the printer driver. Desktop Printing does not support charging for attributes such as duplexing or page size. Desktop Printing is not supported on Mac workstations.
- **Cost Preview** provides a summary of the print request cost prior to sending the job to the printer and prior to recording the transaction in CAS. Users can accept or cancel transactions before printing. Cost preview only works with DRE- and DRC-based print tracking (printers tracked via Desktop Printing will not display the cost preview popup).
- **User Authentication** displays a prompt for Windows login credentials any time a user tries to print to a device monitored by Equitrac. Users must enter a valid windows username and password to complete the print request.
- **Workstation direct IP printing (DRC)** enables Follow-You Printing and provides print tracking on par with DRE server-based print tracking. This is for direct IP printing only.
- **Interactive Print Rules** enables users to interact with rules providing multiple options. This does not apply to desktop printing rules or copy rules.

**NOTE:** Desktop Printing, Message Client and Interactive Print Rules are not supported on Mac clients. Although Equitrac Message Client is not supported for Mac users, the Mac Client has its own message popup capability. The Mac popup will display Equitrac messages except those generated by Interactive Print Rules.
I-Queue Printing

The Nuance I-Queue Printing feature is a cost-effective solution for network printing by reducing the need for system administrators to setup and configure multiple MFPs for users to print to from their workstations.

I-Queue printing utilizes the I-Queue printer which is accessible through the user workstation, eliminating the need for the user to select the appropriate printer for their print jobs, but rather allows the users to send their print requests to the I-Queue printer, and then release their jobs through any available Equitrac configured MFP or SFP through secure document release.

I-Queue provides a single print queue for every user and every printer. When submitting a print job, the I-Queue can be setup to use one or both of the following printing modes:

- Secure printing via a single Follow-You Printing queue where all printers are combined into a single pull group. The I-Queue holds print jobs sent to the I-Queue printer from a user workstation. This I-Queue method only supports secure printing and holds print jobs until the user releases them at a networked printer via Follow-You Printing.

- Direct printing via the I-Queue Direct printer that enables you to print directly to a printer (without printer driver installation and authentication or a Follow-You Printing queue at a printer) in a simple and straightforward method.

There are no pull group restrictions when using the I-Queue print option. Rules and price lists can be applied to the I-Queue for all associated print jobs.

I-Queue Printing Method

The I-Queue printer is auto-created on the DRE print server when the I-Queue feature is installed, or on a client workstation when the DRC feature is installed. The I-Queue printer uses the I-Queue Printer Port and Nuance Universal Print Driver and appears in the Windows built-in printer list. After I-Queue printing has been enabled on the server, the user can print to the I-Queue printer on their workstation and release their jobs at any system-configured printer.

1. The user prints to the I-Queue printer on their workstation. They do not have to select a destination printer.
2. The user authenticates at any system-configured printer on the network and releases their documents via Follow-You Printing. The job is held in the I-Queue until it is released. The user has the option to force monochrome or force duplex at the printer before releasing their documents.
3. The DCE acquires DREs and DRCs that are holding jobs for that user and instructs each of them to release the appropriate documents. They are found through the use of SLP.
4. The DRE/DRC requests driver details from the CAS and downloads the appropriate driver package from the Equitrac Driver Repository and installs it locally. The drivers are installed only at first print. The printer information and queue is cached, and all subsequent prints are released without installing a new print driver.
5. The document is rendered and sent directly to the printer.
6. The user then collects their print jobs and logs out of the printer.

NOTE: A driver package for each client workstation OS should be set up in the Equitrac Driver Repository, OR ensure that the Windows image has an appropriate driver installed. If the driver cannot be found, the user will get a printout stating that there is no print driver and the job fails to print. If they select Print & Save, the job re-spools and job would be duplicated.
I-Queue Direct Printing Method:

I-Queue Direct enables the user to print directly to a printer (without driver installation and authentication, or Follow-You Printing at a printer) in a simple and straightforward method.

The I-Queue Direct printer is created on a client workstation when the DRC I-Queue feature is installed. The I-Queue printer uses the I-Queue Printer Port and Nuance Universal Print Driver and appears in the Windows built-in printer list after a DRC cache update (either manual or automatic). After I-Queue Direct printing has been enabled on the server, the user can print straight to the I-Queue Direct printer from their workstation without authentication.

1. The user prints to the I-Queue Direct printer on their workstation.

2. The I-Queue Direct Printers pop-up window appears with a list of printers configured for I-Queue printing with associated I-Queue Port in System Manager.

   **NOTE:** The user’s recently used printers are displayed first in the list. This way they can quickly select the desired printer the next time they print.

3. The document is released immediately at the selected printer.
How you deploy Equitrac Office or Express depends upon the specific needs of your site.

- Will you need a single Core Accounting Server?
- Will you need multiple Document Routing Engines?
- Do you need to manage only a small number of users operating within a LAN, or do you have a large number of users spread across multiple sites and operating on a WAN?
- Can you rely upon your network to provide a constant connection to CAS?

This chapter provides information on the variables that can affect how you deploy Equitrac Office or Express, and how you can adjust the configuration to suit your specific needs. Not all of these variables may apply to your site, however, read this section in its entirety to ensure that you understand all of the factors that must be addressed—or ruled out—before you create your deployment plan.
Enterprise Topology

Physical geography primarily determines how you will deploy the Equitrac services.

Your enterprise falls into one of two categories:

- Single office or campus only (LAN)
- Corporate office with remote offices or a central campus (WAN)

A single office or campus offers the simplest deployment possibilities. If supporting a relatively small number of users and transactions, you can install all Equitrac services on a single server. If your user base and anticipated number of transactions is very large, also read Single vs. Multiple Core Accounting Servers on page 31.

A corporate office with remote offices or a central campus operating across a Wide Area Network poses a slightly more complicated deployment. To ensure availability of each CAS server to accommodate user authentication requests originating from within the LAN, you may need to install one CAS on each branch of your WAN (one per LAN). However, there are a number of factors to consider before determining the most effective CAS deployment for your site. For complete details on determining the number of CAS servers you will need, see Single vs. Multiple Core Accounting Servers on page 31.

When deploying across a WAN, it is important to keep the Document Routing Engine (DRE), the Document Control Engine (DCE), and the Device Management Engine (DME) locally within the same network branch to keep the intra-server communication local and thereby optimize performance. See Network Interconnection on page 30 for further information about Equitrac component deployment.

You can also install one or more Equitrac service within an existing clustered environment. For details, see Deploying in a Clustered Environment on page 29.
Deploying in a Clustered Environment

If you are considering deploying Equitrac Office or Express within an existing clustered environment, you can elect to cluster a single Equitrac service, or all services.

Clustering is the ability to group two or more servers together such that one server can act as a backup to the others in the cluster. If one server in a cluster becomes unavailable, another server in the cluster handles the functions of the first one. Print servers provide the highest level of printer availability in a cluster by transparently shifting print server functions from one server to another in the cluster when a server is taken offline.

Clustering print servers allows system and printer maintenance to be performed on an individual print server computer without interrupting the availability of the print server to the end user. When deploying Equitrac Office or Express, many Administrators choose to place only the DRE print server component in a cluster node. However, you can also install CAS on a node for failover purposes.

Even if you install CAS on a cluster, you do not necessarily need to cluster the database. Microsoft and Oracle both offer other well-documented methods to ensure high-availability of the database. Refer to the Microsoft or Oracle documentation for specific details.

**NOTE:** CAS and DRE cannot be installed on the same cluster.

When installed in a cluster, CAS can utilize a Microsoft SQL Server or Oracle database only.

If you plan to deploy Equitrac Office or Express in a clustered environment, read the Cluster Deployment Guide first and ensure that the minimum hardware and software requirements listed in Database Requirements on page 6 of this guide are met. You require a Cluster Enabler license for each cluster and a DRE license per physical node.

**NOTE:** Equitrac does not support Printer clustering on Windows Server 2012.
Network Interconnection

Careful consideration should be given to the location of the servers used for the DRE and DCE components on the network. In general, these rules apply:

Install DCE on the same server as CAS only if the following criteria are met:

- The WAN/LAN is slow or unreliable
- DCE will control 150 terminals or less
- CAS is on the same side of the switch/router as the control terminals and output devices

The DCE server should always be placed locally to the output devices it controls (as illustrated in the diagram below). Each time a user authenticates, or job details are uploaded from a terminal to the CAS database, the request is intercepted and handled by DCE. DCE then communicates with CAS on a private port to forward job attributes for inclusion in the database. Direct communication from DCE to the controlled devices maximizes performance.

If deploying within a single LAN, consider deploying DREs and DCEs according to department. Identify similar usage groups and then segment them from one another so you do not disrupt network traffic flow.

**NOTE:** DME is an optional component that can be installed on any server but is most often deployed on the same server as DRE. In the event that there is no DRE in the system, DME is most often on the CAS server.
Single vs. Multiple Core Accounting Servers

This section presents a number of factors to consider when determining the number of CAS servers that would best serve the needs of your site.

Network Reliability and Setup

It is very important to understand that user authentication requests usually require a connection to CAS before the user is allowed to proceed with their print or copy/scan/fax job (the exception is when offline caching is enabled – see Network Bandwidth on page 39). If the connection is impeded in any way (network traffic, network reliability, etc.), the user will be unable to proceed with their job until CAS can verify their login credentials. A reliable connection to the CAS server is important when deciding on a single or multiple CAS server setup.

In deployments across sites, you should deploy a single CAS only in situations where you can guarantee network uptime, and can provide enough bandwidth for Equitrac at all times. If your WAN is unreliable or if you have limited bandwidth, you should install multiple CAS servers.

Ease of Administration

Each CAS requires its own pre-installed database, and these databases are managed separately. Therefore, multiple CAS servers requires separate administration of devices, user accounts, and configuration.

If you are managing completely separate user populations and the networks within each LAN are also managed separately, multiple accounting servers offers the ability to maintain each server independently.

Consolidated Reporting

If you deploy more than one CAS, you will have two or more distinct databases. To generate consolidated reports and analyze system-wide print tracking or copy data, you must configure the Uplink feature to upload transaction data from slave CAS servers to a main server at a pre-set interval. When Uplink is configured, you can view transaction and account data reports from all CAS servers, or you can report on individual servers only. The Uplink feature operates independently of the WAN speed and will not inhibit the flow of network traffic. See Running Consolidated Reports in the Equitrac Office and Express Administration Guide.
Chapter 3: Deployment Variables

The following diagram illustrates a multiple server scenario. Each CAS requires its own unique database that you administer separately, including account, device, and pricing information. When the Uplink is configured, the data from the slave CAS is uploaded to the Master CAS. However, the data on each CAS is maintained separately, even when Uplink has occurred. The Uplink feature consolidates report generation, but not consolidate the databases themselves.

![Diagram of multiple server scenario]

**NOTE:** The Uplink feature is not available with the Equitrac Office Small Business or Equitrac Express Small Campus Editions.

Print Server Platform

DREs can be installed on a Windows or UNIX platform. See **System Requirements** on page 6 for a complete list of DRE software platforms. See **Print Server Platform Feature Comparison Chart** on page 33 for a charted comparison of Equitrac features across all three platforms.

DRE should be deployed on a server that is local to the printers and clients it will control. This optimizes print traffic speed and handling. To calculate the number of DREs you need to implement, see **Print Server Calculation** on page 34. The Equitrac Office or Express Suite includes one DRE license to support up to 100 network printer ports. The Equitrac Express Small Campus Edition also includes one DRE license to support up to 25 devices. The DRE license is not platform-specific.

Windows Print Server

DRE installed on a Windows print server supports the following:

- Network print-tracking and charging
- Rules and routing
- Secure Document Release (SDR), including Follow-You Printing
- PJL and Data Stream Interpreter Page Counting
UNIX Print Servers

The Equitrac UNIX print server enables accounting on UNIX print servers by monitoring printing and reporting printer usage on the standard UNIX printing subsystem to an Equitrac Office or Express accounting server.

See the UNIX Print Server Installation Guide if deploying a UNIX DRE server. This document is located on the product CD in the /Documentation folder.

Print Server Platform Feature Comparison Chart

<table>
<thead>
<tr>
<th>Feature</th>
<th>Windows</th>
<th>UNIX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network print tracking and charging</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Pop-up billing codes</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Email user notifications</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Popup user notifications</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>User authentication for Mac clients</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>Secure document release</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Follow-You Printing</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>DataStream Interpreter page counting</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>PJL page counting</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>iPrint</td>
<td>✗</td>
<td>✓</td>
</tr>
<tr>
<td>Print rule sets</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

* UNIX print servers do not support rules based on group memberships.
Print Server Calculation

Calculating the approximate number of dedicated print servers you will need requires a three-part calculation.

Part 1: Peak pages per minute calculation

The first part of the calculation accounts for the estimate peak pages per minute, then factors in color and PostScript adjustments to derive the Total PPM.

1) Estimated PPM peak rating

- **Requirements**
  - a. Enter the number of output devices within the deployment that will be controlled
  - b. What is the average required speed out of output (PPM)?
  - c. Multiply (a) and (b) to determine the theoretical peak PPM rating
  - d. Calculate 50% of the theoretical peak PPM rating (c) to determine the estimated peak PPM rating

- **Example**
  - a = 400
  - b = 45
  - \( a \times b = c \)
    
  - \( 400 \times 45 = 18000 \)
  - \( c \times 0.5 = d \)
    
  - \( 18000 \times 0.5 = 9000 \)

2) Color-adjusted peak PPM

- **Requirements**
  - e. Enter the average% of color output you anticipate (as a percentage of the total amount of output)
  - f. Add the color percentage to the estimated peak PPM rating (d)

- **Example**
  - e = 10%
  - \( d \times e = f \)
    
  - \( 9000 \times 1.10 = 9900 \)

3) PostScript adjustment

- **Requirements**
  - g. Enter the % of PostScript (as a percentage of the total amount of output)
  - h. Multiple the PostScript percentage (g) by a factor of 4 and add 100 to include black and white printing.

- **Example**
  - g = 25%
  - \( g \times 4 + 100 = h \)
    
  - \( (4 \times 25) + 100 = 200 \)

Part 2A: PDL adjusted peak calculation

**PDL adjusted peak**

- **Requirements**
  - i. Multiply the PostScript adjustment value (h) by the Color Adjusted peak PPM (f)
  - j. Divide the result of (i) by 100 to calculate the PDL Adjusted Peak

- **Example**
  - \( h \times f = i \)
    
  - \( 200 \times 9900 = 1980000 \)
  - \( i \div 100 = j \)
    
  - \( 1980000 \div 100 = 19800 \)
Chapter 3: Deployment Variables

Part 2B: Safe capacity calculation

The second part of the calculation gives you the opportunity to add a safety margin into the calculation, ensuring that the print server is capable of continuously processing all print requests.

I-Queue printing requires additional processing to re-render print jobs at release, and the increase demand must be taken into consideration when planning server size and processing capacity.

1) Server capacity

\[
\begin{align*}
\text{k} & \quad \text{Enter the Server CPU size in MHz} \\
\text{l} & \quad \text{Enter the number of CPU cores} \\
\text{m} & \quad \text{Multiply (k) and (l)} \\
\text{n} & \quad \text{Multiply (m) by 100 to calculate the total desired server capacity}
\end{align*}
\]

\[
\begin{align*}
k \times l &= m \\
3000 \times 2 &= 6000
\end{align*}
\]

\[
\begin{align*}
m \times 100 &= n \\
6000 \times 100 &= 600000
\end{align*}
\]

2) Safety margin

\[
\begin{align*}
o & \quad \text{Enter the margin that you want to add to the total server capacity to ensure that the print server continues to function} \\
p & \quad \text{Divide (n) by (o) to calculate the safe capacity rating (MHz)}
\end{align*}
\]

\[
\begin{align*}
n \div o &= p \\
600000 \div 50 &= 12000
\end{align*}
\]

Part 3: Print Server calculation

Estimate the number of print servers by diving the PDL Adjusted peak value by the Safe Capacity Rating.

Print server calculation

\[
\begin{align*}
q & \quad \text{Divide the PDL adjusted peak (j) by the Safe capacity rating (p) to estimate the number of dedicated print servers.}
\end{align*}
\]

\[
\begin{align*}
j \div p &= q \\
19800 \div 12000 &= 1.65
\end{align*}
\]

Calculation complete
**SPE and Load Balancing**

The Scan Processing Engine (SPE) is an optional server component required to run the Equitrac Office and Express scan feature. SPE can be installed either in a single server configuration, or scaled for larger deployments with the availability of load balancing to ensure uptime and throughput.

Certain endpoints can be configured to use the Capture and Send feature enabling them to send scanned documents to email, network folders, RightFax servers and SharePoint servers. A separate Capture and Send license is required for each device using this feature. In the case of SharePoint and RightFax, there must be as many SharePoint or RightFax destinations as there are SharePoint or RightFax servers (one destination per server). For example, if each department has a SharePoint server, then each server must be added as a valid Scan Destination. See the Configuring Scan Destinations in the Scanning chapter of the Equitrac Office and Express Administration Guide for more detail.

**Scan Load Balancing with OCR Calculation**

An SPE requires at least one DCE to operate, and multiple SPEs can be deployed per DCE to manage the scan load requirements. If performing a large amount of scanning with OCR processing, scale the SPE requirements to suit their needs. One or more SPEs can be deployed to their own servers if the shared DCE/SPE server cannot resolve the scan and OCR needs. Various configurations are possible in such a setup.

When calculating SPE scanning load with OCR processing, consider the following:

- average number of pages per scan (a)
- number of scan jobs per hour peak (b)
- percentage of jobs which are OCR, represented as a decimal (i.e. 50% is 0.5) (ocrp)
- average GHz per core (agc)

The following calculation can be used to determine the number of cores needed for scans and for scans with OCR processing. The number of OCR cores cannot exceed the number of scan cores.

\[
\text{scan} = \frac{(a \times b)}{3000} \times \frac{2.5}{\text{agc}}
\]

\[
\text{ocr} = \frac{(a \times b \times \text{ocrp})}{3000} \times \frac{2.5}{\text{agc}}
\]

For example, if you have 1000 scan jobs per hour, with an average of 10 page/scan, and 50% of the scans are OCR, and the average core speed is 2 GHz, then:

\[
\text{scan} = \frac{(10 \times 1000)}{3000} \times \frac{2.5}{2} = 4.17 \text{ or 5 cores}
\]

\[
\text{ocr} = \frac{(10 \times 1000 \times 0.5)}{3000} \times \frac{2.5}{2} = 2.08 \text{ or 2-3 cores}
\]

Depending if this is a dedicated server or a shared server:

- CPUs for Shared DCE/SPE server
  - 8 cores or less
    - Maximum SPE threads should be set to no more than N (# of cores)
    - Maximum OCR threads should be set to no more than N (# of cores / 2)
  - Great than 8 cores
    - Maximum SPE threads should be set to no more than N (# of cores)
    - Maximum OCR threads should be set to no more than N (# of cores – 4)
• CPUs for Dedicated SPE server
  
  Maximum SPE threads should be set no more than 2 x N (# of cores)
  
  Maximum OCR threads should be set no more than N (# of cores – 1)

The amount of memory allocated for the system for scans is 512MB + (scan)*512MB.

Therefore, the amount of memory required in the example above would be (512) + (5)*512 = 3GB.

**NOTE:** The system should have a dedicated disk and dedicated NIC.

Refer to the "Configuring Load Balancing" section in the Scanning chapter of the *Equitrac Office and Express Administration Guide* for more detail on configuring your OCR scanning needs.
Client Workstations

If you plan to control network and/or desktop printing, you need to deploy the Equitrac Office or Express Client software to any client workstation from which a print request may be generated.

Equitrac can track printing sent to networked printers or locally connected printers (i.e. USB, LPT:1, Bluetooth, Firewire). To fully track workstation printing (including job detail attributes such as color, binding, stapling, and punching), server-based printing is normally required. However, the workstation direct IP printing feature with Equitrac Workstation client provides the same tracking detail without using a print server.

Deploying Client Software

Depending on the number of clients you must track, you can deploy in one of three ways:

- Manual – Run the installer local to each client workstation.
- Automatic – Use distribution software such as SMS or other MSI-capable management systems.
- Silent Install – Push the client installation software from a central shared folder on a network server to target clients.

Client Workstation Caching

Equitrac is capable of tracking printing that occurs even when CAS is offline.

While CAS is offline, all print tracking information generated from the workstation is logged locally until a direct connection with CAS is re-established. The details are automatically uploaded to CAS, and after confirmation of successful upload (transparent to the user), the cache is flushed.
Network Bandwidth

In general, a single communication between Equitrac components is approximately 1.5kb. However, depending on the configuration and the activities generated by the user, the network traffic increases accordingly.

The following table is provided to help you estimate the transaction bandwidth you must anticipate when deploying Equitrac to track network printing and/or copying. The numbers shown below reflect the network traffic generated by Equitrac components only, and do not include Ethernet or TCP/IP packet headers, nor print job traffic.

<table>
<thead>
<tr>
<th>Equitrac event traffic</th>
<th>Estimated Bytes</th>
<th>When event occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>DCE start</td>
<td>19kb</td>
<td>Copy job requires DCE start.</td>
</tr>
<tr>
<td>DRE start</td>
<td>7kb</td>
<td>A print job is sent to DRE and secure document release is configured.</td>
</tr>
<tr>
<td>PageCounter start</td>
<td>9kb</td>
<td>User logs in to PageCounter.</td>
</tr>
<tr>
<td>PageCounter login and copy</td>
<td>7kb</td>
<td>User logs in to PageCounter and makes copies.</td>
</tr>
<tr>
<td>PageCounter login and release all</td>
<td>13kb</td>
<td>A print job is released from the Secure queue via a PageCounter that is configured for release all at login.</td>
</tr>
<tr>
<td>PageCounter login and select print jobs</td>
<td>14kb</td>
<td>A print job is released from the secure queue via a PageCounter that is configured for prompt. The user manually selects the job to release from the terminal.</td>
</tr>
<tr>
<td>Print job (no secure document release)</td>
<td>5kb</td>
<td>A print job is sent to DRE and secure document release is not configured.</td>
</tr>
</tbody>
</table>
CAS Offline Planning

Equitrac Office and Express can be configured to continue print and copy tracking when CAS is unreachable.

Network and direct IP print tracking can continue in the absence of a connection to CAS if you configure DRE or DCE to print and charge later. Data can be stored until the drive space on the DRE server or DRC workstation is completely utilized. DRE and DCE automatically upload cached information to CAS when the connection is restored.

All print tracking except client billing validation is supported when the print device is configured in System Manager to print and charge later. Client billing (billing codes) requires a direct query to CAS to verify account details. With CAS offline, these details cannot be verified. Therefore, if your configuration will implement billing codes, you can configure the workstations to validate billing code information locally. The user can then authenticate against the data stored locally, and the user workflow is not interrupted.

If you enabled DCE Server caching and the DCE and DRE servers are reachable then both PageCounters and embedded devices will support Follow-You Printing. If configured, a billing code prompt will still appear but cannot be validated against CAS. DCE and DRE cache full print and copy attributes and uploads them to CAS once communication is restored. The first time a user logs onto a PageCounter or embedded device while it was connected to CAS ensures that their user credentials have been cached on DCE and are available to all devices accessing DCE.

If you enabled DCE caching and the DCE server is unreachable, PageCounters and embedded devices that support local caching will still track copying. The user must have logged onto the PageCounter or embedded device just once while it was connected to CAS to ensure their user credentials have been cached locally. The device sends a periodic ping to DCE to determine if communication is possible. If not, all user login requests are authenticated against cache data automatically. The device will continue to try to communicate with DCE, and if successful, normal terminal operation resumes and all tracking activity is uploaded to DCE and ultimately, the Equitrac database.

Network Outage

In the event of a network outage that extends beyond CAS (no network communication occurs between any Equitrac components), jobs in the secure print queues are not retrievable until network communication is re-established. Any transactions that have not yet been transmitted to CAS (whether for print or copy jobs) are not retrievable for release by the user and will not be logged in the Equitrac database.
User Account Management

Equitrac Office and Express use account information for user authentication and for transaction tracking. Each time a user performs a print, copy, scan, or fax job, the user must authenticate with their unique credentials before Equitrac allows access to the device. Equitrac Office logs and/or charges the transaction details to a specified user account and maintains an audit trail of activity for reporting purposes. Equitrac Express tracks and charges every document that the user sends to any networked printer or walk-up copier.

Sites often choose to associate Equitrac Office and Express accounts with an existing identity card such as a swipe card, a proximity card, Smart card, an employee pass key (Equitrac Office), or a campus card (Equitrac Express) to offer the user a single mechanism used to authenticate at a variety of different applications. Card readers are then placed on or near the MFPs and device they control to allow the user to swipe or pass their identity card to authenticate before making copies, scanning documents, sending faxes, or releasing documents from the secure print queue.

Topics

- Creating User Accounts
- Preparing the User Base for Synchronization
- Account Administration Options
- Implementing PINs
- Multi-Domain Authentication
## Creating User Accounts

Equitrac Office and Express offer different methods to create user accounts. The size and complexity of your site primarily determines the method you should choose.

<table>
<thead>
<tr>
<th>Method</th>
<th>Purpose and Benefits</th>
<th>Site Description</th>
</tr>
</thead>
</table>
| Active Directory Synchronization           | Use Directory Services to batch import user data, then synchronize updates as they occur.                                                                                                      | • Large sites that primarily rely upon Windows print servers  
• An existing user base that is managed by the directory service  
• LDAP directory service must support persistent search (e.g. eDirectory)                                                                                     |
| - or - LDAP Synchronization                | • Minimizes administration because updates occur automatically via communication with the directory service  
• PIN code (ID card number) synchronization is automated (if implemented)  
• Multi-server Follow-You Printing is configured when the home server is designated upon initial account import into Equitrac Office or Express  
• Department mapping is performed automatically (if configured)                                                                                               |                                                                                                                                                      |
| Flat-file import                           | Use the EQCmd.exe utility to import a file containing user account data.                                                                                                                                           | • Sites that do not rely on ADS or eDirectory user management  
• Typically 250-1000 users                                                                                                                                                                                                 |
| Add users individually                     | Use Accounts Manager within Equitrac Office/Express to add users one at a time.                                                                                                                                     | • Sites that do not rely on ADS or eDirectory user management  
• Typically 1-249 users                                                                                                                                                                                                 |
| Allow Equitrac Office/Express to create users automatically | Configure Equitrac Office/Express to create a new account automatically when a print request is received from a user not known to the Accounting Server, or when a user logs in to the front panel with their network credentials to perform copying. New accounts are assigned the default settings for quotas. | • Sites that prefer to issue temporary PIN codes for user authentication (when the email address is generated at auto user creation)                                                                                       |
| Create guest accounts (Equitrac Express feature) | Configure Equitrac Express to enable users to create temporary guest accounts.                                                                                                                                      | • Sites that prefer to grant guest user accounts in order to add funds via Cashier, Web Deposit or Pay Station Deposit Center                                                                                     |
| Create LDAP user account at login          | Configure System Manager to auto-create users based on their email address.                                                                                                                                           | • Sites that prefer to use employee’s email address for login at MFPs                                                                                                                                          |
Preparing the User Base for Synchronization

Synchronization with an existing set of user accounts from another source such as Active Directory Services (ADS) or eDirectory (formerly NDS), offers the least amount of overhead and administration because you can maintain all user accounts required within your organization from a single source. You can perform an initial import of the accounts, then configure Equitrac Office/Express to listen for changes on the ADS or eDirectory server. However, if you choose this method, you must carefully plan your account groups before you first populate the Equitrac database.

If your existing user account data is managed by eDirectory or other LDAP import solution, you can use LDAP Synchronization to monitor changes to the directory service. Subsequently, when a new user is added to the directory, or if a change is made to an existing account, Equitrac Office/Express receives a notification specifying the change details.

**NOTE:** eDirectory Synchronization does not support domain qualification.

Whether you choose ADS or eDirectory, you can limit the initial account import to specific Organizational Units (OU) that contain user account data. Before you perform the first import, you should create specific OU containers on the ADS or eDirectory server that you will use for import and synchronization purposes.

**NOTE:** The EQ services must be started by a domain account with access to the contact Active Directory. If services are started under a local machine account, the Active Directory synchronization may fail.

If you deploy multiple Core Accounting Servers (CAS), consider that each server manages a separate set of users. You can have a separate instance of the same user account in each database, if needed. However, the accounts are managed separately.

To manage a set of users without duplicating accounts, configure your OUs to group user accounts that will be managed by a particular CAS. You can then import specific OUs into each CAS database.

There are also several Equitrac Office/Express attributes you may need to map within your existing user base. Ensure that these attributes are completed within your existing user accounts before you perform the initial import into the CAS database:

- **The Department** attribute maps the ADS or eDirectory department name to the Department field in the Equitrac database. If the department name does not already exist within Equitrac Office/Express, it is automatically created and the selected users are added to the new department.

- **The Home Server** attribute maps the name of a particular print server to the Home Server field in the Equitrac database.

- **The PrimaryPIN** and **SecondaryPIN** attributes map the alpha-numeric PIN or ID card number code on the ADS or eDirectory Server to the PrimaryPIN and SecondaryPIN fields in Equitrac Office/Express. A Primary PIN is generally the user identifier, and the optional Secondary PIN is equivalent to a password or card pin code.
Chapter 4: User Account Management

Account Administration Options

User accounts are administered through one of two utilities within Equitrac Office and Express:

- **Accounts Manager** provides a direct view to the Equitrac database for all accounts-related information. When planning administrative roles, consider that a user must be a member of the Windows group assigned to Accounts permission to open and use Accounts Manager. Within this utility, the administrator can add new accounts, remove accounts, or make changes to existing account details such as department assignments, accounts balances, PIN numbers, ID card numbers, etc.

  When you launch Accounts Manager, you can specify the Core Accounting Server (CAS) that you want to connect to. Access to this manager is restricted to selected domain groups, assigned in Access Permissions. To open and use Accounts Manager, users must be a member of the Windows group assigned to the Accounts permission. For more on permissions, see Establishing Access Permissions on page 48.

- **Department Manager** also provides a direct view to the Equitrac database for accounts-related information, but the view is limited to accounts assigned to a specific department only. Department Manager allows you to establish department-level administrators.

  To open and use Department Manager, users must be a member of the Windows group assigned to the Department permission. For more on permissions, see Establishing Access Permissions on page 48.

- **Web Based System Manager** provides a web interface to manage Equitrac accounts with a certain set of the standard System Manager functionality accessible via a web browser.

Implementing PINs

PIN information connects an Equitrac Office/Express printing account with user logon information. Control mechanisms can be configured to require the user to enter primary and/or secondary PIN information. The system tracks and charges printer and copier use to the appropriate account in the Equitrac database when users use PINs to log on to a control terminal or release a print job.

The primary PIN is the alpha-numeric sequence that uniquely identifies the user. The primary PIN can be data encoded on a magnetic swipe card, an HID, Legic or Mifare contactless ID card, or the user can enter it using the control terminal keypad. The secondary PIN acts as a device password or card pin code. The user enters it using the control terminal keypad, Release Station keyboard, or on the front panel in the case of embedded devices.

You can configure Equitrac Office/Express to allow users to self-manage their user PIN information at a control terminal or Equitrac User Dashboard. Users can reset their PIN code at any time, reducing administrative overhead normally spent performing this task. Equitrac Office and Express 5.6 offer alternative primary PIN functionality. You can assign two different primary PINs to each user account, providing the user with additional flexibility when logging in.

Where supported, embedded devices can be configured to prompt a user to register a PIN when a new card is swiped. Embedded devices can also be configured to prompt for a Secondary PIN if the Primary PIN is manually typed (i.e. there is no secondary prompt if a swipe card is used).
Multi-Domain Authentication

When using the Equitrac solution in a multi-domain environment, it is recommended that the username be entered in either a Windows NT4 format (e.g. NT4domain\userid) or UPN format (e.g. userid@domain) when registering a swipe card. Using a fully qualified username for swipe-card authentication will greatly reduce the response time by eliminating the need to search though all the domains for that user.

If a fully qualified username is used for swipe-card authentication in a multi-domain environment, it is recommended that the Windows External authority is used for authentication, without specifying a domain. Typically, user accounts are validated against a default Windows domain, however, by not specifying a domain, CAS searches and authenticates by fully qualified username, not domain.

For details on setting external authorities, see Creating & Managing Accounts > User Authentication in the Equitrac Office and Express Administration Guide.
5

Security Considerations

Topics
- Establishing Access Permissions
- Securing Print Output
- Auditing
- Port Communication
- Encryption
- Virus Scanning Setup

Equitrac Office and Express offer the ability to secure the Equitrac services, the administration tools, and the secure print queues.
Establishing Access Permissions

To prevent unauthorized access to the Equitrac Office or Express Administrative Applications or modifications to registry entries, Equitrac Office/Express relies on Windows-level authentication and application-level Administrative accounts. All Equitrac Office/Express installations require at least one user with Windows Administrator privileges who can start and stop services and the print spooler on the server workstation(s).

Application-level permissions are fully configurable. Access is granted to a Windows-level group, as opposed to individual users. For example, if you want to establish department-level account administrators, create a separate group within Windows that includes all users who will be allowed to administer accounts through Department Manager. Assign the group to the Department access permission.

The following table provides a description of each access permission and a use case detailing how you might organize your windows-level groups per domain to accommodate your site needs.

<table>
<thead>
<tr>
<th>Permission</th>
<th>Description</th>
<th>Use Case</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admin</td>
<td>Controls access to System Manager.</td>
<td>System Manager contains all configuration tasks and device detail. Limit access to users from IT or to an Equitrac super administrator group. Separate device administration from accounts administration - assign separate user groups to each permission.</td>
</tr>
<tr>
<td>Reports</td>
<td>Controls Access to Reports Manager.</td>
<td>Create a reports administrator group that is responsible for auditing the system.</td>
</tr>
<tr>
<td>Accounts</td>
<td>Controls Access to Accounts Manager.</td>
<td>Establish a group of users that can create and modify all user accounts.</td>
</tr>
<tr>
<td>Department</td>
<td>Limits the view of user accounts to a specific department only. Equitrac checks which department the user belongs to, then limits the view within Department Manager to accounts within the same department only.</td>
<td>Create a group that is responsible for administering accounts within a specific department only. This group can make modifications to existing accounts, but cannot create accounts.</td>
</tr>
</tbody>
</table>
Securing Print Output

In environments where users print proprietary or confidential documents, secure printing gives users the power to control the timing of their output. Equitrac Office/Express holds documents sent to registered devices in the DRE's secure print queue until the user releases the document from a control mechanism, such as Release Station, control terminal or an embedded device.

Establishing a fully secure document release strategy requires three separate actions:

**Secure the DRE Spool Directories**

Securing the DREs spool directories will ensure that other users cannot find proprietary documents on the DRE server. On each Windows DRE server, ensure that you set full control for the User ID that is running the DRE service only. Grant read-only access to the User ID that is responsible for running system backups. Remove access to any other user IDs.

**Windows:**

\C\Users\<userid>\AppData\Local\Equitrac\Equitrac Platform Component\<version>\EQDRESrv\EQSpool. Where <userid> is the account under which the Equitrac services are running.

**UNIX:**

<installdir>\EQSpool

**Establish IP Masking**

If supported on the output device, mask the IP Address of the MFP to ensure that users cannot directly connect via the IP address.
Chapter 5: Security Considerations

Auditing

Equitrac Office and Express provide the ability to audit device and account activity based on a number of factors. Specifically, detailed activity reports provide statistics about:

- device usage
- user account
- network user
- billing code account
- department account
- queued documents by device
- queued documents by user account

Depending on the report you generate, the following data fields may appear in the report.

<table>
<thead>
<tr>
<th>Report Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Account</td>
<td>Indicates if the activity was charged to a user, department, or billing code account type.</td>
</tr>
<tr>
<td>Cost</td>
<td>The amount of money that was charged to the account for the job.</td>
</tr>
<tr>
<td>Date</td>
<td>You can limit the report contents to a specific date range. When the report is run, the Date field shows the specific date on which the activity occurred within the date range selected.</td>
</tr>
<tr>
<td>Description</td>
<td>Document title for print job. If the activity was a copy job, the description is listed as ‘copying’.</td>
</tr>
<tr>
<td>Details</td>
<td>Lists the specific details of the print job, such as page size, color output, duplex output, stapling, punching, binding, etc. For example, the following details might be displayed for a print job that is seven pages in total: 4xLetter/D = 4 letter-size pages, duplexed 3xLegal/C/Punch = 3 legal-size pages, color and punched output</td>
</tr>
<tr>
<td>Device name</td>
<td>The name of the output device where the copy, scan, or fax job was released or performed.</td>
</tr>
<tr>
<td>Disposition</td>
<td>The status of the job. When you run the report, you can select ‘all’, ‘deleted’, ‘expired’, or ‘released’. Deleted jobs were removed from the queue by the user without releasing them, expired jobs exceeded the time limit set on the secure queue and were automatically removed from the queue, and released jobs were jobs the user printed on an output device. Select ‘all’ to view all disposition types.</td>
</tr>
<tr>
<td>Pages</td>
<td>The number of pages produced.</td>
</tr>
<tr>
<td>Type</td>
<td>The job type that was produced. When you run the report, you can select ‘all’, ‘copy’, ‘fax receive’, ‘fax send’, ‘print’, or ‘scan’.</td>
</tr>
<tr>
<td>User</td>
<td>Lists the Equitrac user account that produced the activity.</td>
</tr>
<tr>
<td>User ID</td>
<td>Lists the network user ID that produced the activity (appears in network user reports only).</td>
</tr>
</tbody>
</table>
Port Communication

If the Equitrac components must communicate through some kind of firewall, you must open several ports in order for the servers to communicate properly. See your firewall documentation for product-specific information about opening ports.

The ports listed in the tables below must be open for both inbound and outbound traffic.

### Equitrac Office and Express Components

<table>
<thead>
<tr>
<th>On the machine running this component</th>
<th>Port to Open</th>
<th>Enables communication from</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Accounting Server (CAS)</td>
<td>TCP 2910</td>
<td>DRE, DCE, DME, Workstations, Web Client</td>
</tr>
<tr>
<td>Document Routing Engine (DRE)</td>
<td>TCP 2938</td>
<td>DCE, CAS, Workstations</td>
</tr>
<tr>
<td>Device Control Engine (DCE)</td>
<td>TCP 2939</td>
<td>CAS</td>
</tr>
<tr>
<td></td>
<td>TCP 1824</td>
<td>Embedded devices – Xerox</td>
</tr>
<tr>
<td></td>
<td>TCP 2063</td>
<td>Embedded devices – Kyocera</td>
</tr>
<tr>
<td></td>
<td>TCP 4941/4942/443</td>
<td>Embedded devices – Sharp</td>
</tr>
<tr>
<td></td>
<td>TCP 7627</td>
<td>Embedded devices – HP-OXP</td>
</tr>
<tr>
<td>Device Monitoring Engine (DME)</td>
<td>TCP 2942</td>
<td>DRE, CAS</td>
</tr>
<tr>
<td>DME Console</td>
<td>UDP 2613</td>
<td>CAS, DME</td>
</tr>
<tr>
<td>Scan Processing Engine (SPE)</td>
<td>TCP 2064</td>
<td>CAS, DCE, Web Client</td>
</tr>
<tr>
<td>Service Location Protocol (SLP)</td>
<td>UDP 427, TCP 427</td>
<td>CAS, DCE, DRE/DRC</td>
</tr>
<tr>
<td>Device Web Service (DWS)</td>
<td>TCP 8080 HTTPS 8443</td>
<td>DCE, CAS</td>
</tr>
<tr>
<td>Web Client</td>
<td>TCP 80 HTTP 80 HTTPS 443</td>
<td>Web Browser</td>
</tr>
<tr>
<td>Web Personal Account Statements and Scheduler</td>
<td>TCP 2941</td>
<td>Web Browser</td>
</tr>
<tr>
<td>Equitrac message client¹</td>
<td>UDP 4940</td>
<td>DRE</td>
</tr>
<tr>
<td>Interactive rules¹</td>
<td>TCP 4940</td>
<td>DRE</td>
</tr>
</tbody>
</table>

¹ The Workstation Client installer opens these ports.

**NOTE:** Equitrac strongly recommends using the HTTPS protocol with IIS. For more information refer to the Microsoft Knowledge Base article "How To Set Up an HTTPS Service in IIS".
PageCounter Communication

If the DCE that controls the PageCounter terminal is located outside the firewall, open the following ports on the machine where DCE is running:

<table>
<thead>
<tr>
<th>Component</th>
<th>Port to Open</th>
</tr>
</thead>
<tbody>
<tr>
<td>PageCounter boot request</td>
<td>UDP 2613</td>
</tr>
<tr>
<td>PageCounter boot response</td>
<td>UDP 68</td>
</tr>
<tr>
<td>Ethernet communication for PageCounters</td>
<td>TCP 1234</td>
</tr>
<tr>
<td>Ethernet communication for legacy control devices</td>
<td>TCP 1235</td>
</tr>
</tbody>
</table>

Database and Messenger Communication

If you require remote access to the SQL server database, you must open the port first.

If you configure “Sending a popup message” as the method of notifying users of print errors, you must open TCP port 139. This port is not open by default.

If you are installing the Client software on Windows Vista, you must configure "Use Equitrac messaging service" as the method of user error notification. This service is installed with the Client by default and port UDP 4940 is opened automatically.

Encryption

Equitrac Office and Express reduce the threat of network sniffing through dynamic encryption keys. At the beginning of each communication with a PageCounter, or when communicating with the server regarding PINs or passwords, DCE performs a dynamic public/private key exchange. If the PageCounter firmware does not support dynamic encryption keys, Equitrac automatically uses 128-bit AES fixed encryption keys

You can optionally configure IPSec encryption if you prefer to encrypt communication between all Equitrac server components, such as DCE, DRE, CAS, DME, and Scheduler.

Print Assistant (Equitrac Express) and Workstation Client use 128-bit AES encryption for the login prompt. If you want encryption on other workstation components, then you need to enable SSL or IPSec. To enable SSL, see Enabling SSL Communication on page 53.

It is possible to encrypt the print stream. There are two options depending upon what the printer supports.

1. Configure the port to use IPP over SSL.
   —Or—
2. Configure IPSec between the DRE server and the printer. This will encrypt all traffic between the two devices.

CAUTION: Enabling SSL or IPSec may impact performance.
Enabling SSL Communication

Communication between Equitrac components running in a Windows environment can utilize SSL (Secure Socket Layer) if required. To enable this feature, run the EQEnableSSL.exe utility located in the Program Files\Equitrac\Express\Tools folder.

**NOTE:** EQEnableSSL.exe must be run on every system running Equitrac software that uses an SSL connection. (e.g. CAS, DRE, DCE). Shutdown all Equitrac services and utilities (e.g. System Manager) before running this command.

The command-line utility accepts the following command:

\[ \text{EQEnableSSL.exe} \ [-e \ -d \ -h] \]

Listed in the table are the values for each letter:

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-e</td>
<td>Enables SSL communication from this system.</td>
</tr>
<tr>
<td>-d</td>
<td>Disables SSL communication from this system.</td>
</tr>
<tr>
<td>-h</td>
<td>Displays this help screen.</td>
</tr>
<tr>
<td></td>
<td>No parameters display the current settings.</td>
</tr>
</tbody>
</table>

**NOTE:** For compatibility reasons, management communications are not currently encrypted even if this feature is enabled. Non-Windows DREs do not support encrypted connections.
Virus Scanning Setup

To ensure successful communication between Equitrac Office and Express services, there are certain folders and file extensions that you should exclude from virus scanning.

Server Folders to Exclude

Equitrac recommends that you exclude the following server folders from virus scanning:

- The folder and sub-folders containing Equitrac Office and Express
- The SPOOL folder that the Windows spooler service is configured to use. The default location for all printer spool files is `%SystemRoot%\System32\Spool\Printers`.
- `C:\Users\<userid>\AppData\Local\Temp`
- `C:\Users\<userid>\AppData\Local\Equitrac`

Where `<userid>` is the account under which the Equitrac services are running.

**NOTE:** The installation path depends on the location where Equitrac was installed on the server. If you installed Equitrac services on another drive letter or at another location altogether, substitute that drive letter and path in the paths listed above.

On a cluster, also exclude cache folders on any shared disks used by Equitrac components, including the spool folders used by print spooler shared disks.

File Extensions to Exclude

Exclude the following file extensions from virus scanning:

- database files (mdf, ldf)
- trace log files (log)
Backup and Recovery

The design and implementation of an effective backup and disaster recovery process is essential to any network environment. Equitrac Office and Express conform to the requirements and standards for Windows server-based applications, and standard backup procedures should be utilized for backing up and restoring the binary files, configuration and data.

**Database Backups**

Equitrac database backups are crucial for ensuring the safety of both the collected data and the system configuration data, which is also stored in the database, with the exception of the print queue definitions. The print queue definitions should be backed up in accordance with backup best practices, including data retention, rotation schemes and off-site storage.

**CAUTION:** The Equitrac databases (whether SQL Express, SQL Server or Oracle) are ‘live’ and cannot perform basic file-based backups without endangering the internal consistency of the databases.

Major backup software applications include specific database backup options or connectors for backing up SQL Server (including SQL Express) and Oracle databases, and should be used whenever possible.

If specific backup connectors are not available, it may be possible to dump the data from the database to an external file or to stop the database engine prior to backing up the files. Consult your database documentation for details.
Print Server Configuration

The Windows print queue configuration is stored in each print server’s registry. This configuration data can be secured by either backing up the complete print server registry using standard backup software, or by using the Print Migration utility (downloadable from microsoft.com).

Recovery

When restoring a backup after a complete system failure, backup recovery systems can generally restore the system to a consistent state. However, when restoring multiple systems or a single system backed-up using a hybrid method, it is necessary to ensure that all aspects of the system have been restored to fully operational state.

The following checklist outlines the items to verify after a recovery process:

- Database restored
- ODBC connection (DSN) restored
- Equitrac Office or Express software either (1) restored, or (2) reinstalled, and appropriate hotfixes applied
- Equitrac Office or Express software licenses correct and valid in System Manager (should the server name have changed, the licenses will need to be re-activated)

Disaster Recovery through Virtual Computing

One approach to recover after a server failure is to utilize virtualization software—such as Virtual Server or VMware—on the Equitrac servers. The Equitrac server can be deployed as the only virtual machine on the physical server to ensure that the full performance of the underlying hardware is available to Equitrac Office and Express.

By using a virtual machine, it is relatively easy to recover from a disaster even in the absence of repaired or identical server hardware, by installing the Equitrac virtual machine on another physical server. This can reduce dependence on specific server hardware and enable more rapid recovery of the server environment.