

# Kofax Invoice Automation

## System Configuration Guide

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The KOFAX logo is displayed in a bold, blue, sans-serif font. The letters are thick and closely spaced, with a clean, modern appearance.

# Legal Notice

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# Preface

This guide is for people who design and install an Invoice Automation 6.0.2 system. The guide helps you to plan the overall Invoice Automation solution.

You must have in-depth knowledge of Invoice Automation to use this guide.

It contains information about:

- Hardware and software requirements.
- The number of required Invoice Automation modules.
- Network bandwidth requirements.
- Solution design questions and answers.
- Recommendations for installing Invoice Automation as a thin-client solution.

## Related documents

The following documents are located in the Documentation folder on the Invoice Automation installation CD:

- *Kofax Invoice Automation Installation Guide* (KIA\_Installation\_Guide\_Eng.pdf).
- *Installing and Configuring Microsoft SQL Server* (KIA\_InstallConfig\_SQL\_Server.pdf).
- *Installing and Configuring Oracle* (KIA\_OracleInstallGuide.pdf).
- *Installing FLEXlm for Kofax Invoice Automation* (KIA\_FLEXlm\_Install.pdf).

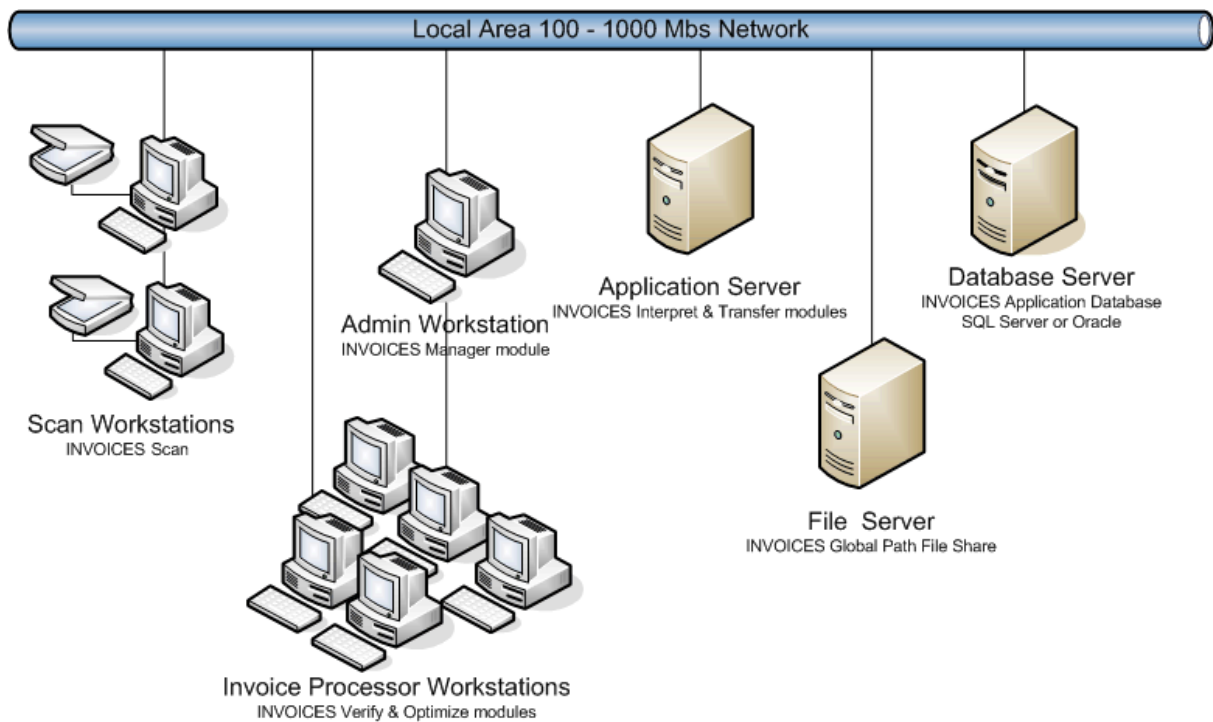
## Chapter 1

# System requirements

To assure production quality and speed, the requirements below need to be met. The requirements assume that Kofax Invoice Automation is the only program running on the workstation or server. If other programs are running at the same time, the requirements for each product must be added to the Invoice Automation requirements.

The requirements for the database server and file server assume they are running on a dedicated machine; that is, no other processing is performed when the Invoice Automation solution is running.

Here is what a high-volume installation might look like:



## Invoice Automation modules

The Invoice Automation modules can run as programs on personal computer workstations. The Interpret and Transfer modules can also run as application servers (as Windows services) with no user intervention.

Invoice Automation is normally installed in a local area network (LAN) environment. In a LAN, the individual Invoice Automation modules are run on separate workstations or on application servers.

Invoice Automation can also be installed as a stand-alone system. In a stand-alone system, all processing is performed on a single workstation.

<b>Workstation or application server minimum configuration</b>	
Operating system	Refer to the <a href="#">Kofax OS fact sheet</a> to see which operating systems Kofax Invoice Automation modules can run on: The operating system should be at the latest service pack and hot fix level. Because of the built-in firewall, some of the newer operating systems may prevent some Kofax products, or products with which they are integrated, from working properly. If you encounter problems, please see " <a href="#">Resolving issues with built-in firewall</a> " on page 37. Microsoft .NET Framework 4.7.2 and Microsoft Primary Interop Assemblies 2005 are also required.
Processor	<ul style="list-style-type: none"> <li>• Intel or AMD.</li> <li>• Interpret module and stand-alone Invoice Automation: 2.2 GHz or faster.</li> <li>• Scan module: 1.4 GHz or faster</li> <li>• Other Invoice Automation modules: 1 GHz or faster.</li> <li>• Dual processors and hyper-threading are supported. See <i>Invoice Automation Help</i> topic "Multi-processor support for Interpret" for more information.</li> </ul>
Display	<ul style="list-style-type: none"> <li>• Manager, Verify, and Optimize modules, and stand-alone Invoice Automation: 19" display with 1280 x 1024 resolution or better.</li> <li>• Other Invoice Automation modules: Any display.</li> </ul>
Memory	<ul style="list-style-type: none"> <li>• Interpret, Verify, and Optimize modules, and stand-alone Invoice Automation: 2 GB. *</li> <li>• Other Invoice Automation modules: 1 GB.</li> </ul>
Disk space	1 GB

<b>Workstation or application server minimum configuration</b>	
Miscellaneous	You must have Microsoft Excel installed on the same computer as the Manager module in order to import master data in Excel format.

\* Large invoices with line items (200+ pages) may not open in Verify if you select to interpret all pages. Since 32-bit Windows limits the amount of RAM that can be allocated to a process to 2 GB, opening invoices of this size with complex line items can easily exceed the limit. The limit for 64-bit Windows is approximately 2.9 GB, and as a result, larger invoices that cannot be opened in a 32-bit Windows environment may be able to be opened in 64-bit Windows. However, testing is required to know for sure.



## Database server

Recommended minimum configuration for the database server	
Database server	See the Kofax database fact sheet to see which database server versions the Invoice Automation database can reside in. The database server should have the latest service pack and hot fixes installed. At the risk of stating the obvious, carefully ensure your selected database is supported (by Oracle or Microsoft) for use on the operating system you intend to install it on.
Operating system	Refer to the recommendations from the database server's manufacturer.
Processor speed	Refer to the recommendations from the database server's manufacturer.
Display	Refer to the recommendations from the database server's manufacturer.
Memory	Refer to the recommendations from the database server's manufacturer.
Disk space	400 KB per supplier for a typical Invoice Automation system. Example: For 1,000 suppliers, 400 MB is recommended In addition, space is required on appropriate media for backup copies of the database and for database logs.

## File server

File server requirements depend on how long transferred images are kept. Use the calculation provided below, or simply take the fixed recommendation.

File server recommended configuration		
Processor speed	2.2 GHz or faster	
Network card	100 Mbps Ethernet network adapter.	
Memory	2 GB RAM or more.	
Disk space (calculation)	<ol style="list-style-type: none"> <li>1. 180KB * invoices per day = daily storage requirement</li> <li>2. Daily storage requirement * days to keep transferred invoices = total disk space requirement</li> </ol> Assumptions: <ul style="list-style-type: none"> <li>• 60 KB per invoice page</li> <li>• 3 pages per invoice</li> </ul>	
Disk space (recommendation)	Invoices per year	Space recommended
	less than 250,000	250 MB
	250,000 – 400,000	400 MB
	400,000 – 1,000,000	1 GB

## License server

### Supported operating systems

Windows 10

Windows 8\*

Windows 7\*

Windows Vista\*

Windows Server 2019

Windows Server 2016

Windows Server 2012

Windows Server 2008

Windows Server 2008 R2\*

\* Limitations with Windows 7 (32- and 64-bit), Windows Vista (64-bit), and Windows Server 2008 R2 (32-bit): No debug log is created; warnings are displayed saying that the service and the server do not start, though they do. You can prevent these problems by replacing the EXE files as described in [Installing FLEXIm for Invoice Automation](#), available in the installation package.

### Other requirements and limitations

Anti-virus programs can interfere with normal operation of FLEXIm. You may need to configure the anti-virus program to recognize FLEXIm as a “friendly” program.

Important: FLEXIm cannot run on a PC using Panda anti-virus software.

For more information about licensing, see the [Invoice Automation Installation Guide](#), or the [Invoice Automation FLEXIm Installation Guide](#), both available on the web and in the installation package.

## Network products

Kofax Invoice Automation can be installed on Microsoft Windows compatible networks.

## Kofax VRS for scanning

Kofax VRS can be used together with Invoice Automation for all scanning requirements. Starting with Kofax Invoice Automation 6.0, how the program communicates with VRS changed, and Invoice Automation now supports all of the scanners supported by VRS. Consequently, we recommend buying

a scanner that already includes VRS. Otherwise, you can purchase it from **Kofax VRS elite Support > Downloads** at [HTTPS://services.kofax.com/support/products/vrs/5.1/downloads.php](https://services.kofax.com/support/products/vrs/5.1/downloads.php)

## Invoice Automation Web API

The same general system requirements that apply for Kofax Invoice Automation also apply when installing Invoice Automation Web API, but installation on a server is preferred, because the higher capacity can better handle potential loads. For information on installing the Invoice Automation Web API, see the Invoices Web API Installation Guide.

## Chapter 2

# How many modules are needed?

The number of modules required for an Invoice Automation solution depends on many variables. It is not possible, in this document, to provide an exact answer for every Invoice Automation solution.

This section describes three example customers and specifies the number of modules they require. If your organization's invoice processing is different from those of the example organizations, consider running more or less modules accordingly.

For solutions that differ greatly from the example customers, contact Kofax Consulting Services for assistance.

## Examples of typical customers

These examples provide information about three typical customers. Assume that the customers scan and verify invoices, do not type in additional data, and do not use external applications for validation.

See "[Number of modules](#)" on page 12 for the INVOICES modules these customers require.

See "[Network requirements](#)" on page 13 for the network bandwidth these customers require.

Customer description	Customer			Comments
	Small	Medium	Large	
Invoice volume and data to be captured				
Invoices per year	20,000	200,000	500,000	
Work days per year	220-250	220-250	220-250	Average work days per year.
Invoices per day	80-90	800-900	2000-2300	Invoices per year ÷ Work days per year.
Fields captured	Country profile fields	Country profile fields	Country profile fields	Based on a standard country profile. No data capture language (DCL) processing is performed.
Line items	No	No	No	The effects of line items are not included in these examples.
Pages per invoice	2	2	2	Average pages per invoice.
Total image file size per invoice	120 KB	120 KB	120 KB	The average size of a black and white, single-page image is assumed to be 60 KB.
Optional products	none	none	none	The effects of any optional Kofax products which may be installed are not included in these examples.

Customer description	Customer			Comments
	Small	Medium	Large	
Supplier volume and manual learning				
Suppliers	1,000	5,000	20,000	10% of suppliers are replaced with new ones every year.
Supplier distribution	20% of suppliers produce 80% of invoices			This is typical for most customers.
Manual learning at startup	20% of suppliers*	20% of suppliers*	20% of suppliers*	*To achieve the results in these examples, the customer should manually learn enough suppliers so that 80% of the incoming invoices are from learned suppliers.
Working time and processing time				
Scanner capacity	10 pages/min.	30 pages/min.	80 pages/min.	This is a typical scanner capacity used by customers of this size.
Scanning time (customer requirement)	1 hour/day	1 hour/day	1 hour/day	All invoices should be scanned within this time. This is a typical customer requirement.
Interpreting time (customer requirement)	1 hour/day	3 hours/day	3 hours/day	All invoices should be interpreted within this time. This is a typical customer requirement.
Verifying time (customer requirement)	1 hour/day	4 hours/day	6 hours/day	All invoices should be verified within this time. Experience shows that Verify operators cannot work effectively for more than 6 hours per day.
Verify time per invoice	15 seconds	15 seconds	15 seconds	Average time the Verify operator works on an invoice. These times are for a typical Verify operator at a typical customer.
Transfer time (customer requirement)	1 hour/day	1 hour/day	1 hour/day	All invoices should be transferred within this time. This is a typical customer requirement.

## Number of modules

This table shows the number of Invoice Automation modules required for the example customers.

The number of modules listed here is required to meet the invoice-processing requirements listed in [“Examples of typical customers”](#) on page 11.

This assumes that the invoice flow is spread evenly across all working days. In other words, the number of modules is dimensioned for average days, not peak days.

Modules required	
Example customer	Number of modules

Modules required						
	Scan	Interpret	Verify	Transfer	Optimize	Manager
Small	1	1	1	1	1	1
Medium	2	2	5	1	1	1
Large	3	4	8	1	1	1

## Optimize time at startup

Use this table to find the number of Optimize modules and the time required to optimize invoices during the startup phase. The customer should manually learn enough suppliers so that 80% of the incoming invoices are from learned suppliers.

Number of days required for optimization		
Example customer	Suppliers to optimize	Days required for one operator
Small	200	2
Medium	1,000	7
Large	4,000	25

The table is based on:

- Optimizing time per supplier: 3 minutes.
- Working time per day: 8 hours.

## Chapter 3

# Network requirements

This section provides information about the network requirements for Invoice Automation solutions that are installed in a LAN environment.

## Bandwidth

Note: Bandwidth recommendations for thin-client solutions are described separately, on page 29.

The table below shows the average bandwidth required in megabits per second (Mbps). The bandwidth is for the entire Invoice Automation solution including the Invoice Automation modules, database server, file server, and image archiving. This average bandwidth is required during the time that invoices are being processed.

The bandwidth shown below is required to meet the invoice processing requirements listed in “[Examples of typical customers](#)” on page 11. For the example customers, the bandwidth required is highest during scanning and transfer.

These assumptions apply:

- The same number of invoices is processed every day.
- Invoices are processed using the modules listed in “[Number of modules](#)” on page 12.
- This bandwidth is dedicated to the use of Invoice Automation.

Average bandwidth required		
Example customer	Average bandwidth	Average bandwidth during scanning
Small	0.5 Mbps	0.5 Mbps
Medium	0.7 Mbps	0.9 Mbps
Large	1.0 Mbps	2.0 Mbps

## Network latency

**Note** Latency in a thin-client solution is discussed on page 32.

Latency is the time it takes for a packet of data to go from a program in one network node to a program in another node. Latency is not a measure of the network bandwidth. It is a measure of the delay time in transporting data from one node to another. Latency can be the result of poor bandwidth.

Normally, latency is low in a LAN environment. It is typically high or very high when a wide area network (WAN) or the Internet is included in the network.

## Kofax Invoice Automation and latency

The network latency in an Invoice Automation solution must be low enough to allow the Kofax Invoice Automation components to interact with each other without causing unacceptable delays. Scanning and verification over networks with high latency times can impact how many invoices per hour can be processed.

In general, Kofax Invoice Automation should operate in a network where latency is less than 120 ms. (By comparison, most local area networks have a latency of less than 10ms.)

For customers who require a wide geographical distribution of Invoice Automation components, consider other solution designs such as those using thin clients (see page [26](#)).



## Chapter 4

# Solution design

An Invoice Automation solution is a specific configuration of Invoice Automation modules and related software, hardware, network, and servers that work together to process invoices for a specific customer.

This section contains information to help you design Invoice Automation solutions.

## Components of an Invoice Automation solution

- Invoice Automation database.
- Image files.
- System-wide configuration files (INI files and license file).
- Other common data (output transfer data, log files, statistics, and so on).
- Interpret and Transfer modules (can be application servers).
- Scan, Verify, Optimize, and Manager modules.
- FLEX/m license controller.

## Differences between a stand-alone solution and a network solution

A stand-alone system typically requires hardware with higher capacity than a network solution. A stand-alone system usually has less impact on network traffic and has different working procedures from a network solution.

### Hardware requirements

Normally, a stand-alone Invoice Automation system runs on a workstation where not only the Invoice Automation modules are installed but also the database server. The workstation must be capable of running all of the individual tasks that would be divided among different computers in a network installation. However, it is not as simple as just finding the peak value for all components, since some components may be run simultaneously. For these reasons, a high-performance workstation is needed for a stand-alone system.

In contrast, a typical network solution spreads the workload over several computers. For example, a network solution usually has separate computers for each module and a separate database server. As a result, the computers do not have the same high-performance requirement as a stand-alone solution.

## Network traffic

In a stand-alone system, all data is stored locally. During invoice processing, there is no network traffic. Network traffic occurs only during image and data transfers from Transfer to the target system. If desired, this transfer can be done when network load is at a minimum.

However, network traffic does occur in Invoice Automation solutions where data is validated and exchanged as part of the process. In these solutions, Invoice Automation is tightly integrated with external systems.

A network solution has more network traffic than a stand-alone solution; how much more depends on how many Invoice Automation modules you run simultaneously and how many invoices you process. Consider that each module communicates with the database server continuously during production.

As part of their normal operation this communication even takes place when there are no invoices to process because the modules are in a continuous dialogue with the server: *When Interpret is configured to run as a Windows service*, it performs certain steps at regular intervals, depending on how the service was configured:

- Job descriptions are loaded and checked whether any of them need to be executed.
- The buyer list is loaded.
- The supplier list is reloaded, if necessary.
- Some other initialization routines are performed, for which it is necessary to load some other data, for example identifier fields.
- There may be more traffic between the module and the database, depending on the specific Invoice Automation settings, any plug-ins that are used, etc.

The Transfer module behaves in a similar way. For example, it reloads the buyer and supplier lists every time a job is started.

Since the jobs are usually set up to run fairly often, this reloading of buyers, suppliers, and definitions is a major contributor to network traffic while the Invoice Automation system is otherwise idle.

However, this frequent reloading only represents *overhead* when the system is idle. If there are invoices to be processed, the job start and initialization procedures are done only once, at the beginning of the job, and the Invoice Automation modules actually work faster, since the data is stored in memory, where it is available when needed.

## Working procedures

In a network installation, several Invoice Automation modules can be running at the same time, with several operators working in parallel. The Invoice Automation modules can be easily installed on the operators' normal workstations.

In a stand-alone system, processing is sequential and there is more operator waiting time. For example, after operators scan invoices, they need to run Interpret and should not use the workstation while Interpret is running.

Because a stand-alone system may need to be used by more than one operator, for example, in case of illness, and because Invoice Automation processing should run alone, a dedicated workstation shared by all potential users is usually the most efficient way of working.

Some customers prefer to set up two or more stand-alone systems in the same office or in a distributed environment. This is recommended when there is no need for synchronization between systems and when there is no need to get an online, centralized overview of the system. Reports generated by each stand-alone system can still be processed centrally.

## Which servers are required and which are optional?

A database server is required. In small, stand-alone Invoice Automation systems, the database-server software can run on the same workstation as Invoice Automation.

Other servers that are often part of an Invoice Automation solution are:

- File server – for invoice images and other files used by multiple workstations.
- Application servers – for running Interpret and Transfer as Windows services.
- License server – for the Invoice Automation license manager.

The optional servers are recommended for solutions with medium to high processing requirements.

## Optimizing performance for larger installations

### Interpret

Hardware	
Processor	The more processors and processing units the server has, the faster Interpret will run. Configure the server hosting Interpret to run as many instances of Interpret as there are processing units on the server.  To achieve 100% CPU, disable multi-threading. Physical servers run Interpret more efficiently than virtual and hyper-threaded servers. Run only one Interpret instance engine per core.
RAM	1 GB RAM is sufficient for each processing unit on the server. However, 2 GB is recommended per CPU.
Software	
Database	Do not host the database on the same server as Interpret.
Kofax Invoice Automation Configuration	
Data capture	Capture only data you need. Processing unnecessary data from an invoice is unproductive.
Freeform capture and DCL files versus Optimize	Using freeform capture and DCL files provide better interpretation of invoices, but takes longer. An alternative is to fine-tune invoice definitions using the Optimize module.

### Verify

Scaling up to 60 concurrent verifiers is acceptable when aster data is not used.

## Other

See [Kofax Invoice Automation help](#) for additional tips on fine-tuning your installation for improved performance.

## Workstation FAQ

### Is it OK to run other programs on Invoice Automation workstations simultaneously with Invoice Automation?

Two types of problems can occur when multiple programs are installed on the same workstation: problems related to performance and problems related to compatibility.

#### Performance issues

If other programs are running at the same time as Kofax software, it is important that the workstation or server hardware configuration meets the total requirements for Kofax software as well as all the other programs.

Typical programs that can cause performance problems are:

- Virus protection programs with online scanning of each file. In particular, repeated scanning of Invoice Automation INI files can cause major problems.
- Backup software running in the background simultaneously with production.
- Entertainment programs such as Internet radio.

Any kind of background activity should be avoided, especially activities that require heavy usage of processing capacity and that move large amounts of data.

#### Compatibility issues

Every Invoice Automation installation must be tested to detect potential compatibility conflicts with other programs. Some rules to follow:

- Avoid installing other programs that have the same or similar functionality as the Invoice Automation modules installed on the computer. For example, other scanning software must not be installed on the workstation where the Invoice Automation Scan module is run.
- Avoid running other programs at the same time as Invoice Automation. Invoice Automation software should be used when no other program is running.

### Can Transfer and Interpret run on the same workstation?

Running Transfer and Interpret on the same workstation is not recommended if they will be running simultaneously.

It is possible to run both modules if the capacity is good enough to allow scheduling of the processes to run at different times. If they run simultaneously, there will be a performance loss of up to 30%. However, Kofax recommends that these processes *not* be run on workstations, but instead on dedicated servers.

## Should one Invoice Automation module run on each workstation?

It is useful to install Verify, Optimize, and Manager on every workstation. The operator or other user may sometimes need to use other modules in addition to the one that the operator normally uses. These modules should not normally be run at the same time.

Scan can also be installed on every workstation, if desired. However, this module can only be run on workstations where a scanner is attached.

## Database server FAQ

### Can Transfer run on the database server?

The database is critical to the entire invoice processing system. Running other resource-demanding programs, such as Transfer, can have a major impact on the performance of the entire Invoice Automation solution, particularly if more than about 300,000 invoices are processed per year. If cost is an issue, running Transfer on the database server generally works well in smaller installations.

See also: [“Is it OK to run other programs on Invoice Automation workstations simultaneously with Invoice Automation?”](#) on page 19. The performance and compatibility issues discussed there also apply to the database server.

## File server FAQ

### Can the file server be on a workstation together with an Invoice Automation module?

This is not recommended. The data on the file server must be accessible all the time for all parts of the Invoice Automation solution. Performance issues, as well as downtime problems, affect the entire solution negatively.

## How many licenses are needed?

Some guidelines:

Invoices per year	Manager	Scan	Interpret	Verify with / without line item interpretation	Optimize	Transfer
60,000	1	1	1	4 / 3	1	1

100,000	1	1	1	5 / 3	1	1
200,000	1	2	2	7 / 5	2	1
300,000	1	2	2	8 / 6	2	1
400,000	1	2	3	9 / 7	2	1
500,000	1	3	4	10 / 8	3	1
600,000	1	3	4	12 / 9	3	1
700,000	1	3	5	14 / 10	3	1
800,000	1	3	6	16 / 11	3	2
900,000	1	3	6	18 / 12	3	2
1 million	1	3	7	19 / 12	3	2

## Chapter 5

# Kofax Invoice Automation in a distributed environment

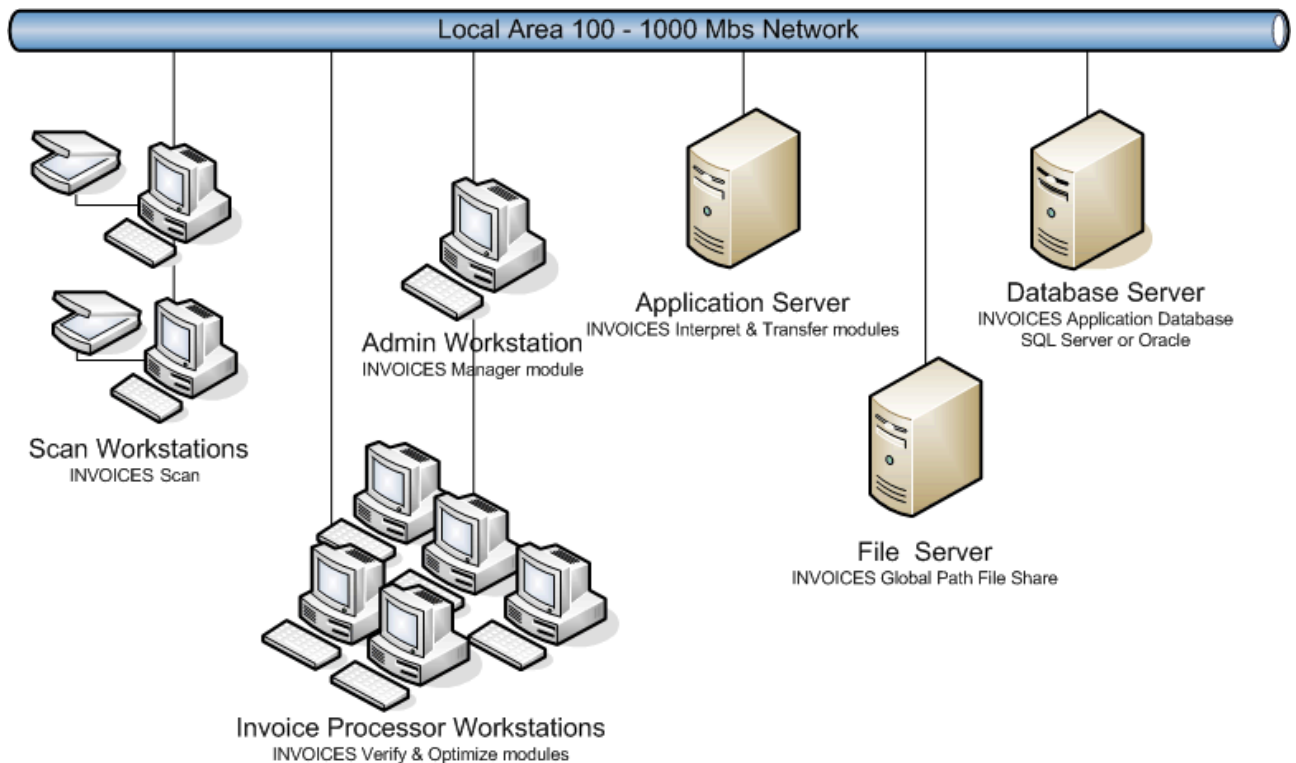
This section looks at different ways in which large organizations can implement an Invoice Automation installation that serves staff dispersed across different office locations, often in different countries.

There are different installation scenarios available, which are described below. Their advantages and disadvantages are also provided. On page 26, the thin-client solution is outlined.

## Installation scenarios

### Centralized

All aspects of invoice processing are performed centrally: scanning, interpretation, verification, transfer, management and optimization.



## Pros

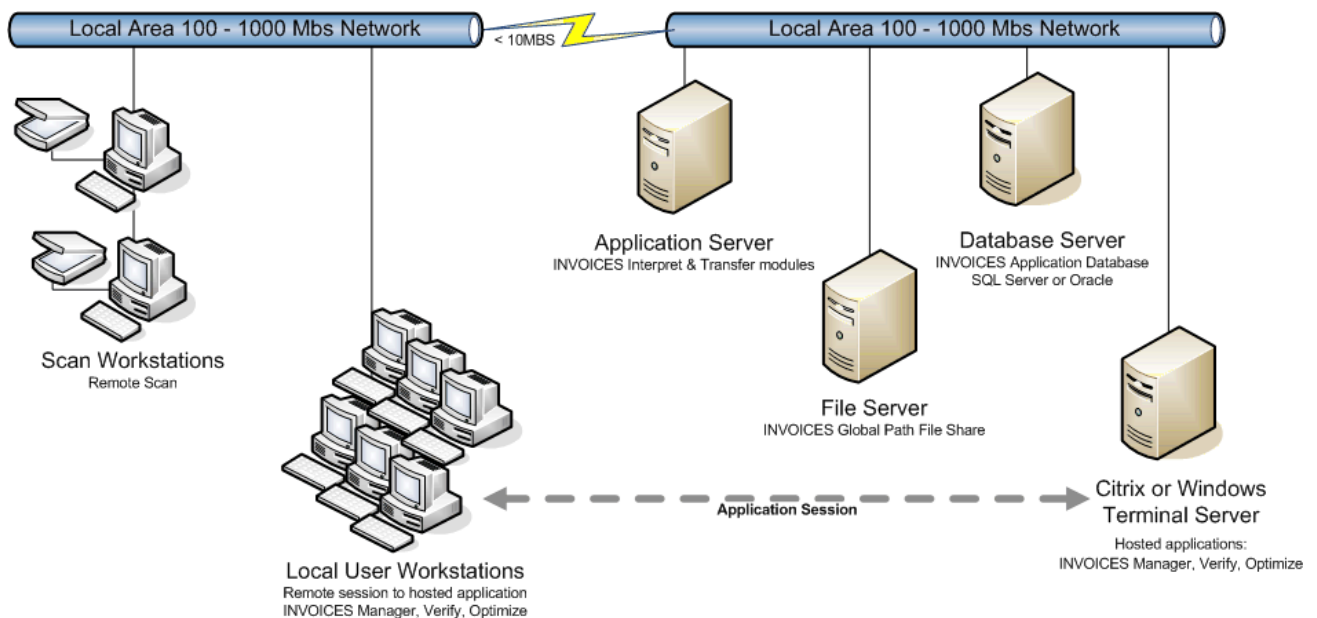
- Easy and cheap to implement.
- Requires a minimum of high-performance scanners.
- Knowledge is centralized.
- Bandwidth is usually not a problem as it is provided by the office LAN.
- Software updates are easy because there is no time difference between clients and they are located together.

## Cons

- Verifiers lack knowledge about the local business.
- Verifiers have insufficient knowledge of invoice languages.
- Invoices must be sent from the buyer or supplier to the central processing site.

## Decentralized

Management, databases, interpretation, and transfer are performed centrally. Scanning, optimization, and verification are performed locally.



This scenario is often used when a company has subsidiary offices located in different countries. Scanning, optimization, and verification are performed in each country.

## Pros

- Invoices can be scanned with no delay.
- All invoices remain with the buyer, making it easy to access them.
- It is easier to find answers to invoice-related questions.



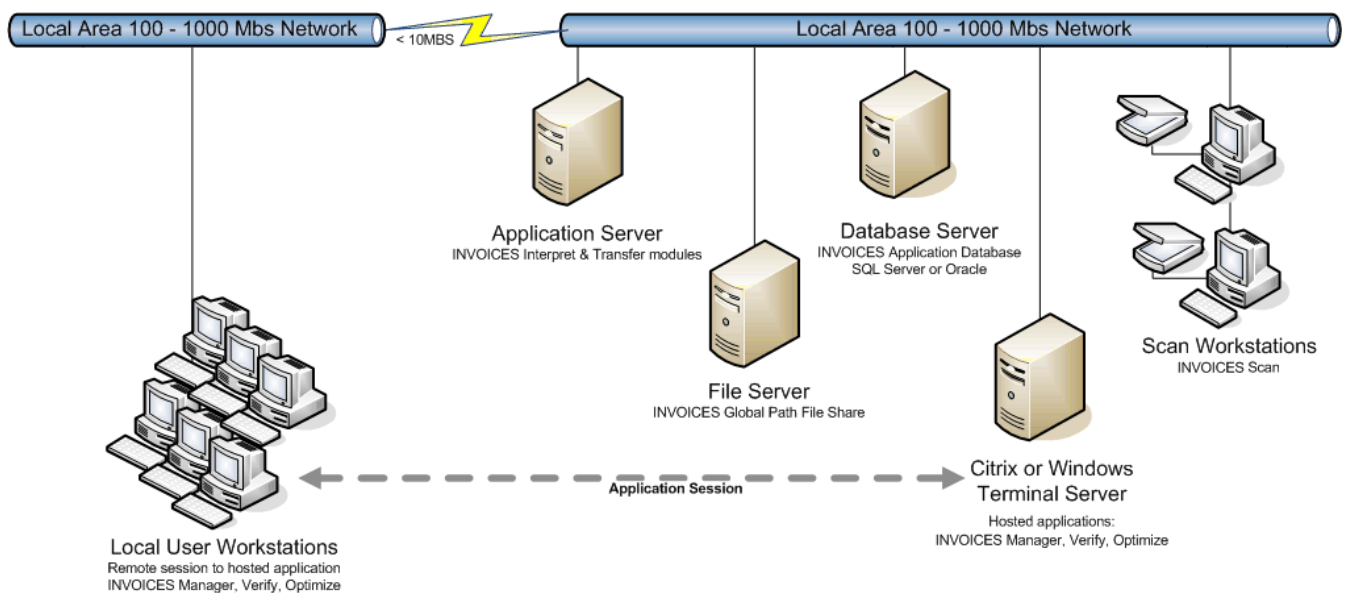
- If information (signature, accounting information, etc.) is added to an invoice, the supplier can send it to the buyer directly, which helps avoid problems and delays.
- The invoice language is known by Verify and Optimize users.

### Cons

- Synchronizing software updates can be a problem due to time and geographical differences.
- Requires Wide Area Network (WAN) bandwidth, where response times are longer and which can be expensive.
- A larger number of relatively small scanners with few image enhancement features are likely to be used, creating images with slightly lower quality.

## Semi-decentralized

Management, databases, interpretation, scanning, and transfer are performed centrally. Optimization and verification are performed locally. Users may also need some access to the management module.



This scenario is often used when a company has subsidiary offices located in different cities within the same country. Optimization and verification are performed in each city, but the rest of the work is done at the central location.

### Pros

- Requires a minimum of high-performance scanners.
- It is easier to find answers to invoice-related questions.
- The invoice language is known by Verify and Optimize users.

### Cons

- Synchronizing software updates can be a problem due to time and geographical differences.
- Requires WAN bandwidth, where response times are longer and which can be expensive.

## Conclusions

When processing invoices inside a multinational company, the preferred solution in most cases is the decentralized model.

For companies with multiple offices within the same country, a semi-decentralized model may be preferable.

In both cases the longer response times and often limited bandwidth in a WAN need to be taken into consideration, and a plan devised for how to manage client software updates.

As accessing extra bandwidth may be expensive or is not possible for some other reason, using thin clients via Remote Desktop Services or Citrix may be an option (see [below](#)).

## Chapter 6

# The thin-client solution

Invoice Automation solutions can be run in thin-client environments such as Citrix XenApp and Microsoft Terminal Server. The Citrix products allow you to remotely access a PC running Windows. This allows you to create centralized application servers that you can access using a thin client. On the server you run Citrix server functionality and on the clients you run thin Citrix access software.

If you are running Invoice Automation over a WAN connection, use Citrix or Terminal Server.

Optimize and Verify clients can run on a server that is accessed by different users via a web browser. This puts low demands on both the client hardware and the available bandwidth.

Using a thin client makes upgrading client software easier as it is done centrally. Changes to INI files are done automatically by the Remote Desktop Services server. When installing the application with the server set to installation mode, the server keeps track of all changes done in the current user registration key. If any INI files are created, the Remote Desktop Services server creates a folder for each user, which contains the INI files, so you don't have to change any INI files on the client machine.

If it is a problem to have Eilocal.ini saved in individual users' folders, specify during installation (in the File Locations dialog) that Eilocal.ini is to be saved in the global path (for example), instead.

## Citrix

In an Invoice Automation environment Citrix XenApp is often used to perform remote verification. For example, you can set up an Invoice Automation system in one part of the world, and then have users anywhere in the world access that system using thin clients that have only Citrix client access software and no Kofax software. A typical scenario is setting up a verification environment for continuous 24-hour verification in three eight-hour shifts.

Citrix can be configured in many ways. A typical way to configure a Verify desktop is to present a screen that displays only a few options. Verify operators may only have access to an icon that starts Verify and nothing else.

Citrix XenApp comes in various editions that differ in scalability, performance, features and management capabilities. Choose any of the editions, depending on your needs.

In scenarios with up to 20 users, Citrix XenApp Fundamentals is fine. According to the Citrix documentation, Fundamentals is for configurations with up to users 75 users. If you have more than 75 users, use another edition.

The Citrix XenApp server running Verify should be dedicated to that application.

## Installing Kofax Invoice Automation

By default, the installation is for the current user only. If you have several users with different accounts using the same PC, you must make the installation available to all users (global). One way to do that:

1. At a command prompt, enter "Install mode" by typing the following, and then press **Enter**:

```
change user /install
```

2. Run the Kofax installation from the command prompt.
3. Finalize installation and configuration.
4. Switch the server back to "Execute mode" by typing this: `change user /execute`  
The preferred way to install applications in a Citrix environment is to use the **Add or Remove Programs**; this sets the server to install mode. (Remember to log on as administrator. Citrix removes **Add or Remove Programs** for normal users.)
5. Log on to the server as an administrator.
6. Click **Start > Settings > Control Panel > Add or Remove Programs**.
7. Click **Add New Programs**. If Windows does not find the Invoice Automation installation program, locate and select it.
8. Select whether you want to install for all users or for only the user who is currently logged on. If you install for all users, the system is put in installation mode and permits Terminal Server to keep track of the user-specific application registry entries, INI files, and DLL files that the application adds to the Terminal Server system during installation.
9. Click **Finish** after completing the installation. This returns the system to execute mode. Restart the server if you are prompted to do so.  
For more information on installing applications on a terminal server, please see [Terminal Server application integration information](#).

## VMware

Invoice Automation runs fine with VMware, a software solution that provides server virtualization, meaning that you can run multiple operating systems simultaneously. This is useful for a variety of reasons, for example:

- Server consolidation. Simplifies maintenance for system administrators.
- Maximizing hardware usage reduces costs.
- Utilizing multi-CPU based computers, including multi-core CPUs.

## License server installation

If the license server is running on the virtualized machine, it should run on the hosting operating system (the one that hosts VMware). The dongle must also be installed on the host. Make sure that the license server is started before the virtualized operating systems are initiated.

Note to those using an ESX server: Because an ESX server does not have a hosting operating system, you cannot use a dongle and therefore you must have a software license (license file with a time limit—see *Installing FLEXIm for Invoice Automation*, available on the installation CD).

## Network adapter setup

VMware supports two ways for operating systems to access the network adapter: Bridged mode and NAT mode. Tests made by Kofax have shown that Bridged mode works best.

## Hardware requirements

This section specifies the hardware requirements for Invoice Automation systems that use thin clients.

As usual, the choice of hardware depends on what the system is used for. A general recommendation is to maximize the amount of RAM for the CPU type. For 32-bit CPUs, 4 GB should be considered. For 64-bit CPUs you can go even higher. For maximized performance, fast disks like SATA (7200 RPM) or SSD are good choices. Get *at least* 7200 RPM.

The recommendations below should be regarded as minimum and for an environment with 20 simultaneous users. One server can normally handle 20 simultaneous users without going down. If it does go down, 20 users will be affected by the production stop. Using two servers and load-balancing these two would result in a more stable environment.

<b>Recommended minimum configuration for thin-client application server</b>	
Processor	2 GHz or faster
Memory	For Manager: 30 MB per user For Optimize: 50 MB per user  For Verify: It depends on how much supplier master data there is. Examples: If there are 50,000 supplier records, allocate at least 200 MB per user. If there are 100,000 supplier records, allocate at least 250 MB per user. As a minimum (no supplier data), allocate 50 MB per user.  In addition, the base system requires about 256 MB plus 13 MB for each user.
Hard drive	18 GB

For XenApp hardware recommendations, please refer to the Citrix documentation.

The Citrix XenApp server running Verify should be dedicated to that application.

<b>Recommended minimum configuration for thin-client clients</b>	
Processor	A modern CPU, at least 2.2 GHz
Memory	2 GB
Disk Space	1 GB
Display	See the display recommendation for Invoice Automation modules on page 7.

## Bandwidth recommendations

There will always be longer response times when working in a distributed environment, even with the fastest WAN connection.

If you must use dial-up modems, using some of the Citrix features can improve response times for Verify and Optimize users. For example, [SpeedScreen Latency Reduction](#) (see page 30) gives the user the perception of less latency. The main cause of latency is the loading of invoice images. Once an image has loaded, the user experience is about the same as when working with the application directly.

Providing bandwidth recommendations is difficult, since there are several factors that can have impact on the bandwidth load. Consider:

- The required response time.
- What kind of network you have.
- Whether the line dedicated to the Invoice Automation application—or what other traffic uses the network.

## Limitations and known problems

### No scanning

It is not possible to run Scan remotely, even if you are using a USB scanner.

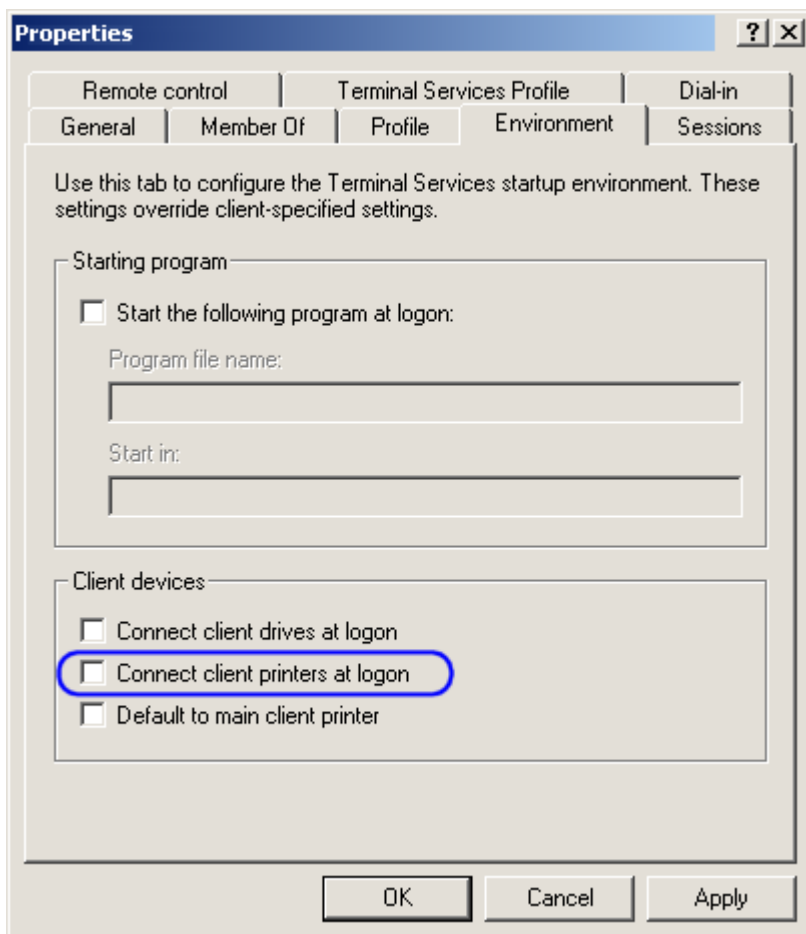
### Citrix overwrites INI files

When a user logs on to their account, Citrix seems to randomly overwrite some INI files and replace them with files with a CTX extension. A quick workaround could be a script that changes CTX files back to INI. However, this cannot be recommended as a long-term solution.

Microsoft has [an article on the problem \(Q186498\)](#). (Search for “CTX”.)

### Slow connection

A very slow connection may be caused by auto-creation of client printers and ports. If you are affected by this problem, you can reduce connection time by disabling Connect client printers at logon in the user settings:



## Performance issues

There are some techniques that can be used to get better performance and usability when using Invoice Automation on a Citrix platform.

### Bitmap caching

ICA clients with local storage capabilities can use that space to cache bitmap images from the Citrix servers. This can improve usability in Verify. The zooming of the invoice image will be faster, because the images are retrieved locally, rather than from the server.

### SpeedScreen Latency Reduction

One of the biggest problems using a terminal server solution is the latency. Citrix offers a solution to this via SpeedScreen Latency Reduction (SLR), which consists of two different techniques:

**Mouse Click Feedback:** When this is enabled, the ICA client changes the cursor from the normal pointer to a working pointer (from the arrow to the arrow with an hourglass). This can prevent users from clicking something (for example the Approved button in Verify) multiple times.

**Local Text Echo:** This allows the ICA client to render fonts locally on the client rather than waiting for them to be sent from the server. This can be useful when the users type rather quickly and do not want any delays in the response time.

## Color depth

Citrix XenApp supports 4-, 8-, 16-, and 24-bit color depths. Ordinarily you would expect that using fewer colors would reduce the bandwidth requirements. This is not necessarily the case. There seems to be no difference when using 16- or 24-bit color.

When using the Verify module, we recommend setting the color to 24-bit color. This provides the user with a better image, reducing the need to zoom, which means getting the image from the server again.

## Local user areas

The Citrix configuration is often based on local folders, for example H:\Windows. Invoice Automation normally updates INI files such as `eiveri.ini` during Verify operations. You may be able to improve performance by saving such settings only on the Citrix server.

## Setting up users

There are several ways of distribute the application to the users. Two of them are described below. In a Citrix environment, the preferred way to handle user settings is by using the `HKEY_CURRENT_USER` key in the Windows Registry. However, Citrix can handle INI file settings.

When an application is installed while the server is set to install mode, any INI files (usually written to common folders) are instead diverted to the user profile location. Then when the application (in this case Invoice Automation) looks for its INI file, it is redirected to the user profile. This allows each user to have their own settings, even if the Windows Registry is not used properly. Normally the user's account has already been set up when Invoice Automation is installed.

As stated [above](#), if it is a problem to have `Eilocal.ini` saved in individual users' folders, specify during installation (in the File Locations dialog) that `Eilocal.ini` is to be saved in the global path (for example), instead.

## Setting up users in a single-server environment

If only one Citrix server is in use, the user profile can be stored locally on the Citrix server.

The `Eilocal.ini` file must be placed in the Windows folder before the user logs on to the server. There is a problem when creating new users on the server. The User folder is created when the user logs on to the server the first time, but the user needs the `Eilocal.ini` file in order to run Kofax Invoice Automation. This can probably be solved using a user login script that copies `Eilocal.ini` to the user profile:



```
\\Documents and Settings\%username%\WINDOWS\Eilocal.ini
```

When the user has logged on and run the invoices application for the first time, terminal servers will add the INI files to the user's profile.

## Setting up users in a multi-server environment

Local profiles can cause problems in an environment with multiple Citrix servers, since each server will contain different local profiles for each user. If a user logs on to Server A and changes the user interface, this change is saved in the user profile located on that server. The next time the user logs on, he might be connected to Server B, and the user profile will not be as expected.

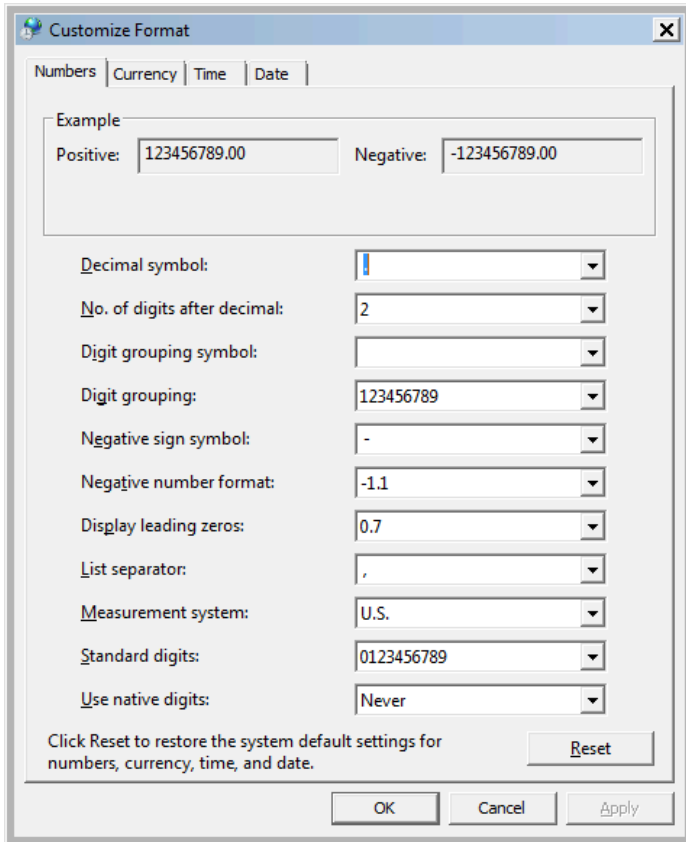
This problem can be solved by either using roaming profiles or user home drives.

Using a roaming profile, the user gets his own environment regardless of which server he is connected to. The roaming profile is located at a network share and is copied from there to whatever server he is connected to. This can mean a slow login for the user if the profile is large.

## Regional settings/options

The SAP R/3 configuration module (INTEGRATION) with SAP uses the values set in Regional and **Language options > Additional settings** to capture and validate some fields. It is therefore important that all users have the same settings, as shown below.

## Numbers



- Decimal symbol must be set to a dot.
- Digit grouping symbol must be set to a space.
- Digit grouping must be set as above (123456789).

## Currency

Customize Format

Numbers | **Currency** | Time | Date

Example

Positive: \$123456789.00      Negative: -\$123456789.00

Currency symbol: \$

Positive currency format: \$1.1

Negative currency format: \$-1.1

Decimal symbol: .

No. of digits after decimal: 2

Digit grouping symbol:

Digit grouping: 123456789

Click Reset to restore the system default settings for numbers, currency, time, and date.

Reset

OK      Cancel      Apply

- Decimal symbol must be set to a dot.
- Digit grouping symbol must be set to a space.
- Digit grouping must be set as above (123456789).

## Chapter 7

# Backing up the Kofax Invoice Automation system

To protect your installation from damage caused by power failure, disk crashes, software errors, incorrect user changes, and so on, it is important to set up routines for backing up program and data files.

At a minimum, we recommend that you back up Invoice Automation' database daily, and that you save the copies on a weekly basis. If you use Kofax Invoice Automation day and night, we recommend that you make backups both morning and evening.

We also recommend that you keep a record book. This book should contain copies of run statistics, batch reports, and other information necessary for restarting from the backup.

Before making a backup, finish all Kofax Invoice Automation processes.

## Backing up a Microsoft SQL Server database

The Microsoft SQL Server environment should be backed up regularly and supported with a SQL maintenance plan to minimize loss of data and work in progress in the event of a SQL database or platform failure. Use the recovery model most suitable for your requirements.

### Simple recovery model

With the simple recovery model the transaction log is not backed up. This saves you the work of managing the transaction log backup. However, the risk of work loss is significant because data can be recovered only up until the most recent backup. Microsoft's general recommendation is that the simple recovery model is suitable for test and development databases but not for production systems where loss of recent changes is not acceptable.

### Full recovery model

The full recovery model is recommended. It protects the production from loss of valuable time due to a system failure. Please refer to *Installing and Configuring Microsoft SQL Server* (Installing and Configuring SQL Server.pdf) for more information about backing up your SQL Server database.

## Backing up an Oracle database

Due to the complexity of Oracle database management, please let a knowledgeable Oracle database administrator create and implement suitable backup and recovery plans.

Changes to the content and structure of an Oracle database are automatically handled in a way that guarantees recovery of the database to the last committed transaction after any single point of failure.

## Backing up the Kofax Invoice Automation server

- The files and subdirectories located in the `C:\Program Files\ReadSoft` folder on the Kofax Invoice Automation server contain the product's licensing information and should be backed up or archived regularly.
- The "global path" is specified by the `GlobalPath` setting in the `[Directory]` section of the `C:\Windows\Eilocal.ini` file. All files and subdirectories located in the global path must be backed up regularly, because they are required for a system restoration. This includes all `*.log` files, as well as `*.TIF` or other image files, and `*.evm` files.
- At least one `Eilocal.ini` file should be archived, either for reference or for the preservation of typical desktop settings.

## Chapter 8

# Resolving issues with built-in firewall

Due to issues with the built-in firewall on later operating systems, some Kofax products, or products with which they are integrated, may not work properly.

This section contains information about what functionality is affected and how to remedy the problems (including these sub-sections):

- Servers vs clients
- How to enable the TCP/IP and UDP/IP ports (see page [39](#))
  - Accessing the Windows Firewall dialog (see page [39](#))
  - Opening a specific port (see page [41](#))
  - Allowing specific programs to use any inbound port (see page [43](#))
- Which ports to activate (see page [44](#))
- Data Execution Prevention causes benevolent applications to fail (see page [46](#))
  - Enabling programs you trust to execute without DEP (see page [46](#))
- A security warning is displayed when you try to install (see page [47](#))
- Using security logging to trace problems (see page [47](#))

The primary reason why these operating systems interfere with Kofax products is that their built-in firewall turns off almost all inbound TCP/IP and UDP/IP ports, which prevents other computers from initiating a connection.

Solutions include enabling the appropriate ports, allowing specific programs to use any inbound port, or completely disabling the firewall. This section explains how to do these things.

## Servers vs. clients

Depending on what role a computer has, different ports must be opened. In general, computers that act as a client only do not require ports to be opened. Computers that act as servers need ports to be opened. See “[Which ports to activate](#)” on page [43](#) for a list of which ports need to be open on which computers.

## How to enable the TCP/IP and UDP/IP ports

Procedures for enabling ports are identical for TCP/IP and UDP/IP ports. There are several techniques that can be used:

- Specifying each individual port to be open. See “[Opening a specific port](#)” below. You can only do this if you know which ports should be used. Kofax will update “[Which ports to activate](#)” on page 43 as they are discovered.

There are two variations of this:

- Allowing communication from the current subnet. This means that computers on the local network can communicate with the computer. This only works if all the computers are on the same subnet.
- Specifying which computers are to be considered secure for given ports. You can do this if you know the exact IP address of the communicating computers. If the installation uses DHCP, you cannot use this technique.
- Allowing specific programs to use any inbound port. You specify which EXE files are permitted to use ports. This is the solution for the [Oracle database server](#).
- Disable the firewall. This is the easiest way to make things work. However, this might be seen as a potential danger if the computer is connected to the Internet and not properly patched. Kofax does not recommend completely disabling the firewall.

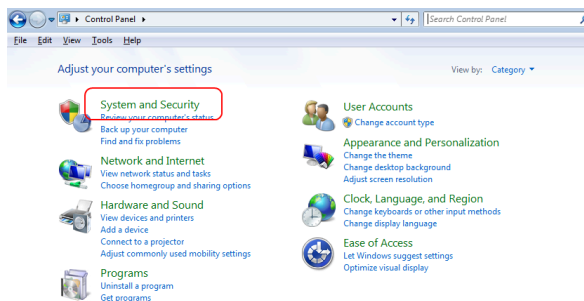
The ports used by Kofax products generally use TCP, but other products may use UDP ports. You can separate TCP from UDP ports, if needed.

## Accessing the Windows Firewall dialog

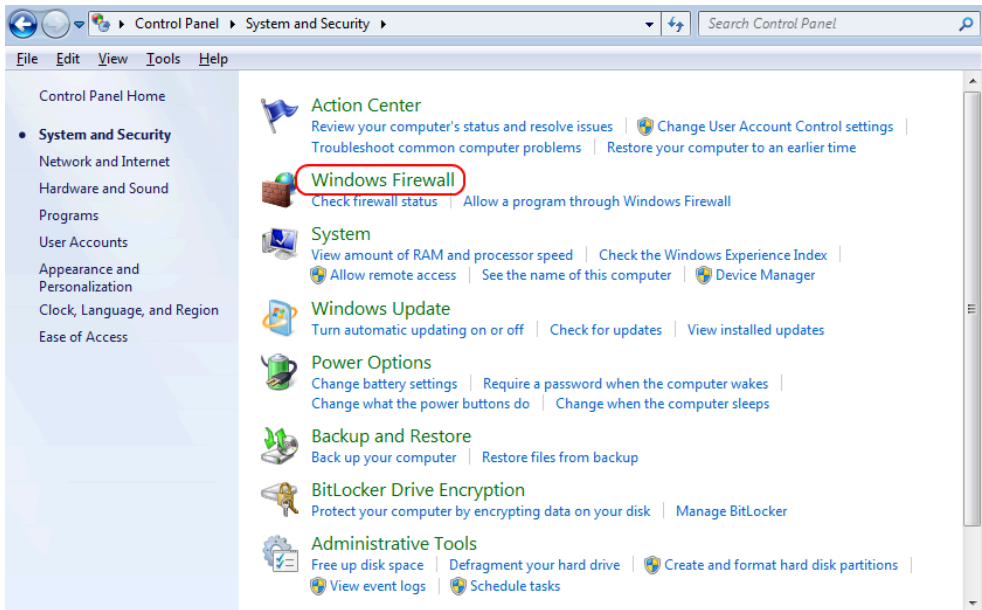
All of the procedures mentioned above require that you open the Windows Firewall dialog in the Security Center. The Security Center lets you control several security aspects of the computer, including ports and the Windows Firewall.

To change the port settings, you must have the appropriate access rights on the computer where you plan to change the settings. (This usually means that you must belong to the local administrator group on the computer.)

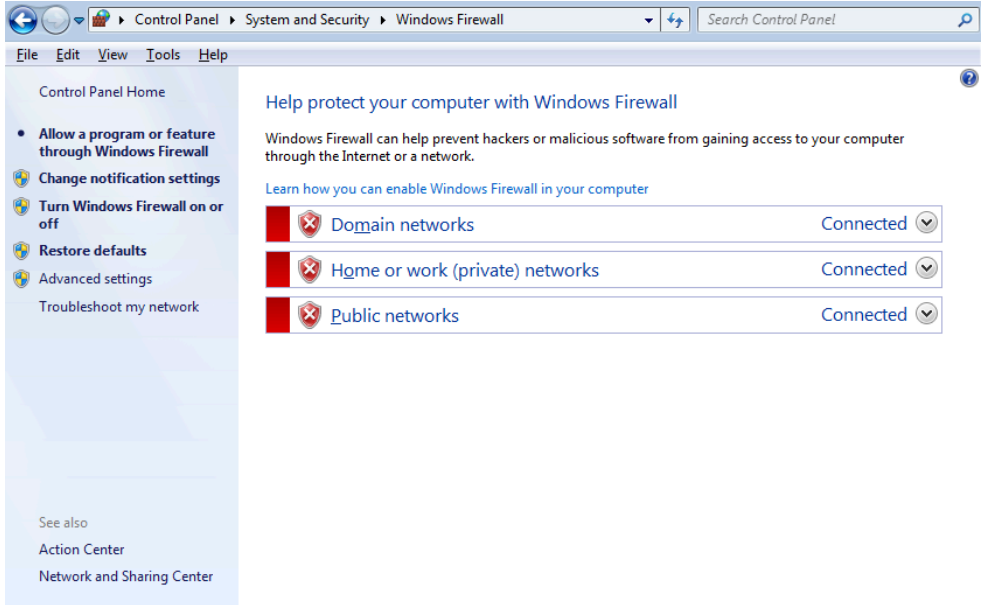
1. Start the Control Panel and click **System and Security**:



2. Click **Windows Firewall**:



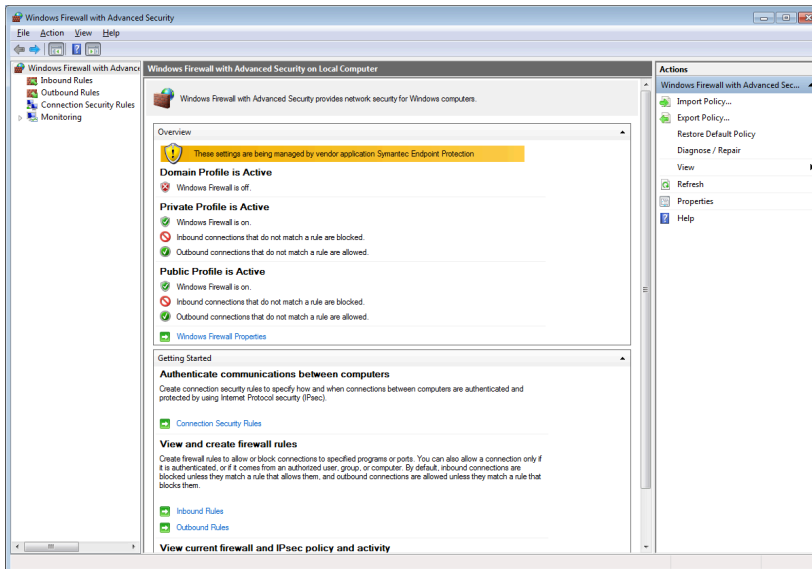
The **Windows Firewall** dialog is displayed.



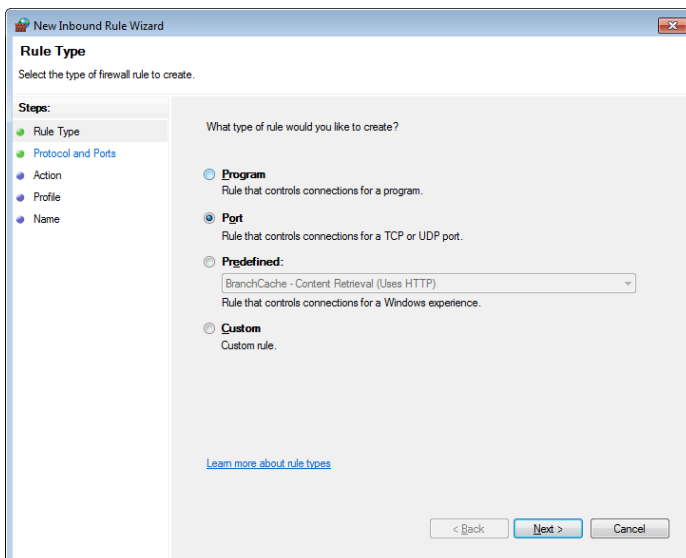


## Opening a specific port

1. In the **Windows Firewall** dialog, click the **Advanced settings** in the navigation pane to display the **Windows Firewall with Advanced Security** settings:

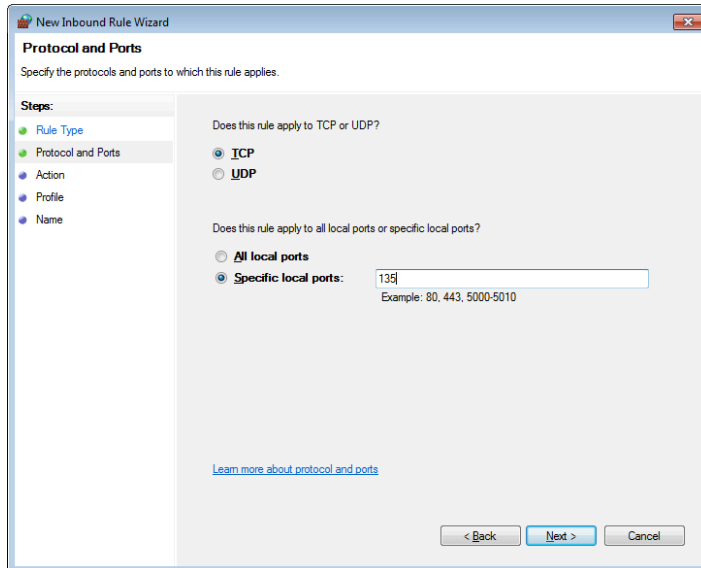


2. Click **Inbound rules** on the left of the screen and then **New rule** on the right. Select **Port** in the dialog that is displayed.



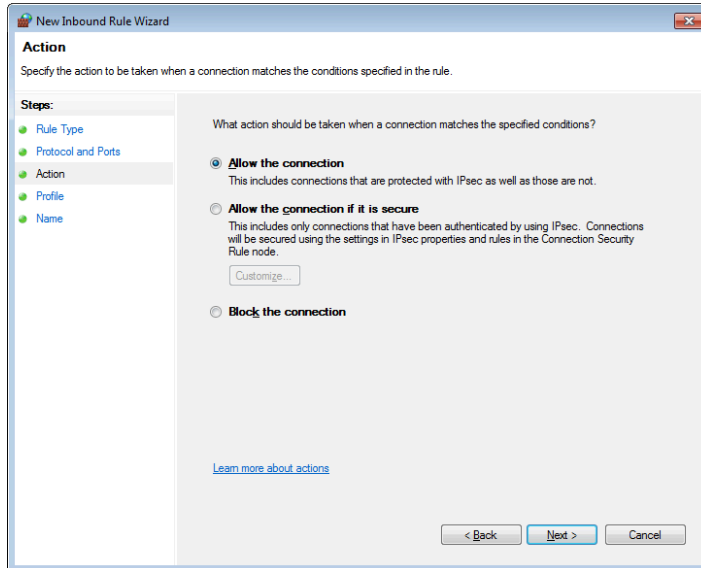
Click **Next**.

3. Ensure that **TCP** is selected and type in the number of the desired port in the **Specific local ports** box. See “[Which ports to activate](#)” on page 43 for a list of required ports.



Click **Next**.

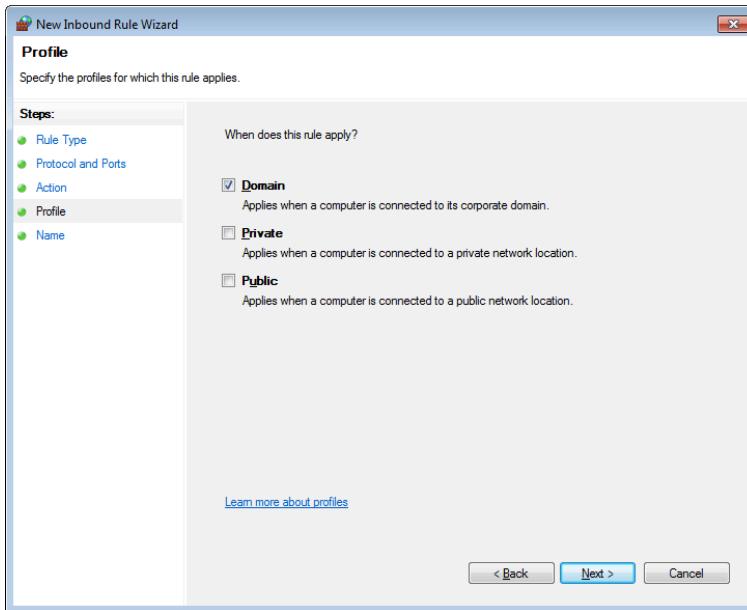
4. Select **Allow the connection** in the next dialog:



Click **Next**.

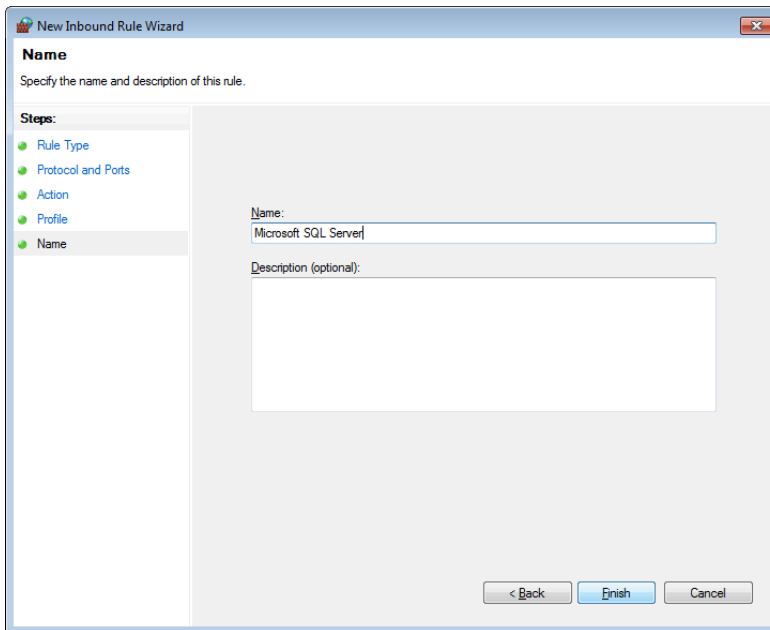
**Note** The **Allow the connection if it is secure** option only works in an environment that uses static IP addresses. If DHCP is used, this option does not work properly.

5. Specify the set of computers for which this port is unblocked.



Click **Next**.

6. Give the rule a name and an optional description to help you know what it's used for:



Click **Finish**.

## Allowing specific programs to use any inbound port

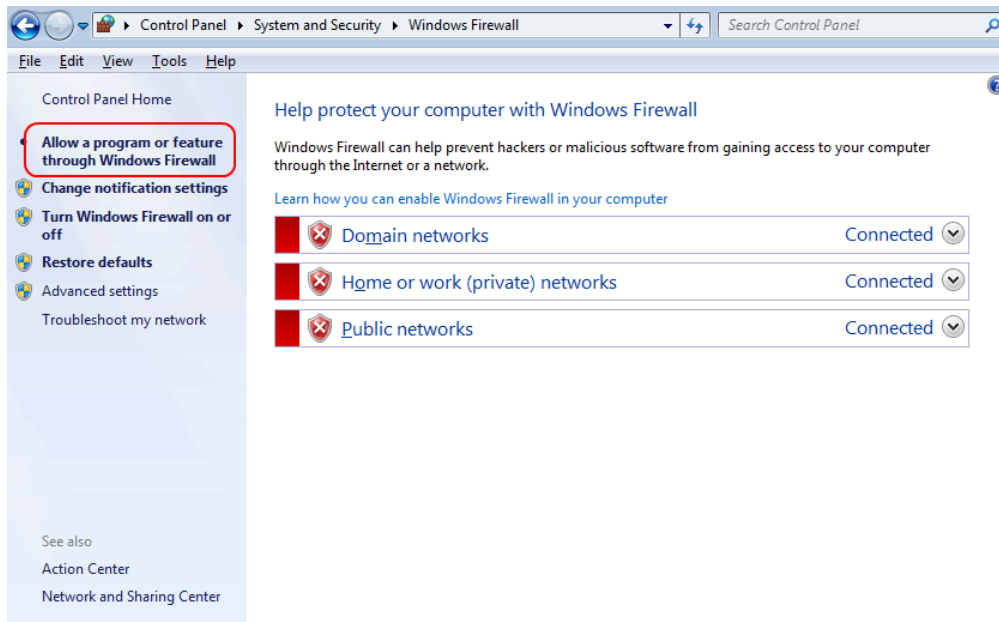
The Oracle database server software uses several different ports, depending on what type and version of Oracle database is in use and what accessory products are installed. This means that you must allow two

programs, `oracle.exe` and `TNSLNSNR.EXE`, to use any inbound port rather than specific ports. You may find this technique useful for other cases, as well.

**Note** Many Oracle installations use operating systems other than Windows Vista or Windows 7 and are therefore not affected.

Use this procedure:

1. In the **Windows Firewall** dialog, click **Allow a program or feature through Windows Firewall**:



2. Click **Change settings**. If you're prompted for an administrator password or confirmation, type the password or provide confirmation.
3. Select the check box next to the program(s) you want to allow (in this case, `oracle.exe` and `TNSLNSNR.EXE`), select the network locations you want to allow communication on, and then click **OK**.

A system administrator might need to consider other requirements necessary for a particular setup, such as enabling **Remote Desktop** for clients.

## Which ports to activate

Depending on what a computer is used for, different ports need to be opened. The list below shows which default ports to open, depending on the role. If default ports are not used, then you must open the ones that *are* used.

**Note** that this list shows only the ports required by Kofax products. Other ports may need to be opened, depending on what else the computer is used for.

Port	Role	Description
23	FLEX/m server	This port is used to communicate with FLEX/m using Telnet, as the LMTOOLS and LMSTAT tools do.
25	Microsoft Exchange Server, SMTP	This port is used by EMAIL, which uses Microsoft Exchange, which accepts SMTP requests on this port. The computer that runs Microsoft Exchange must have this port open. EZ-OUT transmits email to this port.
53	DNS, name resolution, and MX records	The EMAIL uses Microsoft Exchange, which accepts DNS requests on this port. The computer that runs Microsoft Exchange must have this port open. EZ-OUT transmits email to this port, looking for mail servers.
135	Microsoft SQL Server	Used by RPC to establish connections.
445	Microsoft SQL Server	Used to communicate with SQL Server using named pipes. This applies only when running SQL Server Developer Edition or Evaluation Edition. A production SQL Server uses Windows 2000 Server or Windows 2003 Server.
744	FLEX/m server	Used to communicate with FLEX/m.
1090	EHLM.EXE	ReadSoft FLEX/m agent.*
1467	RDM Server database (FORMS 5-2 and earlier only)	CSDMBASE support (network management).
1530-1540	RDM Server database (FORMS 5-2 and earlier only)	Default port range used to communicate with Birdstep RDM Server database. All ports in the 1530-1540 range must be enabled.
27000	LMGRD.EXE	FLEX/m server daemon.*

\* If you are using the Windows Internet firewall, you must edit your license.dat file, specifying the TCP/IP port number that the daemon uses. Here is an example of how to change the SERVER and VENDOR lines in license.dat to specify ports 27000 and 1090. The example is from a FORMS license file with a dongle number.

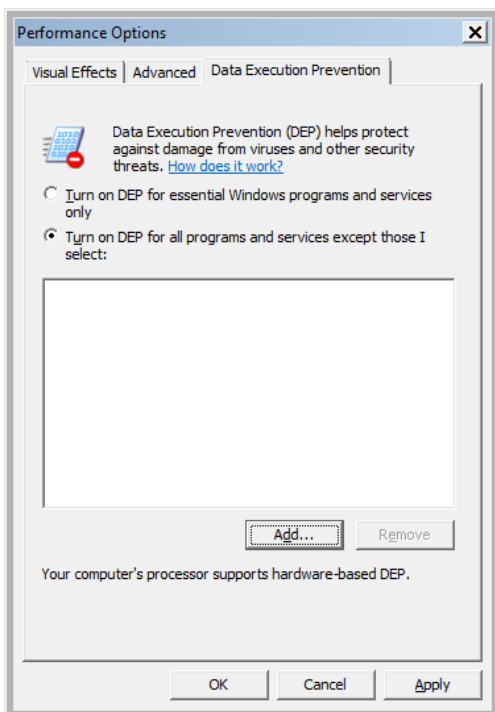
Before:

```
SERVER Change_This RS_Dongle=23123
VENDOR EHLM
```

After:

```
SERVER Change_This RS_Dongle=23123 27000
VENDOR EHLM port=1090
```

## Data Execution Prevention causes benevolent applications to fail




Data Execution Prevention (DEP) is a mechanism that protects computers from malicious code. Unfortunately it also sometimes causes benevolent applications to fail. DEP requires CPU support to work in hardware mode.

Two incidents involving Kofax products and DEP have been reported in the past:

- The installation program for Adobe Acrobat Reader, the AdobeDownloadManager application, gets a DEP exception and is stopped. (This program is no longer used and updates that Adobe has released should have corrected this problem.)
- The LMTOOLS application used to administer FLEX $lm$  gets a DEP exception when you click the System Settings tab.

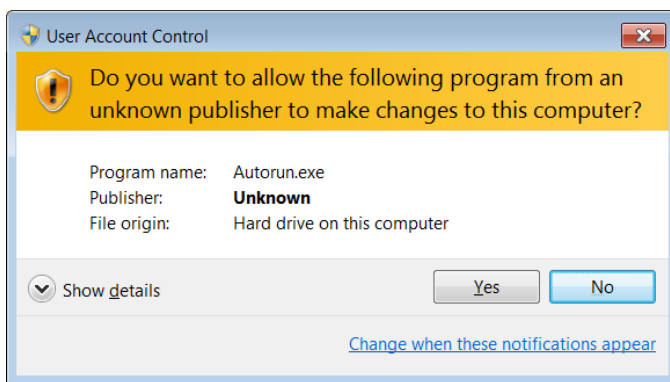
### Enabling programs you trust to execute without DEP

1. Click the **Start** button , right-click **My Computer**, and then click **Properties**.
2. Click **Advanced system settings** on the left. If you're prompted for an administrator password or confirmation, type the password or provide confirmation.
3. Under **Performance**, click **Settings**.
4. Click the **Data Execution Prevention** tab, and then click **Turn on DEP for all programs and services except those I select**.
5. To turn off DEP for an individual program, select the check box next to the program that you want to turn off DEP for, and then click **OK**.

6. If the program is not in the list, click **Add**. Browse to the Program Files folder, find the executable file for the program (it will have an .exe file name extension), and then click **Open**.
7. Click **OK**, click **OK** in the System Properties dialog box if it appears, and then click **OK** again. You might need to restart your computer for the changes to take effect.

## A security warning is displayed when you try to install

When installing certain programs, you are asked if you want to allow the program being installed to make changes to the computer when it comes from an unknown publisher (see below). All Kofax programs can be run safely, so click Yes to start the installation program.

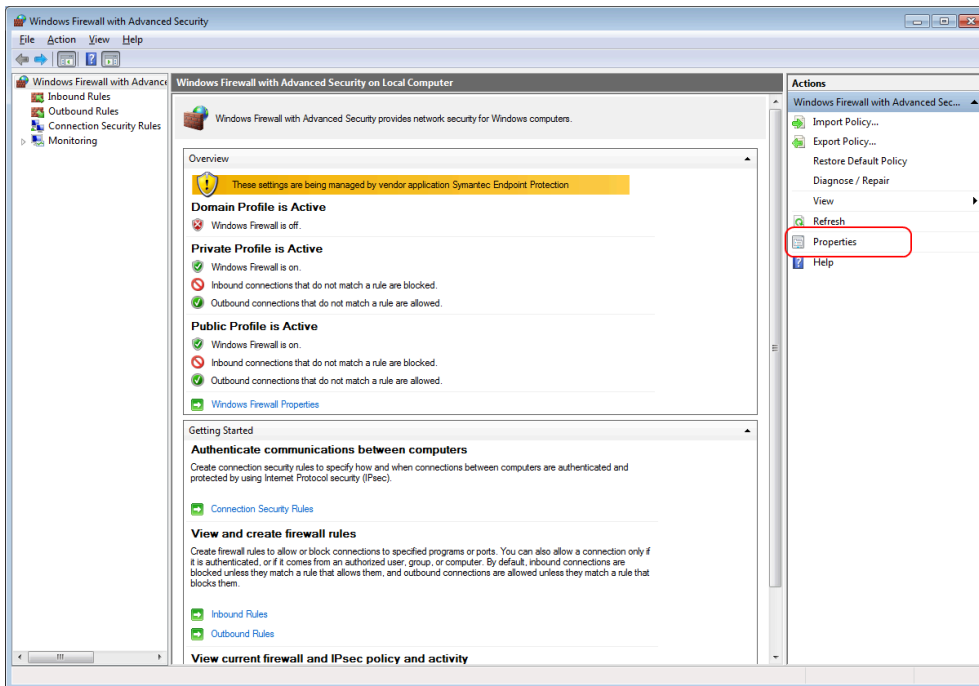


## Using security logging to trace problems

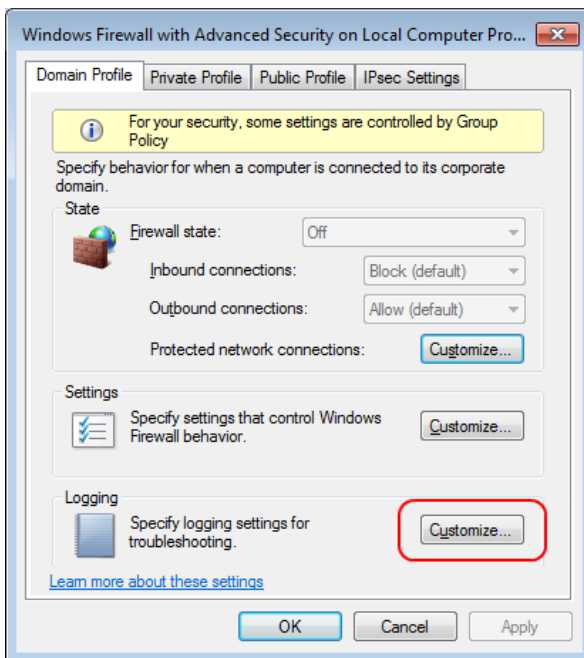
The Windows Firewall allows you to log all attempts to communication with the computer. This can be useful to track down problems related to closed ports. Use this procedure to enable logging:

1. Click the Start button, type **firewall** in the search box, and select **Windows Firewall and Advanced Security**.

2. Click **Properties.**

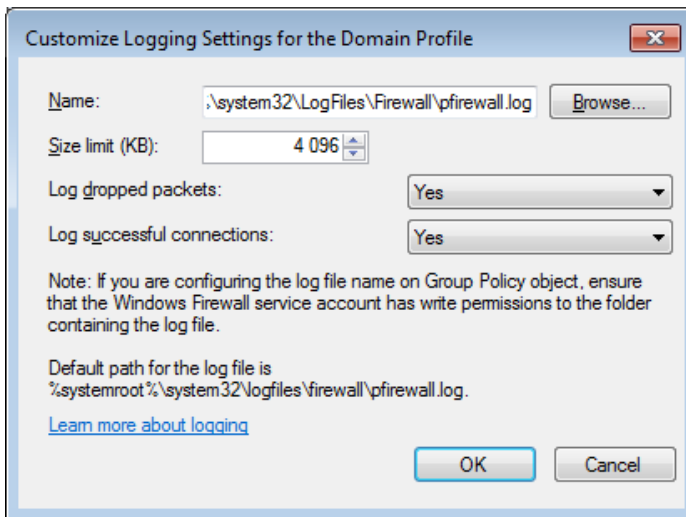


3. Select the tab for the profile that you want to log, and click **Customize** in the **Logging** section.





4. In the **Customize Logging Settings** dialog, enable the logging options and, if desired, change the size and/or location of the log file. (If a solution includes a large number of clients, it may be an advantage to specify a logging location on a central server.)



## Chapter 9

# Restoring the system after a failure

The data objects, directories and files outlined in [“Backing up the Invoice Automation system,”](#) above, must be available for restoration.

All computer platform hardware and software must first be restored to operational condition according to the specifications set forth in this guide and in the Kofax documents listed in the [“Related documents”](#) section on page 6.

1. Restore the database server.

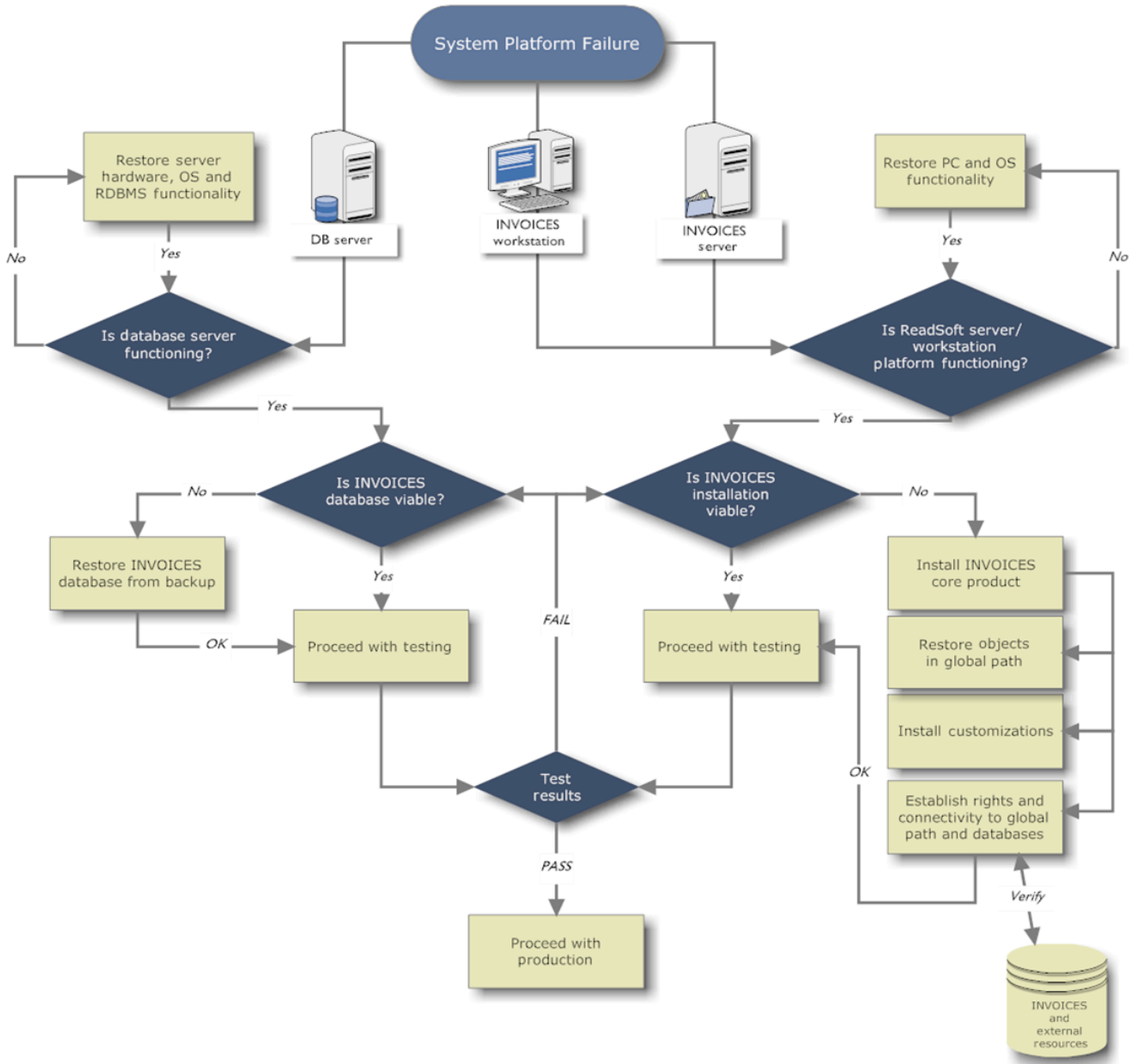
Ensure that the Invoice Automation database is restored and functioning according to the Invoice Automation documentation. Users must be able to connect to the server and access the database.

2. Restore the Invoice Automation server.

Ensure that the server platform that hosts the global path, manages product licensing, and runs the Interpret and Transfer services is restored to operational condition. Then restore the files described in [“Backing up the Invoice Automation server,”](#) above.

3. Restore Invoice Automation workstations.

Ensure that each workstation operating Invoice Automation is restored to operational condition. Then reinstall the Invoice Automation software according to the installation guide.



This Invoice Automation disaster recovery flow chart shows a basic system restoration.

## Chapter 10

# Languages supported

## Interface languages available

The user interface is available in the following languages:

<b>Language</b>
Chinese (simplified)
Chinese (traditional)
Czech
Danish
Dutch
English*
Finnish
French*
German*
Hungarian
Italian
Japanese
Korean
Norwegian
Polish
Portuguese
Russian
Slovak
Spanish*
Swedish
Thai
Vietnamese

Language
Entrance mode - English*
Entrance mode - French

\* Translated versions of the help are included with these languages.

## Character sets interpreted

The character sets for the following languages can be interpreted:

Language
Belgian
Bulgarian
Chinese (simplified)
Chinese (traditional)
Czech
Danish
Dutch
English*
Estonian
Finnish
French*
German*
Greek
Hebrew
Hungarian
Icelandic
Italian
Japanese
Korean
Latvian
Lithuanian
Norwegian
Polish
Portuguese

<b>Language</b>
Romanian
Russian
Serbian (Latin)
Slovanian
Spanish*
Swedish
Thai*
Turkish
Ukranian
Vietnamese*

\* ABBYY must be used as the interpretation engine for these languages.