

Technical Environment Requirements

EMPOWER TECHNICAL OVERVIEW

CONTENTS

1	Technical Environment Requirements Introduction	8.5	Data Flow 2 – Interface with the World Wide Web
2	Glossary	8.5.1	Requirements for this Data Flow to work
3	Server Requirements	8.6	Data Flow 3 – Data Synchronisation
3.1	Client/Server	8.6.1	Requirements for this Data Flow to work
3.2	eApplications	8.7	Data Flow 4 – Uploading a Curriculum Vitae
4	Client PCs	8.7.1	Requirements for this Data Flow to work
4.1	Client/Server	8.8	Data Flow 5 – Emailing a Forgotten Password
4.2	eApplications	8.8.1	Requirements for this Data Flow to work
5	Network	8.9	How Secure is Empower Internet Recruitment?
5.1	Protocol	8.10	Appendix A – Firewall Configuration Summary
5.2	Bandwidth	9	E-mail
6	Disk Storage	9.1	E-mail Connectivity
6.1	Applications	9.2	Empower ePeople Routing
6.2	Data	10	Word Processing
7	Database	11	Organisational Charting
7.1	Supported Databases	11.1	HRCharter Enterprise System Requirements
7.2	Connection	12	Crystal Reports
7.3	Language	13	Active Directory
7.4	Collation Sequence	14	Thin-Client Distribution
7.5	Licensing	15	Test Environment
8	Empower Internet Recruitment	15.1	Software
8.1	Intended Audience	15.2	Hardware
8.2	Prerequisites for Empower Internet Recruitment		
8.3	Empower Internet Recruitment Data Flows		
8.4	Data Flow 1 – Standard Empower Recruitment Processing		
8.4.1	Requirements for this Data Flow to work		

1. TECHNICAL ENVIRONMENT REQUIREMENTS INTRODUCTION

This document aims to give a recommendation of the compatible supported environments in which the Empower product will operate acceptably for most customers.

However, if you have any concerns over either performance of the Empower software or compatibility within your technical environment we strongly recommend setting up an evaluation version of Empower prior to purchasing.

2. GLOSSARY

Term	Explanation
Client/Server	Refers to the core product modules of Empower Personnel, Recruitment & Training
eApplications	Refers to the web-based intranet applications Empower ePeople, eManager and User Manager

3. SERVER REQUIREMENTS

3.1. Client/Server

Empower supports Windows® NT4 (service pack 4 and above), Windows 2000 or Windows 2003 as the operating system. It is recommended that all operating systems are run to the latest Microsoft® Service Pack and with the latest Security Updates applied.

For networks using a PC Server, the minimum requirement is a Pentium III 500 MHz with 256MB RAM. An additional 128MB RAM is recommended if the eApplications use the same server. If new hardware is being purchased to serve the Empower product we recommend buying the highest specification available at that point in time and within your budget.

3.2. eApplications

Empower eServer is the Northgate Information Solutions software which controls the Empower eApplications. Empower eServer is an application and not a service and must be running in order to use the Empower eApplications.

The Web Server must be Microsoft IIS and we support version 4 or higher.

4. CLIENTS PCS

4.1. Client/Server

Empower is supported on IBM compatible PC's running Windows 98, Windows NT4 (service pack 4 or above) Windows 2000 or Windows XP as the operating system. It is recommended that all operating systems are run to the latest Microsoft Service Pack and with the latest Security Updates applied.

The minimum recommended workstation specification is a Pentium II 300MHz with 256MB RAM.

If new hardware is being purchased to serve the Empower product we recommend buying the highest specification available at that point in time and within your budget.

4.2. eApplications and Internet Recruitment

Client machines require a web browser to be installed. This should be Internet Explorer version 5.5 or higher.

5. NETWORK

5.1. Protocol

The network must be a TCP/IP compatible network such as Windows NT.

5.2. Bandwidth

The recommended minimum network speed is 10 megabits per second.

6. DISK STORAGE

6.1. Applications

Empower Client/Server applications without data require 50MB for the first application plus 15MB for each additional application.

Empower eApplications each require 5MB.

6.2. Data

Empower Personnel requires approximately 8MB per 100 employees. Empower Training requires approximately 6MB per 100 employees. Empower Recruitment require approximately 3MB for every 500 Candidates.

In addition, at least 2 times the size of the largest table should be available as free hard disk space for temporary files plus 40MB for system files. For improved performance it is recommended that the Data and Log devices (files) are located on separate physical hard drives whenever possible.

7. DATABASE

7.1. Supported Databases

Empower currently supports only Microsoft SQL Server as its database. Supported versions are Microsoft SQL Server 7, 2000 & MSDE 2000.

We recommend Microsoft SQL Server 2000 for better performance.

For improved performance it is recommended that the Data and Log devices (files) are located on separate physical hard drives whenever possible.

Dictionary order, case insensitive is preferred. Please note that HRCharter does not support Case Sensitive Databases (see Organisational Charting).

7.2. Connection

Empower uses ODBC and related ODBC support files to connect to the chosen Client/Server database. On all client PC's and the server running Empower eServer (if applicable) the Microsoft SQL Server driver is required (version is dependent on service pack installed).

7.3. Language

The default language must be set to US English (Language 0).

7.4. Collation Sequence

The recommended Collation Sequence is Latin1_General_CI_AS.

7.5. Licensing

MSDE

Microsoft SQL Server Desktop Engine (MSDE) is a data engine built and based on core SQL Server technology. Because we

develop our products using Microsoft tools, we are able to distribute this database for sole use with those products free of charge with no additional licensing requirements. It should be noted that MSDE does not have its own user interface or tools but a fully licensed version of the SQL Server Tools can be used to administer it.

MSDE is limited to maximum of 2GB per database, and limited to five concurrent batch workloads. It is therefore not recommended for installations with heavy usage above five concurrent users otherwise there may be degradation in performance.

Standard or Enterprise?

Empower products will work with either Microsoft SQL Server Standard or Enterprise versions. From a licensing perspective the only difference between the two is that the Enterprise Edition allows multiple instances to be installed without buying additional licences. With the Standard Edition you need to buy licences for each additional instance. More detailed information on the differences can be found at:

<http://www.microsoft.com/sql/techinfo/planning/SQLResKChooseEd.asp>

Empower products only require a single instance, and this instance can be shared with other applications. However, if you are looking to implement Empower Internet Recruitment, we strongly recommended that the SQL Server database for the web site is kept on a separate instance and server from that used by Empower Recruitment for security reasons.

Processor or Server Licensing?

You will require sufficient Client Access Licences (or CALs) to allow for the maximum total number of concurrent users you have across all Empower HR products. This total should include any intranet products.

Example

Product	Concurrent Users
Empower Personnel & Payroll	5
Empower eManager	10
Empower ePeople	200
Total CALs required	215

Microsoft SQL Server can be licensed either per server or per processor. With per server licensing, you will need a licence for the server on which SQL Server is installed as well as a CAL for every concurrent user. With processor licensing you will need a licence for each processor in the server on which SQL Server is installed, but you will not need any additional CALs. The decision between processor and server licensing will then be based upon which of the two options is the most cost effective. For Empower Internet Recruitment as each time someone accesses the web site they are likely to create a connection to the SQL Server, we recommend per processor licensing because of the difficulty in controlling the number of server connections.

8. EMPOWER INTERNET RECRUITMENT

This section provides IT staff with a technical overview of the Empower Internet Recruitment system detailing the requirements and the environments on which it can be installed.

The section can also be used during:

- Pre-sales – provide awareness of the requirements of an Internet Recruitment installation and highlight the security aspect of the product.
- Pre-install – inform the client's IT department of the prerequisites prior to the installation.
- Install – provide the fundamentals for a better understanding of the installation and testing processes.
- Maintenance – details all necessary components, databases, processes and security required for optimum system operation.

The approach that this section takes, in describing Internet Recruitment is to separately describe each of the data flows that occur within the product. Each data flow provides details of what aspects of the environment need to be in place for that functional area to work successfully and highlights the necessary security considerations.

8.1. Intended Audience

This section can be read by anyone wishing to understand the general concept of how Empower Internet Recruitment works though most of the information is relevant to network professionals with an interest in maintaining the security of an environment where it is to be installed.

8.2. Prerequisites For Empower Internet Recruitment

- Empower Recruitment.
- Two SQL Servers.
 - one for the Empower Recruitment database, residing on the LAN.
 - one for the Empower Internet Recruitment database, residing in the DMZ (De-Militarised Zone).
- Internet Information Services version 4 or above.
- FTP on Internet Information Services.
- SMTP on web server to enable Internet Recruitment functionality of being able to e-mail Empower Internet Recruitment registered Internet users their forgotten passwords.
- A valid user login account needs to exist on the machine hosting Internet Information Services.

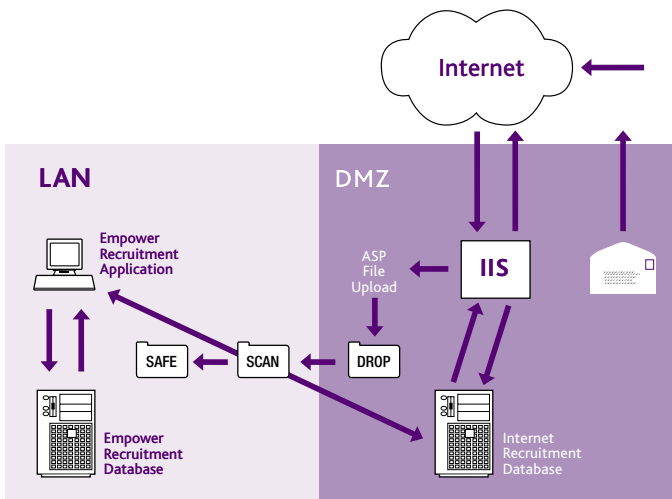
8.3. Empower Internet Recruitment Data Flows

Internet Recruitment is a web component of the Empower Recruitment system that can be easily fitted into a Corporate Web Site.

It allows Vacancy information to be interrogated, and Candidates to apply for these Vacancies including the ability to submit a CV document. It also records their details so that at a later date the Candidate can return to the site and check on their application status, apply for another position or update their details.

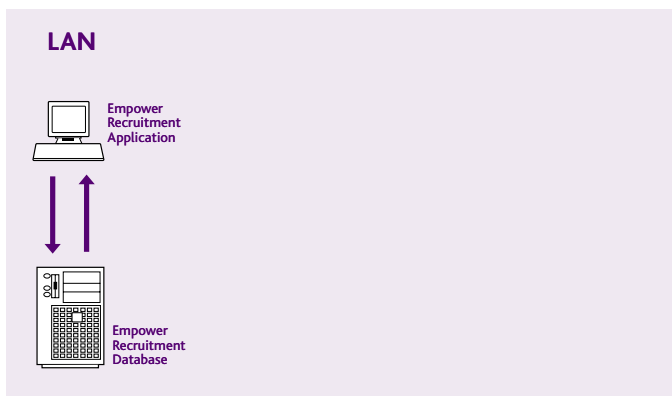
The following data flow provides an overview of the entire Internet Recruitment functionality.

Each of the following sections will give details of specific areas of this diagram.



8.4. Data Flow 1 – Standard Empower Recruitment Processing

Standard Empower Recruitment processing requires a client machine to run the Empower Recruitment application which maintains Empower Recruitment data held on an SQL Server database on a LAN.



8.4.1. Requirements for this Data Flow to work

- Empower Recruitment.
- SQL Server, to hold the Empower Recruitment.
- Windows NT Server, Windows 2000 Professional/Server, Windows XP Professional.

8.5. Data Flow 2 – Interface with the World Wide Web

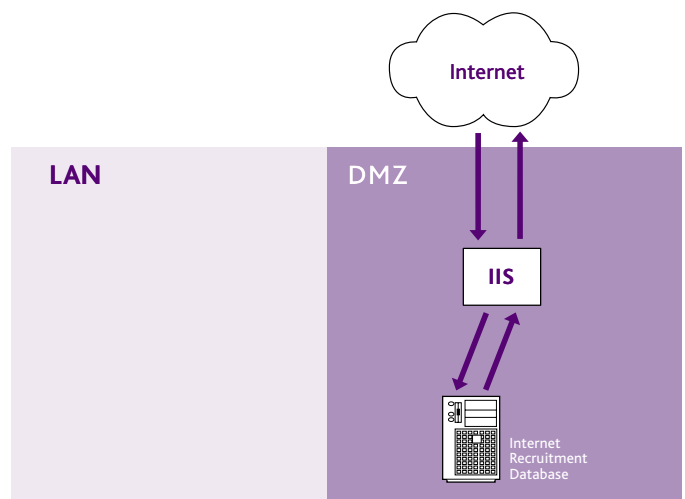
The Internet Recruitment database provides a subset of the information present on the Empower Recruitment database (primarily vacancy information).

This will be available to Internet users to allow them to view vacancy details and register themselves as candidates for one or more vacancies.

This is achieved by maintaining a separate Internet Recruitment database on a SQL Server database located within the DMZ. Access to this database (Internet Recruitment database) is provided by Internet Information Services through the use of a web server and active server pages.

Information on Internet Recruitment registered Internet users is also maintained within this database.

Note that this dataflow operates only within the DMZ and the Internet has no connection to any resources within the company's LAN.



8.5.1. Requirements for this Data Flow to work

- SQL Server residing in the DMZ.
- Internet Information Services version 4 or above.
- MDAC 2.5 or above.
- A virtual directory, created using Internet Information Services, associated with a directory holding the Internet Recruitment Active Server Pages.
- System DSN to enable the Active Server Pages to communicate with the Internet Recruitment database.
- Either:
 - Port 80(TCP) – HTTP – to be open on the firewall between the DMZ and the Internet, or
 - Port 443(TCP) if Secure Socket Layer is being employed.
- A valid user login account needs to exist on the machine hosting Internet Information Services. This account needs to have the correct permissions to write to the registry. The default account name for this is IUSR_MachineName but another account name can be used for the purposes of increased security.
- Installation of Internet Recruitment ASP web pages.

8.6. Data Flow 3 – Data Synchronisation

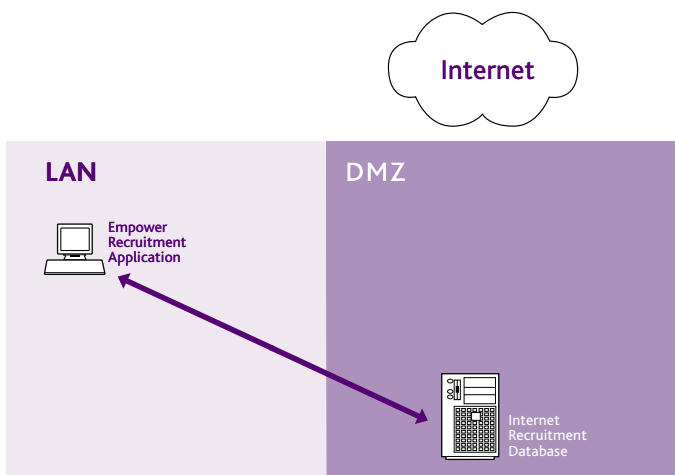
Data Synchronisation allows Empower Recruitment vacancy information to be made available to Internet users and to enable data recorded by candidates via the web to be imported back into the Empower Recruitment module.

As vacancy information changes on the Empower Recruitment database (held on the LAN) and 'Web Candidate' information begins to accumulate on the Internet Recruitment database (held in the DMZ), a process is required to synchronise information. This process needs to:

- 'Export' job vacancy, candidate action and code table information from the Empower Recruitment database to the Internet Recruitment database.
- 'Import' web candidate information from the Internet Recruitment database into the Empower Recruitment database.

Note how the characteristics of this process indicates that it is to be run from within the LAN, this is extremely important. There is nothing within the DMZ that initiates communication with anything within the LAN.

This is a major security feature that is built into Empower Internet Recruitment by design. To minimise security risks no processing should be initiated from the DMZ to the LAN.



The synchronisation processes exist within the housekeeping routines of the Empower Recruitment application, run on the client machine.

By default it is run when the first user logs into Empower Recruitment each day.

8.6.1. Requirements for this Data Flow to work

- The Empower Recruitment clients need to be able to connect with the Internet Recruitment database in the DMZ. This is likely to mean the opening of Port 1433(TCP/UDP) – SQL – on the firewall between the LAN and the DMZ. If a port other than 1433 is used, ensure that the client machines are correctly configured to access the Internet Recruitment database using this port.
- The Empower Recruitment client machines need to use TCP/IP, instead of the default protocol of Named Pipes. This can be achieved in one of three ways:
 - Configure the use of TCP/IP on each client machine.
 - Configure the use of TCP/IP for a specific SQL server.
 - Create a DSN for each client machine.

8.7. Data Flow 4 – Uploading A Curriculum Vitae

Data Flow 2 showed how Internet users are able to read and write to the Internet Recruitment database for the purpose of obtaining information on current vacancies and registering themselves as candidates for vacancies.

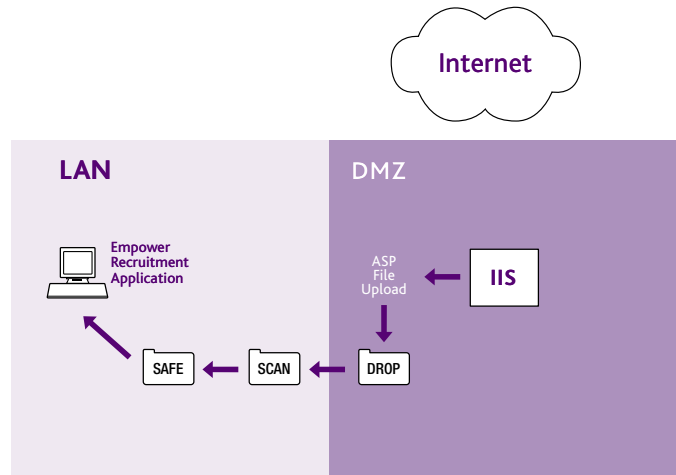
One of the features of Internet Recruitment is to allow Internet users to upload their curriculum vitae (CV) as a separate document which will become attached to the rest of their details when they are imported into the Empower Recruitment database.

This poses the risk from virus infected documents being uploaded into the Empower Recruitment database.

The solution is to use two or more file directories. A scenario to best illustrate how this process works would use three file directories.

The three directories are:

- The Drop directory. A directory to hold CVs as they are uploaded by the Internet user. This directory resides within the DMZ.
- The Scan directory. A directory that is monitored by the client's virus scan. Any file being moved into this directory is automatically scanned for viruses. This directory resides on the LAN.
- The Safe directory. A directory that receives files that have been successfully scanned by the 'Scan' directory.

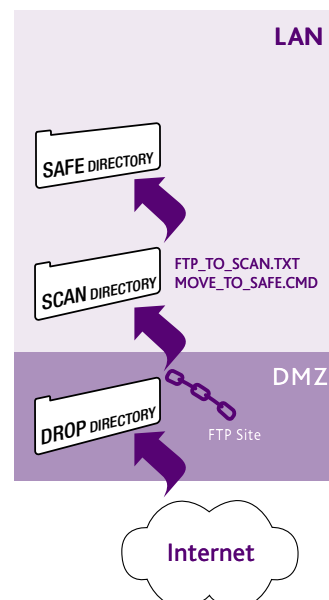


A file's presence in the safe directory indicates that it has been scanned and determined to be virus free by the client's virus protection software. It is then available for import into the Empower Recruitment database. This directory resides on the LAN.

With the Internet Information Services, in the DMZ, an FTP site is created and associated with the 'Drop' directory. The actual moving of a CV is performed by script files, run on the LAN at regular intervals (a CV is moved from the 'Drop' directory to the 'Scan' directory using FTP and from the 'Scan' directory to the 'Safe' directory using a MOVE command).

A CV remains in the 'Safe' directory until an import is performed (part of the data synchronisation process – refer to Data Flow 3) by the Empower Recruitment application, run on the client machine.

This arrangement is quite flexible. The use of three file directories can be reduced to two: one 'Drop' and a combined 'Scan/Safe' directory or a combined 'Drop/Scan' and one 'Safe' directory.



The 'Scan' directory can exist in the DMZ rather than on the LAN however, doing so, will require modification to the standard process for transferring files to the 'Safe' directory.

8.7.1. Requirements For This Data Flow To Work

- The functionality of uploading a file through an active server page is provided by the COM+ component ASPFileUpload.msi. This requires a domain/local account to be specified for the component to run under. This account must have permissions to write to the 'Drop' directory.
- ASPFileUpload.msi can be run out of process but this ability is presently, unsupported.
- The FTP Site that is created requires the following permissions: Read, Write and Log Visits. It also needs to be accessible to the script files, residing on the LAN.

This can be done in a number of ways. For example:

- Modify the script files to include the FTP login name and password.
- Allow anonymous access on the FTP site.

If this method is employed care needs to be taken to ensure that access to the FTP server is restricted to the IP address of the server running the script files.

- Ensure that the 'Scan' directory, which could possibly contain viruses, is kept in an area not accessible by normal users.
- Port 20(TCP) and Port 21(TCP) – FTP – to be open on the firewall between the DMZ and the LAN.
- The 'Drop' directory requires the following permissions to be set up for the Internet Recruitment user login account (the default name for this account is IUSR_MachineName but another account name can be used for the purposes of increased security):

Read, Execute, List, Write and Delete.

- Client's virus scanner needs to be configured to scan any items moved into the 'Scan' directory.
- A server required on the LAN to run the script files to transfer the CVs out of the DMZ.

8.8. Data Flow 5 – Emailing A Forgotten Password

If an Internet user, having previously registered with Internet Recruitment, forgets their password, they can be granted access to it through one of two methods:

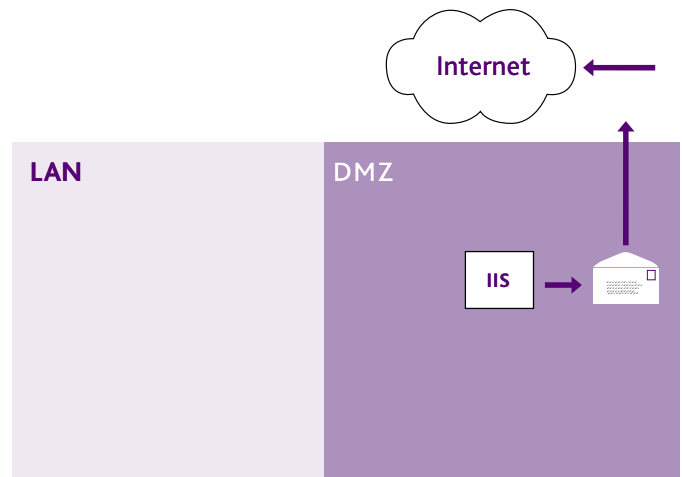
- Internet Recruitment can e-mail the Internet user their forgotten password.
- The Internet user can prove their identity by correctly answering a personal question, the answers to which was provided by the Internet user at the time of registration.

Note that Internet Recruitment can only be configured to use one of the above methods ie. it is not possible for one user to have their password e-mailed to them while another user answers a 'Personal Question'.

A 'Personal Question' configuration relies on the Data Flow 2 described previously, where information (personal questions) are maintained on the Internet Recruitment database and administered by active server pages.

A configuration to facilitate the e-mailing of passwords has a different data flow.

The e-mail functionality is done using SMTP on the web server.



8.8.1. Requirements for this Data Flow to work

- The SMTP service for IIS needs to be installed on the web server and access must be granted out into the Internet through opening port 25(TCP) – SMTP – on the firewall between the DMZ and the Internet.

If this is being installed for the first time be aware that, in the interests of security, this needs to be configured correctly. For example, relaying should be disabled. Consult the appropriate Microsoft Knowledgebase document for further information.

- The COM component that is used to provide the e-mailing function is Collaboration Data Objects for NT Server (CDONTS).

On NT4 and Windows 2000, the CDONTS component is installed with IIS. Although CDONTS will run on Windows XP, Microsoft has decided to remove the component from IIS 5.1 on Windows XP, so if IIS is running on Windows XP then a copy of cdnts.dll needs to be obtained and registered on the web server.

- The Internet Recruitment user login account (ie. the account under which the Active Server Pages are running) should have modify (change) permissions on the ..\Mailroot\ folder and its subfolders, (these folders were created by the SMTP service during installation and are used to write the outgoing email).
- CDONTS.DLL can be run out of process but this ability is, presently, unsupported.

8.9. How Secure is Empower Internet Recruitment?

One of the key considerations, during the design of Internet Recruitment, was security. Allowing access to a company's data via the Internet can leave internal systems vulnerable to attacks from the outside world.

It is for this reason that Empower Internet Recruitment provides the following security safeguards:

- The data, made available to an Internet user, is a 'safe' subset of the live Empower Recruitment data. It contains very little more than vacancy and Internet user registration information.

The least information that is made available to the Internet, the least information that can be compromised.

- There is nothing, within the DMZ, that access anything on the LAN.

A hacker, accessing the DMZ will find they have nowhere else to go.

- The movement of all items (data and files) from the DMZ to the LAN is controlled by scheduled processes executed within the LAN. Access to the LAN is by 'invite only'.

- CVs are virus scanned before they are considered for import by the Empower Recruitment application.

Any documents uploaded by an Internet user are handled with extreme caution.

- Secure Socket Layers (SSL) is fully supported by Empower Internet Recruitment.

If a client currently uses SSL, Empower Internet Recruitment is also able to make use of this protocol.

- Correct configuration of the SMTP service on IIS will provide a secure method of emailing forgotten passwords to Internet users.

For added security, the process of e-mailing information can be replaced by a method of establishing an Internet user's identity, through maintenance of a 'Personal Question'.

- Empower Internet Recruitment is flexible enough to work with various security models.

8.10. Appendix A – Firewall Configuration Summary

The following table provides summary information on the ports that are required to be open for Empower Internet Recruitment to function.

Firewall between the LAN and the DMZ

SQL	1433(TCP/UDP)
FTP-Data	20(TCP)
FTP	21(TCP)

Firewall between the DMZ and the Internet

SMTP	25(TCP)	(If 'e-mail forgotten password' functionality is used)
HTTP	80(TCP)	
HTTPS	443(TCP)	(If Secure Sockets Layer is employed)

9. E-MAIL

9.1. E-mail Connectivity

Empower can connect to fully MAPI compliant e-mail systems in order to send Letters and Reports. Reports can be sent in text, HTML or PDF format.

For installations requiring Lotus Notes email support the recommended version is 5.01a and above.

For installations requiring Groupwise, the Groupwise MAPI compliancy must be installed over the Microsoft Office MAPI compliancy. The Microsoft Outlook® Diary integration requires Microsoft Outlook.

9.2. Empower ePeople Routing

Empower ePeople supports the routing of requests via e-mail. To achieve this Empower eServer needs to have an e-mail account on a MAPI compliant e-mail system and the e-mail client installed on the same server. Empower eServer also supports Lotus Notes 5.01a and above.

10. WORD PROCESSING

Empower links dynamically to the following Windows based word processing packages: Microsoft Word versions 97, 2000 and XP; Lotus WordPro 97 is also supported but does not allow merged documents to be emailed automatically.

11. ORGANISATIONAL CHARTING

Empower links dynamically to the following Microsoft Windows based organisational charting packages: OrgPlus 3.01 and above, Microsoft Visio® 98, 2000 or 2002 (Standard or Professional versions) or HRCharter Professional 9.5. (OrgPlus and Visio licenses must be purchased by the client).

For fully web enabled organisational charting we recommend HRCharter Enterprise 9.5. HRCharter can be supplied through Microsoft Business Solutions.

11.1. HRCharter Enterprise System Requirements

Server

HRCharter supports Windows NT4 (service pack 4 and above) or Windows 2000 as the operating system. Internet Information Server 4.0 or 5.0 is required together with Microsoft Internet Explorer 4.01 Service Pack 2 or later.

The minimum requirement is a Pentium 350MHz processor with 128MB RAM and 15MB hard disk space. If you have clients using the plug-in-less functionality then several hundred MB may be required to provide temporary storage space for the image files, depending on the number of users and the image generation settings. Macro files also require some space on the server.

A default printer driver is required.

If new hardware is being purchased to serve the Empower product we recommend buying the highest specification available at that point in time and within your budget.

Note: The above is a minimum specification suitable only for running the HRCharter Enterprise Edition server in a limited evaluation setting and would not give acceptable performance for most purposes. As with all enterprise applications, the actual system requirements need to be assessed on an individual basis, based on the likely usage profile of the application. We recommend that HRCharter has its own dedicated server (although for a large scale implementation multiple servers may be advisable), which should be a separate machine from that running the database server.

The factors to take into consideration when assessing the hardware requirements include: the likely peak number of concurrent users (note that plug-in-less users require more server processing than plug-in users), the typical depth of reporting in charts (e.g. using expanding group boxes and large numbers of fields from different tables will require more processing than simple name & position boxes), the likely size of charts being built and the size of the database.

Plug-In Client

HRCharter supports Windows 98, NT Workstation 4.0 (service pack 4 and above), Windows 2000 or Windows XP as the operating system. Microsoft Internet Explorer 4.0 Service Pack 2 or later is required.

PC should have a Pentium processor or higher running at a minimum of 200Mhz with 32MB RAM and 4MB hard disk space.

Non-Plug-In Client

Most web browsers on most operating systems should be able to use HRCharter in this mode. However, HRM Software have only tested Internet Explorer 4.0 SP2, 5.x 6.x and Netscape Navigator 4.7 and 6.1 running under each 32-bit Windows variant. The requirements are for the browser to be capable of displaying JPEG images, handling HTML image maps and running simple JavaScript. HRCharter may optionally use PNG images instead of JPEGs, but note that only more recent browsers (e.g. Internet Explorer 5.0 and above) are capable of displaying PNGs. For users of Internet Explorer 5.0 and above, HRCharter will use VML (Vector Markup Language) generated images unless disabled.

12. CRYSTAL REPORTS

Through an additional module, Crystal Reports 9 Advanced Edition can be integrated with Empower eManager in order to deliver centrally created reports to managers in a web-based format across an intranet. These reports will then inherit the manager's security ensuring that only those who report to that manager can be viewed irrespective of how the report is created.

Other versions of Crystal Reports can be connected to the Empower database using a SQL Server ODBC connection (see Database, Connection) but it should be noted that Security will not be inherited from Empower and must be recreated if required within Crystal.

13. ACTIVE DIRECTORY

Empower Personnel supports integration with Windows 2000, Windows 2000 Advanced Server and Windows 2003 Server Active Directory.

14. THIN-CLIENT DISTRIBUTION

Empower supports delivery through Windows Terminal Services (Windows 2000 and Windows 2003) and Citrix Metaframe version 1.8 or higher.

15. TEST ENVIRONMENT

15.1. Software

The Empower products have been tested and quality assured in the following Client PC environments run as VMware images:

- Windows XP.
- Windows 2000 running with Office 2000 and 97.
- Windows NT 4 running with Office 2000 and 97.
- Windows 98 running with Word 97.

15.2. Hardware

The Empower products have been tested and quality assured on 2.4 Ghz Dell PCs with 512 MB RAM.

To find out more about EmpowerHR please contact our sales team on 08702 401555 or visit our website: www.northgate-is.com/hrs

