



**Technical Architecture for the
products developed with the
technological platform
SAFE X3 Version 6.10**

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1 – Technical Architecture

1.1 Generalities

The application softwares developed with the technological platform **SAFE X3 Version 6 (Sage Architecture For the Enterprise)**

- ✓ Sage HR Management
- ✓ Sage ERP X3 - standard & premium editions
- ✓ Sage Geode
- ✓ Sage FRP Fixed Asset

Used a technical architecture organised in layers and designed to

- separate the layers of data management, process execution and the presentation (3-tier architecture)
- spreading the load across one or more servers once the application is intended for a large number of users (scalability objective)
- providing an implementation choice of different technical platforms and databases
- making possible a transactional utilisation through a graphical interface, which can either be a Windows "client" or a Web "browser"

1.2 Description of the resources

All the resources described here under are logical components, which can be all installed under the same physical computer or distributed across several machines according to the number of users to be connected, the size of the database and the number of transactions to be treated. This model of distributed architecture offers an intrinsic high level of scalability.

1.2.1 Database Server

Stores both the application data and the description data for this application (dictionary). This database is organised as a hierarchy of folders, where the root folder is the image of the standard delivery and the other folders are the "customer" folders, generated from the root folder and each representing an application.

SAFE X3 V6 technological platform products are developed according to the database editor recommendations, which guarantee the integrity and the coherence of the data stored into the database.

There is no limit of size for the database usually the average size for the database can reach 20 to 30GB up to 100GB for the bigger. To reduce the size of the database there are some functions to be used for purging or archiving the biggest tables.

1.2.2 Application & Main Processes Server

Gives access to all the elements (processes, screens, reports...) that make up the applications. These elements are organised in directories by folder and are not repeated from mother folder to daughter folder except when they truly belong to the daughter folder,

otherwise it is the element from the mother folder that is used, remembering that only 3 folder levels are managed in this way. A sub-group of application server elements are published via a http server called the solution publication server.

Under an architecture where there is no additional Process Server, it's the Application & main Process Server which is in charge of the execution of processes, excluding anything that is involved in the "presentation", which is directly under the control of the "clients" workstation or the frontal servers Web/Citrix XenApp/Microsoft Terminal Service.

It's also on the Application & main Process Server under which is running the Sage X3 Batch Service in charge of batch processes launching and execution.

1.2.3 Additional Processes Server(s)

That are the resources in charge of the execution of processes, excluding anything that is involved in the "presentation", which is directly under the control of the "clients" workstation or the frontal servers Web/Citrix XenApp/Microsoft Terminal Service.

In order to distribute the load (CPU and memory), it is possible to install as many process servers as necessary, remembering that the user will have to specify in their workstation configuration, the process server that they plan to use.

1.2.4 Print Server

It is a computer which can accept print jobs from external client computers connected to the print server over a network. The print server then sends the data to the appropriate printer or other destinations (pdf, doc, xls, prn, ...) that it manages.

The Print Server can be deployed on Windows 2003 and above.

A Windows service is started on the computer which hold the Print Server, this service is listening all print jobs submitted by other client computers (C/S or Web Workstations or Sage X3 Batch Server). This service is running on default port number 1890 but it can be modified during installation step. This service can manage up to 8 concurrent print output queues.

1.2.5 Business Objects Server

It is the server which hold the Application Software : **Business Objects Enterprise XI** and eventually the data warehouse. The function of the data warehouse is to consolidate information from the Sage X3 production database to provide a context for reporting on, requesting and analyzing.

The Business Object Server can be deployed on Windows 2000 and above.

If the data warehouse is stored under another machine than the BO Server, it will be mandatory to install on the BO Server an Oracle Client Net 11 or an ODBC Driver for SQL Server

1.2.6 Web Server

It is the frontal server to be addressed by the endusers to open a session into Sage X3 application through the Microsoft browser Internet Explorer 6.0 or 7.0

Web server is not in fact attached to a solution but can be used within the framework of N solutions as long as they maintain a good technical level. Conversely it is possible to have several web servers for the same process server

1.2.7 Citrix XenApp / Microsoft Terminal Service Servers

Citrix XenApp Server or Microsoft Terminal Services Server are remote access/application publishing product that allows users to connect to applications available from central servers.

One advantage of publishing applications is that it lets user connect to these applications remotely, from their homes, airport Internet kiosks and other devices outside of their corporate networks.

1.2.8 Client Workstation

It's a computer equipped with Windows Client Operating System which is required to connect into one of the application of the SAFE X3 V6 technological platform products.

1.2.9 Mail Server or SMTP bridge

A Mail Server is a computer program or software that transfers electronic mail messages from one computer to another. Mail servers move and store mail over corporate networks, via LANs and WANs and across the Internet.

Sage X3 users are not directly in contact with the Mail Server but used a mail client application (like: Outlook), or another binary program in charge of contacting the Mail Server to send electronic mail messages. SMTP is a relatively simple, text-based protocol used by the client to communicate with the Mail Server.

In the daily usage of the Sage X3 Application Software, the existence of a Mail Server is strongly recommended for the good working of the **Workflow** functionalities.

1.3 Network requirements

A Gigabit link is necessary between the different servers which will host the Sage applications.

These servers must all be part of an Active Directory Domain, and be part of the same branch (same IP address range). Only exception: the frontal servers : Web (Sage), Microsoft Terminal Service or Citrix XenApp, which can be part of a DMZ-type sub-network.

- ✓ *When some machines on the internal network need to be accessible from the outside, it is often necessary to create a new interface to a separate network, accessible both from the inside and from the outside, without putting the whole enterprise security at risk. "DMZ" or DeMilitarized Zone designates this isolated area, which hosts applications accessible to the public.*

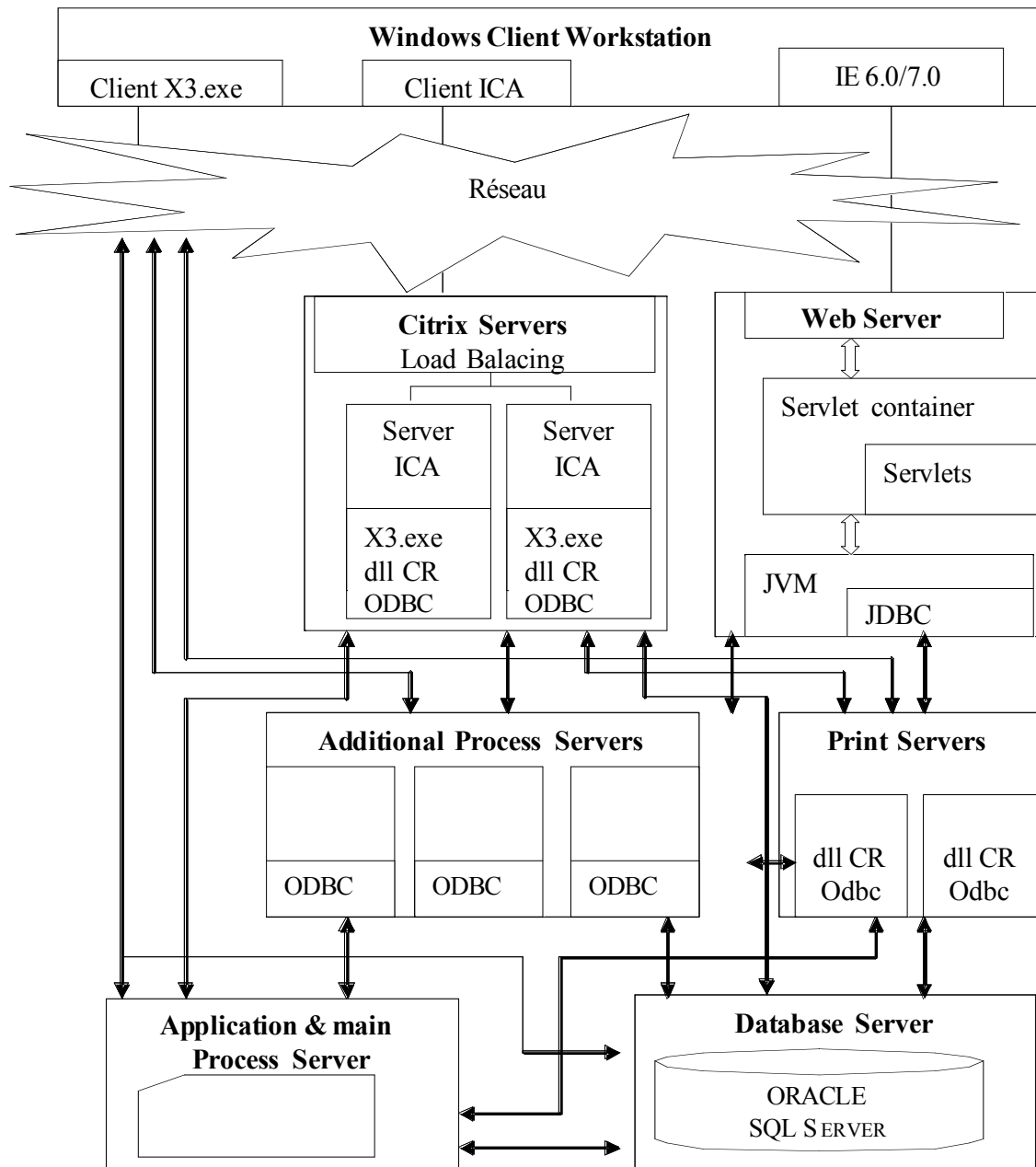
The different servers must also be registered in a DNS domain, allowing the client workstations to recognize the FQDN (fully qualified domain name) of the servers, including that of Unix-Linux machines, and allowing the servers to recognize the FQDN of the client workstations. The configuration of the DNS servers must allow for the registration of the client workstations in the reverse DNS areas.

We also strongly advise to force to the same values the speed and transfer modes between the network card(s) installed on the servers and the ports of the switch(es).

1.4 Development environment

- Development Workbench : Sage X3 Framework
- Development languages :
 - ☞ Client/Server Interface : C, C++, VB
 - ☞ Web Interface : javascript, ActiveX, HTML
 - ☞ The application software : Sage X3 4GL

1.5 General schema of the technical architecture



1.6 Configuration of the resources

1.6.1 List of the Operating System available

Resources	Operating System versions
Database Server	(1) Windows x64 Server 2003 Windows x64 Server 2008 Red Hat Enterprise Linux AS x64 release 5 IBM-Aix 5.3 ML5
Application & main Process Server	(1) Windows x64 Server 2003 Windows x64 Server 2008 Red Hat Enterprise Linux AS x64 release 5 IBM-Aix 5.3 ML5
Additional Process Server	(1) Windows x64 Server 2003 Windows x64 Server 2008 Red Hat Enterprise Linux AS x64 release 5 IBM-Aix 5.3 ML5
Print Server	Windows Server 2003 (32-bit) Windows x64 Server 2003 / 2008
Business Objects Server	Windows Server 2003 (32-bit) Windows x64 Server 2003 / 2008
Web Server	Windows Server 2003 (32-bit) Windows x64 Server 2003 / 2008 Red Hat Enterprise Linux AS x64 release 5 IBM-Aix 5.3 ML5
Citrix XenApp or Microsoft TS	Windows Server 2003 (32-bit) Windows x64 Server 2003 / 2008
Sage X3 Client Workstation	Windows (32-bit) XP SP1a, SP2, SP3 Windows (32-bit) Vista Business et Enterprise Windows x64 Vista Business et Enterprise
Citrix or Microsoft TS Workstation	See requirements given by the editor.

(1) Temporarily supported during the availability of 6.0 version for the ramp-up sites and for the ramp-up customers migrating from 6.0 to 6.10 version.

1.6.2 List of the database versions

Resources	Database Versions
(1) Windows x64 Server 2003	(1) Oracle 10g (64-bit) version 10.2.0.4 (1) SQL Server 2005 (64-bit) + SP2
Windows x64 Server 2008	Oracle 11g (64-bit) SQL Server 2008 (64-bit)
Red Hat Enterprise Linux AS x64 release 5	Oracle 11g (64-bit)
IBM-Aix 5.3 ML5	Oracle 11g (64-bit)

(1) Temporarily supported during the availability of 6.0 version for the ramp-up sites and for the ramp-up customers migrating from 6.0 to 6.10 version.

1.6.3 Sage X3 Processes distribution across a 2-tier Architecture

Resources	Processes	Process origin
<u>DATABASE and APPLICATION & MAIN PROCESS SERVER :</u>	1 x oracle.exe / instance 1 x sqlserver.exe / instance 1 x adxdsrv.exe / solution n x adonix.exe n x sadora.exe / sadoss.exe n x sadfsq.exe	Oracle Database engine SQL Database engine Sage X3 listener Sage X3 process Sage X3 process Sage X3 process
<u>CLIENT WORKSTATION :</u>	X3.exe	Sage X3 Client

(n) = number of concurrent users

1.6.4 Sage X3 Processes distribution across a 3-tier Architecture

Resources	Processes	Process origin
<u>DATABASE SERVER :</u>	1 x oracle.exe / instance 1 x sqlserver.exe / instance	Oracle Database engine SQL Database engine
<u>APPLICATION & MAIN PROCESS SERVER :</u>	1 x adxdsrv.exe / solution n x adonix.exe n x sadora.exe / sadoss.exe n x sadfsq.exe	Sage X3 listener Sage X3 process Sage X3 process Sage X3 process
<u>CLIENT WORKSTATION :</u>	X3.exe	Sage X3 Client

(n) = number of concurrent users

1.6.5 Sage X3 Processes distribution across a 4-tier Architecture

Resources	Processes	Process origin
<u>DATABASE SERVER :</u>	1 x oracle.exe / instance 1 x sqlserver.exe / instance	Oracle Database engine SQL Database engine
<u>APPLICATION SERVER :</u>	1 x adxdsrv.exe / solution n x 2 x sadfsq.exe	Sage X3 listener Sage X3 process
<u>ADDITIONAL PROCESS SERVERS :</u>	1 x adxdsrv.exe / solution n x adonix.exe n x sadora.exe / sadoss.exe	Sage X3 listener Sage X3 process Sage X3 process
<u>CLIENT WORKSTATION :</u>	X3.exe	Sage X3 Client

(n) = number of concurrent users

1.6.6 Average Size occupied in memory by the Sage X3 processes

Resources	Processes	Physical memory	Virtual memory
Database Server	1 x oracle.exe / instance 1 x sqlserver.exe / instance	1 to 4 Go	1 to 4 Go
Application & main Process Server	1 x adxdsrv.exe / solution n x 2 x sadfsq.exe	3 Mo 2 x 3 Mo	2 Mo 2 x 2 Mo
Additional Process Server	1 x adxdsrv.exe / solution n x adonix.exe n x sadora or sadoss.exe	3 Mo 20 Mo 20 Mo	2 Mo 20 Mo 20 Mo
Sage X3 C/S Workstation	X3.exe / session	150-250 Mo	100-200 Mo
Sage X3 Web Workstation	iexplore.exe / session	100-200 Mo	100-200 Mo

(n) = number of concurrent users

1.6.7 Other Sage X3 Processes distribution

Resources	Processes	Process origin
Print Server	AdxSrvImp.exe	Sage X3 print engine
Business Objects Server	ConnectionServer.exe, EventServer.exe, inputfilesrv.exe, outputfilesrv.exe, cachesrv.exe, etc...	Business Objects Enterprise Software
Web Server	Apache.exe Tomcat.exe	HTTP Apache Software Sage X3 Web engine
Citrix or Microsoft TS Server	n x X3.exe	Sage X3 Client
Sage X3 C/S Workstation	X3.exe	Sage X3 Client
Sage X3 Web Workstation	iexplore.exe	Microsoft Internet Explorer

(n) = number of concurrent users

1.6.8 List of additional Softwares to be installed

Software	Version	Resources under which this Software must be installed
Database engine	Oracle / SQL Server	Database Server
* Apache http Server	2.0.61	Application & main Process Server
* Microsoft .NET Framework (190MB)	2.0 with SP1	Console of configuration Sage X3 C/S Workstation
* Java Software Development Kit	1.5.0_02	Web Server and Print Server
* Business Objects Enterprise	Xi R2 with SP3	Business Objects Server
* Apache Tomcat	6.0.18	Web Server
* Apache http Server	2.2.10	Web Server

Oracle Client application (500MB)	11g	Additional Process Server Sage X3 C/S Workstation → only if Oracle has been installed on the Database Server
Mail Client Software	MAPI	Sage X3 C/S Workstation
Microsoft Office (optionnal)	2003 or 2007	Sage X3 C/S & Web Workstation
Macromedia FlashPlayer	9.0.48	Sage X3 C/S & Web Workstation
* Java Runtime Environment	1.6	Sage X3 Web Workstation (only if Sage WEB Server is implemented under a Linux or Unix Platform)
Adobe Reader (230MB)	9.0	Sage X3 Web Workstation

(*) = component delivered in the Sage X3 Installation DVD-ROM for Windows

1.6.9 Bandwidth network between Workstations and frontal Servers

Type of client interface	Frontal Servers	Bandwidth without printing and BO requesting
Sage X3 C/S interface	Process Server (Sage)	60 Kbps per user
Sage X3 Web interface	Web Server (Sage)	40 Kbps per user
Sage X3 C/S through RDP protocol	Microsoft Terminal Service	24 Kbps per session
Sage X3 C/S through ICA protocol	Citrix XenApp	12 Kbps per session

1.7 Remote connection

The connection mode required is the VPN connection through the public internet network.

The VPN connection can be establish by using one of the most standard VPN Software of the market: Microsoft VPN Client, Cisco or any other editor.

To facilitate the remote connection to your site you will have to provide us all the instructions regarding installation and configuration (list of port tcp/udp #) of the appropriate VPN Software.

2 – Requirements

2.1 Requirements : Frontal Servers and Workstations

Resources	Sizing recommendations
Print Server	Pentium IV or Xeon DP 2.4 GHz RAM memory 2 GB 36 GB 15ktpm SCSI Ethernet card Gigabit ➔ working area on disk <= 2 GB
Web Server (for 50 users)	Xeon Dual Core 2.3GHz / 1066 MHz / 2MB L2 cache RAM memory 3 GB 2 x 36 GB 15ktpm SCSI RAID-1 Ethernet card Gigabit
Web Server (for 100 users)	Xeon Quad Core 2.66GHz / 1333 MHz / 4MB L2 cache RAM memory 4 GB 2 x 36 GB 15ktpm SCSI en RAID-1 Ethernet card Gigabit
Servers : Citrix XenApp Microsoft Terminal Service (for 40 sessions)	Xeon Quad Core 2.66GHz / 1333 MHz / 4MB L2 cache RAM memory 12 GB 2 x 72 GB 15ktpm SCSI RAID-1 ➔ working area on disk 250MB per session Ethernet card Gigabit <i>For security: we recommend to implement several machines configured in Load Balancing.</i>
Sage X3 C/S Workstation	Pentium III/IV/Celeron/AMD Athlon 1GHz RAM memory 1 GB <u>minimum</u> Display super VGA 1024x768 pixels color 16-bits
Sage X3 Web Workstation	Pentium IV/Celeron/AMD Athlon 2GHz RAM memory 1 GB <u>minimum</u> Display super VGA 1024x768 pixels color 32-bits

2.2 Requirements : Additional Process Server

Additional Process Server - Windows	<u>For 100 connections :</u> 1 processor Quad Core Intel Xeon 2.66GHz / 1333 MHz Frontal Bus / 4MB cache L2 8 GB RAM memory
Additional Process Server - LINUX	<u>For 120 connections :</u> 1 processor Quad Core Intel Xeon 2.66GHz / 1333 MHz Frontal Bus / 4MB cache L2 8 GB RAM memory
Additional Process Server - IBM-Aix	<u>For 100 connections :</u> 1 processor 1.9GHz POWER5+ 64-bit (DCM) 8 GB RAM memory

2.3 Requirements : Database and Application Servers

Platform	IBM-Aix / Linux Red Hat		Windows	
Material	IBM pSeries (64-bit Power5+ 1.9 Ghz or ↗) LINUX (Quad Core Intel Xéon 2.66GHz or ↗)		PC 100% compatible Quad Core Intel Xéon 2.66GHz or ↗	
Operating System	IBM-Aix 5.3 ML5 (64-bit) or ↗ Red Hat Enterprise Linux AS x64 Rel.5		Windows x64 Server 2008	
Software to be installed	Librairies X11 R6 Motif 2.1		Microsoft Internet Explorer 6 version 6.0.2800 or ↗ Microsoft Internet Explorer 7 version 7.0.5730.11 Microsoft Internet Explorer 8 version	
Freeware Components (1)	Apache HTTP Server 2.0.61 or ↗		Apache HTTP Server 2.0.61 or ↗ Java Software Development Kit 1.5.0_02 Apache Tomcat 6.0	
RAM memory	2 GB (for the Operating System) + 1 to 4 GB (per instance of database) + 60 MB per user connected under a Windows Server + 80 MB per user connected under a Unix or Linux Server			
Virtual space	Swap disk 1,5 to 2 x the size of the RAM memory		Virtual memory 2 x the size of the RAM memory	
Processor	1 processor for the 40 first Sage X3 users + 1 processor for every 40 additional users		1 processor for the 30 first Sage X3 users + 1 processor for every 30 additional users	
Disk architecture	2 x 72 GB 15k/tpm RAID 1, for the Operating System and the database engine 4 x 72 GB 15k/tpm RAID 10, for the application and the datafiles 2 x 72 GB 15k/tpm RAID 1, for the Oracle Archive Log Files or the SQL Server Transactions Logs → under Windows Operating System the disk must be formatted with NTFS File System			
Disk space (GB)	Unix		Windows	
	Oracle 11g + patch		Oracle 11g + patch	
	SQL Server 2008			
	X3	X3+DEMO	X3	X3+DEMO
	Geode	GX+DEMOGX	Geode	GX+DEMOGX
	Payroll & HR	PAYE+PAYEDEMO	Payroll & HR	PAYE+PAYEDEMO
	Database files		Database files	
RAID (optionnal)	RAID 1	Mirroring	Security	>= 2 disks
	RAID 5	Mirroring with parity control	Security at low cost	>= 3 disks
	RAID 1+0	Mirroring + stripping	Security & performance	>= 4 disks
Network	Ethernet Card 100 Mbps <u>minimum</u> or 1 Gbps recommended			
Database (2)	Oracle 11g (64-bit) Standard Edition		Oracle 11g (64-bit) Standard Edition	
			SQL Server 2008 (64-bit) Standard Edition	
User Accounts	User account	Group	User Accounts	User account
	oracle sagex3	oinstall, dba sagex3	oracle sqlserver sagex3	ORA_DBA sagex3
	User Rights Assignment			
	Act as part of the operating system Log on as a service			

(1) Only the Windows components are delivered on the Sage X3 DVD-ROM

(2) Oracle 11g installation requires **400 MB** of disk space available in the temporary file-system under Unix and Linux hardware platforms