

# Internet/Intranet Imaging, i3

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**Abstract—Internet/intranet imaging (i3) is centered on the use of open public standards to distribute all of your information, including access to databases and image archives. Compared to traditional client-server solutions, i3 offers dramatic advantages in compatibility, lower purchase price, lower support costs, and easier integration for enterprise-wide solutions!**

## I. INTRODUCTION

The intranet architecture is so compelling that 90% of the Fortune 200 companies have implemented an intranet. This isn't just for international corporations distributing document images world-wide. The same standards that make the Internet work are increasingly being used to make intranets inside large institutions and small companies. This is very rapidly becoming the mainstream systems architecture.

## II. WHY INTRANET?

At Acordex, we believe that Internet/Intranet Imaging (i3) will do the same thing to proprietary imaging frameworks that the Internet is doing to proprietary e-mail and groupware products—it will replace them. There are five reasons why we believe this:

1. **Compatibility.** Unlike traditional client-server software which provides a client piece for one or two operating systems, an intranet is compatible with any computer, including Mac OS, OS/2, UNIX, VMS, Windows95/98/NT. And it will be compatible with new operating systems that do not exist today.  
COST IMPACT: Your existing hardware/OS are used. Zero waste!
2. **Purchase price.** An intranet client is your web browser, like Netscape. At most, small plug-ins are added to handle special data types (like a TIFF image plug-in that is priced at \$29 each at quantity 20)! ALL of the software development costs of managing windows, network protocols, menus, etc. are covered ONCE when you buy

Netscape or Explorer!

COST IMPACT: A factor of 10 reduction in client software costs!

3. **Support costs.** Unlike traditional client-server software that makes you buy, deploy, support and revision control dedicated client software for EVERY program at EVERY desktop, the intranet automatically downloads small modules on-demand to those who use it. Adding a function to a client is as easy as bookmarking a URL!  
COST IMPACT: Client software deployment, support and revision costs can be ZERO!
4. **Integration.** Unlike older integration tools using single-platform APIs for program linking such as OLE/Active-X, intranet solutions are multi-platform and permit easy integration of services from any vendor. Services are provided to your network via web servers. The brand-name of the hardware and operating system of the web server is completely irrelevant to the brand at the user's desktop! Integrating multiple services for one user is as simple as editing an HTML file instead customization from a single-source software vendor!  
COST IMPACT: 4-digit outsourced customization projects are replaced by single-day in-house tasks!
5. **Enterprise-wide scalable.** Unlike traditional client-server software that bogs down when too many users demand services, intranets use the same standards as the Internet, which has demonstrated the ability to scale to arbitrarily huge sizes. Adding parallel servers and parallel network paths is well established, proven technology.  
COST IMPACT: Services scale easily as demand grows. No overkill purchases!

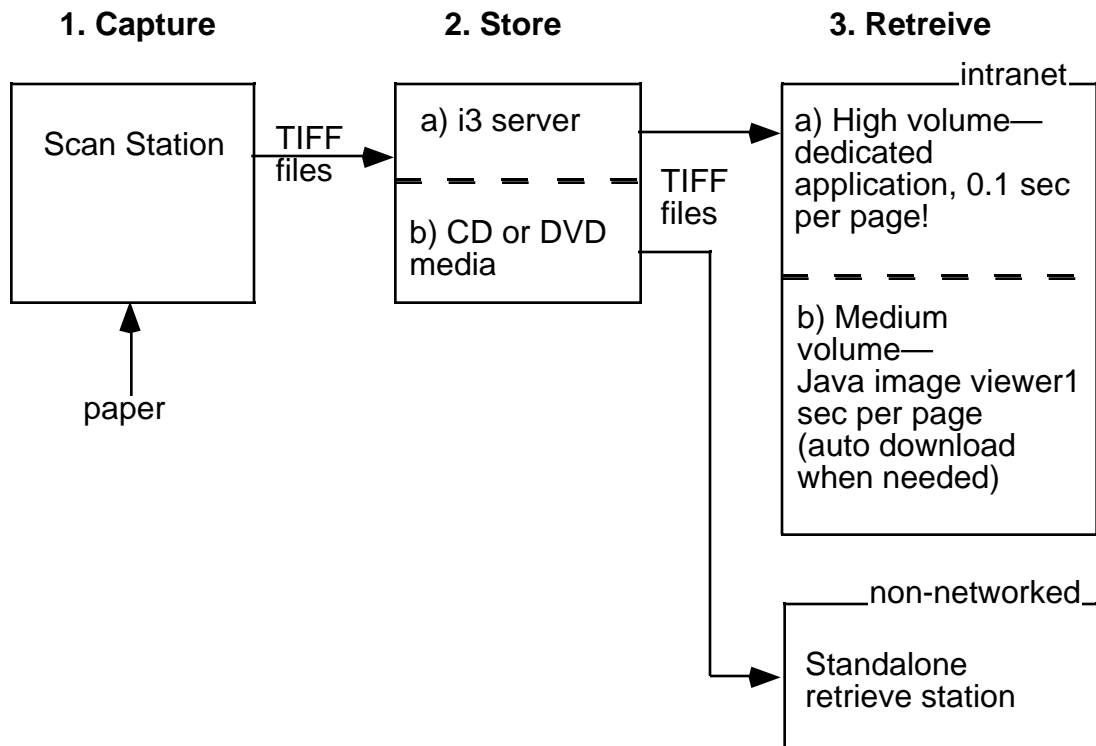
## III. I3 ARCHITECTURE

Acordex supports the Netscape vision of the “Full Service Intranet.” The i3 architecture in the diagram below employs well

established software standards that have been in use for decades, but are new to some desktop computers. The strength of i3 lies in its simplicity:

1. **Capture.** The scan station's role is to convert paper to TIFF files. TIFF is the standard widely accepted format for images. The TIFF images are sent to DVDs or an i3 server or both. One scan station automates both.
2. **Store.** The i3 Server includes an http server on a TCP/IP network, the same standards that make the Internet World Wide Web work. It stores images on hard disk, and is backed up by a DVD archive for unlimited off-line storage of images. One i3 server *concurrently serves* three levels of image retrieval demand.
3. **Retrieve.** Users select the level of performance they need.
  - a) **High** volume, production imaging users get dedicated workstations optimized for imaging.
  - b) **Medium** volume imaging users get a Java program automatically downloaded when needed to view images. Since no data is written to the users hard disk, security remains tight, revision control problems are non-existent, and images are "just there" at a URL whenever they are needed.

One network supports all users. And of course standalone stations can be set up and smoothly integrated to provide off-line images at remote locations not conveniently connectable to the Internet/intranet.



One intranet server (2) distributes document images to all types of users (3).

**All levels of image retrieve clients are supported concurrently  
from the same i3 server**

<b>i3 client solutions</b>	<b>Acordex dedicated imaging station</b>	<b>Web browser + Acordex Java ViewTIFF</b>
User's imaging demand	Constant demand for 6+ hours every day	Frequent demand, several hours per day
Image retrieve time, per page	0.3 sec	1 sec
Installation effort	Normal— dedicated workstation with installed imaging application	None— no installation effort, automatically downloaded as needed
User training	15 minutes— learns how to launch and use a special purpose application	0-1 minute— no special training

Image retrieve time, per page is listed for mid-range 1998 or newer hardware.

#### IV. i3 SERVER

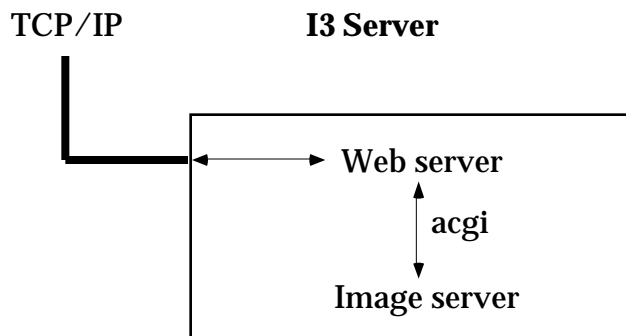
The i3 server consists of three main components that work together. First is the web (http) server. This software responds to requests from the network and sends responses. It is responsible for all communications tasks. The web server can provide all types of data. Most important for the i3 server are HTML pages for general navigation and TIFF files (the actual images sent to the Netscape clients).

Second is an acgi (asynchronous common gateway interface). The acgi locates images and sends them to the client through the web server and, if needed,

passes image request data to the Image server.

The third component is the Image server which provides the following functions:

- a) manages hard disk cache to maximize retrieve performance for the retrieve clients. An automatic aging algorithm keeps the newest or most recently used images in the hard disk cache.
- b) requests cartridges from the jukebox (if available) or from the shelf as needed to retrieve older images.
- c) purges, pre-loads and prints images under control of other programs. Any program can send text files listing documents that should be purged, pre-loaded or printed at the file server.
- d) technically, the Image Server provides:
  - Caching—magnetic cache of DVDs or CDRs
  - Queuing—manages multiple users' requests for multiple cartridges
  - Pre-fetching—caches subsequent pages to the one requested
  - Staging—uploads pages needed in the future



## V. I3 CLIENT SOFTWARE

The easiest part of the i3 configuration is the client computers. They simply run Netscape Navigator, Internet Explorer or a compatible web browser. There is no training on how to launch and use yet another application.

Please note that the “i3 client software” section of this paper is very short. That’s the key point. The users have very little to install and learn.

## VI. CURRENT ACORDEX PRODUCTS

Current products from Acordex include imaging and data access in the i3 architecture.

Safekeep, is a very high performance multi-user document management system. Safekeep is widely scalable. It is cost effective for as few as three users and with hundreds of users sharing an archive of 100 million pages, Safekeep will still retrieve images in just one third of a second! Safekeep components include a Scan Station, Image Server and dedicated Image Retrieval application. Safekeep supports i3 using ftp and http protocols.

Accel ViewTIFF is a Windows and Mac OS plug-in to view document images in your web browser. Exceptionally fast decompression, zoom, pan and scale-to-grey. Makes your web browser into an i3 client.

ViewTIFF for Java is a Java program to view document images in your web browser. It works with any web browser that supports Java, including Mac OS, UNIX, Windows 95-XT.

JTerm is a Java program to log in to a database running on a mainframe, UNIX, VMS, SuperDOS and other terminal oriented computers. Like ViewTIFF for Java, it works with any web browser that supports Java, including Mac OS, UNIX, Windows 95-XT.

## VII. ACORDEX IMAGING SYSTEMS

Acordex’s vision of the future is to make document image archives available on-demand to any person needing the information. Special training, dedicated-

purpose software and specific operating system brand names will not be required. Acordex is proud of our past. Since 1989, we have been delivering one of the most cost effective imaging solutions in the market. Our first imaging system has now been in continuous use for 7 years, with well over 10 million pages archived and has *never* been down for a full day!

- By focusing on document management and understanding the details of related technologies, Acordex’s products have consistently been more productive in managing high volumes of documents than any other system near its price range.
- By adhering to open standards that are supported by multiple vendors, image distribution and database connections are compatible with a wide variety of other computers and software. Acordex is recognized for our ability to maximize the use of installed equipment, whatever it is.

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The author is with Acordex Imaging Systems (978 352-5500), a product development and system integration company specializing in high performance document management systems. <http://acordex.com>