

# Web1000 Reference Guide

## Using Web1000

Version 3.1



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	<ul style="list-style-type: none"><li></li></ul>

## **Statement of Manufacturer's Responsibility**

The manufacturer, installer, or importer will be responsible for safety, reliability, and performance of the equipment only if:

- Installation, modifications, adjustments, changes, or repairs are performed by suitably qualified service personnel.
- The electrical installation of the site in which the equipment is used is according to an applicable safety standard (UL, CSA, or IEC/CDE).
- The equipment is used according to the instructions provided in the operation manuals.

No software other than that which is distributed with this package or is sanctioned by Agfa will reside on the Web1000 personal computer.

## Using This Manual

This guide provides information for users of Web1000 Release 3.1. The first chapters describe the basic components that make up Web1000 and how to begin using the program. The remaining chapters describe the functions of Web1000 in more detail.

The focus of this guide is on using the software. This guide is useful for Radiologists, Clinicians or Technicians and other users as well as System Administrators who want a general overview of the Web1000 client functionality. This is useful for troubleshooting any problems a user may encounter.

This manual is divided into 6 sections:

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# Overview

# 1

This guide describes Web1000. Refer to this section of the manual for an overview of the web server documentation and for tips on how to locate information quickly in this guide.


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## Who Should Read This Guide

This guide is specifically designed for radiologists, clinicians, and technicians who use Web1000. You will find descriptions of the features and functions of Web1000 in this manual along with in-depth reference information. Users new to Web1000 version 3.1 and users upgrading from version 2.x should read the manual in its entirety to take full advantage of all Web1000 features. A glossary is provided on page 68 to define any terms you are unsure of.

## Conventions Used In This Guide

This guide assumes basic familiarity with a current web browser. It uses the following typographic conventions:

Example	Describes
File → Save	Choosing Save from the File menu.
File → New → Blank Page	Choosing the Blank page option on the New submenu, located in the File menu.
CTRL, ENTER	Key names (always shown in small capitals).
Right-click	Clicking the right mouse button. For Mac users, see COMMAND-click.
Click	Clicking the left mouse button.
COMMAND-click	Instead of using a right-click as specified in the documentation, Macintosh users should COMMAND-click. The COMMAND key is the  key.
CTRL+W	Holding down the CTRL and W keys at the same time.
CTRL+right-click	Holding down the CTRL key and clicking the right mouse button. Can also use these commands instead: <ul style="list-style-type: none"><li>• ATL and left-click</li><li>• middle button click (if you have a 3 button mouse)</li></ul>

## Additional Notes for Macintosh Users

If you are accessing Web1000 on a Macintosh computer, some additional steps are required. See your System Administrator if you have any questions.

Hosts File Configuration	If the full hostname of the Web1000 server is not resolvable on your network, you may need to add a Hosts file in the Preferences folder on the Mac client. Check with your network administrator to see if this step is required.
Color Preferences	Monitor color depth should always be set to millions of colors. If your monitor color depth is set to thousands of colors, the default Macintosh palette only provides 16 grays. This can cause an artificial 'posterizing' or 'contouring' effect in some grayscale images.
Virtual Memory	Virtual memory should be enabled in the Memory control panel for optimum performance.

## Using Web1000 User Documentation

There are four components in the Web1000 User Documentation. The table below describes the type of information you can find in each guide

Document	Contents
Web1000 User Guide - Getting Started	<ul style="list-style-type: none"><li>• instructions for new Web1000 users</li></ul>
Web1000 Reference Guide	<ul style="list-style-type: none"><li>• description of the Web1000 software and its features</li></ul>
Web1000 Online Help	<ul style="list-style-type: none"><li>• instructions for the tasks involved with Web1000</li><li>• description of all the tools</li></ul>
Web1000 Quick Reference Guide	<ul style="list-style-type: none"><li>• instructions to get you started quickly</li></ul>

# Getting Help

There are two types of help available for you to use while working in Web1000: tool tips, and online help.

## Tool Tips

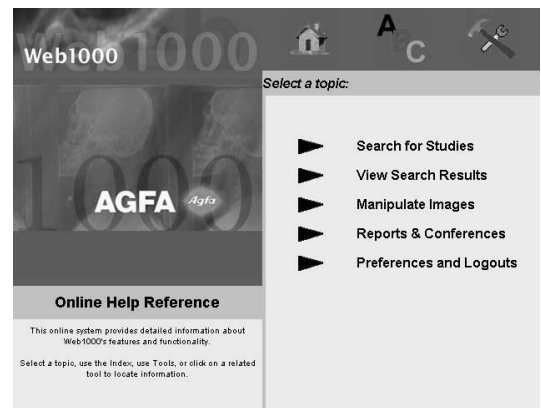
Tool tip text help is available for all icon buttons in Web1000. Whenever you leave your mouse cursor over a button or function for a second or two, a text pop-up appears providing the name or function of the button.



If you want to turn off the tool tips, deselect the “Show tool tips” option on the Study tab of the Preferences page.

## Online Help

This help system provides specific instructions that step you through the workflow. The help system also provides a detailed list of the tools available. Use the Help button to access the online help system. Proceed through the workflow, use the index or the tool reference for a short description of each tool.



# Getting Started

# 2

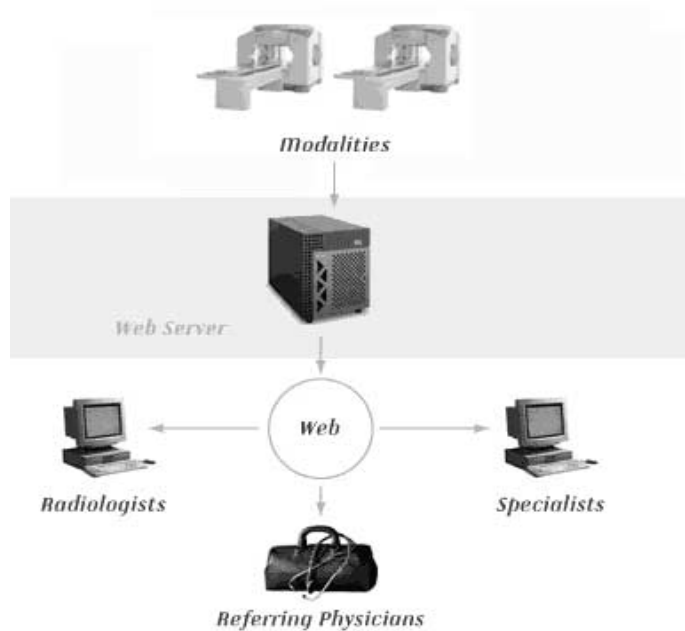
This section provides information to get Web1000 up and running on your web browser. This section also discusses the login and launch of Web1000 and gives a general introduction to the software.

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## About Web1000

*Basic familiarity with a current web browser is assumed throughout this manual.*

Web1000 provides web-based results distribution over hospital networks. The Web1000 server distributes studies to standard web browsers, such as Netscape Navigator or Microsoft Internet Explorer. All you need to use Web1000 is a supported web browser and a connection to the network on which the Web1000 server is installed. If you know the hostname of the webserver, any machine connected to the same network can access Web1000.



In Web1000, you can:

- Search for studies based on query constraints such as patient name, ID, referring physician or accession number
- Retrieve images from compatible DICOM devices
- View studies in a variety of display formats, apply geometric rotations and axis inversion to the images, and take measurements
- Adjust window and level dynamically, or using presets
- Zoom in or out to any magnification
- Select relevant images from quick-loading thumbnails
- Compare related studies in split-screen mode
- Protect studies so that they are not auto-deleted
- Examine the reports associated with each study, when used on a compatible PACS network
- Confer interactively with specialists at a remote location, using Web1000's conference mode

## Basic Workflow

Web1000's basic workflow is divided into 3 broad steps:

- 1 Choose a set of query restrictions to locate studies.
- 2 Display the images and/or reports for the selected studies to review.
- 3 Manipulate the images and conference with colleagues.

## Information to Get Started

Before you can use Web1000, you need to obtain the following information from the server administrator at your site:

Information Required	Check
Computer connected to the network?	<input type="checkbox"/>
Enterprise uses a proxy server?  If yes, what is the proxy hostname? If yes, what is the proxy port?	<input type="checkbox"/>
Full URL or IP address of the web server. Form: http://<server_name> OR http://<IP address>	
Unique User ID Unique password (keep this confidential)	

## Supported Web Browsers

The release 3.1 software documented in this manual has been tested in the following configurations:

### Windows '95, '98 and Windows NT 4.0

- Netscape Navigator version 4.6
- Microsoft Internet Explorer version 5.01 with updated Microsoft VM 3167 or later

### Macintosh

- Microsoft Internet Explorer version 4.5 (requires Apple MRJ 2.1 plug-in)

For best results, ask your System Administrator to properly configure your computer, install a web browser, and configure the web browser for you.

*The Mac OS cannot resolve simple hostnames like web1. You must specify a fully qualified hostname of the server, such as web1.myorg.com, or its IP address.*

## Starting Web1000 the First Time

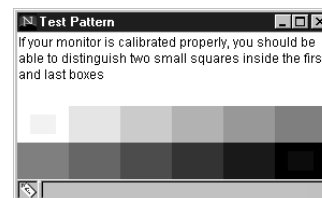
Once you type the URL or IP address in the Address (Internet Explorer) or Location (Netscape) field for the first time, you are asked to accept the Digital certificate. The Java applet used by Web1000 is signed with a digital certificate so that it can access certain features of your computer, such as printing. The certificate verifies that the applet has been obtained from a trusted source, and will not perform any illegal operations. If you select the “Remember this decision...” checkbox in the security dialog, the message does not appear the next time you log in.

## Specifying the Proxy Servers

In an enterprise that uses the internet, a proxy server acts as an intermediary between a workstation and the internet. Using a proxy server, the enterprise ensures security, administrative control, and caching service. If you connect to the web server through a proxy server, you need to specify additional information to connect to the web server. If your System Administrator has given you proxy server settings, use the Proxy Settings button on the login screen. You need to enter the proxy hostname and proxy port. If your System Administrator has not given you proxy settings, you can skip this step.

## Viewing the Test Pattern

Web1000 shows you a test pattern to ensure that your monitor is calibrated correctly. If you see the small squares inside the first and last box when you click on Test Pattern, your monitor is calibrated correctly.



## Logging In

Each user has a unique User ID and password. This is important for the security of the system and the confidentiality of the patient information. Your login saves:

- any user preferences you have changed while using the system
- the available tools
- the query Wizards you create

Your System Administrator is responsible for setting your login privileges and determining which functions are available.

Log in using the User ID and password given to you by the System Administrator. Your ID and password are case-sensitive; “JOHN” is not the same as “JohN”. If the password is incorrect, you receive an error message. Re-enter your ID and password again. If you still have difficulties, contact your System Administrator. If your login is correct, Web1000 loads, and the Study page opens.

## Logging Out

If you close your web browser before logging out, any recent changes to your user preferences are not saved. After you are finished your session, or you leave the computer unattended, you should log out prior to closing your web browser application.

Your System Administrator may have configured Web1000 to automatically log out inactive users after a certain period of time. If this feature has been enabled, you will be



logged out if you do not perform any action in Web1000 for a specified period of time. If this happens, enter your User ID and password, and log in again to re-connect.

## Web1000 Pages

Web1000 has been separated into 6 interfaces, or pages:

- Study
- Thumbnail
- Image
- Report
- Conference
- Preferences

Different tasks are performed on the different pages. This section describes the 6 pages.

### Switch Between Web1000 Pages

The tabs across the top of the window display 5 of the 6 pages available. To access the Preferences page, click on the Preferences tool. Once a page is active, click on a tab to switch between pages. Some pages may not always be available. The name of the page is greyed out when this is the case. For example, you may not be able to click on the Report tab if a report is not available. The active page is in the front.



To access the Study page, you must always click on the Study tab. For all the other pages, you can use the following tools to switch to different pages:

Tool	From the...	Switch to the...
	Study page	Thumbnail page
	Study page, Thumbnail page	Image page
	Study page, Image page	Report page
	Image page	Conference page

## Study Page

Use the Study page to perform 2 basic tasks:

- choose a combination of criteria and constraints to query the database for matching studies
- select the studies you want to work with

The Study page contains these options:

The screenshot shows the 'Study' page interface. At the top, there is a 'Study' tab and a 'Query toolbar' with search criteria dropdowns. Below that is a 'Toolbar' with various icons. The main area is a 'Display list' table with columns: Patient Name, Patient ID, Accession number, Study Date, Study Time, Study Description, Study Comment, and Referring Physician. A right-click menu is open over a study entry, showing options like 'Study Information', 'Protect study', 'View images', and 'View report'. At the bottom, there is a 'Status bar' showing '815 Studies Returned' and other system information.

Interface option	Contains...
Toolbar	<ul style="list-style-type: none"> <li>• the tool icons required for querying, displaying images, switching servers or groups, deleting a study, retrieving reports, protecting a study, etc.</li> </ul>
Query toolbar	<ul style="list-style-type: none"> <li>• parameters for a search using a combination of six criteria and six corresponding constraints</li> <li>• query wizard tools</li> </ul>
Display list	<ul style="list-style-type: none"> <li>• list of studies matching the search parameters</li> <li>• information columns about the studies are customizable</li> <li>• area to select the studies to display the images, delete them or reset the finder criteria to search again</li> </ul>

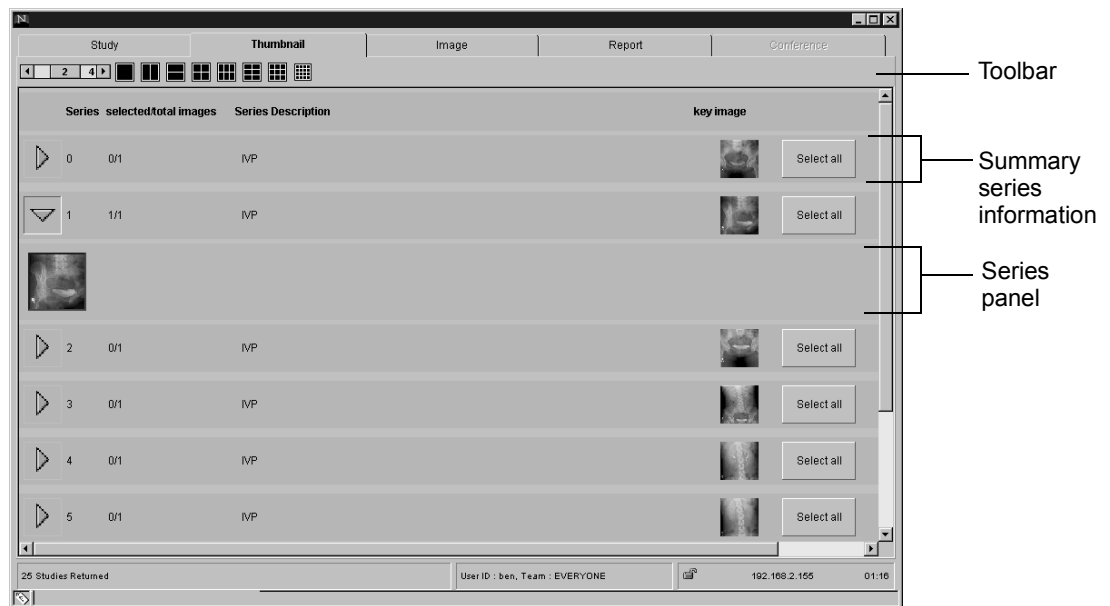
Interface option	Contains...
Status bar	<ul style="list-style-type: none"> <li>• number of studies returned, your User ID and Team Name</li> <li>• a padlock showing whether SSL encryption is enabled (an open padlock represents that SSL encryption is not enabled)</li> <li>• name of the web server</li> </ul>
Right-click menu	<ul style="list-style-type: none"> <li>• a menu of options (Click the right mouse button to reveal the menu; Mac users need to press the COMMAND key and click)</li> <li>• offers the following choices: Study Information, Protect study, View images, or View reports</li> </ul>

## Thumbnail Page

Use the Thumbnail page to perform 2 basic tasks:

- view all the images of a series at a glance
- select specific images to view at full size

The Thumbnail page contains these options:



Interface option	Contains...
Toolbar	<ul style="list-style-type: none"> <li>• the tool icons required for changing image formats and navigating through the studies</li> </ul>
Summary series information	<ul style="list-style-type: none"> <li>• a representative thumbnail image for the series, as well as the series number, description and total number of images in the series</li> </ul>

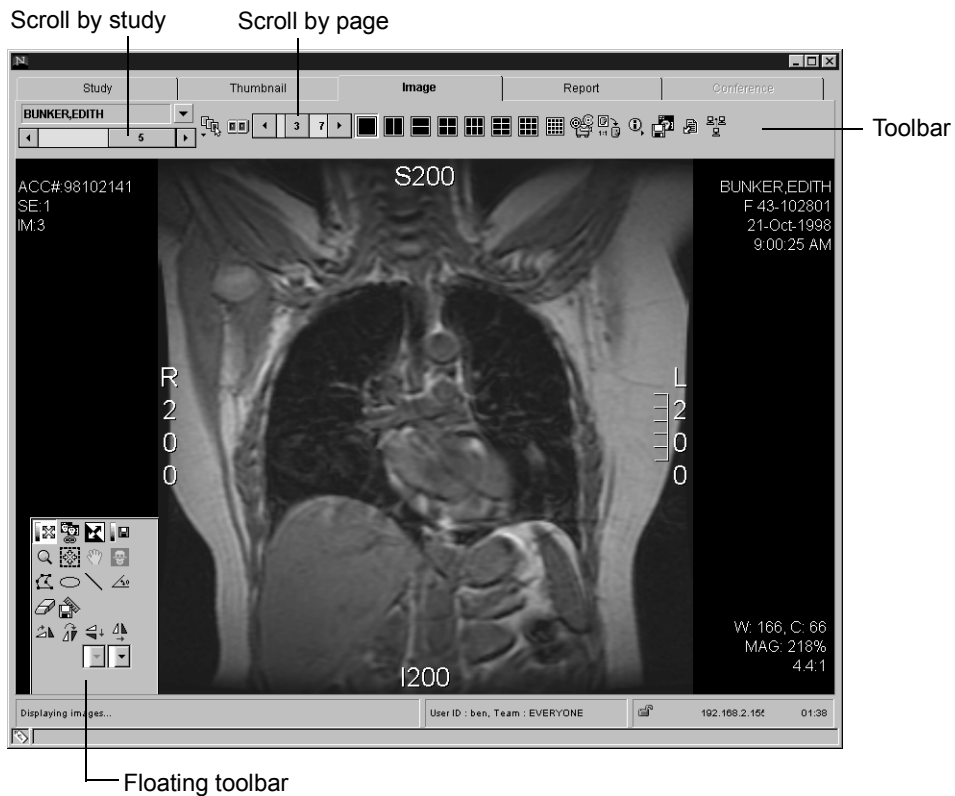
Interface option	Contains...
Series panel	<ul style="list-style-type: none"> <li>shows all images of the series (click the right-facing arrow to reveal the series panel)</li> </ul>

## Image Page

Use the Image page to perform 3 basic tasks:

- view images in many formats and modes
- manipulate the images
- retrieve a report or initiate a conference

The Image page contains these options:



Interface option	Contains...
Toolbar	<ul style="list-style-type: none"> <li>tool icons required to change formats and modes, saves images, retrieve reports or initiate a conference</li> <li>based on modality</li> <li>customizable based on your User ID</li> <li>once you customize a toolbar it remains that way every time you log in</li> </ul>
Navigation tools	<ul style="list-style-type: none"> <li>sliders to scroll by study or scroll by page to change the display to view the next study or page</li> </ul>

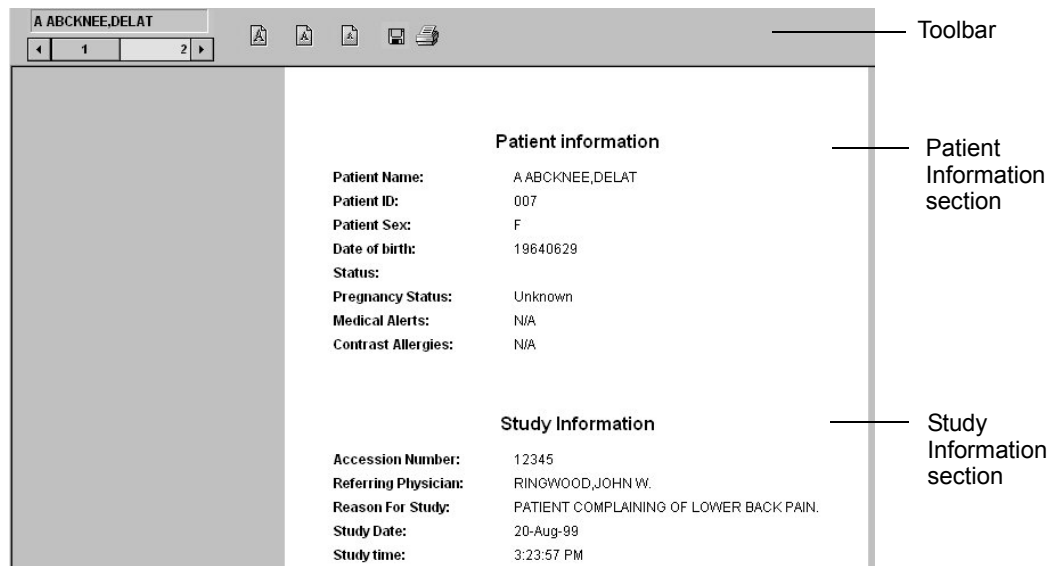
Interface option	Contains...
Floating toolbar	<ul style="list-style-type: none"> <li>customizable toolbar for every modality customizable based on your User ID</li> <li>manipulation tools by default</li> </ul>

## Report Page

Use the Report page to perform 2 basic tasks:

- view the report
- save the report
- print the report

The Report page contains these options:



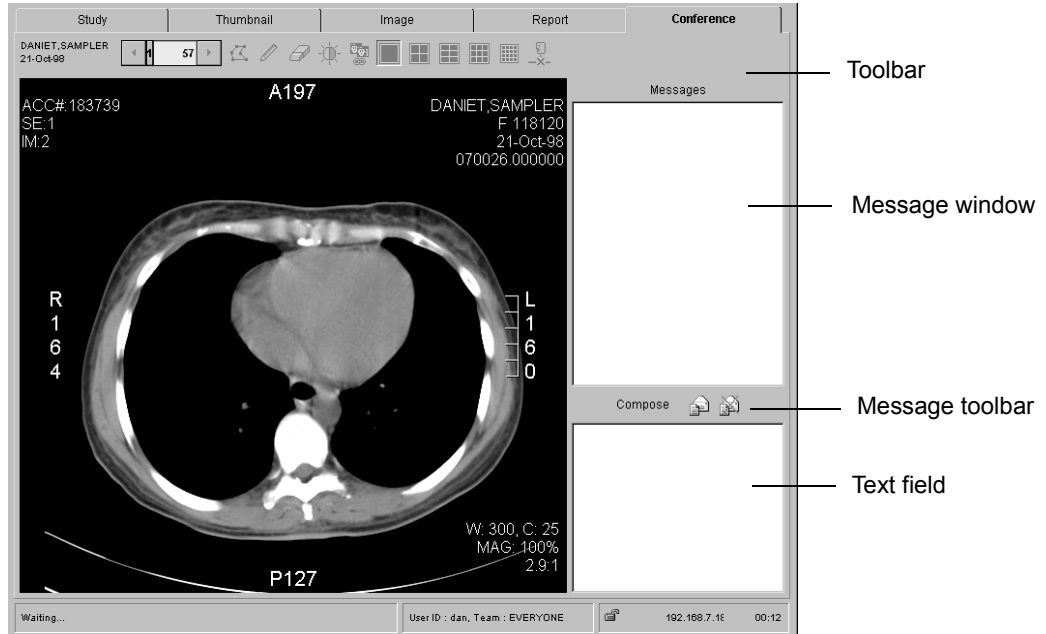
Interface option	Contains...
Toolbar	<ul style="list-style-type: none"> <li>tool icons required for saving or printing reports, navigating through the studies and changing the font size of the report</li> </ul>
Information sections	<ul style="list-style-type: none"> <li>each report is divided into three sections: Patient Information, Study Information and Report Information</li> <li>vertical scrollbar to see all parts of the report</li> </ul>

## Conference Page

Use the Conference page to perform 2 main tasks:

- read and send messages
- manipulate the images for all the users involved in the conference

The Conference page contains these options:



Interface option	Contains...
Toolbar	<ul style="list-style-type: none"> <li>• tool icons required for changing the format of the images, manipulating the images and navigating through the images</li> </ul>
Message window	<ul style="list-style-type: none"> <li>• messages from the other users</li> </ul>
Text field	<ul style="list-style-type: none"> <li>• your typed messages before you send them</li> </ul>
Message toolbar	<ul style="list-style-type: none"> <li>• tools to send or discard your message in the Text field</li> </ul>

## Preferences Page

The Preferences page allows you to customize your working environment. The Preferences are customizable based on your User ID. Once you have modified your preferences, they remain that way every time you log in.

The Preferences page contains these tabs:

Tab	Contains...
Study	<ul style="list-style-type: none"><li>• lists used to customize the columns that appear in the Display list, as well as the order in which they appear</li></ul>
Wizards	<ul style="list-style-type: none"><li>• tools to modify the query wizards (presets) you have created</li></ul>
Machine Profile	<ul style="list-style-type: none"><li>• settings for the machine you're working on</li></ul>
Toolbar Layout	<ul style="list-style-type: none"><li>• tools to customize the Image page toolbars (main and floating)</li></ul>
Image	<ul style="list-style-type: none"><li>• compression ratios, scale type and demographic information for the images</li></ul>

## Customizing the Machine Profile

The Machine Profile tab on the Preferences page allows you to configure the settings for the machine you're working on. The following settings can be adjusted:


Setting	Description
System Memory	<ul style="list-style-type: none"><li>total amount of RAM on your computer memory</li><li>specify the amount</li></ul>
Image Cache Usage	<ul style="list-style-type: none"><li>amount of disk space to allocate for storing images that have been pulled through the server</li><li>heavy, medium, or light</li></ul>
Cache Location	<ul style="list-style-type: none"><li>directory where you would like to store the pulled images</li><li>specify a path name</li></ul>
Pulled Image Cache Size	<ul style="list-style-type: none"><li>size of the cache where you would like to store the pulled images</li><li>specify the size</li></ul>
Proxy Server	<ul style="list-style-type: none"><li>ask your System Administrator if you are using a proxy server</li><li>specify the server name if you are using a proxy server</li></ul>
Proxy Port	<ul style="list-style-type: none"><li>ask your System Administrator if you are using a proxy server</li><li>specify the port if you are using a proxy server</li></ul>
Disable Proxy	<ul style="list-style-type: none"><li>bypass proxy servers when connecting to the Web1000 server<sup>c</sup></li></ul>
Text & Button Size	<ul style="list-style-type: none"><li>depends on your monitor size</li><li>small, medium, large, or extra large</li></ul>



# Basic Web1000 Workflow

There are three broad steps in the Web1000 workflow.

## 1 Query

- 1 Select a combination of query criteria.  
OR
- 1 Use a wizard.
- 2 Click on Search for Studies. 

Location	Date
Web cache	Last month

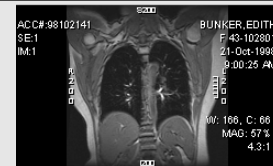
MR SIGNA

See pages 29 to 32 for information about querying and wizards.

## 2 Display Images and Reports

- 1 Select studies from the Display list.
- 2 Display study images.
- 3 Browse through series and studies.
- 4 Retrieve a report.

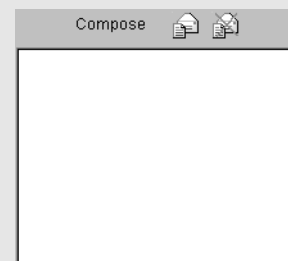
Patient Name	Patient ID	Accession
A ABCKNEE, DELAT	007	12345
A Knee, AP	007	120
AKER, STEN		



See pages 34 to 52 for information about displaying images and reports.

## 3 Manipulate Images or Conference with Colleagues

- 1 Transform images and create markup measurements.
- 2 Initiate or join a conference.
- 3 Send and receive messages.



See pages 56 to 62 for information about manipulating images and conferencing with colleagues.



# Selecting Studies

# 3

The first screen you see after logging into Web1000 is the Study page. This page allows you to search for studies. Once the search results are listed you can view the images. By the end of this section you will be able to perform a search and select studies to view.

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## Study Page Settings

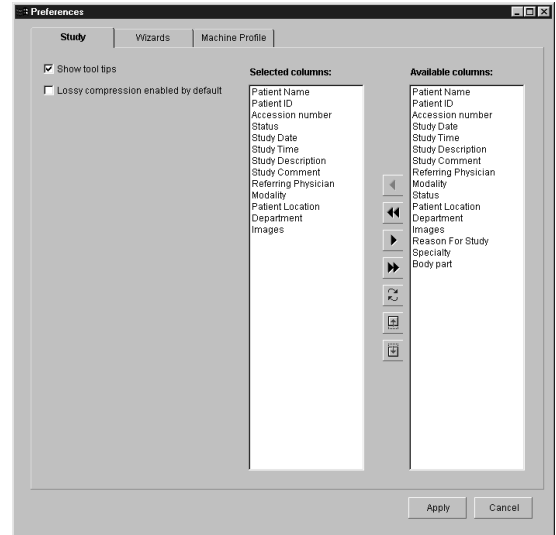
The first screen displayed by Web1000 is the Study page. This page allows you to search Web1000's database or remote devices for studies and select them for viewing at your computer.

### Customize the Study Page

The Display list shows several columns of information about the studies. You may have to use the scrollbars to view all the information. It is possible to limit the number of columns available for viewing and rearrange the order.

The Study tab of the Preferences page allows you to customize which columns appear in the Display list. You can also rearrange the order of the columns.

Two other options are available on the Study tab of the Preferences page:



Option	If selected...
Show tool tips	Whenever you move your mouse cursor over a button or function a text pop-up appears providing the name or function of the button.
Lossy compression enabled by default	Any images to be viewed are automatically compressed. For more information about lossy compression, see <i>Enabling Lossy Compression, page 49</i> .

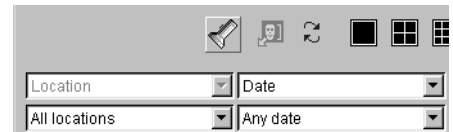
# Querying the Web Server

## Query Restrictions

You may choose up to six different query criteria and six different query constraints when querying the server. Use the Query criteria to limit the search to specific parameters.

Some query criteria let you select from a list of constraints, such as different modality types. For these criteria, make a selection from the drop-down lists provided. Other Query Criteria such as Patient Name, Patient ID, or Accession Number are specific to a study. You must type these constraints in yourself. If you do not know the entire Patient Name, you can enter wildcards (\*, SHIFT-8) to substitute for any number of characters, or the question mark (?) to substitute for a single character. You must, however, specify the complete patient ID or accession number.

You must select Location as a criteria in each query. You can only use Location once per query. By default it is the first Query Criteria field. The Date criteria can also only be used once per query (or you receive an error message), but you may use the other criteria more than once. For example you can select Modality twice as a criteria while the constraints may be CT and CR. After carefully restricting your query parameters, use the Search for Studies tool to search for the results.



A Wildcard represents unknown information in a query criteria. Use the wildcard when you are unsure of spelling, or you remember only part of a word or number.

Criteria	Description	Constraints	Default
Location	View the studies that are currently stored in a number of different locations (databases).	All locations, Web cache, Local cache (the Image cache on the Web server), Remote devices	Web cache
Date	Restrict your search to a specific time frame.	Any Date, Today, Yesterday, Last 2 days, Last week, Last month	Any date
Referring Physician	Choose to view only studies performed by a specific referring physician. Due to security restrictions in place at your site, you may not be able to select any option other than the default for this field.	Specific referring physicians' names	1st referring physician in the list
Modality	Restrict the query to show only studies from a certain modality type.	Specific modality types	1st modality in the list

Criteria	Description	Constraints	Default
Patient ID, Name, Accession Number	Use a patient's ID, name, or accession number as query criteria. When searching by patient name, you do not have to type the entire name. Instead, use the Wildcard character.	Any, specific patient name, ID or accession number	No constraints
Patient Location	Restrict the query to show only studies for patients that are currently in a specific location.	Any location, specific patient locations	Any location
Body Part	Restrict the query to show only studies for a certain body part.	Specific body parts	1st body part in the list
Status	Restrict the query to studies of a specific status.	New, Preliminary, Approved	New
Sex	Restrict the query to show only studies of one sex.	F, M, O	F
Department	Restrict the query to show only studies for a specific department.	Any Department, specific departments	Any department

## Query Wizards

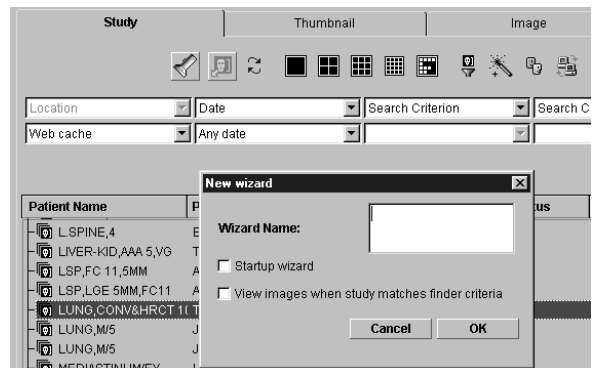
A wizard automates a process that you perform often. You can save the current query criteria and constraints as wizards so that they are restored the next time you log in. Rather than performing the same number of clicks for every search, a wizard reduces the query to one simple click. For instance, if you are looking at all the CT studies in the web cache everyday, rather than;

- set Study Location to Web Cache
- set Modality to CT
- click on the Search for Studies tool,

create a wizard that performs all these steps for you with the click of one button.

### Create Query Wizards

Once you select your query criteria and constraints, the Wizard tool saves those settings. A name is required for the wizard. Options are available to have the wizard listed on startup of the software, as well as to launch the Image page immediately after the query is complete.



## Modify Query Wizards

The wizard can be modified using the Wizards tab on the Preferences page. You can modify the criteria, constraints and the name of any Wizards created.

## Use Query Wizards

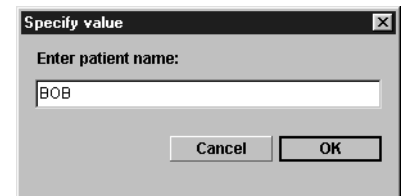
To use the Wizard, click on the Wizard tool. The query criteria is automatically set and the database is queried. If you selected the View Images option when creating the wizard, the images are displayed on the Image page.

## Interaction Wizards

You can create a wizard that searches for studies based on Patient Name, Patient ID, or Accession Number. If you enter a specific name, ID, or accession number, the wizard returns studies based on the specific criteria.

Alternatively, you can leave the criteria blank when you create the wizard. When you use the wizard, it prompts you to enter the specific information you are looking for.

This dialog must be completed before the wizard can complete the query.



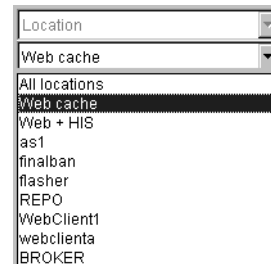
The image shows a small dialog box titled "Specify value" with a close button in the top right corner. Inside the dialog, there is a label "Enter patient name:" followed by a text input field. The input field contains the text "BOB". At the bottom right of the dialog, there are two buttons: "Cancel" and "OK".

## Querying Other Locations

Querying locations other than the web and image caches will depend on your user preferences.

### Querying Remote Devices

Your ability to query a remote device depends on the configuration of the PACS and your individual user privileges. If these features are disabled, consult your System Administrator for assistance. Remote devices could include remote PACS, remote PACS Broker, or other web servers. The available devices are found in the drop-down constraint list for Location.



*Depending on the characteristics of the remote device, the query may take several minutes to complete.*

### Remote PACS

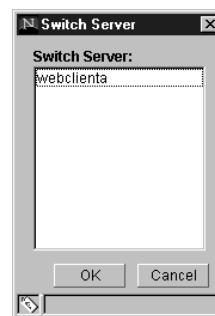
A remote PACS device is any DICOM device that can store images, such as an archive or cached review station. You can query a remote PACS device for a list of studies that match a set of query constraints. While querying a remote PACS, the images stored there may be retrieved by the web server so that you can view them in your web browser.

### PACS Broker

PACS Broker has become a vital middleware component in the integration between Hospital Information Systems and Radiology PACS Systems. PACS and modalities typically speak DICOM, while hospital information systems generally speak HL7. Many of these systems also speak via other proprietary protocols (ie. ASCII or SQL). PACS Broker links patient and exam data with images, provides worklists to modalities, displays reports on workstations, triggers pre-fetching on PACS, and much more. Web1000 can retrieve available reports from the PACS Broker.

### Other Web Servers

If another Web1000 server has been configured properly, you can also switch between servers. A list of other web servers can be found by clicking on the Switch Server tool. When you select a different server from the list, your connection to the current server is disconnected and you are connected to the new URL with your current User ID and password.



### Querying for Scheduled Studies

You may query the database for scheduled studies only. In this instance Scheduled is not the constraint for the criteria Status, but it is a constraint for the criteria Location. The System Administrator must have configured the web server to accept this type of query.



## Default Teams

Teams are used in Web1000 to determine which studies you are allowed to view. By default, all users are members of the Everyone team.

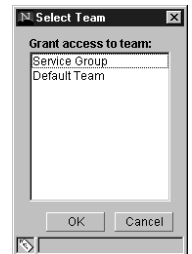
After you log in for the first time, check to see if the administrator has assigned you to more than one team by clicking on the Select Teams tool. A dialog opens listing all the teams to which you have been assigned. If you have been assigned to a team other than Everyone, you can specify which team to use by default when you log in.



Each team has security restrictions that limit the studies that can be accessed while your assigned to that team. Web1000 allows you to switch between the teams you've been assigned to during the same session.

## Granting Access to Other Teams

You may want another team to have access to a study they do not currently have the privileges to see. Only certain levels of users have access to the Grant Access tool. The tool lists the different teams to which you can grant access for the study.



## Viewing Search Results

Web1000 will only display lists of 500 or fewer studies at a time.

When you submit a query, Web1000 searches through all the available studies and displays only those which match your criteria in the Display list. Before you can view images or reports, you must select the study (or studies) to be viewed.

Patient Name	Patient ID	Accession number	Study Date	Status	Location	Referring Physician	Study Time	Study Description
CTF_LUNG BIOPSY	2111871		25-Sep-1997			BLAIR	9:03:40 AM	
DDD,PATIENT	3113803010	99246151	07-Dec-1999				12:24:14 PM	
EX,C/S	UXE-CS-001	SX-543	25-Jun-1997			BUSER,M.D.	2:44:54 PM	
EX,LUMBAR	UXE-LS-002	SX-535	18-Aug-1997			JONES,M.D.	3:44:44 PM	
FOCAL,NODULAR,HYF	EXSP-AH-024	SX-448*	05-Sep-1997				11:56:32 AM	
FSE, FLAIR STIR,AXIAL	Brain, 305.5a	TMS04	10-Mar-1997				8:48:00 AM	Comparison
GASTRIC,EMPTYING	GCA 7100	GCA-15	29-Apr-1996				10:05:59 AM	Gastric
GENESYS1	11223344							
GENESYS1	11223344	NM-3	15-Sep-1997			9926,WEINER STUART,DO	11:20:11 AM	NMBON TOT
GENESYS1	11223344	NM-5	14-Apr-1997			6888,COTTER ROBERT,J	10:26:58 AM	NMBON TOT
GENESYS1	11223344	NM-4	10-Apr-1997			6888,COTTER ROBERT,J	10:14:30 AM	NMLIV SP
GENESYS1	11223344	CT-1	15-Sep-1997			9926,WEINER STUART,DO	10:05:45 AM	CTDYN THO
GENESYS1	11223344	CT-2	15-Sep-1997			9926,WEINER STUART,DO	9:47:57 AM	CTABD COM

## The Display List




Some sites may elect not to use some of the following columns, and therefore not all of the following columns may appear in your list. Use the Study tab of the Preferences page to select the necessary columns for your site. See *Study Page Settings, page 28* for more information.

Column Heading	Description
Patient Name	<ul style="list-style-type: none"> <li>Displays the patient's name by last, then first name. All the fields including prefix, middle initial, and suffix are separated by commas.</li> </ul>
Patient ID	<ul style="list-style-type: none"> <li>The patient's identification number. In most hospitals, the patient ID is synonymous with the medical record.</li> </ul>
Accession number	<ul style="list-style-type: none"> <li>A unique ID or job number that is generated by the hospital RIS, and used for tracking each exam and its corresponding patient name, date and exam type.</li> </ul>
Study Date	<ul style="list-style-type: none"> <li>Shows the year, month, and day when the patient folder was created at the modality.</li> </ul>
Study Time	<ul style="list-style-type: none"> <li>Shows the hour, minute, and second when the study was created at the modality.</li> </ul>
Study Description	<ul style="list-style-type: none"> <li>Contains the RIS examination code. This code specifies the nature of the examination.</li> </ul>
Study Comments	<ul style="list-style-type: none"> <li>Can be entered by anyone with the proper authority. For example, the admitting physician or technician may enter in a comment.</li> </ul>
Referring Physician	<ul style="list-style-type: none"> <li>The patient's doctor who sent the patient for a specialist's opinion.</li> </ul>

Column Heading	Description
Modality	<ul style="list-style-type: none"> <li>Displays a two-letter code for the type of imaging modality. For example, Magnetic resonance is MR.</li> </ul>
Status	<ul style="list-style-type: none"> <li>Indicates status information of the study. See <i>Status of Studies</i>, page 35 for details.</li> </ul>
Location	<ul style="list-style-type: none"> <li>Indicates location, protection, and key image information for the study. See <i>Location Column</i>, page 35 for details.</li> </ul>
Department	<ul style="list-style-type: none"> <li>The name of the department in the institution where the exam was performed.</li> </ul>
Images	<ul style="list-style-type: none"> <li>The number of images in the study.</li> </ul>
Reason for Study	<ul style="list-style-type: none"> <li>The patient's symptoms and/or the patient's condition as a reason for the study.</li> </ul>
Specialty	<ul style="list-style-type: none"> <li>The body part that has been mapped to the RIS examination code.</li> </ul>
Body Part	<ul style="list-style-type: none"> <li>The part of the body where the study was taken.</li> </ul>


### Status of Studies





The Status column of the Display list may contain different icons to represent the status of the study. See the following table for a list of the icons and what they represent.

Icon	Definition
	A preliminary report is available.
	An approved report is available.
	A scheduled study.

### Location Column

The Location column of the Display list may contain different icons to represent the location, and/or protection information for the study. The column contains three slots for the icons so that more than one icon may be used. See the following table for a list of the icons and what they represent

Slot	Slot Name	Icon	Definition
1	Protection		The study is protected. The system will not autodelete the study.

Slot	Slot Name	Icon	Definition
2	Cache Location		The study is local (on the web server).
			The study is on a remote PACS.
			The study is on a remote HIS/PACS Broker
3	Key Images		Key images are available.

## Studies with Conflicts

After submitting your query, you may notice some studies are displayed with red text in the Display list. These studies have been registered as having a conflict. If a study is sent to the web server that has conflicting patient information compared to what is already stored on the server, a conflict is registered. These studies are flagged so that the System Administrator can manually fix the conflicting data. You should treat the information for these studies as suspect.

## Select Studies

The results of your query are sorted before being displayed on screen. The Display list can be sorted by any criteria simply by clicking on the appropriate column heading.

Choose to select only one study, or multiple studies. If a study is selected, it appears in reverse video (dark background, light text). The CTRL key is used with the mouse to select multiple, inconsecutive studies in the list, while the SHIFT key is used with the mouse to select multiple consecutive studies.

Studies for the same patient are grouped together in a folder that appears above the first study for the patient. By default, the folder is collapsed.

Patient Name	Patient ID
DAVANGENDREN, TAM	1277994
AKER, STEN / 8274911	
SMALLTS, GREG	12759870
BANSOUR, WADE / 127	
MOSLEY, THOMAS P	1376547
JEPPS, EDELAIDE	7219102

Note that the folder icon is NOT a study itself, it is just a container for studies belonging to the same patient. If you select the folder and perform an action (such as viewing images), all studies inside the folder are selected.

If you select a study inside the folder, only that study is selected.

To expand the folder to show all of the patient's studies, click on the + sign next to the folder. To collapse the folder to show only the patient name and ID, click on the - sign next to the folder.

Patient Name	Patient ID
DAVANGENDREN, TAM	1277994
AKER, STEN / 8274911	
AKER, STEN	8274911
AKER, STEN	8274911
AKER, STEN	8274911
SMALLTS, GREG	12759870
BANSOUR, WADE / 127	
BANSOUR, WADE	1275882
BANSOUR, WADE	1275882
BANSOUR, WADE	1275882
BANSOUR, WADE	1275882
MOSLEY, THOMAS P	1376547
JEPPS, EDELAIDE	7219102

## Working With the Selected Studies

There are additional functions provided on the Study page.

### Protecting Studies

If you think a study is of clinical interest for future reference, Web1000 allows you to protect the study. When you protect selected studies, they are not deleted from the web server. If you select a study and click on the Protect Study tool, a lock icon appears in the Location column of the Display list for the selected study.

### Deleting Studies From the Display List


Access to deleting studies is based on privileges, and may not be available to you. A deleted study is removed from the web server so that other users will no longer be able to access it.

### Showing all Study Information

You may have configured the Display page to show only certain columns of information for the Display list. (See *Study Page Settings, page 28* for information about changing the columns of the Display list.) Web1000 allows you to view all information available for a study by clicking on Study Information.

### Downloading All Images in a Study

Use the Pull All Images tool to download all images in a study to the local hard disk on your computer. Once the images are stored locally, you can view them rapidly without waiting for them to download from the web server. Before you can use Pull All Images, you need to ensure that you have configured a local cache location and size on the Preferences page on the Machine Profile tab (see *Customizing the Machine Profile, page 24*).



The screenshot shows a 'Study Information' dialog box with the following fields and values:

Reason For Study	
Study Comment	
Patient Name	Patient ID
SCHMIDT, WILLIAM	8126228
Sex	Age
M	74 Years
Date of birth	Modality
22-Jun-1926	CR
Status	Accession number
New	760900
Date	Time
20-Mar-2000	7:11:56 AM
Referring Physician	Study Description
MICHAEL K VANDE	MR RT SHOULDER
Department	Patient Location
<input type="button" value="OK"/>	














# Viewing Images & Reports

# 4

After you select studies from the search results list (Display list) you can view the images and/or a report. Images are available with every study, but reports are not. By the end of this chapter you will be able to view images in several different formats and retrieve reports.

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## Image Viewing Formats

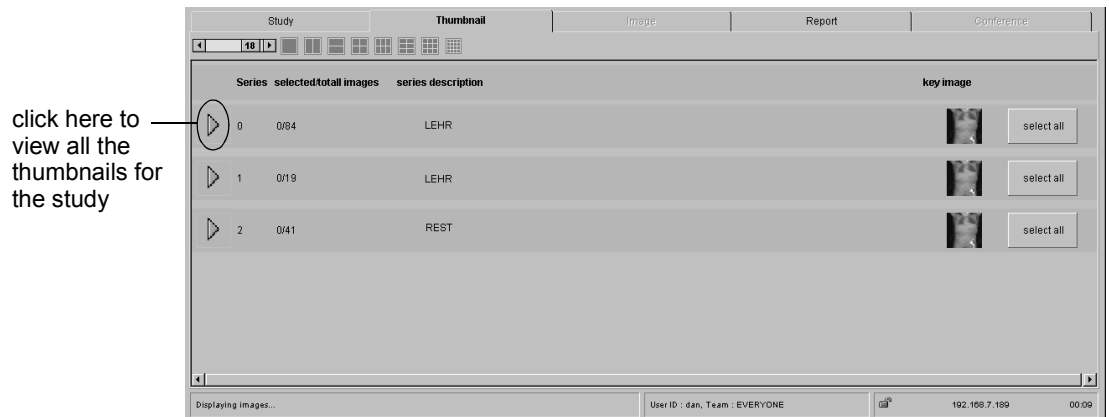
Icon	Keyboard Shortcut	Tool Tip	Function
	CTRL-1	1x1 View	A single image is displayed full screen.
		2x1 View	Two images are displayed full screen, one row by two columns.
		1x2 View	Two images are displayed full screen, two rows by one column.
	CTRL-2	2x2 View	Four images are displayed full screen, two rows by two columns.
		3x2 View	Six images are displayed full screen, two rows by three columns.
		2x3 View	Six images are displayed full screen, three rows by two columns.
	CTRL-3	3x3 View	Nine images are displayed full screen, three rows by three columns.
	CTRL-4	4x4 View	Sixteen images are displayed full screen, four rows by four columns.
		Thumbnail Format	Images are grouped by series and displayed as low-resolution thumbnail icons.
		Cine Viewer	Images are shown frame by frame in succession, much like a movie.
		Full Resolution Mode	Images are shown at full resolution using all data in the original image, in 1x1 format.



## Displaying Thumbnail Images

Thumbnails are low resolution, thumbnail-sized icons created from original full size images. Because they contain less detail, they are loaded much more quickly than full size images but cannot be used for diagnostic purposes. Use the Thumbnail page to quickly browse through the available images in a study to determine which images you want to view at full size.

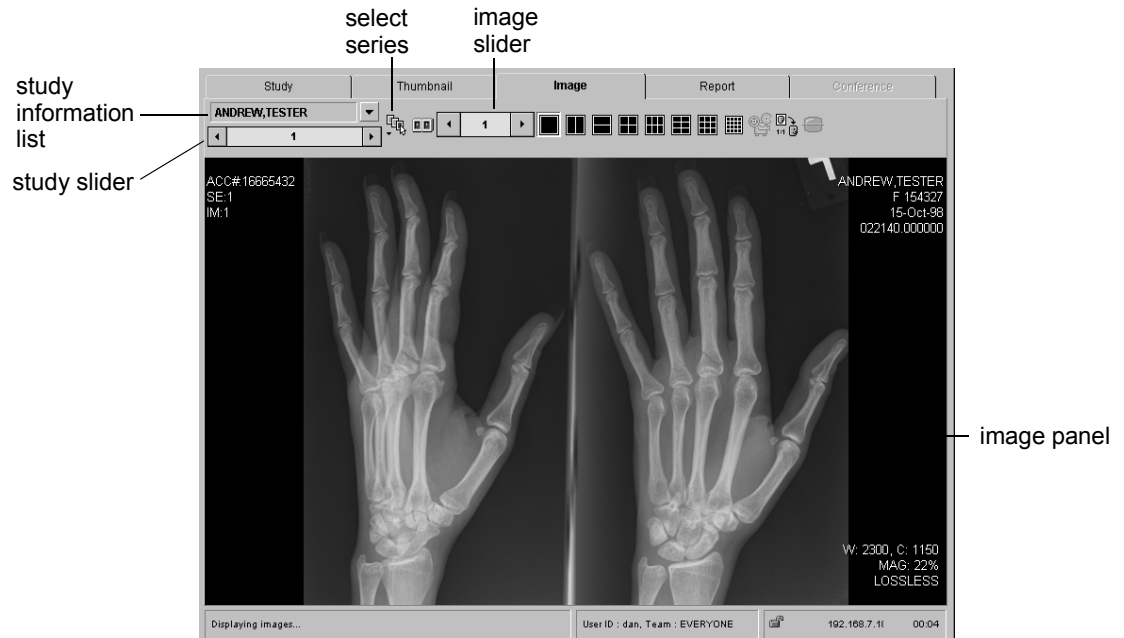
Click on the Thumbnail format tool on the Study page, or switch to the Thumbnail tab to access the Thumbnail page. The Thumbnail page contains a list of the Series ID number, the number of selected images/total images, a description and a key image. If multiple studies are selected, the first study in the list is shown by default.



Only the key thumbnail image is shown. The arrow buttons hide or show all the available thumbnail images in the series. Select any of the thumbnail icons (or use the Select All button), and click on one of the image format tools for Web1000 to automatically switch to the Image page for full screen viewing.

## Displaying Full Size Images

In full screen viewing mode, images are enlarged to fill the screen. Depending on your monitor resolution and view format, images may be displayed at 100% magnification or greater. Web1000 allows you to select from eight different formats, allowing you to view multiple full size images simultaneously.

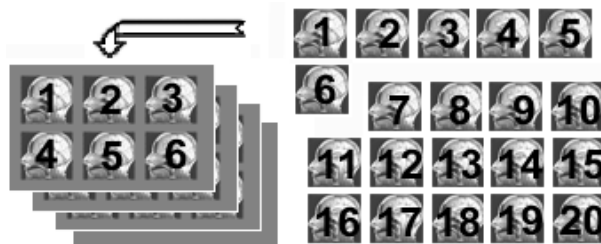


## Viewing in Full Size Mode

Full size mode is useful for carefully looking through images of interest and manipulating them. To view them, select a study in the Display list and click on one of the image format tools or using the right-click shortcut menu. The images associated with the selected study are downloaded and displayed on screen. A red or partly green circle next to an image indicates that the image is still loading. When the image is at full resolution, the marker disappears. A red 'X' indicates that an error has occurred while downloading the image. Your system administrator should be notified of the error and for which image it occurred.

## How Images are Displayed on Screen

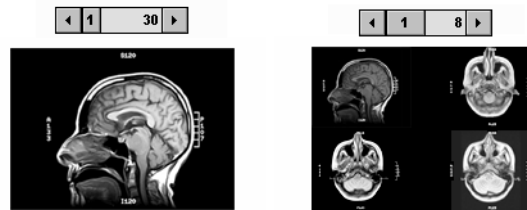
Depending on the view format you have chosen, all the images in the study may not appear on screen. For example, if you are examining a series of twenty images in 3x2 format, only six images can fit on screen at a time. The first page displayed contains the first six images, the next page contains the next six, and so on.



## Changing Viewing Format

To change the viewing format from within the image display window, click the appropriate view format tool.

When you change viewing format, the number of available pages may change. In the example shown below, a study with 30 images will contain 30 pages in 1x1 format, and 8 pages of images in 2x2 format.



## Using Image Tags

When looking at a study from a cross-sectional modality, you may not want to revert to the default first page when you change viewing format. Web1000 allows you to tag an image. It then displays that page on which the tagged image appears first. Click on the image while holding down the **SHIFT** key. A tagged image is identified by a red and white dot in the upper left corner of the image.

## Viewing in Full Resolution Mode

In full resolution mode, all data from the original image is downloaded and displayed at 100% magnification on your screen in 1x1 view format. This mode is useful if you want to view the full resolution of the image in order to see fine detail. If the image is larger than the dimensions of your computer monitor, the Pan tool is automatically selected so that you may drag the image around the screen.

## Save Images to Local Disk

You can save an image to your local disk as a JPEG image. The process uses the standard Save File dialog for your computer's operating system. When naming the file, you must add a .jpg extension.

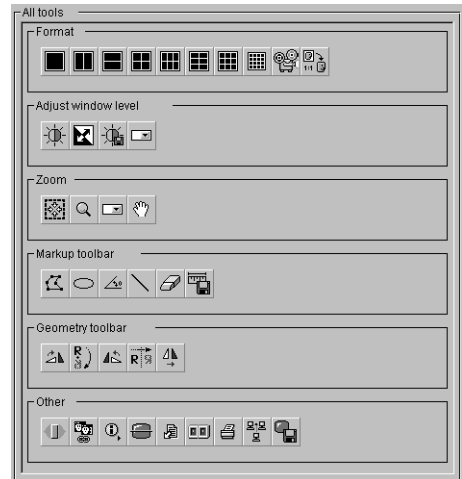
## Customizing Display Settings

The main toolbar offers tools to manipulate and measure the images, view the images in Cine mode, enable lossy compression and view two studies side-by-side in split screen mode. Any additional tools can be added to a floating toolbar. To access the floating toolbar, right-click in the image panel. The information that appears on each image, the display overlays, can also be customized.

### Customizing the Toolbars

The toolbars are completely customizable using the Toolbar layout tab of the Preferences page. Every time you log in, your customized toolbars are available as your preferences are saved with your login.

Each toolbar is modality specific. For example, you may find you want the Show Scout tool available for your CT studies. After you add the Show Scout tool to the CT toolbar apply the change. The next time you log in and view a CT study, the Show Scout tool is part of the toolbar for every CT study. It does not appear on your CR toolbar, unless you add it during a CR study. You can copy one modality's toolbar to another modality using the Copy and Paste tools.

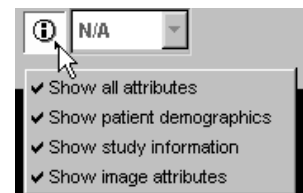


A tool cannot be added to both the main toolbar and the floating toolbar; a tool may only be added once. Not only can the tools on the toolbar change, but their position and whether they appear at all can be changed from the Toolbar Layout tab.

### Customizing Display Overlay Defaults

The Display Overlays feature shows or hides the demographic information displayed on the images. On the Image page the user can decide which information to view on a particular image. However, the Image tab of the Preferences page determines what is displayed by default on the image.

The Image tab of the Preferences page allows you to modify the demographic information displayed by default on the images. You can select any combination of the following:



Demographic Information	Includes...
Patient Demographics	<ul style="list-style-type: none"> <li>• Patient Name</li> <li>• Patient ID</li> <li>• Study Date</li> <li>• Study Time</li> </ul>

<b>Demographic Information</b>	<b>Includes...</b>
Study Information	<ul style="list-style-type: none"><li>• Accession Number</li><li>• Series</li><li>• Image</li></ul>
Image Attributes	<ul style="list-style-type: none"><li>• Window width</li><li>• Window center</li><li>• Magnification</li><li>• Aspect ratio</li></ul>

## Navigating Through the Images

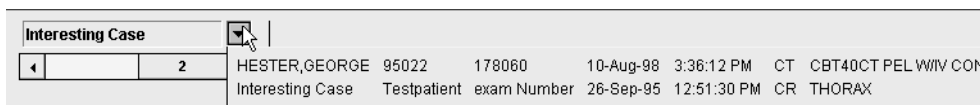
### By Study

If multiple studies are selected in the Display list, navigate between them using the Study Slider. The number of studies is displayed at the right of the slider and your current location is indicated on the position slider. The slider shown here indicates the first of two selected studies.

Destination	Action
Move to first selected study	Press CTRL-HOME.
Move to last selected study	Press CTRL-END.
Move forward one study	Left-click the right arrow on the study scrollbar or press CTRL-PAGEDOWN.
Move back one study	Left-click the left arrow on the study scrollbar or press CTRL-PAGEUP.
Move to study $n$	Left-click and drag the position slider to the location of study $n$ on the scrollbar. Web1000 displays pages from the new study as the slider is moved. To jump faster without updating, click directly on the new location.

### By Patient

If multiple studies were selected in the Display list, you can also navigate between them using the Study Information list. Click on the drop-down arrow beside the patient name above the Study Slider to view a list of the selected patient names with additional patient information.



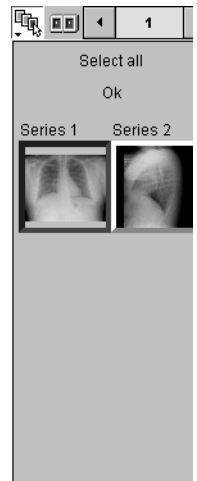
### Within a Study

You can navigate between pages of displayed images using the Image Slider on the main toolbar. The number of pages is displayed at the right of the slider, and your current location is indicated on the position slider. The slider shown above indicates the first of 90 pages. Web1000 displays the new page as the slider is moved. To move faster without updating, click directly on the new location in the page slider.

Destination	Action
Move to first page	<ul style="list-style-type: none"> <li>press the HOME key</li> </ul>
Move to last page	<ul style="list-style-type: none"> <li>press the END key</li> </ul>
Move forward one page	<ul style="list-style-type: none"> <li>left-click the right arrow on the page scrollbar or press the →, ↓ or the PAGEUP key</li> <li>right-click the image display area to move forward</li> </ul>
Move back one page	<ul style="list-style-type: none"> <li>left-click the left arrow on the page scrollbar or press the ←, ↑ or the PAGEDOWN key</li> <li>click the image display area to move back</li> </ul>
Move to page <i>n</i>	<ul style="list-style-type: none"> <li>left-click and drag the position slider to the location of page <i>n</i> on the page scrollbar</li> </ul>

## By Series

Images in different series are kept separate in full screen display mode. If a study contains multiple series of images, each series is assigned a sequence of pages and only the pages from a specific series are displayed. After you click on Select Series a drop-down box with thumbnail key images for each of the series appears. Select one series, or use the SHIFT and CTRL keys to select multiple series.

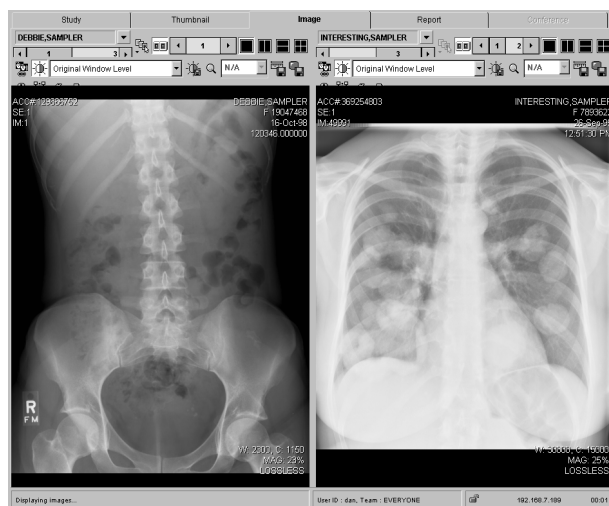


## Using Other Viewing Formats

### Split Screen Mode

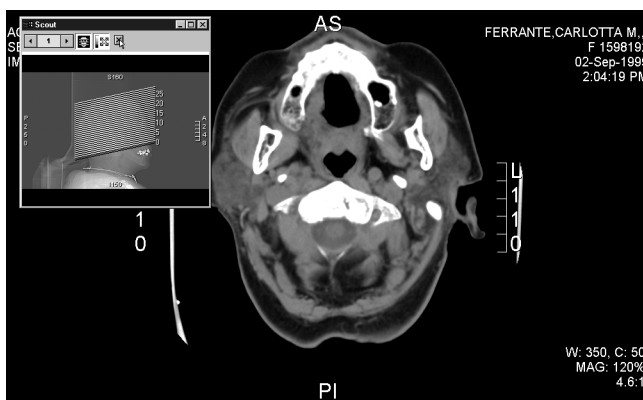
Use Web1000's split screen mode to compare two studies side-by-side. The Image window is split into two viewing areas. Each half of the screen has its own toolbar to allow images to be manipulated independently.

Web1000 also allows you to view an image and a report side-by-side (see *Retrieving Reports in Split Screen Mode*, page 53).



### Scout Lines

This tool is only enabled for CT images, but not all CT images offer scouts. The Display Scout option allows you to see at exactly what part of the body the image was taken in the study. To view the Scout Window, click on Display Scout. To see all the slices, click on All Scout Lines. Click on a scout line to change the view of the image to that slice location. You can also window level the scout image.





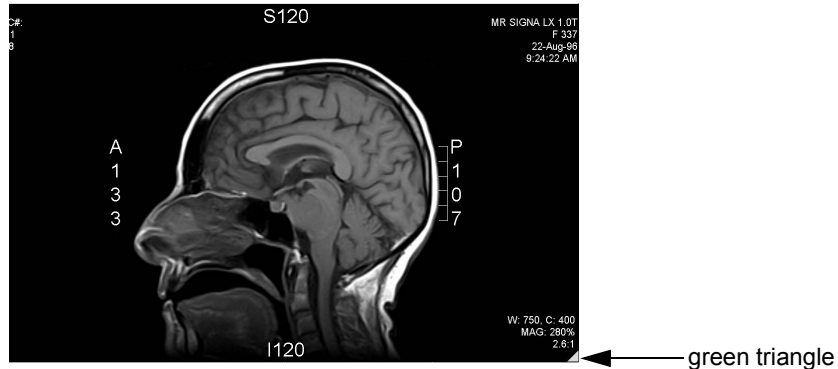
## Enabling Lossy Compression

If you are viewing images over a slow connection, you can enable lossy compression to view images more quickly. Lossy compression slightly reduces image quality. However, for non-diagnostic purposes, the reduction incurred is minimal. Compression is enabled when the tool is pressed on the Study page. Web1000 permits the user to enable lossy compression from the web browser interface.

*When an image has been downloaded in lossless format, it is impossible to download the lossy compressed equivalent.*

*However, if you download a lossy compressed image, you can download the lossless equivalent.*

The actual compression ratio may also be displayed in the lower-right corner of the image. If sufficient image data has been downloaded to calculate the ratio, it is displayed. If not, it simply says “LOSSY” or “LOSSLESS”. A green triangle appears in the bottom right corner of the image when lossy compression is enabled, as shown below:



## Specifying Compression Ratios

You can specify the compression ratio settings on the Image tab of the Preferences page. The compression ratio settings are applied when lossy compression is enabled. The compression ratios are determined by modality. We do not recommend changing the default compression ratios unless you are certain this is necessary.

When compressing an image, there is always a trade-off between reproduction quality and file size. The compression ratio sets the amount of compression that should be applied to the image. For example, a compression ratio of 20:1 means the image is compressed to a size twenty times smaller than the original image.

The smaller the compression ratio, the larger the size of the transmitted file. There may be trade-off in transmission time because too high a lossy compression ratio might cause a performance drop on the web server side. Consult the table below for the recommended compression ratios per modality. There are actually 3 compression ratios for 8 bit grayscale, 16 bit grayscale and color images:

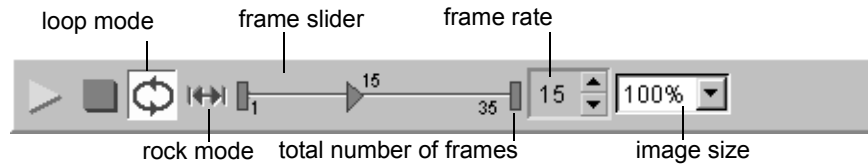
Modality	8 bit	16 bit	Color
CR	13	20	30
CT	6	6	15
MR	6	6	15
NM	4	4	10
US	6	12	16

<b>Modality</b>	<b>8 bit</b>	<b>16 bit</b>	<b>Color</b>
OT	8	12	20
XA	8	12	20
RF	8	12	20

## Viewing in Cine Mode

While in Cine mode, images are shown frame by frame in succession. The result is a moving image. To switch to Cine mode, click on the Cine mode tool.

A floating toolbar is superimposed over the image while in Cine mode. The new toolbar contains several tools to control how the images are played back. You can navigate between any number of frames at different speeds. The total number of frames appears at the right end of the frame slider control.



Before playing a cine you must set:

Setting	Description
frame range	Frames you would like to play. Use the frame slider control. The amount of RAM of your system will dictate the number of images you can play at the chosen frame rate with good image quality.
frame rate	Lower the number, the slower the frames change
image size	50%, 75%, 100%, 200% or 400% pixels. Larger images require more memory for playback.
play mode	Loop mode runs the frames in ascending order. When it reaches the last frame it re-starts from the beginning of the series. Rock mode plays the frames in ascending and then descending order continuously.

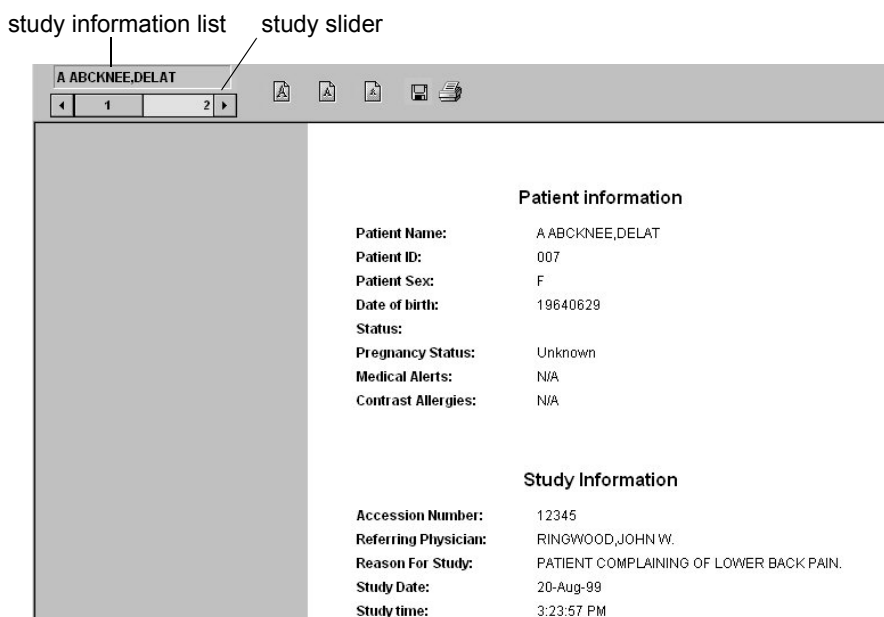
*If you first download the study's images using the Pull All command, loading of images is much faster.*

Once you click on Play, there is a brief delay while Web1000 loads the images into memory. The current frame number is shown in the frame slider and the triangular indicator moves to show the relative position of the frame in the selected images.

## Viewing Reports

If Web1000 is installed on a compatible PACS network with a PACS Broker connected to a RIS, you can obtain the full report for each study, if one is available. The Display list on the Study page shows a report icon in the Status column if a report is available. Check with your System Administrator if you're not sure that your web server has been configured for this capability.

If a report is available for a study, select the study. Click on Retrieve Report and the report opens on the Report page. For each report there are three sections: Patient Information, Report Information and Study Information. The text size can be changed for greater readability. There are three sizes available: large (24 pt), medium (18 pt) and small (12 pt). If the report does not fit on the computer screen, a vertical scrollbar is available for navigation. If you have selected multiple studies from the Display list browser, browse through the reports with the Study Slider. More information about the study is available from the Study Information list.



## Printing & Saving Reports

Web1000 offers the ability to print any reports you are able to retrieve using a local PC printer.

Reports can be saved as one of three formats: plain text, rich text format, and hypertext markup language. When naming the file during the save process, the file name must have an extension of:

- .txt or .TXT
- .rtf or .RTF
- .html or .HTML.

Only these extensions are valid.

## Retrieving Reports in Split Screen Mode

If there is a report available with a study, you can view the images and the associated report in Split Screen mode side-by-side. Click on Retrieve Report from the Image page.

The screenshot shows a medical software interface with a split-screen view. The left pane displays an X-ray image of the lumbar spine. The right pane displays patient and study information.

**Patient Information**

Patient Name:	AABOKNEE, DELAT
Patient ID:	007
Patient Sex:	F
Date of birth:	19640629
Status:	
Pregnancy Status:	Unknown
Medical Allergies:	N/A
Contrast Allergies:	N/A

**Study Information**

Accession Number:	12345
Referring Physician:	RINWOOD, JOHN W.
Reason For Study:	PATIENT COMPLAINING OF LOWER BACK PAIN.
Study Date:	20-Aug-99
Study time:	3:23:57 PM
Requesting physician:	RINWOOD, JOHN W.
Study Description:	US955
Procedure code:	US955
Procedure description:	US955
Resource Name:	MR01
Modality:	MR



# Using Advanced Features

# 5

Several advanced Web1000 tools let you manipulate the images on screen and conference with other online users. All changes made by these tools are completely reversible and only affect the images displayed on your browser. Images in the database cannot be altered or damaged via Web1000's web browser interface. By the end of this chapter, you will be able to use the image manipulation tools available to you, understand how they work and use them within a conference.

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## Linking Images

When you link images together, any changes applied to an image are applied to all images in the current series at once. For example, if you adjust the window/level for one image, it adjusts the window/level for all images within that series. The Link tool is a toggle switch, that can also be accessed using the keyboard shortcut CTRL + L.

The Link tool works with the following types of operations:

- horizontal and vertical flips
- rotations
- zoom region
- window/level
- gray-scale invert

## Transforming Images

Web1000's geometry tools allow you to change the orientation of the images.

Images can be rotated 90 degrees to the right, 90 degrees to the left, or 180 degrees.

Perform the opposite rotation to restore the image to its original orientation. If only one image is displayed, the change is made immediately. If multiple images are displayed, you must click the image to be changed.

Images can be flipped vertically to turn the image upside-down, or flipped horizontally to mirror the image. Use the tool a second time to restore the image to its original orientation.



## Viewing Large Images

Images can be displayed at more than 100% magnification in order to view more detail. Magnification is calculated using a scale type which can be modified. Often a magnified image cannot fit on the monitor so Web1000 provides tools in order to view different sections of the image.

### Modify the Scale Type

The scale type is used when displaying images at more than 100% magnification. To modify the scale type you must open the Preferences page and switch to the Image tab. The following choices are available:

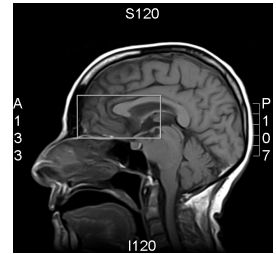
Scale Type	When it is used	Description
Replicate Interpolation	<ul style="list-style-type: none"><li>• magnifying glass tool</li><li>• full resolution mode</li></ul>	<ul style="list-style-type: none"><li>• fast</li><li>• guarantees the pixel value shown is a replicate of one of the corresponding source pixels</li><li>• poor, blocky images</li></ul>
Bilinear Interpolation	<ul style="list-style-type: none"><li>• colour images</li></ul>	<ul style="list-style-type: none"><li>• weighted average of up to 4 points is used to determine the destination pixel</li><li>• half of the speed of replicate scaling</li><li>• smooth edge with no overshoot or ringing</li><li>• slight staircasing artifacts may be visible at high magnifications on modalities such as MR</li></ul>
Bicubic Interpolation	<ul style="list-style-type: none"><li>• grayscale images</li></ul>	<ul style="list-style-type: none"><li>• signed, weighted average of up to 16 points is used to determine the destination pixel</li><li>• speed difference is unnoticeable on a fast machine</li><li>• sharpest, smoothest images</li><li>• only artifact can be slight overshoot or sharpening effect at high contrast edges</li></ul>

### Using the Pan Tool

When viewing an image in full resolution mode, the image dimensions may be larger than your computer monitor. Use the Pan tool to drag the image on the screen to see all parts of the image. Zoom percentages from the Zoom Preset drop-down list change the zoom level to a predefined value. To manually adjust the zoom level, press CTRL++ or CTRL+-. Press CTRL and right-click to continuously change the zoom level.

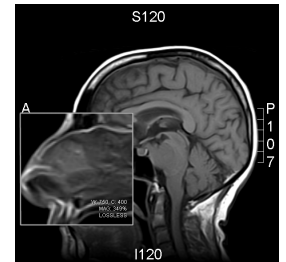
## Zooming In on a Region

Use the Magnify Rectangle tool to zoom in on a rectangular region of the image. The rectangular region shows at full screen size.



## Magnifying an Image

The Magnify tool lets you view areas of the image at any magnification. Left-click and drag the mouse to move the magnify tool around any part of the image. It appears as though you are looking through an actual magnifying glass. Press CTRL and right-click as you drag with the mouse to increase or decrease the magnification.



## Initiating a Magnifying Action

There are multiple ways to manipulate magnified images, depending on what you are most comfortable with using, as well as the type of mouse you are using.

After you have selected the type of magnification you want to use, you can use one of the following ways to manipulate the magnification:

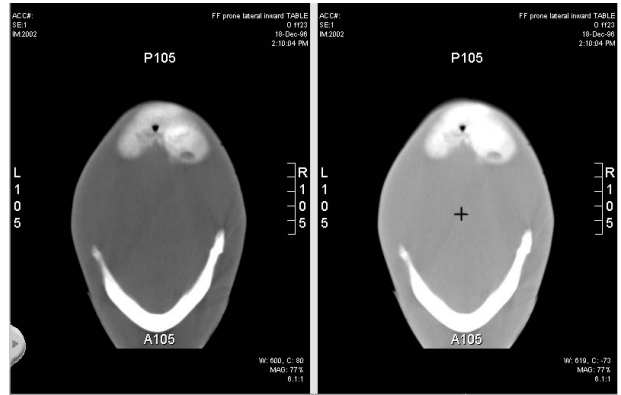
- CTRL and right-click
- ATL and left-click
- middle button click (if you have a 3 button mouse)

## Using Window/Level Tools

The Window/Level tools allow you to manipulate image contrast by adjusting window center and width levels. There are two ways to adjust the window/level. You can adjust it manually, or by applying a window/level preset.

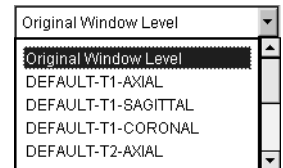
### Adjusting Window/Level Manually

Use your mouse to adjust the window/level. Adjust the window/level for one image, or link the images in the current series to adjust them all at once. Drag the cursor vertically to adjust the window center. Drag the cursor horizontally to adjust the window width. To restore the images to their original levels, press CTRL and right-click the image. Or, if you have a 3 button mouse use the middle button instead of pressing CTRL and right-clicking.



### Using Window/Level Presets

Many window/level presets are available for different types of procedures. A drop-down list in the toolbar shows the available presets. The window center and width of the presets are applied to all images in the current series.



Your own saved presets can be modified at any time. Once you have adjusted the window/level of an image to the desired values, you can save those values. The new preset requires a new name, and the following attributes:

Attribute	Description
Body Part	A descriptive name for the preset, relating to the body part.
Label	Additional descriptive names for the preset, such as tissue type or echo.
Center	The window center value. It already contains the last window center value applied in the Image window.
Width	The window width value. It already contains the last window width value applied in the Image window.

### Inverting Grey-Scale

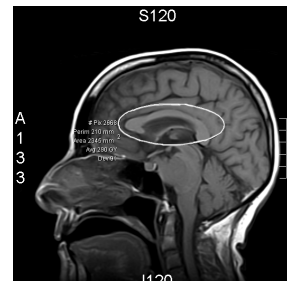
The background and foreground colours of any image are reversible using the Invert Grey-Scale tool.

## Using Measurement Tools

The Measurement tools let you measure angles and sizes of features on the images. The Erase tool removes any markings.

### Region of Interest Tools

There are two Region of Interest (ROI) tools for your use. The Freeform Markup tool marks an area with an irregular shape while the Ellipse Markup tool marks an area with an ellipse. The number of pixels, the perimeter, area, average Greys (or Hounsfield units for CT) and deviation appear when you have marked the area. If the images are uncalibrated (i.e. calibration information is not present) then all distances, areas and perimeters are given in units of pixels instead of millimetres.



### Angle and Distance Tools

There are two other measurement tools to measure angles and distances. The Markup Angle tool marks the interior and exterior angles formed by the two lines. The two lines do not have to meet at an intersect; the system auto-projects the point of intersection. The method of measurement is degrees. Markup Caliper measures the distance in millimetres.



### Save Markup

Depending on your privileges, you may be able to save any measurements made on images to the database. When measurements are saved, all users will see them when they subsequently view the images. They are not saved with only your login as your preferences, they are saved with the images so that all users will see them. It is possible to delete the markups that have been saved in the database, but remember that you then erase all markups for the entire study.

Your ability to save measurements depends on your privileges assigned to your User ID and password.

### Measurement Accuracy

Since Web1000 is not intended as a diagnostic tool, do not consider the results of the measurement tools as absolute.

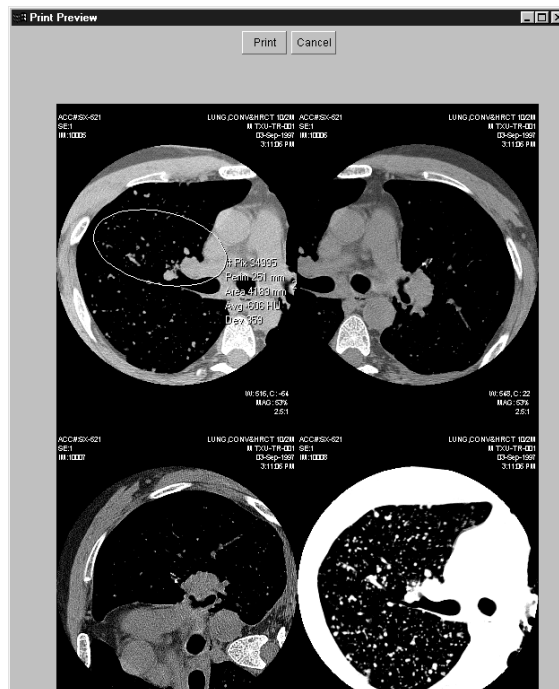
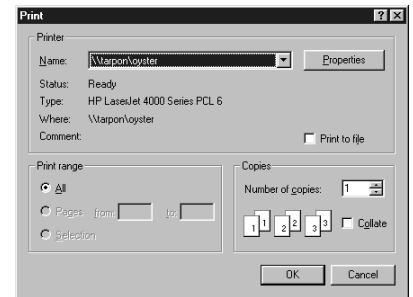
## Printing Images

You can print images currently displayed on the screen to any printer supported by your operating system.

Images are printed using the current view format and are scaled to fit the printable page. Before you print, make sure that you have made all the changes to the image you want to be printed, including window level changes, markups, rotations, overlays displayed, etc.

When you click on the Print tool, the standard print dialog for your operating system opens. Set up the print job and click on OK.

A preview window opens so you can see how the page will look before printing. If you want to change something, click on Cancel. If the print preview is okay, click on Print to initiate the print job.



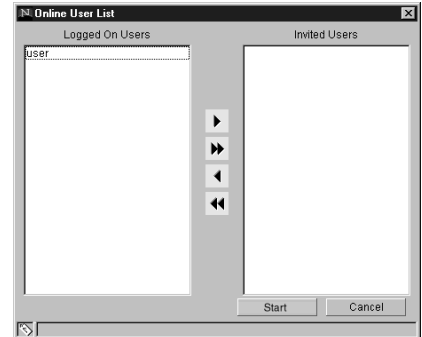
# Conferencing with Users

Web1000 can be used in conferences. You are able to collaborate on images with other users on your system by sending messages to your colleagues. Up to ten people can join the conference session at a time. All users must be connected (logged in) to the same Web1000 server.

Web1000 allows you to manipulate and annotate the images while in conference mode with the other users.

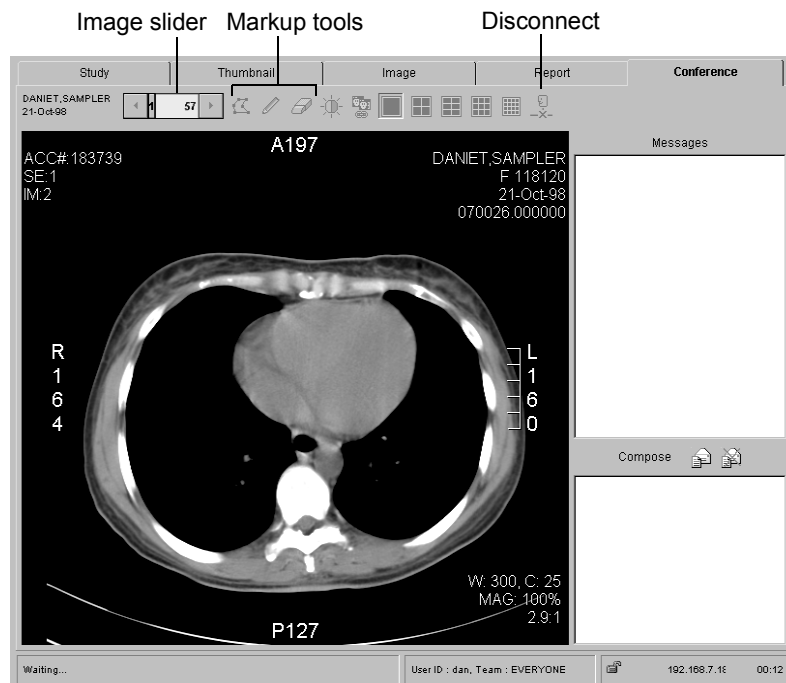
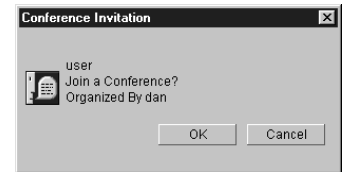
## Initiating a Conference

One person must initiate the conference. Use the Start Conference tool from the Image page. The ability to initiate a conference is based on user privileges. The initiator gets a list of currently logged in users to select the users to invite to join the conference. Each invited user will receive an invitation message which they can accept or reject.



## Participating in a Conference

When an invitation to join a conference arrives, you can choose to accept or reject the invitation. If you accept, the Conference page is automatically selected. Your mouse can then be used as a pointer and any markups you add to the images will be viewed by all users participating in the conference.



## Sending Messages in a Conference

Web1000 allows you to send messages to other users in the conference and view all messages that have been composed by the other users. The text field in the bottom right corner is used to compose your messages. Once you click on Send your message appears in the message window of all the participating users.



## Manipulating Images in Conference

### Page Backwards/Forwards

While in conference mode, use the Image Slider to move forwards or back through the images. 

### Change the Viewing Format

You can also change the viewing format from within the Conference page. Click on the appropriate view format tool. Choose from: 1x1, 2x2, 2x3, 3x3 or 4x4. See *Image Viewing Formats, page 40* for more information on the viewing formats.

### Annotate Images

While in conference mode, 'draw' annotations on the screen with the mouse. Annotate the image using straight lines or using a Freehand Drawing tool that allows the user to guide the mouse to draw a shape. Erase removes all annotations.

### Adjust Window/Levels

While in conference mode, adjust the window/level. Drag the cursor vertically over the image to adjust the window center. Drag the cursor horizontally to adjust the window width. Use CTRL + right-click or ALT + left-click on the image to restore the original levels.

## Disconnecting From a Conference

When the initiator of the conference disconnects, all users are disconnected at that time. When a participant disconnects, other users receive the following message in the message window:

**disconnected  
message**

```
user > examine the lower node on the right  
service > Notice the colouring  
user > **** Dropped from Conference ****
```

The other users can continue with the conference until each one of them disconnects, or the initiator of the conference disconnects.





# Troubleshooting

# 6

This section identifies potential problems you may encounter while working with Web1000 version 3.1 and describes some solutions. By the end of this section you will be able to diagnose and correct some of the more common errors that might occur.

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## Host Name Isn't Resolvable

### Problem:

The full hostname of the Web1000 server is not resolvable on the network.

### Possible Solutions

- 1 You may need to add a Hosts file. Check with your Network Administrator to see if this step is required. A Hosts file is a text file containing the web address, hostname and correct IP address of the web server. This file must be saved in a particular directory. Your System Administrator can create a Hosts file for you.

## Cannot Log In to Web1000

### Problem:

When I tried to log in to Web1000, I received a “That is not a valid user name and password” message.

### Possible Solutions:

- 1 Your password has expired. Contact your System Administrator.
- 2 You may have typed your password in incorrectly. Try typing your password again.
- 3 The CAPS LOCK key on your keyboard may be on. Check the case. Make sure it is off and try typing your password again.

## Nothing on the Screen

### Problem:

There is no display on the monitor.

### Possible Solutions:

- 1 The screen saver has started. Wiggle the mouse or press a key on the keyboard to stop the screen saver and return to your Web1000 screen.
- 2 The monitors are powered off. Switch the monitors back on. If there is still no display, contact the System Administrator to check the power connections.
- 3 The machine is powered off. Switch the machine back on. If there is still no display, contact the System Administrator to check the power connections.

## Cannot Locate a Study

### Problem:

I performed a query but I cannot find the study I want to view.

### Possible Solutions:

- 1 It is possible to configure user accounts so that certain users cannot view certain studies. This means that some studies will not appear in the Display list even if they reside in the database. Keep this in mind if you cannot locate a study on the system. Consult with the System Administrator if you need to have access to studies that are not presently viewable in the Display list.
- 2 Try switching Teams, or ask another user to Grant Access to you. See *Default Teams, page 33* and *Granting Access to Other Teams, page 33* for more information.

## Busy Indicator

### Problem:

There is a continuous busy indicator  on the screen in response to performing an action.

### Possible Solutions:

- 1 If a message window appears prompting you for a response, the Busy indicator is a normal condition if you place the mouse cursor outside of the window.
- 2 There may be a loss of network connection to the web server. Log out of Web1000, then log back in again. If this does not clear the problem, contact your System Administrator.
- 3 There may be insufficient memory (RAM) on the machine to handle the volume of studies. If the problem persists, have Service check and possibly add more memory.
- 4 If you are using a Mac, you may need to increase your virtual memory.

## Images Loading Slowly

### Problem:

An unclear image loads, but a red and partly green circle appears next to the image.

### Possible Solution:

- 1 Be patient. A red and partly green circle next to an image indicates that the image is still being loaded. When the image is at full resolution, the marker disappears.

### Problem:

No image appears but there is a red “X”.

### Possible Solution:

- 1 An error has occurred while downloading the image. Notify your System Administrator of the error and for which image it occurred.

# Glossary

## Applet

Small software application which runs within a web browser.

## Compression

Reduces the file size of an image. Use compression if you are transmitting images to a station via a slow connection. Lossy compression reduces image quality slightly; for non-diagnostic purposes, the loss is minimal.

## Extension

A suffix at the end of a file name that indicates the format or usage of a file. Examples include: .doc, .txt, .jpg.

## Host Name

The host name is a common alphanumeric alias for the IP address of a station.

## .html

Extension for a file read using your web browser (Internet Explorer, Netscape Navigator).

## IP Address

The Internet Protocol address is a numeric address that identifies the station to other TCP/IP devices on the network.

## Java

Programming language which is used to write applets.

## JPEG image

A JPEG (pronounced JAY-peg) is a graphic image created by choosing from a range of compression qualities. Since the highest quality results in the largest file, you can make a trade-off between image quality and file size.

## Key image

Representative image for a series of images.

## Lossy

Refers to a method of compressing image which results in a slight reduction of image quality.

## Modality

A device which gathers digital information such as medical images.

## Multiframe Images

A study that contains multiple frames, such as ultrasound, and in some cases, MR studies.

## PACS

Picture Archive and Communications System. A system (often comprised of several components) concerned with the digital storage, transmission, and display of medical images.

## Remote Devices

Remote refers to any devices which can be accessed over the network.

## Reverse video

If a study is selected, it appears in reverse video. Generally the background on your machine is light, while the text is dark. Reverse video describes a dark background with light text to make it stand out.

## .rtf

Rich text format file extension. Rich text format keeps some of the formatting of the original document. For example, bold words would still look bold. You could use the following software to read the file: WordPad, Notepad, Microsoft Word or WordPerfect.

## Thumbnail

A low resolution, small size version of an image which can be used to quickly select the full size image.

### **Toggle switch**

A tool or button which both enables and disables a feature; an on/off switch.

### **.txt**

Extension for a plain text file (unformatted text). You could read this file using the following software: WordPad, Notepad, Microsoft Word or WordPerfect.

### **URL**

Uniform Resource Locator. Address of the form <http://www.agfa.com/>, used to point your web browser at a specific location on the web.

### **Virtual machine**

Computer program which extends the capabilities of your web browser by running Java applets.

### **Web browser**

Software programs that allow you to view the contents of documents on the Internet.

### **Wildcard**

A Wildcard represents unknown information in Patient Name field. It is represented by the \* and ? symbols.

## Image Page Keyboard Shortcuts

Shortcut	Description
CTRL-W	Select window/level tool.
CTRL-I	Select invert tool.
CTRL-→	Flip image 90 degrees right.
CTRL-←	Flip image 90 degrees left.
CTRL-L	Select Link tool.
CTRL-1	Display images 1x1.
CTRL-2	Display images 2x2.
CTRL-3	Display images 3x3.
CTRL-4	Display images 4x4.
CTRL-+ (only number keypad)	Zoom in 10% (only in full resolution).
CTRL-- (only number keypad)	Zoom out 10% (only in full resolution).
PAGEDOWN down arrow ↓	Go to next page of images.
PAGEUP up arrow ↑	Go to previous page of images.
HOME	Go to the first page of images.
END	Go to the last page of images.
CTRL-PAGEDOWN	Go to next study.
CTRL-PAGEUP	Go to previous study.
CTRL-HOME	Go to the first study.
CTRL-END	Go to the last study.

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