

So.... You are on call



A GUIDE TO THINGS YOU NEED TO KNOW

By

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MY SITE ID IS: _____

MY ENVIRONMENT(S)

ARE: _____

Introduction

This is a “Guide” by Eric Warden, the purpose is to provide some commonsense advice on the things that you need to know in order to survive being on call with the least difficulty.

The intended audience is the LIS Administrator or their designees who will be contacted after hours by the laboratory staff when problems are encountered with either the hardware or software.

Keep in mind that each individual’s situation is different so not all things in this guide will apply to you. However, everyone’s situation is subject to change so what is not pertinent or useful to you today might be tomorrow and vice versa.

This guide is normally furnished as a Microsoft Word document and/or a PDF document. When printing the document, the intention is for it to be printed on one side only of a standard 8.5 by 11-inch sheet of paper in a landscape orientation. After printing, the sheets are to be cut in half and three-hole punched. This will give you a stack of pages that will lay in an Avery binder (small format) with

the printed material on the right side and a blank page on the left (unprinted back of previous page). It is intended this way to facilitate your entering your own notes and comments on the left facing page. That enables you to customize your copy specifically to your situation. The decimal page numbering also makes adding pages easy.

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Preface

There are blank forms at the back of this document that can be copied if more space is needed. The forms are for you to document where things are such as the ID's of the various interfaces and which lab environment they are being used in. Be sure to organize this information so it is grouped in such a manner as to enable quick identification of the needed information.

Having the up to date and correct information is half of the troubleshooting process and will make your job and ours much easier and quicker to identify the problem and resolve it.

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Your Options

Your options on how to provide coverage will be largely dictated by your lab manager or IT department in most cases. If you do have a choice of options then your equipment, software and connection methods will play an important part in the final decision.

Basically, your options will run the gamut from getting a call from your lab staff and then forwarding that information to LIS vendor for

investigation, to getting the call, logging in to your lab system remotely, troubleshooting the problem and educating your staff if that is what is needed. There is a whole range of variations between the two extremes.

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Glossary of terms

QUIKOIDS, (Quick Factoids)

Why you are on call

Good question! It depends on whom you ask and what their perspective is. The generally accepted answer would be that you are on call to fix whatever goes wrong. That can mean many things to different people.

To me it means that whatever is needed to be done to facilitate the proper functioning of the laboratory is why you are on call. It could be as simple as answering a question for a tech such as “yes, you have to double click the icon” or it could be very complex such as being physically on site in order to locate and assist with the replacement/repair of a major piece of hardware. There is a whole gamut of things in between.

Unfortunately, there are different levels of “on call” as mandated by your superior in the chain of command. This can mean that your “on call” can be as simple as receiving a call from the lab and then calling your LIS vendor with the information, to as complex as logging into the system either on site or remotely to do as full an investigation as possible before calling the vendor (which may eliminate the need to call at all).

1.0

Minimum Option

The minimum on call scenario is usually the most frustrating for all parties concerned. If you get a call and then simply ask the person calling you to call the LIS vendor then the probability that person will not know answers to questions posed by the Technical Support Specialist is very high in most cases and will certainly lead to frustration for both and a delay in resolving the issue. Since this is an “After Business Hours” situation, the lab staff is usually short on staffing and overloaded with stat and priority requests from the medical staff. The tech. then does not have the time or the patience to answer many questions to even decide what the problem is, much less finding the solution. This is not a happy situation ☹ for the tech. or the support tech who has answered the call.

If this is the only allowed scenario then you definitely need to advise the person who is going to call the LIS vendor of certain items of information such as:

- Client Identifier
- Environment
- Interface ID

- Printer name (as seen in the system, not HP or Zebra)
- Other pertinent information as required.

examples a lab tech that is capable of running lab tests should be able to also do this level of troubleshooting. Of course, they would need to be made aware of the availability of these checks and given the needed system permissions. However, with the tech. being able to do this level of troubleshooting it could mean the problem would be fixed much faster than calling someone and possibly waiting on a return call.

1.1

Moderate Option

This option while still not the best is far better than the minimum option. In this scenario you would log in to the system either on site or remotely and perform basic trouble shooting and also verify that the problem is repeatable from different workstations and logins.

As an example, in this scenario, if you were called by the lab staff saying that reports were not printing. You would ascertain first, are no reports printing anywhere which could mean the Reporting interface might be ‘not running’ in which case simply restarting the interface fixes the problem. It could be that the reports are not printing to a specific printer and when you check its status it is merely in a “Down” state and simply restarting the queue fixes the problem. It is noteworthy that in both these

1.2

Maximum Option

This option will bring you to the fullest level in your coverage of the “on call” position. While it requires more understanding of the system, applications and their setup it will be the most rewarding for the individual and bring about confidence in your abilities from those you report too and also make you look like a superhero to your staff.

At this level you would have “root” access to the system, have a sound understanding of UNIX or Windows Server operating system and hardware in addition to fully understanding the LIS applications that are installed on your computer system. It is not expected that you will understand everything to the extent that you will not need technical support at all but your need will be less and when you do need support you will have much more and better information to share, along with a better understanding of what needs to be done by the technical support staff as well as a better understanding of what was done.

To be proficient at this level you will need to do additional study and have a full set of LIS application manuals to refer to.

At this level, as in the example given in the Moderate Option, the printer troubleshooting would be possibly expanded to verifying the type of printer connection and if a network printer the ability to “ping” the printer to verify connectivity or in the case of a printer connected to a terminal server (ex. Xyplex, Itouch, etc.) the ability to log in to the terminal server and verify connectivity and/or log the port for the printer.

Your Expectations – vs- The Real World

Ok, we have covered the different levels of on call support you may have been assigned by your manager, now to discuss the expectations.

Your manager is in all probability going to expect that the system is perfect and never has a hiccup. If this is the case, then your manager has never been exposed to computers or at least not to “Windows” system computers. In reality though, with computer systems it is not a case of ***will there be a problem*** but actually ***how long until there is a problem***. That is why vendors of computer hardware such as hard disk manufactures list in the specifications page a specification called “MTBF” which stands for “*Mean Time Between Failures*”. So, you see nothing lasts forever, that is why there are junk yards, landfills and cemeteries. Now that we have that settled let us go further along the continuum.

It is your LIS vendor’s desire to provide continuous, prompt and courteous service to you. They try to do that in all cases but as previously pointed out their ability to provide this to you can also depend on the information and assistance you provide to them. If the information is misleading or incomplete, they will waste valuable time in trying to not only fix the problem but also to simply determine what the problem is. Therefore, the ability to help you is directly related to the level of assistance you can provide. Also, when they do address an issue and it

needs further investigation or testing from you, the delay from you will impact the final resolution of the task. We know that you are busy and have many “fires” to attend to but please keep in mind your part in the ability to provide the level of service that you have paid for and are expecting. Also, keep in mind that they and you are only human, that is why there are erasers on pencils ☺

2.0

Your Equipment

You now know the levels of your involvement in the troubleshooting process and you also understand the expectations on both sides. Now it is time to discuss your equipment needs.

Depending on the on call option you have been assigned you will need equipment (assuming you are not on site) that ranges from just a telephone line for the Minimum Option to a broadband connection, computer and possibly a printer and/or fax machine for the Maximum Option. There are many variations between the two extremes. You may live in an area where there are frequent power outages and you may need to have an UPS (Uninterruptible Power Supply) in order to keep the computer powered up. You may need a second telephone line in case you are not fortunate enough to have a broadband connection.

In most if not all cases your hospital IT department will have strict conditions for the equipment you use and your connection method, so you will need to address their concerns as well.

3.0

My Equipment for Remote Access - Form

My computer is (Dell, HP, etc.):

Desktop Laptop

The processor is (Pentium, Core Duo, etc.):

My installed memory is (RAM):

My Internet connection is: Dialup, Cable, DSL, Satellite,
Other

My service provider is:

My Router is (Linksys, etc.):

Wireless: NO YES

If YES, then encryption used (WEP, WPA, etc.):

My OS (W2K, XP, Vista, etc.):

Service Pak installed (1,2, etc.):

The information above will assist your IT department in making any pertinent recommendations.

My Name:

Department:

Email address:

Other:

Your Software

In addition to the hardware (computer, etc.) you will need software in order to perform your on-call duties. This will not be needed necessarily in the Minimum Option.

You will need terminal emulation software to connect to the server, the choice will most likely be made by your IT department or the LIS Administrator if you are not that person.

You will need to have anti-virus software to protect your computer which in turn will assist in protecting your lab server. ***Note that this software is not just installed but needs to be constantly kept up to date.*** Most anti-virus software provides an auto update function, make sure it is enabled and also check to make sure it works properly.

Your additional software needs will be related to how you perform your on-call functions and will possibly include such as Microsoft Office applications.

4.0

My Software for Remote Access - Form

My Office version (2003, 2007, etc.):

Circle installed components:

Word Excel PowerPoint Access Visio
Outlook

Firewall software:

Anti-Virus software:

Version: _____

Automatic updates: NO YES

Current: NO YES

Terminal Software (PowerTerm, etc.): _____

Other:

The information above will assist your IT department in making any pertinent recommendations.

My Name:

Department:

Email address:

Other:

4.1

Corporate Resources

Most hospitals have set in place some means of providing corporate resources to assist you with maintaining your laboratory information system. Keeping in mind that usually their main concern is the hospital system and secondarily the laboratory system you can see that you might be lower on the

totem pole. A good example is – you are standing in a pasture between an angry bull and a fertile cow, the corporate support person is on the outside of the fence and has an electric prod that can turn the bull away. Since the corporate person is *outside* the fence consider how important they consider it to their own benefit that they run into the pasture with the prod to assist you. Of course, the opposite extreme could also exist in which there were signs posted on the pasture fence warning you and if you still found yourself in danger, they would immediately jump the fence and rescue you.

Assuming there are resources available, pursue them, you can never have too many friends. Cultivate the relationship by being as knowledgeable as possible about your LIS (laboratory information system). If you are able to converse in a knowledgeable manner you will garner their understanding and support easier.

Alternate Resources

Consider all your possible resource providers. You have vendors for your instruments that can provide computer interface documentation which can provide invaluable. Ask them if they have any help desk trouble shooting information for the instruments and their associated software.

The LIS vendor provides application manuals, software utilities, and training courses at the their facility. Take full advantage of these offerings, doing so can facilitate your implementation and support of your LIS applications. Also, join their user group which is a group made up of users just like you at other hospitals. This group can assist you since they may have already experienced a problem you are having. The user's group has an annual conference each year where members of the group along with the LIS vendor staff give presentations on various topics. These topics can include such things as trouble shooting, new applications, upgrades, and general interest topics. There may be a web site for members of user group and joining will give you access to it. It is a convenient way to get a quick response from other users on shared problems such as unique setups or methods and new issues (e.g. regulatory, ABN forms and billing changes, among many others).

Alternate Resources, continued

If you are new to the world of UNIX there are numerous books published on the topic ranging from the new user at a basic level to the more advanced at the server management level. You can find these publications at your local book store. One such title is “UNIX in Plain English” ISBN 1-55828-549-0, this is an older version and I think it has been updated. I like this particular book in that it is to the point and gives the information in somewhat of a dictionary format, so it is very easy to get to the information.

Another more advanced reference book is “UNIX and LINUX system administration handbook”, ISBN-13: 978-0-13-148005-6, ISBN-10: 0-13-148005-7.

Don’t forget about doing a “Google search”. I have Googled AIX error messages and found the answer online on many occasions. Be creative and look for information anywhere you can imagine.

The case of the ...

On the next pages I will go through some examples of common scenarios that will hopefully illustrate the troubleshooting of them.

When troubleshooting any scenario, it is important to use your head for something other than to wear your face on. My point is that using manuals is certainly good, but they are not foolproof, they were written by someone, remember the pencil eraser ☺. If you just think through the situation logically and not restrict yourself to a manual you will find the process more enjoyable and intuitive. If you happen to be the kind of person who enjoys puzzles, then you might also find yourself looking for problems to solve and enjoying it.

Part of the troubleshooting process is also looking for another way to accomplish something, also known as a “workaround”. While that does not solve the problem, it will get your staff back to work and take the pressure off. Getting the pressure off your back can greatly facilitate your troubleshooting and fully resolving the problem. While there are those strange people who enjoy the pressure, it is not the norm.

No Results from Instrument

Alright, you have been called because the big chemistry analyzer is not sending results to your LIS application. What do we do next? Well, we start by making a note of who is calling this problem in, is it the person who is running the tests on the machine or someone maybe even in another department. Is there a senior technologist on the shift and have they been made aware of the problem? If not, then make sure they have been given the opportunity to get involved and maybe fix the problem (remember having eyes on the problem directly can be very important.) Make sure you are talking with the right person!

Ask the caller if this is affecting other instruments as well. Is it a problem with all the samples or just some, if just some are the barcodes reading on the instrument? If the barcodes are being read then are there any error messages on the instrument data manager such as, "Host Communication Failed." If the barcode labels are not being read has the label been reprinted on a different printer to rule out bad barcodes? Has the barcode reader on the instrument been checked and cleaned? If the sample ID is entered into the instrument data manager do the results cross to the LIS? If not, then have the network cables been checked to make sure they have a good connection at the instrument and at the wall plug. Is there an A/B switch in the interface cable and is it positioned correctly? Have there been any power glitches about the time this problem started? If so, has the interface been checked in the interface menu and/or has the instrument been rebooted since the power glitch?

port" when restarted. If that fails, then stop the interface via the interface menu and then log into the terminal server and reset the port. Then log out of the terminal server and restart the interface. Check to see if problem has been resolved. Note that if you are unable to telnet to the terminal server, you should try to "ping" it to see if it is alive. If you cannot ping it then you have found the problem. Keep in mind that if the terminal server is down then you will not be able to read barcodes, nor will you be able to send results from the instrument. Now, if the terminal server pings Ok, you have logged into it and logged the port, but you are still not getting any results from the instrument, then you need to verify the instrument is actually sending the results. A note here, Coulter instruments due to the way results are handled will have a problem sending results to the interface if the instrument memory is full. It will still print out the results, it just will not send them anywhere. Other things to check for are; interface is running in the test environment, patch cable in computer area is not connected well or has been changed. So, you see there are many things to be considered in trouble shooting a problem.

7.1

Possible solutions to No Results

The most common reason for no results being received from an instrument is a problem with the communication which in most cases is via a terminal server such as a Xyplex. The first step would be to try restarting the interface since some interfaces have been set up to automatically "log the

No orders from the HIS

When not receiving orders from the hospital system it is necessary to determine where the problem is in a chain of interfaces. So, the first thing to do is to check the status of the interfaces to see if any are not running. The normal chain will usually consist of at least two or more individual interfaces. If one of these interfaces is not running, then the “chain” is broken, and no orders will be processed. Please fill in the needed information on page 9.2 That information may be obtained from your LIS vendor team.

If the time stamp of the most recent order is much older than the current time then no orders are being received from the HIS and you must then have them look into their “sending” interface. Even though their sending interface may be working there is often another piece in between called an “Interface Engine”. This is a computer that does nothing but translate the information from one system to the other, so they are speaking the same language. Sometimes this computer can be hung and although it appears to be working from the HIS side it is not actually sending any information and most always will need to be rebooted by the HIS staff.

An improperly formed record can cause the order creation interface to either hang or stop running.

HIS not receiving results

When the HIS is not receiving any orders from the LIS (laboratory system) you should check the interfaces to make sure they are all running properly. Normally you will have one or more result reporting interfaces running.

If you have access check the sending interface, look for any errors, especially an errno=78 or errno=79 message. Both of these errors are caused by problems on the HIS side and will need to be addressed by the HIS staff.

Please fill in the needed information on page 9.2 so it will be easier to look at the correct interface. This information may be obtained from your implementation team.

There could also be a problem with the “interface engine” if one is present and would need to be addressed by the HIS staff.

Cannot cancel print job

Having a print job that cannot be canceled is most always if not always associated with a “network” printer. The normal printer status check options do not work when the network printer queue is at “Running”. There are two common situations that bring about this condition.

First, the network card (NIC) could be hung and needs to be reset. The NIC is sometimes internal to the printer in which case the solution is to power off the printer, disconnect the power cord from the power outlet, wait ten seconds, reconnect the power cord and then turn the printer back on. After doing that the job will start printing, nothing will happen in which case the print queue is now in a “Down” state or the job is still at “Running”.

Second, the print job itself could be corrupted and the NIC cannot process the data. In this case the job will need to be canceled at the UNIX command prompt.

These examples given illustrate the different conditions you may encounter during your on-call rotation. There are many other situations, all with their own unique trouble shooting steps and solutions.

7.5

My client information

TMS ID: _____

Environments (alab, mlab, etc.):

Env. (i.e. mlab)	Site Name (i.e. "Somewhere Hospital)
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

My important numbers (tele. Pager, etc.):

8.0

Check lists for my site

Make sure the following things are done for each environment:

9.0

Instruments marked with interface ID

Communications cables marked at wall plugs

Printers marked with printer ID

Workstations marked with IP address

PC Anywhere host is running on support PC

Users trained to:

Check printer status and restart

Check interface status and restart

Reprint a report or reports

Load labels to printer and calibrate if needed

Recognize a “print server” attached to printer

Users know their “Site ID” and “environment”

Users know where the “server” is located

Users know where the “wiring closet” is located

At least one senior tech. with advanced system permissions per shift.

On-Call name and number posted in lab (LIS Staff)

Local Help Desk number posted in lab

Know to call local help desk, LIS staff, before the LIS vendor.

Check list for environment: _____

Make sure the following things are done at each environment:

Check each item when confirmed

- Instruments marked with interface ID
- Communications cables marked at wall plugs
- Printers marked with printer ID
- Workstations marked with IP address
- PC Anywhere host is running on support PC
- Users trained to:
 - Check printer status and restart
 - Check interface status and restart
 - Reprint a report or reports
 - Load labels to printer and calibrate if needed
 - Recognize a “print server” attached to printer
- Users know their “Site ID” and “environment”
- Users know where the server is located
- Users know where the “wiring closet” is located
- At least one senior tech. with advanced system permissions per shift.
- On-Call name and number posted in lab (LIS Staff)
- Local Help Desk number posted in lab

- Know to call local help desk, LIS staff, before the LIS vendor.

Date of completion: _____

Verified by: _____

Environment Manager:

Environment Manager Telephone #:

9.1

Things I should know about my site/envir.:

*If single site then just environment: _____
(otherwise then a form for each.)*

HIS name and Receiving, Sending and other interfaces names:

Receiving: _____, Sending:

_____, Other: _____

GUI LIS applications:

My interface sequence for incoming orders is:

_____, _____, _____, _____, _____,

_____, _____, _____, _____, _____,

_____, _____, _____, _____, _____,

My interface sequence for outgoing results is:

_____, _____, _____, _____, _____,

_____, _____, _____, _____, _____,

My terminal servers (iTouch, Xyplex, etc.) are located:

I have _____ servers and they are located:

9.2

My list of interfaces:

ID (mlab, etc.)	Full Name	Envir.
--------------------	-----------	--------

[illegible][illegible]

9.3

Trouble Ticket

Local Trouble Ticket

Date:

Time:

Complaint:

Contact:

Site:

Application:

Module(s):

Printer(s):

Interface(s):

Workstation(s):

Report(s):

Example(s):

TMS Task Number:

Remarks:

them to take any action other than informing the calling party to contact their system administrator for assistance.

To help with a potential problem, ask your staff to use one finger and type very slowly when responding to a “change password” request by the system since if they make a mistake you will be called, the LIS vendor cannot fix it.

Problems contacting the LIS vendor

If you encounter problems contacting the vendor for technical support after hours make sure you have called the correct contact number.

If asked to leave a message, please do so, the staff after hours is more limited than during business hours and the Technical Support Specialist may be on the telephone with another client. However, should you not get a return call within ten minutes then please call the number again.

10.0

End Notes

Security and passwords

Be aware the LIS vendor cannot change, enter, or renew passwords for the lab staff after the initial go-live has been completed. This is for your sites and patient’s protection and to also be in compliance with HIPAA. There is no way to ascertain for certain the identity or status of anyone calling the LIS vendor to make any changes to passwords, so therefore it is impossible for

11.0

Entering and updating support tasks

12.0

When entering a task make sure the first characters in the description are specific to the problem, this and the following criteria make the handing and processing of the task easier and faster for all concerned.

If there are multiple problems, then enter each in a separate task. That is because the different problems may need to be sent to different departments in order to address them.

When updating a task, if the update is concerning a different problem (even if it appears related in some way) enter the problem in a separate task and reference the task you think may be related.

TERM	Definition	Glossary
Backup	A copy of data whether it be patient results, operating system files or software files that is placed on another hard disk, tape or some other media in addition to the original data.	
Baud rate	The speed that data is transmitted from one place to another. Some devices can not transmit or receive at faster rates and should use a lower baud rate.	
CAT 5	Designation for a connecting cable that meets certain standard for conduction and non-crossover between conductors. Contains 4 pairs of wires for a total of eight wires.	
Command prompt	In UNIX the system prompt that is seen where commands must be entered. On Windows systems the window that is opened to execute system commands such as "ipconfig" etc..	
Concentrator	A piece of hardware that connects many serial devices to a single server port. It is generally located next to the server. Not that used anymore, terminal servers used more often and are located away from the server and closer to the devices.	

CORBA	Common Object Request Broker Architecture. A standard endorsed by the OMG (Object Management Group), the Object Request Broker (ORB) software that handles the communication between objects in a distributed computing environment. Also, a soup made with rice and flavored with lemon, sometimes containing chicken or chicken livers.
DBA	Database Administrator. The person responsible for managing data at a logical level, namely data definitions, data policies and data security.
DBMS	Database Management System. A complex system of programs and utilities used to define, maintain, and manage access to large collections of online data.
Down queue	Most often related to a printer queue and indicates that the communication between the server and the printer has been interrupted. Also, may be a queue associated with an interface which will most likely be seen as an "queue is full" message in interface trace.
Engine	A computer that is placed in between the HIS and the LIS and serves to interpret the data streams between the two. Can be a source of problems with receiving orders and sending results.
FSO	File System Overload, indicates that a file system has grown to a point that it needs attention by the System Eng. staff at SCC to correct.

FTP	File Transfer Protocol, a method of moving files from one place to another between computers.
HACMP	High-Availability Cluster MultiProcessing
HIS	Hospital Information System
Host	A host is a computer that serves to facilitate data transmission back and for between client computers.
Hub	A hub is a physical device that handles data transmission between different computers. The data is transmitted to all the computers that are connected even though only one requested it.
Interface	Is a software program that transfers information between a computer and other devices such as instruments. Can also describe what you see in order to work with a computer.
IP	Stands for Internet Protocol and is used in conjunction with an address (such as 192.168.1.0) in order to communicate with a specific device.
ipconfig	Is a system command which will when used without switches return the IP address of the network adapter in the computer that it is ran on. Used to identify the specific workstation you are using.
iTouch	Is a commercial name for a brand of terminal server.
LAN	Stands for Local Area Network. Normally confined to a small area such as a building or facility
LIS	Laboratory Information System

Network	A physical system which interconnects various devices and computers so they may communicate with each other. Can be either or both wired or wireless.
Network Adapter	A physical device that serves to connect a computer or other device to the network.
NIC	Network Interface Card, essentially the same as a "network adapter". A physical device which has an IP address and allows communication between computers and other devices.
NAS	Network Attached Storage, a storage medium (usually hard disks) which is attached to a network and allows computers that are part of the network to store and retrieve data from it.
ODBC	ODBC is an open standard application programming interface for accessing a database. By using ODBC statements in a program, you can access files in a number of different databases, including Access, dBase, DB2, Excel, and Text.
ORACLE	Oracle is a relational database management system developed and copyrighted by the Oracle Corporation. An Oracle database, is a collection of data managed by an Oracle database management system or DBMS.
Patch Panel	A physical panel that allows the configuration of connections to be made and changed as needed by moving one or both ends of a "patch cable" between sockets.

Print Queue	A software file that stores print jobs in the order received and holds them until they have been successfully printed by the physical printer.
prnterc file	A software file stored on the system that holds the information the system needs in order to associate a print queue with the printer so that jobs may be sent to the printer.
Quick launch	The small section containing icons on the bottom left of a Windows computer screen. Clicking the icon will launch the associated application.
Running queue	This is a condition where the printer status says "Running" and it indicates that a job has been sent to a network printer but the printer has not acknowledged back to the computer that the job has been successfully printed.
SAN	Storage Area Network, in it's simplest definition is a collection of hard disks that have been made available to more than one computer system in order to maximize the utilization of the storage media, to allow ease of data sharing between systems and in most cases provide backup and redundancy.

Server	A computer that has been designated as the focal point for communication between computers and devices on a network. It allows for security of the information as well using user logins and passwords with permission settings for each user to each piece of data stored on it. Alternately the word server has been used to describe modules of software.
SQL	Structured Query Language, a system of commands that are used to access information in a SQL database.
Switch	A physical device which is very much like a "Hub" which allows communication between computers and devices but which knows which computer requested which information and sends the data only to that computer rather than broadcasting it to every computer as a Hub does.
System tray	The small section containing icons on the bottom right of a Windows computer screen. These icons display for applications that are already running on the computer and right clicking can elicit a popup menu with options that can be selected.
Task Manager	A Windows utility that is executed by pressing Ctrl-Alt-Del keys all at the same time. The utility will enable you to kill a hung or misbehaving application

TCP/IP	A suite of computer communication protocols that connect networks and allows them to communicate with each other over the Internet. TCP verifies data transmission between a client and a server. IP moves the data to the appropriate node on a network.
Terminal	A physical device which is used to communicate with a computer system. Can be a workstation PC, handheld, etc..
Workstation	A PC which is used to place orders, results tests, run reports, place queries, etc..
WAN	Shorthand for "Wide Area Network". This is a network that is physically outside of your LAN (Local Area Network). Usually more than one LAN interconnects with a WAN.
WTR	Is the "writer" component on the aux. or mirror system that writes the patient data to a hard disk database that is receives from the companion program on the main system that sends the data.
Xyplex	A terminal server. Xyplex is the brand name but has become a common name for all terminal servers in general much as "Kleenex" has for all tissues.

QUIKIDS (Quick Factoids)

Workstation frozen – Others work Ok, reboot frozen one.

No login – Others work Ok, reboot this one. None work, check network first, restart GUI second.

Application hourglass – Others Ok, kill session with “task manager” (Ctrl-Alt-Del), reboot workstation, recheck.

Instrument Interface not working – Is it running, will it run if restarted, host communication error on instrument? Check to see if running in other environments. Port open failed message in trace, check terminal server for ping, logout port.

No results to HIS – Is Receiving, Sending interfaces running? Errno=78 or errno=79 in trace, problem on HIS side.

No orders from HIS – Is Receiving interface running?

Barcodes not reading on instruments – If more than one instrument, then reprint labels on another printer and retest.

Barcodes not reading on one instrument – Check interface,

Multiple instrument interfaces not working – Check to see if terminal server is OK, test by pinging terminal server name. Older systems may be a concentrator problem, physically check concentrator for errors

Printer (one) not working – Check status, if down then restart, if running the cycle power on NIC (internal to printer or external device).

Printer (multiple) not working – Check terminal server if used or concentrator.

No orders in LIS – Check the orders interface and restart if not running or is hung.

Revisions:

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