Agilent OpenLAB CDS

Network Requirements

Agilent Technologies

Notices

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This product may be used as a component of an in vitro diagnostic system if the system is registered with the appropriate authorities and complies with the relevant regulations. Otherwise, it is intended only for general laboratory use.

Software Revision

This guide is valid for revision A.02.01 of Agilent OpenLAB CDS.

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1 Network Requirements for OpenLAB CDS

This chapter describes the network requirements that must be met in order to support the environmental computing needs of OpenLAB Chromatography Data System (CDS).

Introduction

OpenLAB CDS systems rely on network infrastructure in order to support the communication between various system nodes. This communication is based on standard TCP/IP protocols. In order to provide optimum performance and uptime, the network must meet design criteria for available bandwidth, IP address assignment, name resolution and appropriate isolation of the lab subnet from the corporate network.

LAN Connectivity

When using LAN communications to connect workstations or instrument controllers to an instrument, use one of these methods:

- Directly connect the instrument using a crossover CAT-5 cable
- Connect via an isolated switch (see "Network Isolation" on page 11) using standard CAT-5 network cabling

LAN communication hardware should be 100/1000 mbps speed capable. LAN cards should *not* be teamed for system communications.

NOTE See the *Options Installation Guide* located on the EZChrom Edition Drivers disk for further information regarding vendor specific instrument connections to an EZChrom Edition system.

LAN Power Management

Avoid data capture or transfer interruptions in your data acquisition system by making LAN communication cards available for instrument and system component communications.

Windows may be set to turn instruments/components off to save power while sleeping or hibernating. To change this setting:

1 Go to **Start > Control Panel > Network and Sharing Center**[1].

2 Select **Change adapter settings**. Right-click **Local Area Connection > Properties > Configure**.

3 Select the **Power Management** tab.

4 Clear the **Allow the computer to turn off this device to save power** check box.

[1] View the items by icon to see a list of all items.

Firewall Settings

If you are using a third party firewall or antivirus software on the network where OpenLAB CDS is installed, open these firewall ports to allow communication between the system components of OpenLAB CDS. These apply to workstation system as well as distributed systems as instrument communications rely on these communication channels:

Port 25:	Agilent OpenLAB send eMail (SMTP)
Port 67 and 68:	BootP Server communications
Port 1433:	SQL Server (Default Port)
Port 3424:	Transfer of diagnostics information between system components, such as AICs and clients, and OpenLAB Shared Services
Port 3389:	Remote Desktop Protocol by the ChemStation AIC
Port 4879:	Required for Headspace events
Port 5432:	PostgreSQL (Default Port)
Port 6570:	Subscribenet: active retrieval and release of product licenses
Port 6577:	Communications of OpenLAB Shared Services related information. This includes instrument and run status, active trace data, and global configurations
Port 6624:	Agilent OpenLAB REST API
Port 8084:	Agilent OpenLAB Licensing support
Ports 8085-8089:	Alternative to port 8084 if that port is in use by another page or process
Port 8090:	Hosts the viewing page of current license grants and consumptions found in the OpenLAB Control Panel administration interface
Ports 9001-9002:	AIC communication with instruments and shared servers
Port 9753:	Task-based messaging communication between acquisition controllers and chromatography clients Configurable during AIC registration. It is required that all ports designated during AIC registration be opened for access.
Port 10000-10010:	Status and acquisition communication with Agilent 7890 GCs

Ports 27000-27009:	Communication of license availability
Dynamic Ports:	Temporary communications between clients and instrument controllers The ports used depend on the operating system in use and are configurable. Refer to the operating system documentation for more information.

The OpenLAB CDS installer will automatically open these ports on an enabled Windows firewall during installation.

Domain Requirements

Domains support the flow of information and user access rights across machines in the network. This means that all machines and instruments within the networked OpenLAB CDS system must reside within the same domain or have the appropriate cross domain trusts to allow name based communications between all components in the system. In the case of a workstation installation, domains are only relevant if you are using a Windows domain-based authentication model. In this case the workstation or client must always be able to communicate with domain components in order to function as expected.

When installing OpenLAB CDS on Microsoft Windows 7, Windows 8.1, or Microsoft Windows Server 2008 R2 systems ensure that you are logged into the machine as a domain user that is a local administrator. This will allow the OpenLAB CDS installer to apply network exceptions to the Windows firewall under the domain profile to result in a functional system. The components necessary to support OpenLAB CDS on a domain are:

- *Domain controller* – broadcasts the domain name and negotiates access to machines.
- *Domain name server (DNS)* – maintains records of what hostnames belong to which IP on the network. This component is always required for effective components communications in networked systems.
- *Active directory* – maintains the list of users and their access rights on the domain.

NOTE The domain name server (DNS) must be able to resolve the IPv4 address of all instrument controllers and instruments. Any unresolved instrument controller or instrument will disrupt the functionality of OpenLAB resulting in errors or delays. IPv6 is not supported and must be deactivated.

NOTE OpenLAB CDS components may not be installed on the same machine as the domain controller.

The domain components above host a variety of services and settings that must be configured appropriately to allow communication across machines. The following services and settings will need to be configured to fit your domain. Your internal IT group is responsible for proper configuration of any custom domain solutions. These include settings for:

- Lookup zones and hostnames
- Group and security policies
- Subnet masks and Virtual LANs

Environments with Proxy Servers

The servers in your environment (for example, ECM server, Data Store server, or license server) must be accessible via http or https in the network. If you use proxy severs, make sure that accessing the servers is possible. If required, adjust the proxy settings.

Network Isolation

A networked OpenLAB CDS system should be isolated from network environments that experience frequent failures due to faulty switching, viruses, or worms. If network isolation is not possible, workstations should be reconfigured and disconnected from the problem network until these issues can be resolved. On an isolated network name resolution services must be hosted by a separate machine to enable proper communications between system components by name.

An isolated network is completely physically isolated, so that no LAN switch connections on the network are shared with the corporate network infrastructure. Figure 1 on page 12 shows a simple client/server topology. In this example, the connection highlighted in red prevents isolation of the system.

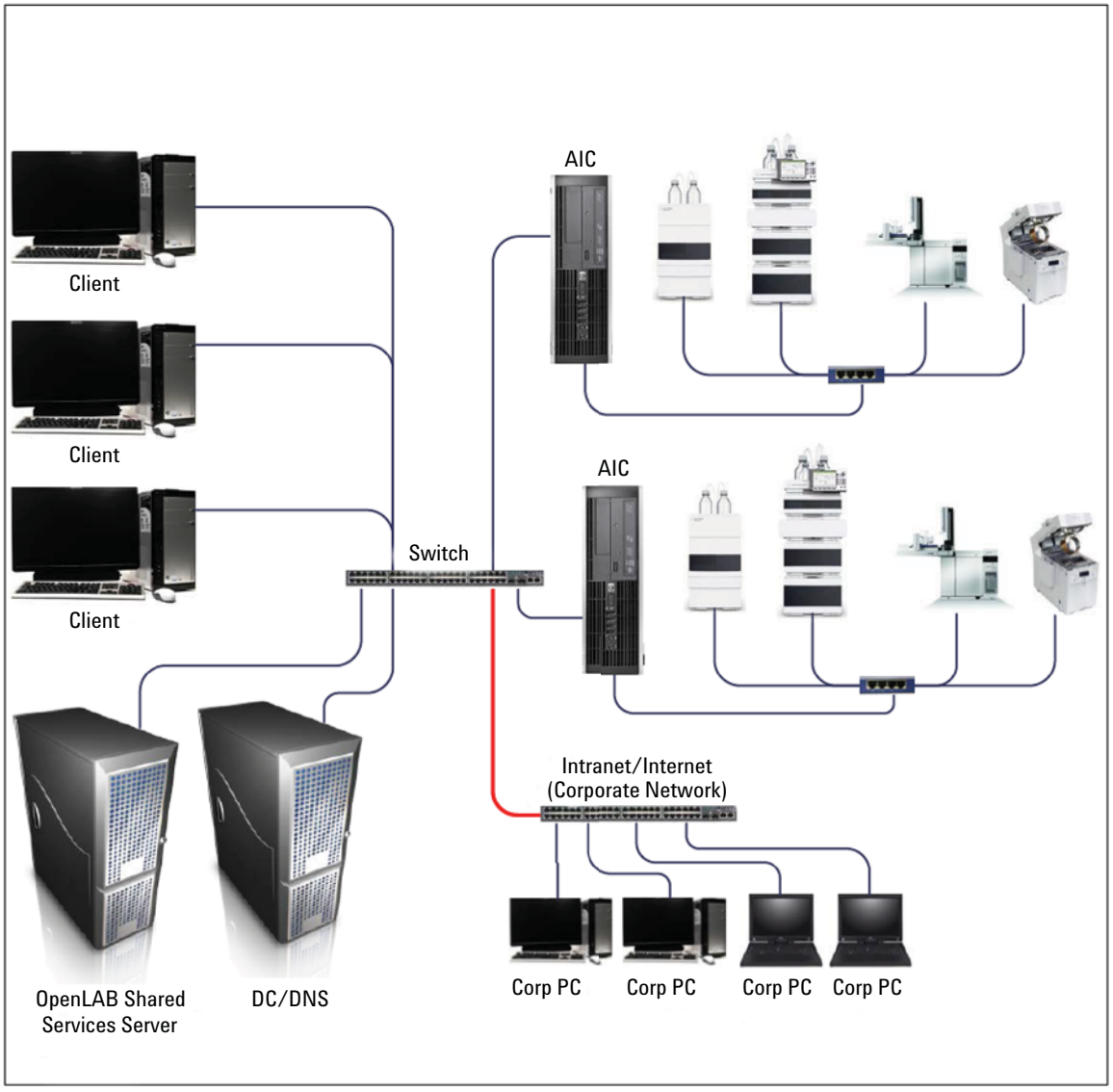

Figure 1 Sample client/server topology: Network Isolation

Databases

For systems configured to use a database external to the OpenLAB Shared Services Server, the network separation between the database and the Shared Services Server must be minimized for best performance. The database and shared services server should be physically connected to the same switch for optimal performance.

Application Virtualization: Instrument Controllers

When using virtual machines as OpenLAB CDS instrument controllers confirm that the virtual network connection used allows access to other system components with no routing between instruments and the instrument controller. Virtualization of instrument controllers introduces a risk to data buffering functions for the system. In the event of a network failure, the connection to the instrument will be severed and acquisitions in progress will fail. To avoid this scenario use physical instrument controllers.

Important Notes

- TCP/IP networking is required for all products.

  WANs (wide area networks) are not supported.
- LAN folder sharing is required for EZChrom client/server systems on Storage Location (Enterprise Path).

  Distributed File Sharing (DFS) is not supported for the Enterprise Path on the Enterprise machine.

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In This Book

This guide provides the network requirements for supporting the Agilent OpenLAB Chromatography Data System (CDS) family of products.

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