Agilent OpenLAB Chromatography Data System (CDS)

EZChrom and ChemStation Editions

Network Requirements

Agilent Technologies

Notices

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CAUTION

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Contents

Introduction

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

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 communications

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*) using standard CAT-5 network cabling

LAN communication hardware should be 100/1000 or Gigabit speed capable. LAN cards should NOT be teamed for system communications.

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 **Windows>Control Panel>Network Connections>Local Area Network>Properties**.
2. Select the **power management** tab.
3. Un-check **Allow the computer to turn off this device to save power**.

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 67 and 68: These ports are used for the receipt and response, respectively, of BootP server communications.

Port 80: This port is used by OpenLAB Data Store or OpenLAB ECM.

Port 3424: This port is used for the transfer of diagnostics information between system components, such as AICs and clients, and OpenLAB shared services.

Port 3389: This port is used for Remote Desktop Protocol by the ChemStation AIC.

Port 6570 (default): This port is used for the active retrieval and release of product licenses.

Port 6577: This port is used for the communications of all shared services related information. This includes instrument and run status, active trace data, and global configurations.

Ports 8084-8089: These ports are used as an alternative to port 8090 if that port is in use by another page or process.

Port 8090: This port is used to host the viewing page of current license grants and consuptions found in the OpenLAB Control Panel administration interface.

Port 9000: This port is used for configuration of Agilent 7890 GCs.

Ports 9001-9002: These ports are used by AICs to communicate with instruments and shared servers.

Port 9753 (default): This port is used for all task-based messaging communication between acquisition controllers and chromatography clients. It is configurable during AIC registration. It is required that all ports designated during AIC registration be opened for access.

Port 10000-10009: These ports are used for status and acquisition communication with Agilent 7890 GCs.

Ports 27000-27009: These porst are used for communication of license availability.

Dynamic Ports: Dynamic ports are used for 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 Window 7 or 2008 server 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: 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

Network isolation

A networked OpenLAB CDS system should be isolated from network systems 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 shows a simple client/server topology. In this example, the connection highlighted in red prevents isolation of the system.

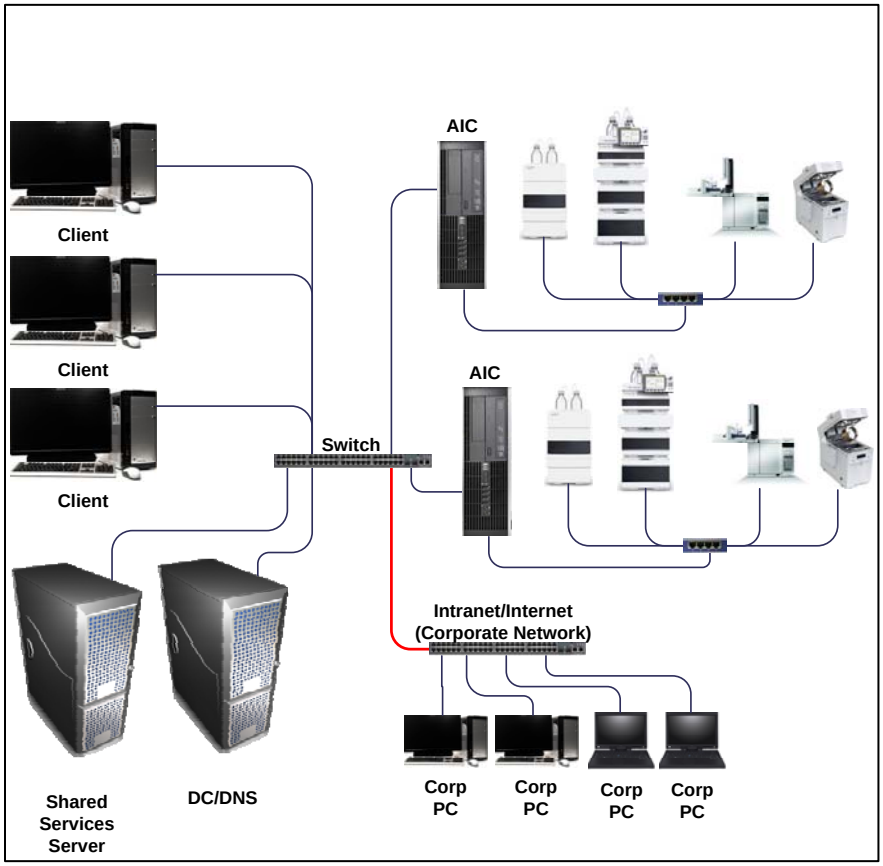

Figure 1 Sample client/server topology: Network Isolation

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 norouting 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 isntrument will be severed and acquisitions in progress will fail. To avoidd thiscenario use physical instrument controllers.

Important notes

- TCP/IP networking is required for all products. WAN's (wide area networks) are not supported.
- LAN folder sharing is required for client/server systems on Storage Location (Enterprise path). Distributed File Sharing (DFS) is not supported for the Enterprise Path or the Enterprise machine.