

Coalesce Directory Service (CDS)

## CDS User Guide



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## 1. Introduction

The Coalesce Directory Service (CDS) provides an IT-friendly mechanism for finding displays near you throughout the enterprise. This service is an optional component that enables users to click-to-connect to Coalesce displays near you from a dropdown list on their client devices. Without CDS, users can still connect to any Coalesce display near you either by entering the display IP in a browser window or in the Coalesce client itself.

### 1.1 Why would I use CDS?

Typically, CDS is used when multiple Coalesce displays are deployed on enterprise networks, and it is installed during the initial deployment phase. Use CDS on your network for any of the following reasons:

- To enable click-to-connect capability on networks that do not allow broadcast.
- To choose which displays near you should and should not appear to users for connection.
- To enable users on your network to connect without entering an IP address or launching Coalesce from their browsers.
- To enable user to connect without displaying an IP address on the Coalesce display.
- To enable users to view which displays are locked and how many users are connected to the display on the network.

CDS software comes with Coalesce at no additional cost and runs on a Windows computer that is connected to the same network as the display software host computers. To access this additional program, visit [blackbox.com](http://blackbox.com), search for WC-COA and download the newest version available under Resources. Then install the program on your Windows computer.

This guide serves as a functional overview of CDS. There is a separate Coalesce Product Reference Guide that details the Coalesce control settings and user features. You can also find additional details in the tool tips that are included in the software itself.

### 1.2 Coalesce Directory Service (CDS)

Coalesce can use UDP broadcast for click-to-connect capability without the need for CDS. However, if UDP broadcast is disabled on your network, users will connect by entering the IP address of the display host PC, or CDS is available as an alternative. CDS is available as an IT-friendly mechanism for displays near you throughout the enterprise. CDS uses lightweight TCP/IP packets over ports 53200, and 53201, which will need to be allowed through the host machine's firewall, as well as on the network(s).

CDS enables the click-to-connect mechanism that allows Coalesce client devices the ability to connect to displays near you by selecting the display name from a dropdown list. CDS is a standalone application that needs to be installed on a Windows computer residing on the same network as the displays. This CDS host computer can be a server or workstation that is being used to provide other network services such as DNS.

Setting up CDS for a campus: A university campus uses both wireless and wired networks that are bridged by routers that do not forward UDP broadcast discovery packets. Instead CDS is installed on an IT server that is reachable by both networks. Each display is given an intuitive name for the click-to-connect feature. For example, displays are named "Classroom1" through "Classroom100." The administrator then uses the Coalesce Central to select all Coalesce displays near you by clicking the "Publish Display Name to Coalesce Directory Service" setting under the "Enable Click-to-Connect" field.

When students arrive at campus, they are presented with a splash screen that informs them of both the display name and an IP address. If a student doesn't have the Coalesce client app, they open a browser and type the display IP address to connect and share. Their new client app now points at the CDS host machine on the campus network. When the client app is next opened, all classroom display names will be shown in a dropdown list. From now on, the student can use the click-to-connect feature to connect to more displays.

*NOTE: Click-to-connect does not circumvent on-screen security codes and passwords that may be enabled.*

## 2. Installing and Configuring CDS

Install the CDS service on a windows PC (or in a Virtual Machine environment) connected to the network where your Coalesce displays reside. Next, open the Coalesce Central and select the Coalesce display(s) near you that you want to make available/visible to Coalesce clients. In the "Configuration and Security" tab, two settings must be configured correctly. First under "Enable Click to Connect," select the option to "Publish display name to Coalesce Directory Service." This will tell your displays to list themselves with the CDS using their currently set display name. Next, under "Network," the "Primary CDS Host (not required)" field must be populated with the IP address of the Windows computer or server on the network with CDS installed on it. These two settings can also be updated from the Coalesce display software Configuration Panel if you are configuring a single display at a time. Finally, in the "CDS" tab of the Coalesce Central, click the button to "Configure Primary CDS Host" and enter the same IP address of the CDS host machine. The CDS tab should show you more displays that are being served by CDS.

In the "Configuration and Security" tab, two settings must be configured correctly. First under "Enable Click to Connect," select the option to "Publish display name to Coalesce Directory Service." This will tell your displays to list themselves with the CDS using their currently set display name. Next, under "Network," the "Primary CDS Host (not required)" field must be populated with the IP address of the Windows computer or server on the network with CDS installed on it. These two settings can also be updated from the Coalesce display software Configuration Panel if you are configuring a single display at a time. Finally, in the "CDS" tab of the Coalesce Central, click the button to "Configure Primary CDS Host" and enter the same IP address of the CDS host machine. The CDS tab should show you more displays that are being served by CDS.

Coalesce clients will also look for a CDS server if one is configured. The set of displays being published by CDS will appear in the application window allowing your users to simply click the intuitive name of the Coalesce display near you and connect. When a user's device launches a client from their browser, their CDS entry will be set based on what is configured on the display. This means that once a new user launches a client from a browser, their CDS will be set correctly, allowing that client to use the click-to-connect feature from then on whenever the client is launched.

*NOTE: For CDS to work, the client devices need to be able to connect over the network to the machine running CDS.*

### 2.1 Setting up CDS for a Campus

A university campus has both wireless and wired networks that are bridged by routers that do not forward UDP broadcast discovery packets. Instead CDS is installed on an IT server that is reachable by both networks. Each display is given an intuitive name for the click-to-connect feature. For example, displays are named "Classroom1" though "Classroom100." The administrator then uses the Coalesce Central to select all Coalesce displays clicking the "Publish Display Name to Solstice Directory Service" setting under the "Enable Click-to-Connect" field.

When students arrive at campus, they are presented with a splash screen that informs them of both the display name and an IP address. If a student doesn't have the Coalesce client app, they open a browser and type the display IP address to connect and share to the display. Their new client app now points at the CDS host machine on the campus network. When the client app is next opened, all classroom display names will be shown in a dropdown list. From now on, the student can use the click-to-connect feature to connect to any display on the network.

*NOTE: Click-to-connect does not circumvent on-screen security codes and passwords that may be enabled.*

### 2.2 Optional Network Routing CDS Override

CDS and Coalesce clients have been engineered to support direct network routing so that the IP address of the CDS host machine does not need to be configured. Although this requires modification to the DNS of the local network by the appropriate IT administrators, this approach has some advantages over a traditional CDS installation:

- Users are not required to enter an IP address to connect to a display, even the first time. Instead, any user with a Coalesce client will see a dropdown list of Coalesce more displays and can click to connect.
- Guest users whose client CDS has already been set for/on a different network will still discover the CDS on a network that has been configured with the CDS override.

## 2.3 Configuring Network Routing CDS Override

Option One: The DNS administrator creates a "Coalesce\_customer\_internal" domain zone and adds an "A" record that maps the name "Coalescedirectoryservice.Coalesce\_customer\_internal" to the IP address of the machine where the CDS is installed.

Option two: Coalescedirectoryservice is an unqualified host name because it does not include a domain name such as "blackbox.com" or "university.edu." By leaving off the domain name, we allow the client operating system the option of appending the local domain name. This allows the IT department to add a CDS record to their name server using a proprietary domain name, e.g. university.edu.

For example, the university could add a record to their name server as follows:

Type: A

Name: Coalescedirectoryservice.university.edu

IP: 192.168.1.100

This record is added to the existing zone so that there is no poisoning of the customer's DNS with a "blackbox.com" zone. For this to work properly, the client operating system needs to automatically append the local domain name when resolving the host name, so that the DNS can match it to its record.

This can be accomplished by configuring the DHCP server (typically a wired or wireless router) to provide the default domain name to the client device when it provides the IP address for the device. Devices should then append this domain name to host names when attempting to resolve the host name to an IP address.

*NOTE: Option two does not work correctly on Android devices because the Android OS does not automatically add the domain to an unqualified name. We expect this to be fixed by Google eventually. In the meantime, please use Option One if you expect Android clients to connect to your Coalesce installations within your organization. Alternatively, Android devices can always connect by typing in the IP address of the Coalesce display host computer.*

Both the Coalesce display software and the Coalesce client software communicate to the CDS periodically using lightweight TCP/IP packets over ports 53200 and 53201, which will need to be allowed through the host machine's firewall, as well as on the network(s). Active displays periodically provide an entry to the CDS that includes their current display name and a corresponding IP address. Likewise, client devices will receive a list of available displays from CDS at connection time, allowing users to simply click the display they want to connect to. The corresponding IP address is then used to facilitate connection between the client and display. Displays and clients will automatically attempt to resolve the IP address of the CDS using both of the above methods. No special configuration is required.

If CDS is active and correctly routed on the network, Coalesce Central will indicate this by changing the CDS tab logo from dark grey to bright green. By clicking on the CDS tab, the set of displays that are being added to the CDS and published to client devices on your network can be viewed. Finally, Solstice displays can be added/removed from the CDS on an individual basis by checking/unchecking the "Publish Display Name to Coalesce Directory Service" feature under the Configuration and Security tab.

## 3. Best Practices for CDS Management

- Make sure CDS is needed for your installation. See “Why would I use CDS?” in this guide.
- Install the CDS on a machine that is connected to your network. Ideally, this will be installed on a machine such as a domain controller that has IP routes to all of the subnets that have Coalesce displays and Coalesce clients on them. Good examples are the workstations already being used to manage your network.
- Once CDS is installed and displays are configured, users should connect to one of your displays by launching their clients from a browser. This will set their CDS IP address according to the setting you’ve configured on the display. This is now their “home” network for CDS.
- In small/medium businesses, CDS may not be needed. First try using Coalesce broadcast discovery. If CDS is needed, you can enable it in conjunction with broadcast, and they will both operate to provide users with a list of available displays.



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