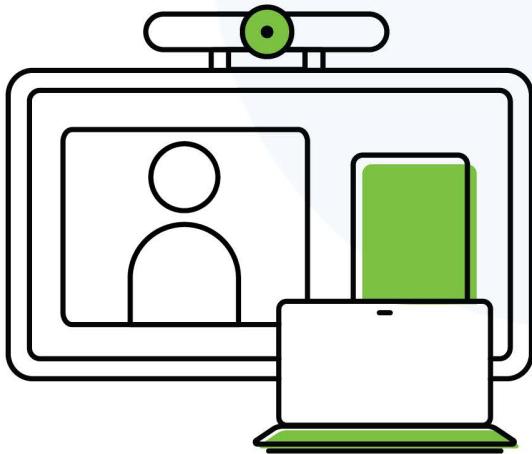
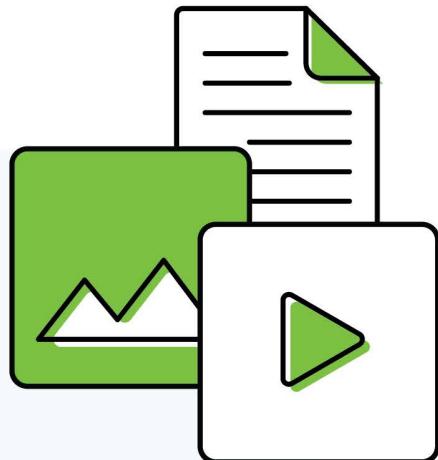




mersive
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Solstice Discovery Service (SDS) Guide

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Table of Contents

Solstice Discovery Service (SDS)	2
Solstice Discovery Service (SDS) + DNS Resolution (Optional)	7
Configure SDS for Multiple Subnets (Optional)	9
Configure SDS to Auto-Restart (Optional)	11

Solstice Discovery Service (SDS)

Display discovery refers to the ability for a user to "discover" what Solstice displays are available to connect to. By default, Solstice utilizes UDP broadcast packets to enable discovery. We realize not every network allows broadcast traffic, so we built Solstice Discovery Service (SDS) to make connecting to a Solstice display fast and easy for users on those networks.

The Solstice Discovery Service (SDS) is a lightweight network application for display discovery that allows users to discover and click-to-connect to Solstice displays from their own devices to start sharing content. Users point their Solstice App to that same SDS host machine's IP address (or they can inherit that setting from the first SDS-configured display they connect to) to see every available Solstice display. The result is the easy click-to-connect experience without the network congestion or security concerns associated with broadcast traffic.

Do I Need SDS?

Typically, SDS is used when multiple Solstice displays are deployed on an enterprise network (or any network that does not allow UDP broadcast traffic), and is installed during the initial deployment phase. SDS should be installed on your network to enable and support these scenarios:

- To enable users to connect to Solstice without entering an IP address
- To enable a one-step meeting start by simply entering the Solstice display's screen key into the Solstice app
- To enable ease of use with Solstice Conference
- To enable users to view which displays/rooms are in use and by how many people
- To choose which displays do and do not appear to users for connection

System Requirements

The Solstice Discovery Service is a free software that must be installed on a Windows computer or Windows server attached to the same network as your Solstice Pods and Windows Software displays. Each Solstice Pod or Software display is configured to point to the IP address of the machine SDS is installed on, which allows the Pods and Software displays to publish their information to the SDS directory.

You must install SDS on a Windows machine with a static IP address and has IP routes to all subnets used by Solstice Pods and client applications. This is because Solstice displays and user apps will use this IP address to communicate with the directory. This can be a PC running Windows 8 or 10, or a Windows Server running 2012 R2 or later and a quad core processor with a minimum of 12GB RAM. A Windows 2016 Server may be used if desktop experience is enabled.



SDS uses lightweight TCP/IP packets over network ports 53200, 53201, 53202, and port 80. SDS traffic through these ports will need to be allowed through the SDS host machine's firewall and on the network.

Many deployments use the same computer for SDS and the Solstice Dashboard, although that is not a requirement.



Pods on Solstice 5.1 or later should be compatible with older versions of SDS. However, Mersive recommends updating your SDS version to 5.1 to benefit from the latest enhancements and retain screen key support for Solstice Pods and Solstice apps on version 5.1 or later. Visit mersive.com/download/get-sds to get the latest version.

How To

Step 1: Download and Install SDS

1. Visit mersive.com/download/get-sds.
2. Under **Newest Version (recommended)**, click the link for the latest version of SDS. The installer will be downloaded.
3. Run the SolsticeDiscoveryServiceSetup_[version_number].exe installer on the Windows host machine or Windows server and step through the InstallShield wizard until SDS is installed.

Step 2: Find the IP Address of the SDS Host

If you already know the static IP address of the machine with SDS installed, move on to Step 3.

To find your IP address, open a Command Prompt window, type **ipconfig**, and hit Enter. The IP address is listed in the results that appear.

```
Command Prompt
Windows IP Configuration

Ethernet adapter Ethernet:
  Media State . . . . . : Media disconnected
  Connection-specific DNS Suffix . . .

Wireless LAN adapter Local Area Connection* 1:
  Media State . . . . . : Media disconnected
  Connection-specific DNS Suffix . . .

Wireless LAN adapter Local Area Connection* 2:
  Media State . . . . . : Media disconnected
  Connection-specific DNS Suffix . . .

Wireless LAN adapter Wi-Fi:
  Connection-specific DNS Suffix . . .
  IPv4 Address. . . . . : 192.168.2.124
  Subnet Mask . . . . . : 255.255.254.0
  Default Gateway . . . . . : 192.168.2.1
```

Step 3: Set the SDS Information to List the Display on SDS

There are two ways you can set the SDS configuration for Solstice: using Solstice Cloud, or using the Solstice Dashboard.

Solstice Cloud

1. Log into Solstice Cloud as an administrator.
2. Using the left sidebar, navigate to **Manage > Pods > Templates > Discovery**.
3. Edit an existing template, or create a new template.
4. Uncheck **Broadcast display name on network** and ensure that **List display to SDS** is checked.
5. In the **SDS Host 1** field, enter the SDS host machine's IP address.



A second SDS host can be listed for Solstice displays that are attached to two networks using Solstice's dual-network capability. Displays attached to two networks will require an SDS host machine on each network in order to utilize SDS (order does not matter).

6. Click **Save**.
7. If the template was already applied to your Pods, the saved settings will be applied across those Pods. If the template was not already applied, you can batch apply it to your Pods by clicking **Assign Pods** and using the Pod Template Assignments table.

Solstice Dashboard

1. On the Windows machine used for Solstice Pod display management, open Solstice Dashboard.
2. Go to the **SDS** tab and click **Configure Primary SDS Host**.
3. In the box that appears, enter the IP address of the SDS host machine, then click **Set**. The SDS tab's icon will turn green to show a connection has been made to this host.
4. In the list of your Solstice instances, select the Solstice displays you want to add to the SDS directory. You can use CTRL+click or SHIFT+click to select multiple displays.
5. Go to the **Network** tab.
6. In the Display Discovery section, uncheck **Broadcast display name on network** to disable broadcast discovery and select **List display to Solstice Directory Service**.
7. In the **SDS Host 1** field, enter the SDS host machine's IP address.

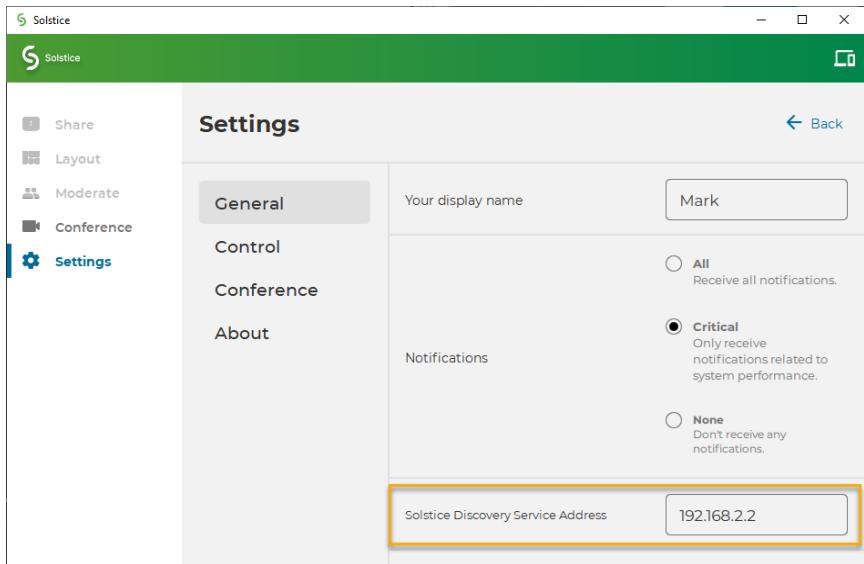


A second SDS host can be listed for Solstice displays that are attached to two networks using Solstice's dual-network capability. Displays attached to two networks will require an SDS host machine on each network in order to utilize SDS.

8. Click **Apply**.

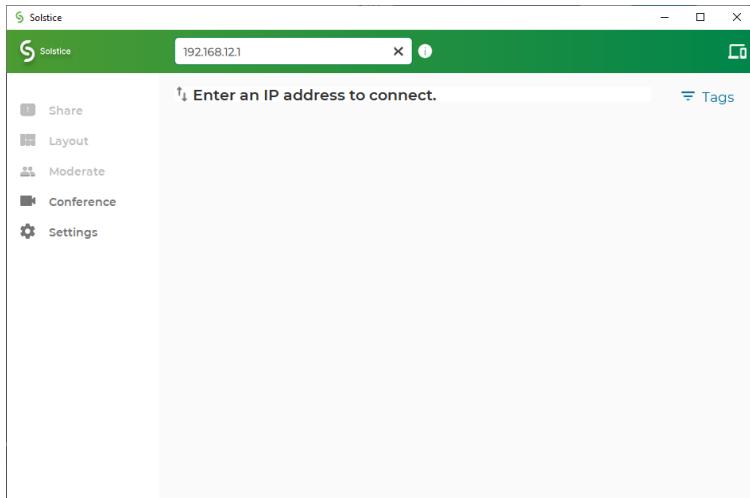
Step 4: Configure SDS in Solstice User Apps

For users to see the Solstice displays listed in the SDS directory, each user will need to do a one-time configuration to enter the SDS host IP address in their Solstice app's Settings. After entering the SDS host, the user will be able to see Solstice displays available for connection every time they open the app.



If centrally deploying the app to end-users using MSI or SCCM, SDS information can be pre-configured during the installation process.

Alternatively, if you have already applied the Discovery template containing the SDS information to your Solstice Pods, SDS will be automatically configured in a user's app when they connect to one of these displays by entering the display's URL in the app's search bar.



Solstice Discovery Service (SDS) + DNS Resolution (Optional)

SDS and Solstice clients have been engineered to support direct network routing so that the IP address of the SDS 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 simple SDS installation:

- Users are never required to enter an IP address to connect to a display. Instead, any user with a Solstice client will see a drop-down list of Solstice displays and can click to connect.
- Visiting users whose client SDS has already been set for a different network will still discover the SDS on a network that has been configured with the SDS override.

Configuring SDS + DNS Resolution

There are two options for how to modify the local network's DNS:

| Option One

The DNS administrator creates a 'solstice_customer_internal' domain zone and adds an 'A' record which maps the name 'solsticediscoveryservice.solstice_customer_internal' to the IP address of the machine where the SDS is installed.

| Option Two

Solsticediscoveryservice is an unqualified host name because it does not include a domain name such as 'mersive.com' or 'university.edu'. By leaving off the domain name, we give the client operating system the option of appending the local domain name. This allows the IT department to add an SDS 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	Name	IP
A	solsticediscoveryservice.university.edu	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 'mersive.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.



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 Solstice displays within your organization. Alternatively, Android devices can always connect by typing in the IP address of the Solstice display host computer.

Using SDS + DNS Resolution

This direct network routing override method does not require the same IP address-related setup as the standard installation. If SDS is active and correctly routed on the network, the Solstice Dashboard will indicate this by changing the SDS tab logo from dark grey to bright green. By clicking on the SDS tab, the set of displays that are being added to SDS and published to client devices on your network can be viewed. Displays can still be added or removed from SDS on an individual basis by checking or unchecking the **Publish display name to SDS** feature on the configuration panel's Network tab.

Both the Solstice Pods and the Solstice app communicate to SDS periodically using lightweight TCP/IP packets over ports 53200, 53201, and 53202, which will need to be allowed through the host machines' firewalls and on the networks. Active displays periodically provide an entry to SDS that includes their current display name and a corresponding IP address. Likewise, client devices will receive a list of available displays from SDS at connection time, allowing users to see and simply click the desired display to connect. The corresponding IP address is then used to facilitate connection between the Solstice App and the display. Displays and apps will automatically attempt to resolve the IP address of the SDS using either of the above methods. No special configuration of the display or app is required.

Configure SDS for Multiple Subnets (Optional)

If SDS is being used centrally to list Solstice displays across multiple locations, each of which has its own subnet, administrators can now group Solstice displays by subnet which will allow a user's Solstice App to only see displays on the same subnet they are connected to. There are two ways SDS can group displays by subnet: based on either a single, global prefix length configured in the Windows Registry OR based on an explicit list of subnets with varying prefix lengths via a text file placed in the Solstice program data folder.

How To

Add Subnets with a Single, Global Prefix Length to SDS

1. Open the Windows Registry Editor.
2. Navigate to the following registry key:

HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Mersive\DirectoryService

3. In the key, right-click and select **New**, then select **DWORD (32-bit) value**.
4. Name the value "subnetPrefixLength".
5. Right-click the value and select **Modify**.
6. Enter the prefix length into the **Value data** field. For example, you can enter in the prefix length value of 16.
7. Under the Base options, select the **Decimal** radio button.
8. Click **OK**.
9. Restart the SDS Service.

Add Subnets with Varying Prefix Lengths to SDS

1. Create a .txt file named "subnets.txt".
2. Add the IP address of each Pod as a new row in the text file. Each IP address should be followed by a forward slash, then the prefix length. Each IP address should be its own row. For example, an IP address row should read:

192.168.3.0/24

3. Save the .txt file and place it in the following location:
-

C:\ProgramData\Mersive\Solstice\DiscoveryService

4. Restart the SDS service.
-

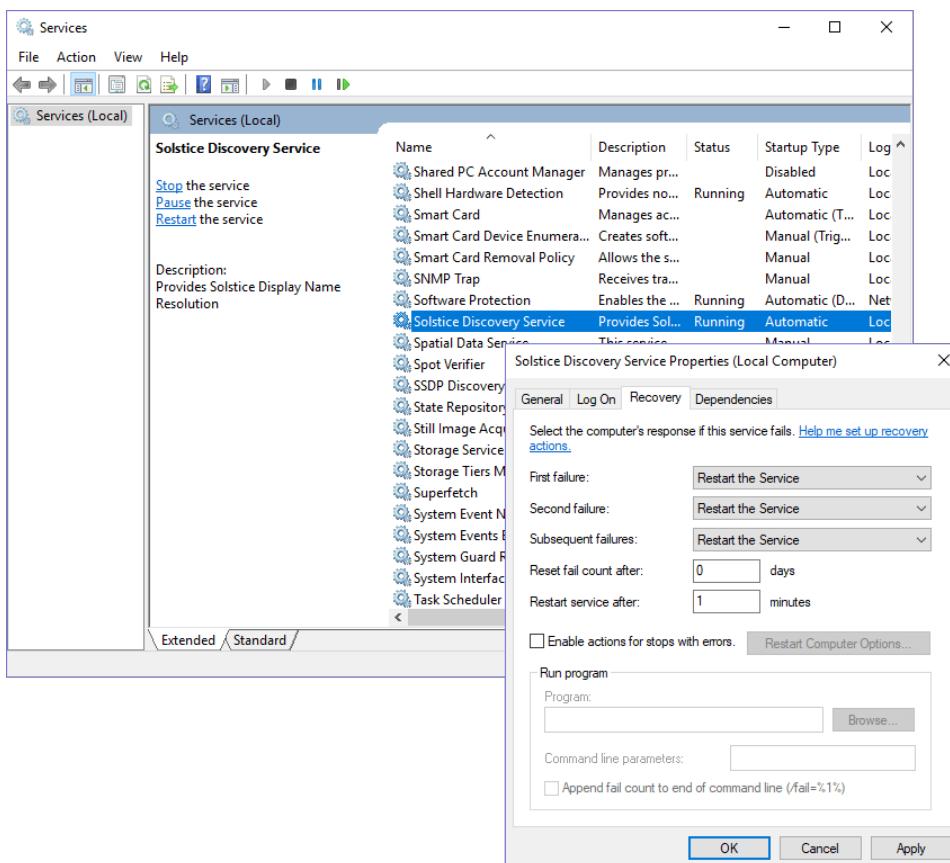
Configure SDS to Auto-Restart (Optional)

It is recommended that customers who deploy SDS configure the Windows host machine to automatically restart the service if it ever stops running. Enabling the auto-restart of SDS on the Windows host machine will reduce the risk of SDS becoming unreachable by the Solstice Pods, Apps, Dashboard, and/or Windows Display Software instances.

How To

Configure SDS to Auto-restart if the Service Goes Down

1. Navigate to the Windows Start menu and search for “Services”.
2. Open the Services desktop app.
3. Find Solstice Discovery Service in the list, then right-click and select **Properties**.
4. Go to the **Recovery** tab.
5. For the **First, Second, and Subsequent failures** options, select **Restart the Service** from the dropdowns.



6. Click **Apply**, then click **OK**.