

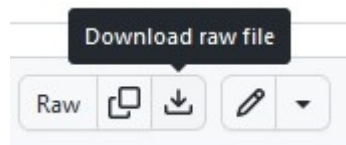
# Counter-Strike 2 Low Latency DOCSIS Trial Instructions

## Purpose

Counter-Strike 2, a free to play game, provides network statics and the ability to enable/disable Low Latency DOCSIS (LLD) from within the game client. For this trial, we would like to collect network statistics for different scenarios while LLD is enabled and disabled.

## Setup

1. Install the Steam application: <https://store.steampowered.com/>
2. Install CS2 from within the Steam application.
3. Once installed in your Steam library list, right click CS2 and select "Properties..."
4. Under General>Launch Options, type: `-console -sw`
  - a. `-console` allows opening of the console window to enter game commands
  - b. `-sw` allows the game to be run in a window instead of full screen. It also allows moving the mouse cursor outside of the game window to use other apps like Notepad and the iPerf traffic tool.
5. Close the Properties window.
6. Download and unzip the Traffic Generator tool. Please download this version even if you have done so previously:
  - a. [https://github.com/jlivingood/IETF-L4S-Deployment/blob/main/iperf3-GUI-windows-x86\\_64-10102023-v2.exe](https://github.com/jlivingood/IETF-L4S-Deployment/blob/main/iperf3-GUI-windows-x86_64-10102023-v2.exe)
  - b. Click the "Download Raw file" button to properly download the .zip file.



7. In the Steam app, select CS2 in the game list and click Play.
8. We recommend changing your video settings to make getting to the iPerf tool and Notepad easier:
  - a. Click the cog to access the game options.
  - b. Under Video, change your Display Mode to "Windowed" and lower your Resolution so you can see your Windows desktop.
9. Close the options window.

Note: Currently only the Windows version of CS2 supports LLD.

## Playing CS2 and Collecting Data

CS2 requires you play through a tutorial against bots before you can play public matches. The tutorial is run locally with no network activity and should be completed before running the below tests.

These instructions will place you in “Casual” mode which places you in an unranked match. It is not recommended to do the tests in a ranked mode as you will be doing activities outside of the game window and lose control of your character. If you die before 5 minutes of gameplay, it is OK to spectate for the remaining amount of time.

## Running the Tests

There are three scenarios we would like you to gather stats for.

### Test 1 – No Low Latency with No Background Traffic

1. Press ` to open the console window.
2. Enter this command to disable Low Latency: `net_option ecn -1`
3. Click Play
4. Select Matchmaking
5. Select Casual
6. Pick a map and click Go.
7. After 5 minutes, type these commands:
  - a. `clear` : clear the console window first.
  - b. `net_option ecn` : record low latency setting for the record
  - c. `net_connections_stats` : outputs the game session’s network stats
8. Right click in the console window and select “Save to Log”
9. Save the file with the name: `cs2-1.txt`
10. Quit the match.

### Test 2 - No Low Latency with Background Traffic

1. Open the iPerf traffic generator tool.
2. On the main CS2 screen, press ` to open the console window if it is not already.
3. Enter this command to disable Low Latency: `net_option ecn -1`
4. Click Play
5. Select Matchmaking
6. Select Casual
7. Pick a map and click Go.
8. When the match is ready. Click the play button in the iPerf tool. It will run for 5 minutes and then stop.
9. Just before the 5 minute timer runs out in the iPerf tool, run these commands in the console window:
  - a. `clear` : clear the console window first.
  - b. `net_option ecn` : record low latency setting for the record
  - c. `net_connections_stats` : outputs the game session’s network stats
10. Right click in the console window and select “Save to Log”
11. Save the file with the name: `cs2-2.txt`
12. Quit the match.

### Test 3 - Low Latency with Background Traffic

1. Open the iPerf traffic generator tool.
2. On the main CS2 screen, press ` to open the console window if it is not already.
3. Enter this command to disable Low Latency: `net_option ecn 1`

4. Click Play
5. Select Matchmaking
6. Select Casual
7. Pick a map and click Go.
8. When the match is ready. Click the play button in the iPerf tool. It will run for 5 minutes and then stop.
9. Just before the 5 minute timer runs out in the iPerf tool, run these commands in the console window:
  - a. `clear` : clear the console window first.
  - b. `net_option ecn` : record low latency setting for the record
  - c. `net_connections_stats` : outputs the game session's network stats
10. Right click in the console window and select "Save to Log"
11. Save the file with the name: `cs2-3.txt`
12. Quit the match.

## Subjective Testing

The above testing will provide quantifiable data demonstrating the benefits of low latency while gaming, but it does not provide a good situation for the player to "feel" a benefit. CS2 is in a genre of games that should noticeably benefit in a real match against other players when high amounts of action are on screen.

If willing, we would like our trial users to also play more populated deathmatches with LLD enabled and disabled. And if feeling brave, with the iPerf traffic generator running in the background. We would welcome feedback on how the gameplay feels not just during this LLD trial, but also compared to past matches where you noticed moments where gameplay slowed down or the frame rate dip during high intensity moments.

## Send In Your Results

If you want to run the tests more than once each, we welcome the extra data!

Please use this form to upload the notepad files with data you collected using the console commands: <https://app.smartsheet.com/b/form/b57ea3a3364f4b69a97c4ed1fbc37a74>

Please use this form to provide your subjective feedback on playing regular deathmatches outside of collecting the network statistics based on past patches and matches with LLD enabled and disabled: <https://app.smartsheet.com/b/form/1f8a26bed7ab40a5916fb1ad7f5ebf23>

**Thank you!**

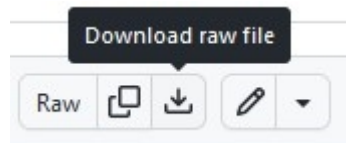
# Dota 2 Low Latency DOCSIS Trial Instructions

## Purpose

Dota 2, a free to play game, provides network statics and the ability to enable/disable Low Latency DOCSIS from within the game client. For this trial, we would like to collect measurable network statistics for different scenarios while LLD is enabled and disabled.

## Setup

1. Install the Steam application: <https://store.steampowered.com/>
2. Install Dota 2 from within the Steam app.
3. Once installed, in your Steam library list, right click on Dota 2 and select "Properties..."
  - Under "Launch Options", type the following: `-console -sw`
    - i. `-console` allows opening of the console window to enter game commands
    - ii. `-sw` allows the game to be run in a window instead of full screen. It also allows moving the mouse cursor outside of the game window to use other apps like Notepad and the iPerf traffic tool.
4. Download the iPerf traffic tool that will generate upstream traffic. Please download this version even if you have done so previously:
  - [https://github.com/jlivingood/IETF-L4S-Deployment/blob/main/iperf3-GUI-windows-x86\\_64-10102023-v2.exe](https://github.com/jlivingood/IETF-L4S-Deployment/blob/main/iperf3-GUI-windows-x86_64-10102023-v2.exe)
  - Click the "Download Raw file" button to properly save the .zip file.



Note: Currently only the Windows version of Dota 2 supports LLD

## Configuring the Match Settings

1. In the Steam app, select Dota 2 in the game list and click Play.
2. In Dota 2, click Play DOTA in the lower right of the game window.
3. Under Custom Lobbies, click +CREATE.
4. To the right of Lobby Settings, click EDIT.
5. Configure the settings as shown below:
6. Server location: Pick US West or US East based on your location.
7. Set lobby visibility to "unlisted" and set a lobby password to make sure other players do not bother you.
8. Click OK.

## GENERAL LOBBY SETTINGS

GAME NAME

GAME MODE

LOBBY PASSWORD

SERVER LOCATION

LOBBY VISIBILITY

☐ Hide Password  
☐ ENABLE CHEATS  
☐ IMMORTAL DRAFT ⓘ

### ▼ ADVANCED LOBBY SETTINGS

#### COMPETITIVE

SELECTION PRIORITY

STARTING TEAM

PENALTY - RADIANT

PENALTY - DIRE

LEAGUE

#### GAMEPLAY RULES

SPECTATORS

DOTA TV DELAY

PAUSING

SERIES TYPE

#### BOT SETTINGS

☒ FILL EMPTY SLOTS WITH BOTS

RADIANT DIFFICULTY

RADIANT BOTS

DIRE DIFFICULTY

DIRE BOTS

## Running the Tests

There are three scenarios we would like you to gather stats for.

### Test 1 – No Low Latency with No Background Traffic

1. Press \ to open the console window.
2. Enter this command to disable Low Latency: `net_option ecn -1`
3. Click Start Game.
4. Click Skip Ahead to enter the match immediately. There is no need to play the match and you can idle by the fountain.
5. After 5 minutes, type these commands:
  - a. `clear` : clear the console window first.
  - b. `net_option ecn` : record low latency setting for the record
  - c. `net_connections_stats` : outputs the game session's network stats
6. Right click in the console window and select "Save to Log"
7. Save the file with the name: `dota1.txt`
8. Quit the match.

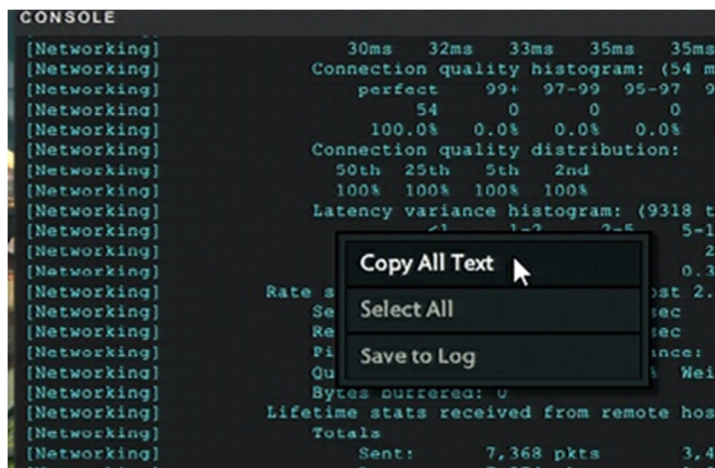
### Test 2 - No Low Latency with Background Traffic

1. Back on the main Dota2 screen, press \ to open the console window if it is not already.
2. Enter this command to disable Low Latency: `net_option ecn -1`

3. Open the iPerf traffic generator tool and click the Play button. It will run for 5 minutes and then stop.
4. Click Start Game.
5. Click Skip Ahead to enter the match immediately. There is no need to play the match and you can idle by the fountain.
6. Just before the 5 minute timer runs out in the iPerf tool, run these commands in the console window:
  - a. `clear` : clear the console window first.
  - b. `net_option ecn` : record low latency setting for the record
  - c. `net_connections_stats` : outputs the game session's network stats
7. Right click in the console window and select "Save to Log."
8. Save the file with the name: `dota2.txt`
9. Quit the match.

### Test 3 - Low Latency with Background Traffic

1. Back on the main Dota2 screen, press \ to open the console window if it is not already.
2. Enter this command to disable Low Latency: `net_option ecn 1`
3. Open the iPerf traffic generator tool and click the Play button. It will run for 5 minutes and then stop.
4. Click Start Game.
5. Click Skip Ahead to enter the match immediately. There is no need to play the match and you can idle by the fountain.
6. Just before the 5 minute timer runs out in the iPerf tool, run these commands in the console window:
  - a. `clear` : clear the console window first.
  - b. `net_option ecn` : record low latency setting for the record
  - c. `net_connections_stats` : outputs the game session's network stats
7. Right click in the console window and select "Save to Log."
8. Save the file with the name: `dota3.txt`
9. Quit the match.



## More Data Is Welcome!

Running additional tests and choosing a Dota 2 server location furthest away, i.e., selecting US West if you are in Pennsylvania, will provide additional data points because of added latency. The geographic area can be selected under "Server Location" when you are configuring the match settings.

## Send In Your Results

Please use this form to upload your notepad files with collected game statistics:

<https://app.smartsheet.com/b/form/b1b7c10f57fa4750b1d140452b74f3f6>

**Thank you!**