There are a lot of misconceptions in the Kodi world about what buffering is, what causes it, why it happens and how to help avoid it. So I wanted to write an article addressing some of the causes of buffering and how to help minimize it, Please note that I did not say eliminate it as this is impossible.

But before we get into the buffering discussion I want to explain a little bit of how Kodi actually works and explain what is happening behind the scenes when you open up Kodi Addons and stream sources.

Kodi is a media center program. At its core it is simply a program that has the ability to play video files. Obviously Kodi does much more than that, but at the most simple level it simply plays video content.

Within Kodi you can add additional programs called addons. Each of these addons provides access to lots of different types of video content.

So let's go through what happens when you open up an Kodi addon. When you click to open up an Kodi addon the addon directs your unit to go to a specific URL. From this URL the addon opens up its initial menu. You may next click on a sub menu such as Movies or TV Shows. Clicking on any of these sub menus directs your unit to another specific URL.

So let's skip to the point where you have found the video content you want to watch and are given a menu with a list of stream sources to choose from. Each one of these stream source choices is basically a link to a URL that is supposed to have a file there ready to stream to your TV.

As you can see, kodi and all of the addons within it are basically search engines for finding video content.

Sometimes when you click on a stream source you will get an error message. Some examples of these are (File Not Found, File failed to Play, Script Error, Playback Failed Check log files.)

If you see an error like this when you click on a stream source it is because of one of three things.

The file has been moved and is not at the URL that your unit was directed to.

The URL that the addon directed your unit to is not a good link anymore.

The stream source is down or has so much traffic that it cannot take on any more streams.

None if these errors are caused by the unit you are using Kodi on. Blaming the unit would be like calling Microsoft and telling them the computer you bought is broken because you went to a website and got a 404 error (Website not Available.)

If you have used the internet I am sure that you have seen that websites sometimes have issues, go down, 404 errors, servers overloaded. This is no different within XBMC Kodi.

So now I have explained how Kodi works and how it is basically a search engine for video content. And we have also explained that sometimes the URL your unit was directed to could be down, file missing or there servers could be over loaded let look at buffering and why it happens.

What causes buffering in Kodi?

I have read some very interesting theories and ideas on as to why buffering happens. From people thinking that there graphics card can't handle the stream, the processor is working too hard. I have even seen someone swear that Kodi is throttling the streams because they don't want people using their program to watch certain things (This is impossible by the way as Kodi cannot control internet transfer rates from third party servers.)

As complicated as people want to make buffering issues out to be, it is actually very simple. There are really only two variables that can cause buffering issues within Kodi.
You're Internet Speed

The first and usually most overlooked reason that buffering occurs is your own internet speed. Many users try to skimp out on upgrading their internet speed. If you are going to stream your video content you need fast internet. While you can get away with 10 Mbps down for most streams, this is really the minimum speed needed for a good streaming experience using Kodi.

What is the recommend internet speed for Kodi? This is a personal preference but we recommend for an optimal streaming experience you should have 25 Mbps or higher.

There are also several other factors that can affect your own internet speeds. The most common negative factor is Wifi. Wifi is extremely convenient for connecting lots of devices to the internet without having to connect them with a wire. With this convenience comes a downside. Wifi signal fluctuate up and down very often which can lead to buffering.

I cannot stress enough how quickly Wifi signal and speeds degrade over distance and through obstacles like walls. People are under the impression that if they are getting a wifi signal to a device that the device is getting the same amount of bandwidth as they pay for.

Another huge factor with your internet speed is who else is using it and what are they doing. If you have 10 Mbps down and a family member is downloading a bunch of stuff and another family member is playing an online game then there is a strong chance your video content is going to buffer.

Another great tip to help increase your speed is to reset your router once a week. Your internet provider spent time and money finding a router that they can give you that works just enough to provide a decent signal. They skimped and penny pinched as much as they could to save themselves money. So your stock router is not of the highest quality. With that being said, over time these routers degrade in the speed they are able to broadcast. By simply unplugging the

router for 30 seconds and then plugging it back in we have seen many customers internet speed double. If you haven't reset your router in a long time or forever it is a great idea to do this.

So to summarize your internet speed and how it effects buffering in Kodi.

Minimum of 10 Mbps Down, while the preferred speed is around 25 Mbps Down.

Connecting your unit to the internet via an Ethernet cable is ideal

If you must use Wifi, make sure the unit is very close to the router (15 feet or under is ideal)

Make sure you have reset your router recently.

Keep in mind what others in your household are doing on the internet. If they are doing anything bandwidth intensive it can affect your streaming.

So let's get into the second source of buffering within Kodi. The second half of all of your video streams is the stream sources ability to give you data. You can have 100 Mbps down and be hardwired via Ethernet, but if the stream source cannot give you enough data you will get buffering.

Video content files are stored on servers. These servers have a limit in how much data they can transmit out to people. When these servers reach a level of users they get overloaded and are not able to give out as much data as may be needed for an end user to stream a file with no buffering.

Servers are not cheap to buy, rent or operate. So before you get upset that a stream source is buffering please ask yourself how much money you have contributed to the host who is paying for the server. My guess is that the answer is $0. The gracious people that host these servers do it because they love helping people get content for free. They pay for these servers out of their own pockets. Please keep this in mind.

We know that everyone wants to watch the latest episode of something or the newest movie that is available. But please remember that so does everyone else around the globe. So when you go to load up the newest released video file and experience buffering it is most likely because thousands if not millions of other people are trying to watch the same thing. When a server gets hit with thousands of people streaming a file it can get overloaded and unable to give out enough data to everyone.

A good way to think about this is driving on the highway. Would you voluntarily go for a leisurely drive during rush hour and then complain about the traffic? Of Course not, you would go out driving after rush hour is over.

We are all eager to watch the latest video content, but I can assure you that you will encounter much less buffering if you wait one extra day to watch whatever you are trying to watch.

So let's sum up some of the misconceptions about buffering in Kodi.

Buffering has nothing to do with your units Processor speed, Graphics processing power or RAM.

Buffering has nothing to do with your hardware.

Buffering is not caused by Kodi throttling your speeds.

What causes buffering?
Slow internet speeds on the users end.

Wifi signal being weak and or degraded by distance or having to go through walls or other obstacles.

Other users on your internet network hogging bandwidth.

The stream sources server being overloaded with too many users.

The stream sources server having internet issues.

Your internet provider having fluctuations in their internet service.

How to minimize buffering in Kodi

Have at least 10 Mbps actually getting to the unit. 25 Mbps is preferred

Hardwire your unit directly to the internet via an Ethernet cable.
Reset your router once a week. (unplug it)

Don't try to watch brand new content the same day it just became available. Give it a day and you will get less buffering.

Pause a stream for a minute or two to allow it to build up some data in the Cache.

While most of the streams that you click on within Kodi will work with no problems at all, you are going to encounter streams that just can't give you enough data for whatever reason. You can have 100 Mbps and be hardwired and you will still have links that won't stream without buffering. It has nothing to do with your hardware or Kodi itself. It is just because the server can't give you enough data.

If you encounter a stream that isn't playing smoothly, stop the stream and choose another one. It is that simple.

I wish we could tell you that every link will work and every stream will play flawlessly with zero buffering, but we cannot. The people who host these files and video content do it to help other people out and provide it for free. Sometimes they may be having internet issues, or there servers are overloaded.

So follow all of the steps to help minimize buffering within Kodi and you will have a much better experience.

If you do happen to encounter a stream that isn't playing perfectly try to remember that they are giving you this for free because they enjoy helping others out.

There are literally hundreds of different ways to find video content within Kodi. If one stream isn't working there are 100 more to try.

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