

# Downloading From TiVo

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In “Merging Netflix and TiVo” in the previous issue of *The Perl Review*, I went through my Perl program to combine the data from my Netflix queue and my cable TV provider. The next step in that process is scheduling my TiVo to record those programs, but I haven’t automated that part yet. Once recorded, however, I have a program that downloads them from my TiVo and un-TiVos them for me. Once I have them, I can translate the files to the format that I need using `ffmpeg`.

To get files from my TiVo to my computer in a form that I can view involves some XML processing, web user-agents, and the help of a couple of external programs. I tie these together to create a cron job that downloads and converts everything automatically so I don’t have to think about it.

## ■ Why not TiVo? -----

TiVo already provides a solution that does exactly the same job, but it only works on Windows. The Windows software connects to my TiVo machine over my home network, authenticates itself, and fetches the shows I told it to download.

For some reason, TiVo’s Windows software is incredibly slow. Not only that, my Windows box is a bit temperamental; it would work for a few weeks, then stop renewing its DHCP lease. That was probably something I had configured incorrectly, but I finally decided that the time I spent wrestling with Windows to make the TiVo software work would be better spent automating the task. Once automated, I could even change the workflow to be exactly what I wanted.

There are various other free- and shareware programs that attempt to do the same thing, either for Windows or Mac, but I could never get them to work correctly. Some wouldn’t connect to my TiVo and others wouldn’t download files. Even though some of those programs are open source, the time to figure out the mess code code that other people write is worse than the time to mess with my temperamental Windows box. The situation might have improved since I stopped looking a year ago, but now I have a solution that works for me.

Lastly, as most Perl programmers will probably already be thinking, once I have my program working, I can make it do anything I like. I’m not constrained by the GUIs of third-party software. I really just want something that runs without me having to do anything. Although GUIs can be nice, they force you to accept what other people think you should do.

## ■ Downloading from TiVo -----

My TiVo box is connected to my home network and has an IP address just like any other host on the network. I’ve configured my local DNS so that the host `tivo.local` points to my TiVo, and I’ll use that host name for the rest of the article. You’ll have to figure out the address for your own box.

The TiVo box runs its own webserver, and I go to `https://tivo.local/nowplaying/index.html`. When it challenges me for a username and password, I use “tivo” for the username and my Media Access Key (MAK) as the password. From the “Now Playing page, I can download shows through the links it provides. These files are special `.TiVo` files that I’ll need to decode before I can view them. To get the MAK, on my TiVo I look in the `TiVo settings > Account & System Information > Media Access Key`. There should be a different MAK for each TiVo account.

I could write a `WWW::Mechanize` script to handle the downloads, I guess, but that’s a little too much work to parse the page, sort through the links, and so on. The TiVo web server can also send me an XML document with everything I need to know so I don’t have to crawl the website. I won’t go through the XML format in this article, but I’ve included an article from XML.com in the *References* section. I don’t have to worry about that too much because the `Net::TiVo` can take care of all of the XML downloading and parsing for me.

The `Net::TiVo` module only gives me access to the meta-data though. Once I get a list of the shows and their download links, I still need to get that data. Since I have the link, that’s a simple matter of using `LWP` to handle the transaction for me. It’s slightly tricky because the TiVo web server uses digest authentication.

## ■ The basic process -----

In *Code Listing 1 (next page)*, I show the meat of my TiVo downloader program. There are three major things I need to work out before I get down to business. I’ll go through the main part of the program first then show the subroutines later.

First, since I want my program to run repeatedly, either from cron or the command line, I keep a `DBM::Deep` file around so I can track which files I’ve already downloaded. I don’t care to delete programs from the TiVo once I’ve downloaded them so I have the option of viewing them on TV or on my computer., and sometimes the transfers fail (a full disk being the main

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