Note: I refer to a personal computer as a "PC". This is not meant to discriminate against Mac users. A Mac is a "personal computer" too….

Open this page in a browser: http://www.sagetv.com/requirements.html?sageSub=tv

Leave this browser page open as you read this document. It will be referenced several times.

To start:

1. You need a PC.
    a. Which Operating System?
        i. See the web page you opened (above) - SageTV works on most of the usual suspects, though is more buggy and has more hassles on some compared to others. This document will not recommend one, because different users have different familiarity levels with different systems. But as the web page shows, SageTV works with various flavors of Windows, with Linux, and with Mac. Seems like the most issues that you will see posted in the forums are with Vista, but that could just be a perception. If you are comfy with several OS's and want advice, just post a question in the forum – people will be glad to chime in with pros and cons.
    b. Will you watch TV on the PC?
        i. Yes.
            1. It must meet specs on the webpage you opened (above).
                a. Note the requirements "For HDTV playback" if you intend on that.
        ii. No, but I will watch on other "client" PCs
            1. Those PCs must meet the requirements on the same page above.
        iii. No, I will watch on Extenders only.
            1. If you are using the SageTV HD200 Extender, your "server" PC (where the SageTV software runs) must meet the minimum requirements listed on the page above "For Hardware Encoding". Not much, right?
        iv. NOTE: although this page recommends 256 Mb of RAM, most Sage users recommend at least 1 Gb, if not 2 Gb. Also, you may want to adjust your java heap size – search the user forum for posts on this topic. None of this is (likely) required… but people seem to report better/faster performance when doing it.
    c. If you want to watch on an existing TV but not have a PC sitting nearby, you need to buy an "extender".
        i. SageTV (in the store) sells the proprietary "HD Theater Extender", aka, HD200. It is one of very few extenders on the market that can stream full HD to a television.
            1. The HD200 does all the decoding within the box, so it takes that load off of the server (hence the lower system requirements in "1.a.iii" above). For this reason, many users choose to watch via HD200 even if their HTPC is physically sitting right next to the TV… it makes everything easier on the PC.
            2. It plays almost any video format you throw at it… see the specs on the webpage.
            3. It also operates in standalone mode, without accessing the SageTV server software. It has USB ports for media, or can search your network for media stored on drives.

4. It has no cooling fan and thus is silent, unlike a PC (or even most DVRs/Tivos).

ii. Another extender which works with SageTV is the Hauppauge MediaMVP. It is SD-only and requires all video decoding work to be done on the server. For this reason, and for simple future-proofing (when we all eventually go all-HD, right?), it is strongly recommended by almost all SageTV users that you go with the HD200 Extender. As most owners will tell you, "it just works".

iii. Other devices can be used as extenders with some mods, such as an Xbox.

2. How many tuners do you need?

a. Watching "live" TV counts as use of a tuner.

i. Everything you watch, whether "live" or not, is actually being recorded by SageTV, even if being shown to you in that same instant.

b. Every show you record simultaneously requires a separate tuner.

i. You can combine antenna ("over the air", or "OTA"), satellite, and/or cable (SageTV will sort them out). You do not need to only pick one for your TV service.

ii. So if, for example, you want to watch a "live" show while recording two other shows, you need three tuners.

1. Think about the shows you regularly record and whether some of them are shows which are frequently re-shown.

a. Is everything a one-time, first-run, "won't be shown again until the summer reruns" show? Or are they shows that are shown 15 times within a week (i.e., almost everything on PBS). SageTV is smart enough to find another airing if a show is re-broadcast, so keep that in mind if you watch a lot of frequently-shown programs. If you can get by with less tuners, you will save money.

2. Think about the source for each tuner.

a. Is it a network show that is available on digital/HD cable, analog cable, and local OTA, all at once? Is it a "premium" channel (like HBO) that is only available through your set-top box ("STB")? If you have two must-watch shows that are premium-only, only broadcast once, and are shown simultaneously, then you need at least two compatible tuners with this "type" of recording capability (more on this below).

3. Think about what you need to have in HD.

a. It costs more to have more STBs that can give you HD content (monthly provider fees, plus up-front hardware). Is it worth it to pay more for a second STB (and accompanying Sage tuner) when you could maybe record one show in HD and the other simultaneous show in analog/SD? If one show that you record is on an HD-available channel but was shot in SD, then you could record the SD channel showing instead, and possibly save yourself having an extra HD tuner. It's your choice, we're just giving you options and we don't want you to spend a bunch of money on stuff you don't need.

b. Remember that there are multiple options for HD, specifically when it comes to network programming. You don't need an HD satellite STB (and its monthly fee) to record "Lost" on ABC-HD

if you can get your local ABC perfectly with rabbit ears and a digital tuner card.

    c. In case you are wondering, no one has yet (?) to find a limit on how many tuners Sage can handle. There are several users on this forum who have 10 tuners, and Sage works just fine.

    d. Alright, figured out how many tuners you need? On to the next step:

3. What kind of television service do you intend on having?

    a. Antenna (over the air, "OTA")

        i. We're going to assume you know about antennas… directional vs. omni-directional, outdoor vs. attic vs. indoor, proper mounting and grounding, etc. We're just taking you from that coax cable coming from your antenna, to the SageTV machine… the antenna on the other end of that cable is your business and there are plenty of websites to help you with that.

            1. By this point, you are probably aware of the fact that your old antenna that received analog stations just fine *might* not receive digital as well, when the switchover finally occurs. Hopefully you have already resolved this, or at least feel confortable enough to move forward with what you have. If not, check your reception chances at www.tvfool.com (or www.antennaweb.org).

            2. In case you don't know (and the antenna-making companies don't want you to know, obviously), there is no such thing as an "HD antenna". An antenna is an antenna… a piece of metal that picks up signals in the air based on wavelength, frequency, etc. The tuner into which the antenna is connected is what determines whether you are going to see analog or digital TV.

            3. You may also know that coaxial cable is very "lossy", meaning the longer the cable run, the more signal loss you will have. Depending how far your antenna is from your tuner, you may need to add inline amplification.

        ii. Got a working antenna? Good. Let's face it, if you are just starting now, why bother with analog? Things are going all-digital soon enough. So get yourself a digital ATSC tuner (or however many of them you need, from part 2 above). Go to the webpage you have open (top of this document) and scroll down to "Supported OTA HDTV Tuners (requres SageTV V5 or later)". You need at least one of these. If you get a card, it will need to be installed in your server PC. If USB or network, install it per manufacturer's instructions. Note that some devices have specific instructions for SageTV use.

            1. Probably the most-recommended one on these forums is the SiliconDust HD Homerun, or "HDHR". It is a dual-ATSC-tuner unit, and is a network device, so it does not require a card slot. A side benefit of the device being networked is that it can be located close to the antenna, avoiding the long coax run and the associated signal losses mentioned above. Many HDHR owners who have antennas in the attic or on the roof will run network cable up to their attic or just below, so that the coax cable from the antenna to the HDHR is very short.

            2. The Hauppauge tuner cards seem to be the most-used internal tuner cards.

    b. Cable

        i. Analog

1. If you have basic, analog cable, where the coax just plugs into the back of your TV and no box is used, then there are a number of tuner cards that you can use. See the listing of compatible cards on the webpage that you have open. As with your TV, you will just plug your cable straight into the analog input coax jack on your card.

ii. Free unencrypted QAM (digital)
1. *Most of the general public does not know about this!*
2. If you have any level of cable – analog or digital or whatever – you can get free, unencrypted, digital channels if you have a QAM (or "Clear QAM") tuner. To do this, you will need to run the cable straight into the QAM-capable coax jack, with no STB involved.
   a. Typically QAM is just your "locals" (supposedly required by law) and maybe some cable-access channels and such. Often it will include the cable TV guide channel, or maybe PPV preview channels. Some cable companies include other, "normally cable-only" channels… there's only one way to know what you'll get, and that's to check!
      i. You can also try here, though this is not guaranteed to be correct… scroll down until you see "qam256" on the left:
      http://www.silicondust.com/hdhomerun/channels_us
   b. Note that cable companies don't like the fact that they have to carry QAM, and customer service reps and installers will likely either play dumb (or will actually be "dumb") about it. You are somewhat on your own, but Sage users on the forum are always helpful!
   c. Note that QAM often requires a fairly strong signal, perhaps more than you are used to having for watching analog cable. You may need an inline amp in your cable, especially if you have it split a million ways before connecting to your tuner.
   d. Note that often cable companies move QAM channel locations around (probably to make it a hassle and make you want to pay for digital service). You may occasionally have to re-scan for channels, and re-assign channel names and such. The price you pay for getting digital channels "free"….

iii. Digital SD
1. If you have digital cable or are using an STB (SD), you can connect your output – best to use the S-video, plus audio – to an analog tuner. Then you will need some sort of device to change the channel on the tuner box, such as an IR blaster or USB-UIRT. That way, when Sage (or you, using Sage) changes the channel, it sends a signal to the box to change the channel coming "out of" the STB. Some STBs have serial or firewire (or other?) connections that allow a hardwired channel changing option. All of this can be configured within Sage.
   a. Note: although it can work, it is not recommended that you use a DVR box as your STB for a Sage system. The packaged menus and internal operations of the DVR can (and at some point, will) interfere with the SageTV operation of the device. And besides, why would you want to pay the extra monthly fee when a plain STB would do the same job, and SageTV is now your PVR?
2. You can also use the HD-PVR… see "HD" below.

3. As explained in #2 above, you will need a separate tuner device and STB for each "tuner" you require of this type (digital SD cable). Although this is not intuitive to the general public, this means you will (probably) have all of your STBs located at your server PC (rather than at each TV or "client PC" throughout the house).

    iv. Digital HD

1. If you have an HD STB, the only (current) way to get HD content from it (without some complicated mods that we won't discuss here) is to buy the Hauppauge HD-PVR. It takes the signal from your HD STB via the "component out" cables, and connects to your server PC via USB. It includes a device to change the STB channels as well. These devices are sold in the SageTV store as well as other locations.
2. For every HD Cable tuner you want to have available, you will need a separate HD-PVR. This is where, (as mentioned above in 2.b.ii), you want to consider how many HD Cable tuners you really need. However, it it currently the only "official" way to get HD Cable (and satellite… see below) into SageTV.

c. Satellite (DirecTV or Dish Network)

    i. SD

1. See "Cable/Digital SD" above (3.b.iii).

    ii. HD

1. See "Cable/Digital HD" above (3.b.iv).

4. What you will need to buy

a. First of all, you need the SageTV "Media Center" software, from the SageTV store.
    i. Note that, depending on what other hardware you are buying, you can save by buying it bundled with some hardware.
    ii. Note that there is a interface plug-in (a "customization") that is called "SageMC", with the "MC" meaning "media center". This is not to be confused with the purchased base software, called SageTV Media Center. Yeah, the customization should have been called something else less confusing, but it was named long ago, and it's too late to change it now. On the SageTV forums, if you see reference to "SageMC", it is typically referring to the customization and not to the default software. Most people just seem to call the software "Sage" or "SageTV".

b. For every computer that you will watch TV on (via SageTV), aka "Client PC", you will need to buy a license for "SageTV Client".
    i. Consult with the Sage website as to how many licenses you need when not all client PCs are running simultaneously.

c. For every remote computer that you wish to access SageTV through via the internet, you will need to buy a license for "SageTV Placeshifter".
    i. You can also use Placeshifter on a networked PC similar to "client" above.
    ii. Consult with the Sage website as to how many licenses you need when not all placeshifted PCs are running simultaneously.

d. For every TV in your house that you want to watch your Sage media on (and not have a nearby PC with direct video card out-to-TV in), you will need an extender, such as the SageTV HD200 (see 1.b.iii above). The HD200 comes licensed, so you do not need to buy a separate license.
    i. Use of the HD200 is highly recommended - refer to notes under "1.c" above.

e. You will need tuner devices.

i. These include internal tuner cards, USB tuners, network devices (such as the HD Homerun), or HD-PVRs. You can mix and match. If you have, for example, HD Cable, you would have an HD-PVR for each HD STB, but could also split your cable before one of the STBs. You could then use an analog tuner card to get another tuner with analog cable, and use a QAM tuner card to get the Clear QAM stations on another tuner. This all depends on the signal that your cable provided sends, of course (many cable companies currently send analog, QAM, and digital/HD all in the same cable). Likewise, a dual-tuner device like the HD Homerun, which handles QAM and ATSC OTA, could have cable into one jack (for QAM) and an antenna into the other, if your antenna was able to pick up stations that were not provided in QAM by your cable company.

f. Hard drive capacity

    i. Only you know how much you need. Some people have tens of thousands of MP3s and/or photos. Some people have hundreds of DVDs that will be ripped. Some people record 20+ hours of TV each day, all in HD, while some record 5 hours of TV per week, in SD.

        1. The only advice that can really be given is that you need to follow the SageTV instructions and partition your hard drive(s) into 64K clusters (very important if you want smooth playback). Instructions for doing this are in the SageTV manual.

        2. While many Sage users have high-end equipment with expensive networked storage solutions, SageTV does not require this. Standard internal IDE drives, or USB 2.0 external drives plugged into the server, work just fine.

        3. While there is no "requirement" for this, it seems to be the general consensus around the forums (and common sense seems to dictate) that multiple smaller hard drives (starting around 500 Gb seems to be a good solution) are a better solution than one huge (say, 2+ Tb) drive. Besides the whole advantage of accessing data from one drive while writing to another, you also stand to lose less if one of several drives crashes (if you only had one, and it crashed, you would lose everything, plus have nowhere for SageTV to record).

g. Networking

    i. SageTV home networks are typically hardwired. The HD200 extender is hardwired only (meaning it does not have built-in wireless; obviously you could attach an external wireless devide to the LAN port).

    ii. Network Capacity

        1. The SageTV system can work on a 10/100 network with CAT5e cable - it is a matter of how many streams are passing through any one cable, or a router/switch/hub/NIC at any one time.

            a. If you have an entirely Gb (1000 Mbps) network, you should be completely future-proofed (by a long shot). Unless you are planning to have 25 HD Extenders playing Blu-Ray rips simultanously – in which case, you probably have other issues to worry about.

            b. 10/100 analysis: Unless you have multiple NICs in your server, your system likely only has one cable from the server to your router/hub/switch, and then multiple cables "spidering" out from there. So the bottleneck that represents your "worst case" is likely this segment of the system.

i. On a 10/100 network, you will (most likely) only have issues if you have HD content. An HDTV stream is typically 20-25 Mbps, and SD streams are only a fraction of that. So count each HD stream as ~25 Mbps. You probably also have internet traffic through your system too, which will vary in bandwidth used. Plus, good practice dictates that you don't want to be over, say, 90% of your network capacity (90 Mbps). So to be safe, you wouldn't want more than 3 HD streams going through any 10/100 devices at any one time. This would mean that you could only ever have 3 HD shows playing simultaneously on 3 HD extenders.

ii. Another consideration: if you have one or more networked tuner devices (such as the HDHR), the "incoming" streams are also in the same "worst case" pipeline. In that case, if you had three HD shows recording at once (~75Mbps total), then you wouldn't have the capacity to watch one of them on an HD Extender simultaneously (~25 Mbps more would be "outgoing" in the same pipeline).

iii. Long story short: The size of your system (number of networked devices operating simultaneously and bandwidth required by each) will dictate whether you need to spend the extra money to go with a Gb network. Many SageTV users get by just fine with 10/100 and CAT5e. But if you can afford the Gb network and CAT6 wiring up front, you shouldn't ever have to worry about bandwidth issues on your system.

iii. Wireless
   1. SD: SD TV streams can be done wirelessly and the Hauppauge MediaMVP comes in a wireless version. However, users have reported mixed results, and it is fair to say that you need a clear and somewhat short path from transmitter to receiver, for wireless signal transmission.
   2. HD: While some SageTV users have reported success by using various high-end wireless networking gadgets within their system, the general consensus is that "for the masses" wireless HD technology is "not quite there yet". As always, your results may vary, based on everything from the equipment you use, to the other electronics in your house, to the distance covered by the signal. But most SageTV users will tell you that it is best to go hard-wired if at all possible.

h. Remote controls
   i. The HD200 and Media MVP extenders each come with a remote control, which is fine, but neither has a programmable button that allows you to turn off your TV set or any other media devices. For this reason, some users opt to use a programmable universal remote (such as those by Harmony). In general, these work fine – check the Sage FAQs and forums to see if a particular model is compatible or has any issues.