Workshop 06 Resources and Upgrades

Hardware Resources

Official Documentation

HP has an offical support site for your computer that can be found at here, along with all the manuals. The technical manual is the most useful document for learning about your computer.

Hardware Sites

A large part of building a computer is doing the research into how components fit together. Every time you upgrade one part, it may mean that you have to replace others.

For example, changing your motherboard will may require upgrading your CPU, adding a GPU may mean upgrading your PSU.

There are many sites dedicated to finding, reviewing, discussing and selling PC hardware. A google search will usually turn up one of the following sites:

- Toms Hardware
- Anandtech
- Guru3d

The technical terms used and speed of change can be hard to keep up with, but hopefully the CCC program has prepared you for getting started.

Upgrading or Replacing Parts in your Computer

In this sections we will give you some tips on how and where to get upgrades.

If you are based in Brisbane, there are a few stores that sell on-line with pick-up available. This is usually the cheapest way to buy locally.

For regional areas, we suggest you support you local retailer and find a store as you can usually ask for items to be ordered specially. If you can't buy local, try to find a store with cheap or free shipping.

For small, light items like RAM or even SSD drives buying internationally can be cheaper.

We don't endorse or associate with these stores in any way - this workshop is just about showing you how the online ordering process works.

Finding and Purchasing Parts Online

With so many types and brands of computer components, finding the exact type you need can be hard. We will go through using a store based search system, then introduce usingPCPartPicker, which searches many stores at once.

You will usually need a credit card to make online purchases, but some stores will let you pay when you collect from the store.

Budget Upgrades

Parts you can easily upgrade or replace;

- an *extra* hard-drive
- a *replacement* hard-drive for your OS.
- more *RAM*.
- a dedicated *GPU*.

An Extra Hard Drive

The best use of an extra drive is usually as data storage. This means its a place to store files, but your operating system isn't installed on the drive.

Do I Need an Extra Drive?

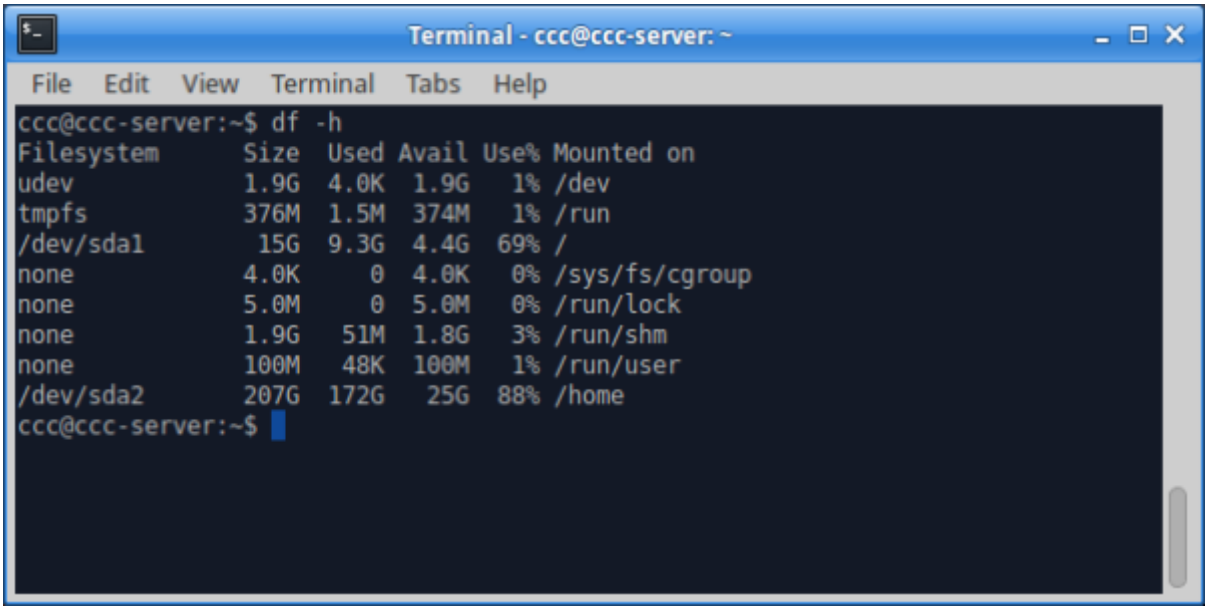
When your drive is about 90 percent full then it's time to think about a new drive.

For example,if your drive is 200gig, you can use about 180gig.

To check the amount of space, in the terminal use the disk free command (df).

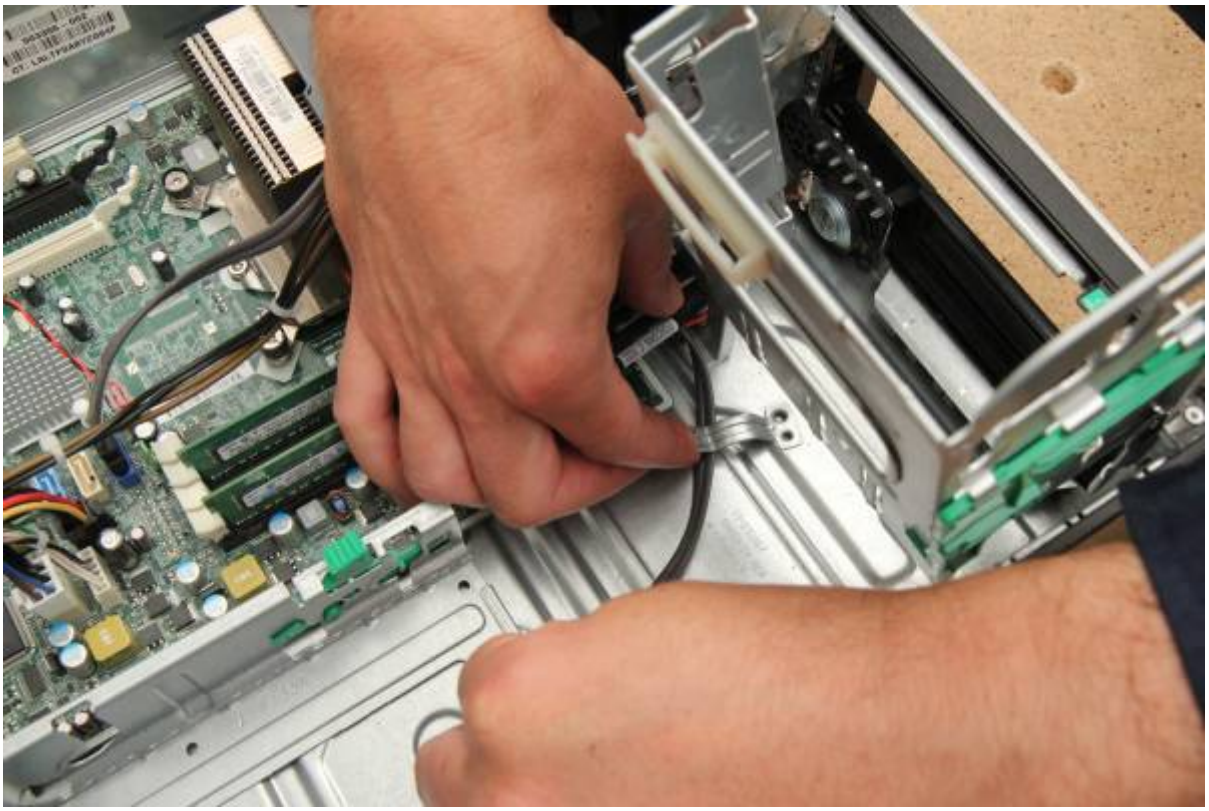
```
df -h
```

The `-h` flag gives you human readable numbers - that means gigabytes. You will see something like this.



Where does it fit?

Your computer has a second bay under your existing hard-drive.



Which Part?

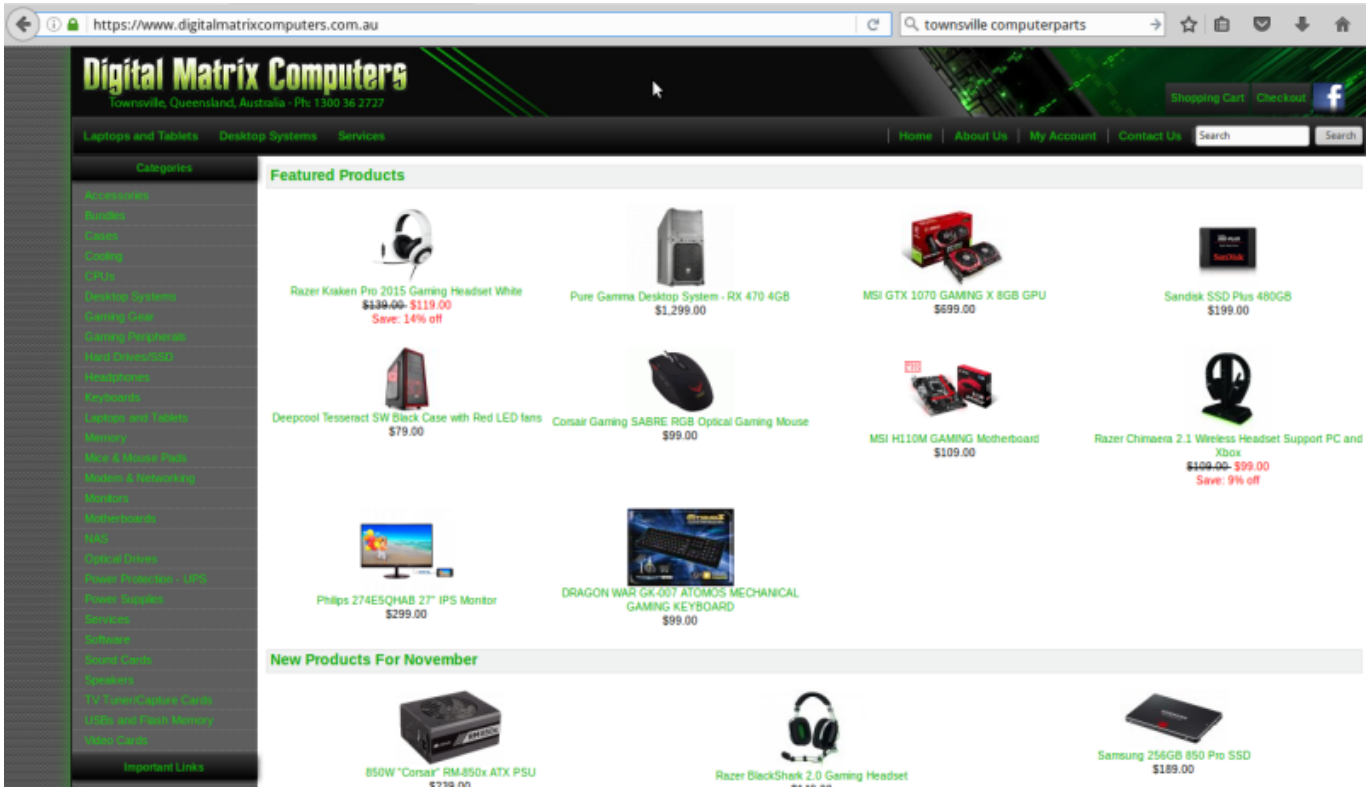
To buy the right part, you will need to know;

- the form factor (3 1/2 inch)
- the connector type (SATA)
- the capacity you want (in Gigabytes)

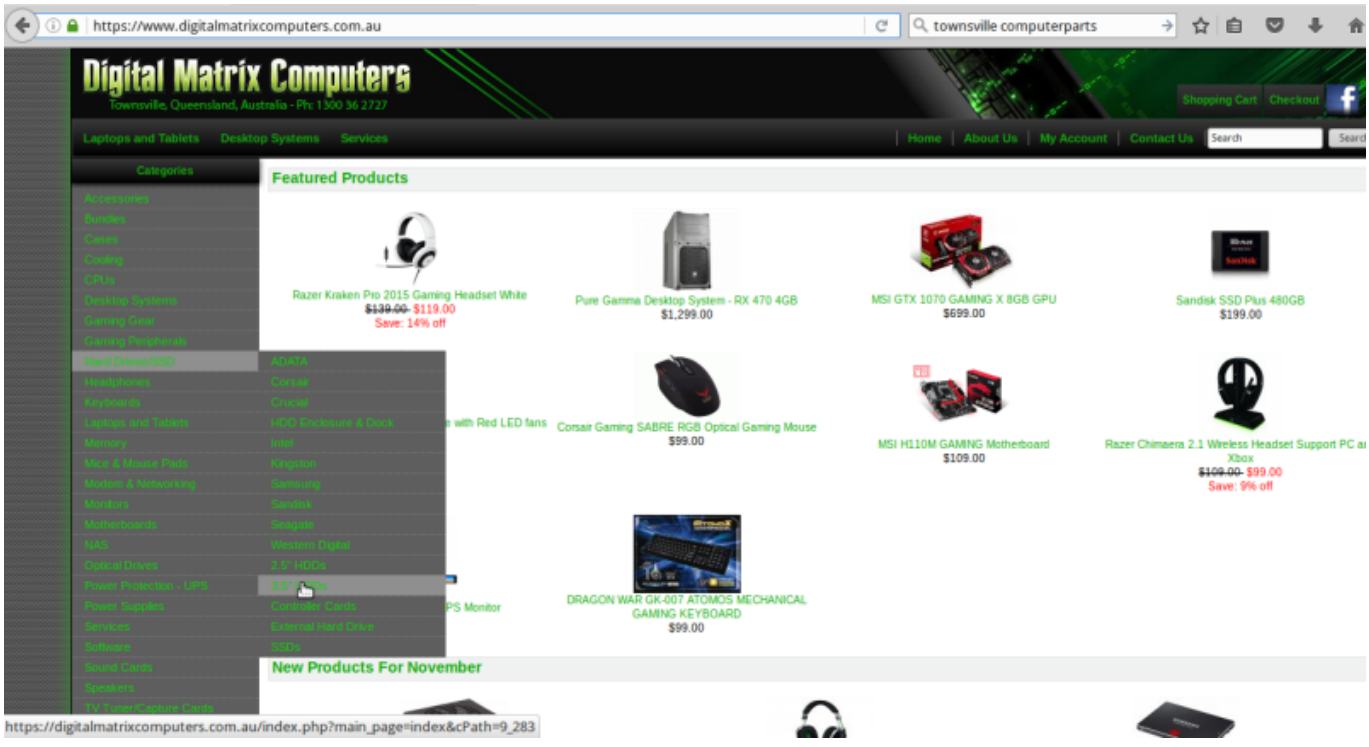
Ordering Online

Lets have a look at ordering from a Townsville store Digital Matrix Computers for an example of using a local store.

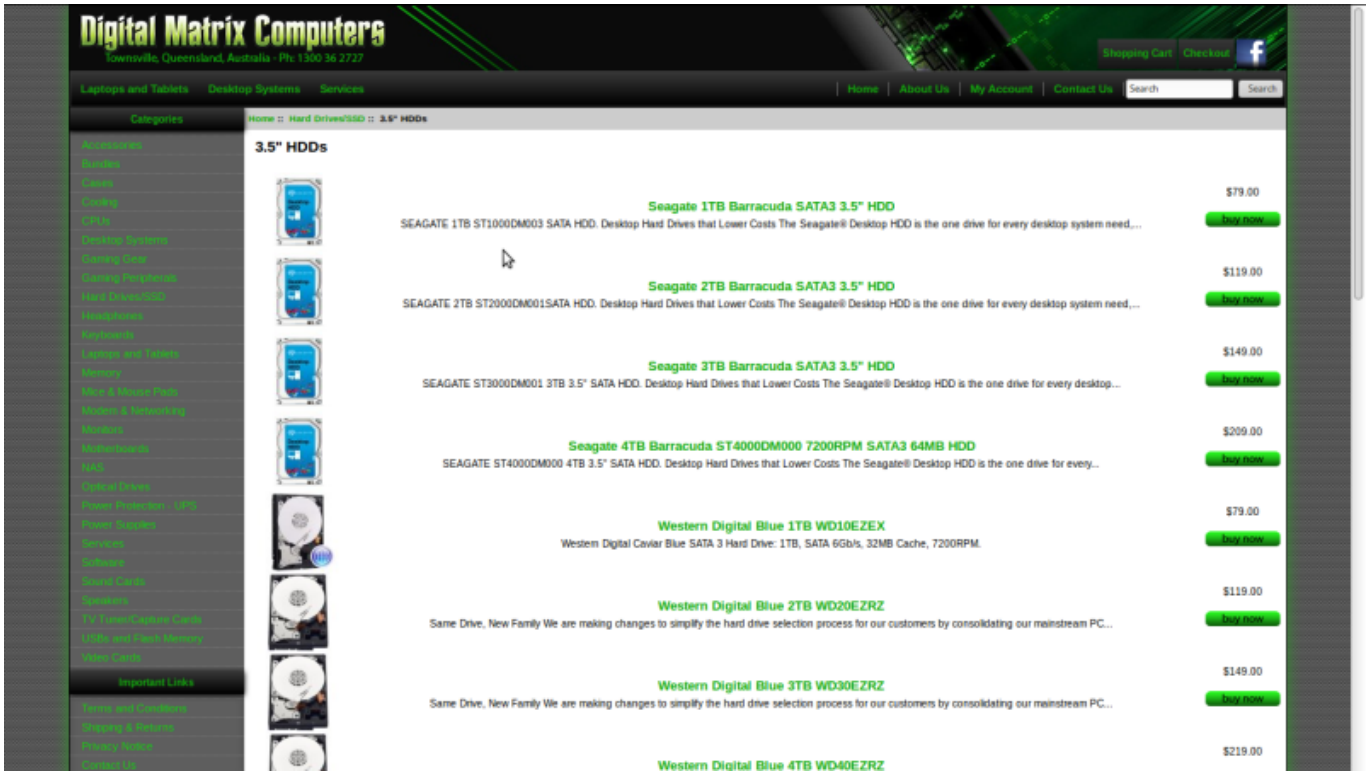
Like most stores, the front page has specials and a list of products.



Lets go through that list on the left and find the 3 1/2 inch hard drives.



The first hard drive looks good -click on it for some more details



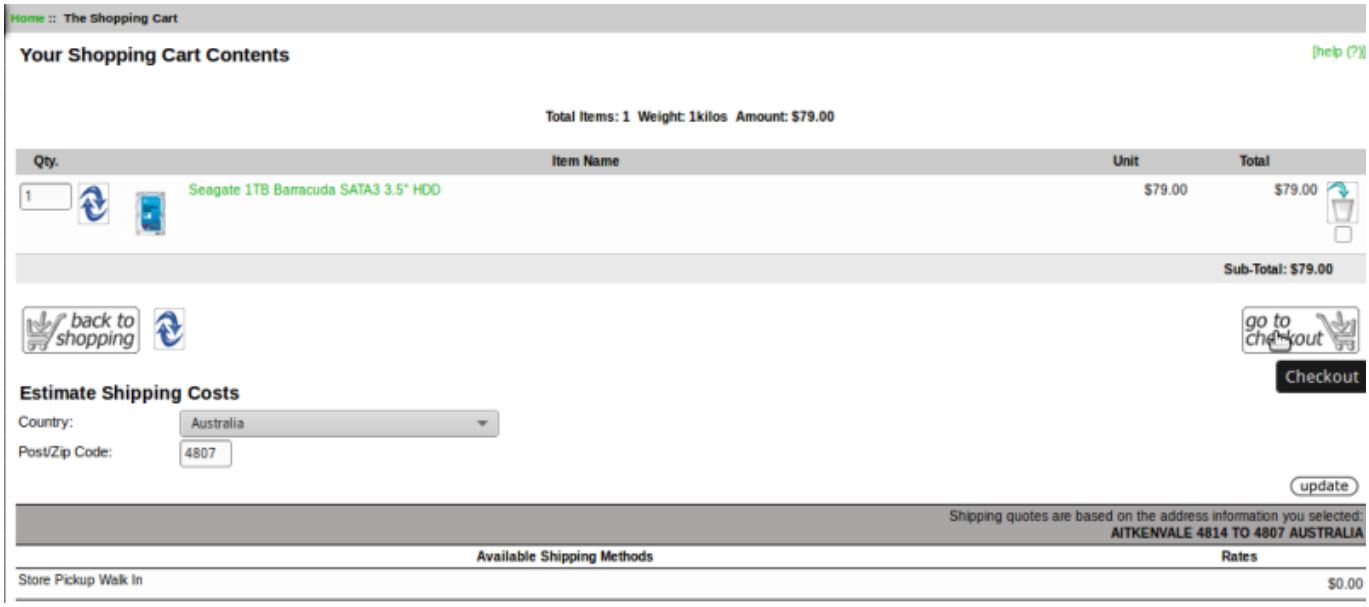
To make sure this is the part we want, check the name for ;

- the form factor (3.5“ means 3 1/2 inch)
- the connector type (SATA)
- the capacity you want - 1 terabyte= 1000 gigabytes.

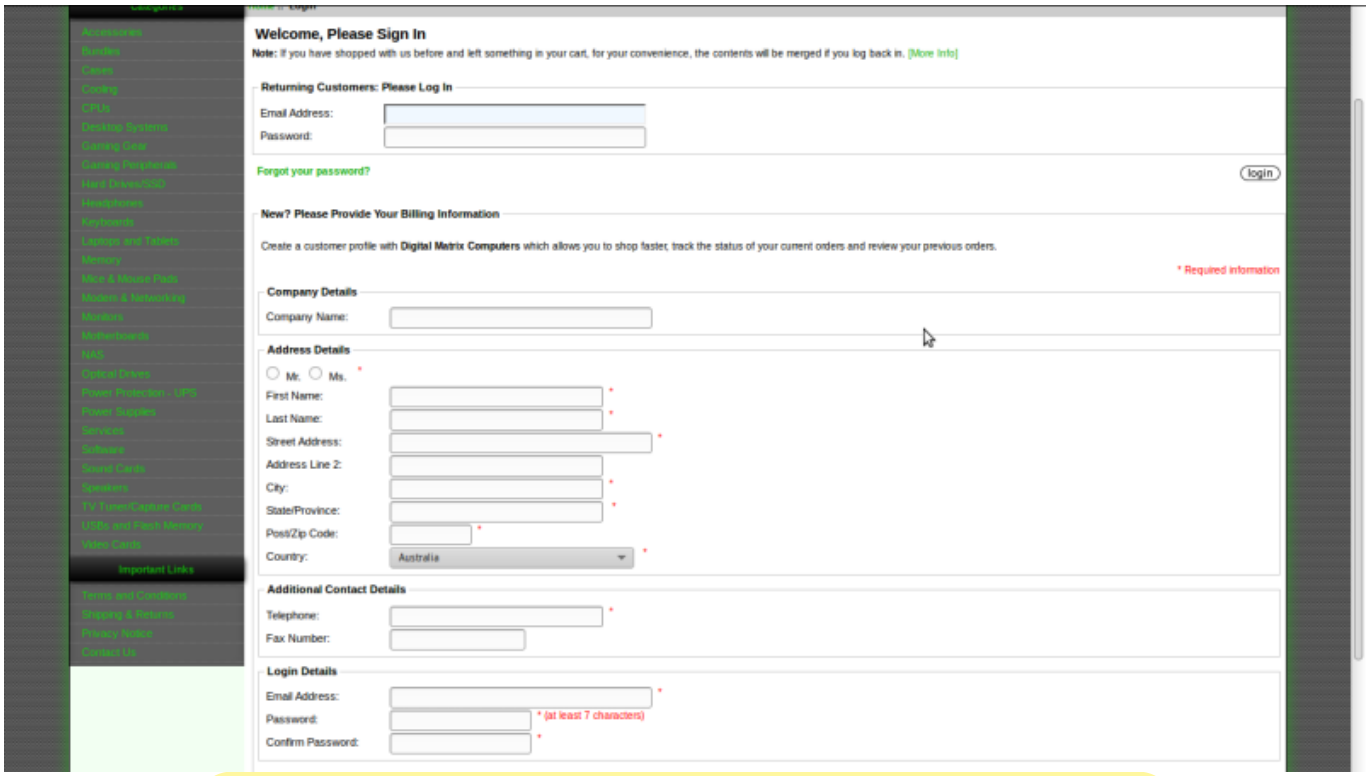


Next - add it to your shopping cart

Once the item is in your cart, you can go to the check-out.



You will need an account to buy your part. Some stores let you buy without an account, but its a good idea to make an account to track your order. Done!





Do you need another SATA cable for your drive? If so remember to order one.

Using your New Drive

Once you have installed your new drive you will need to format it to a linux native format - like EXT4. Check out the format section of workshop 03.

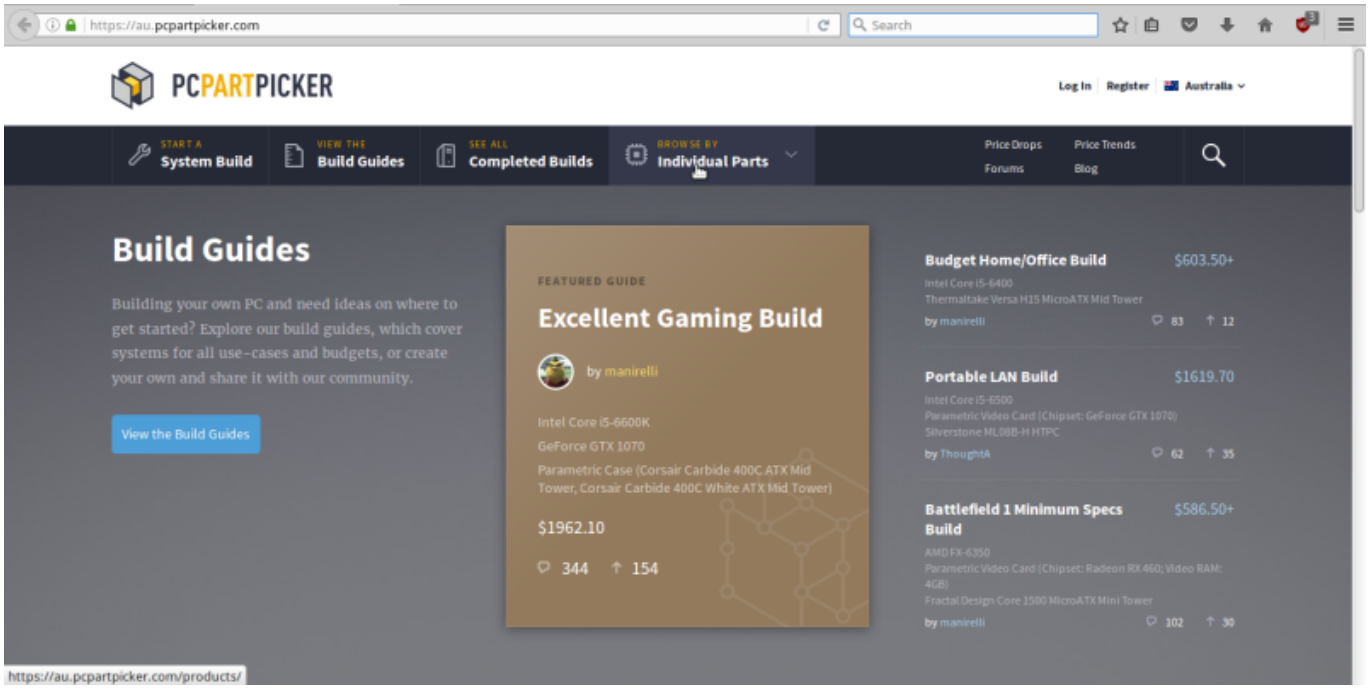
a Replacement Hard Drive

The most 'bang for buck' of upgrades is installing an SSD. Your computer will boot much faster, and programs will load very quickly.

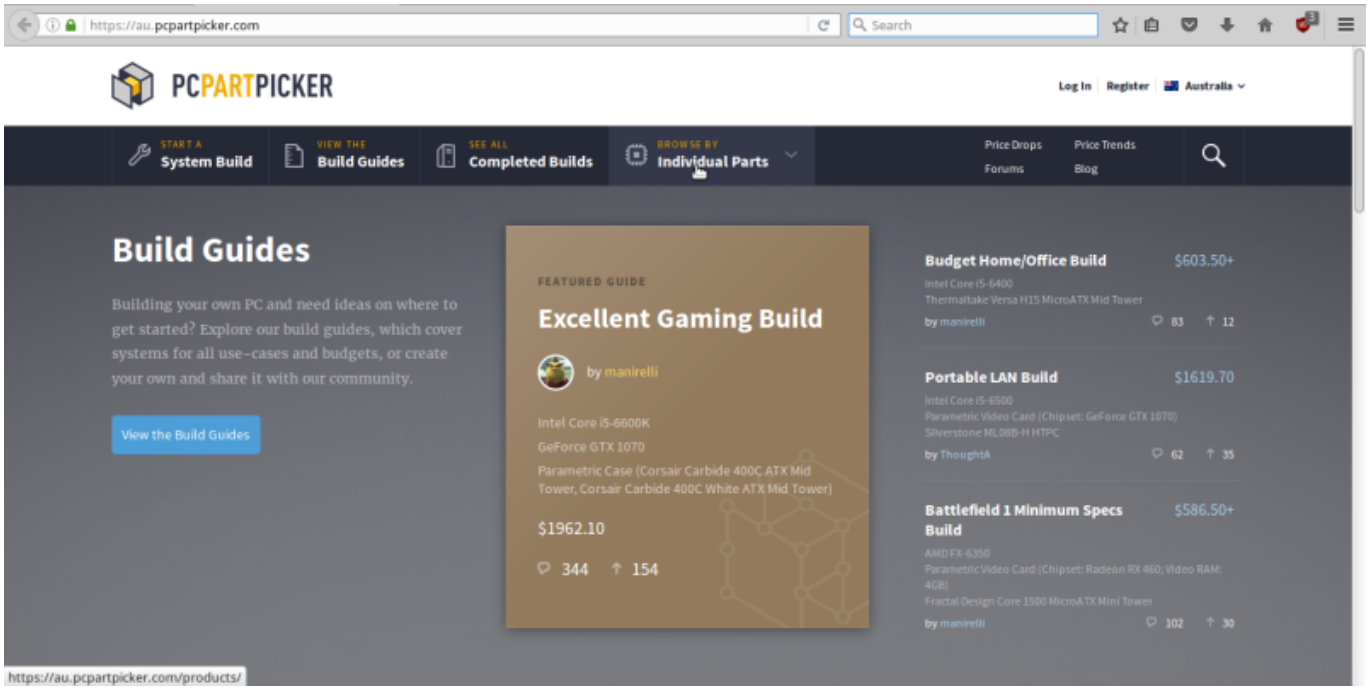
The important thing to know about installing an SSD is that SSDs are almost always 2 1/2 inch format(remember what size your hard-drive bays are?) so you will need a 2 1/2 inch to 3 1/2 SSD adaptor.

Lets try using pcpartpicker to find the right part. To make sure we get a store we know, we will use the options to search only umart. We will then search in Umart store itself for an SSD adaptor.

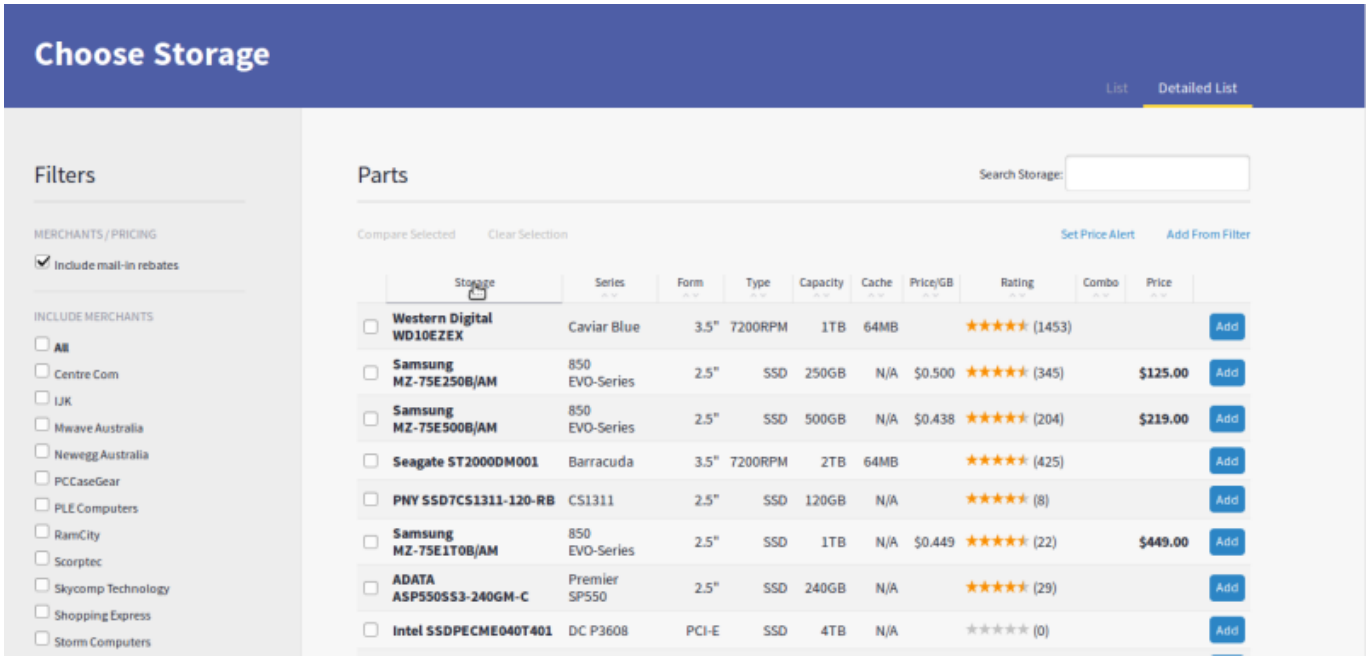
First up, go to pcpartpicker,make sure you are in the Australian store (with the Australian flag) and select 'Individual Parts'



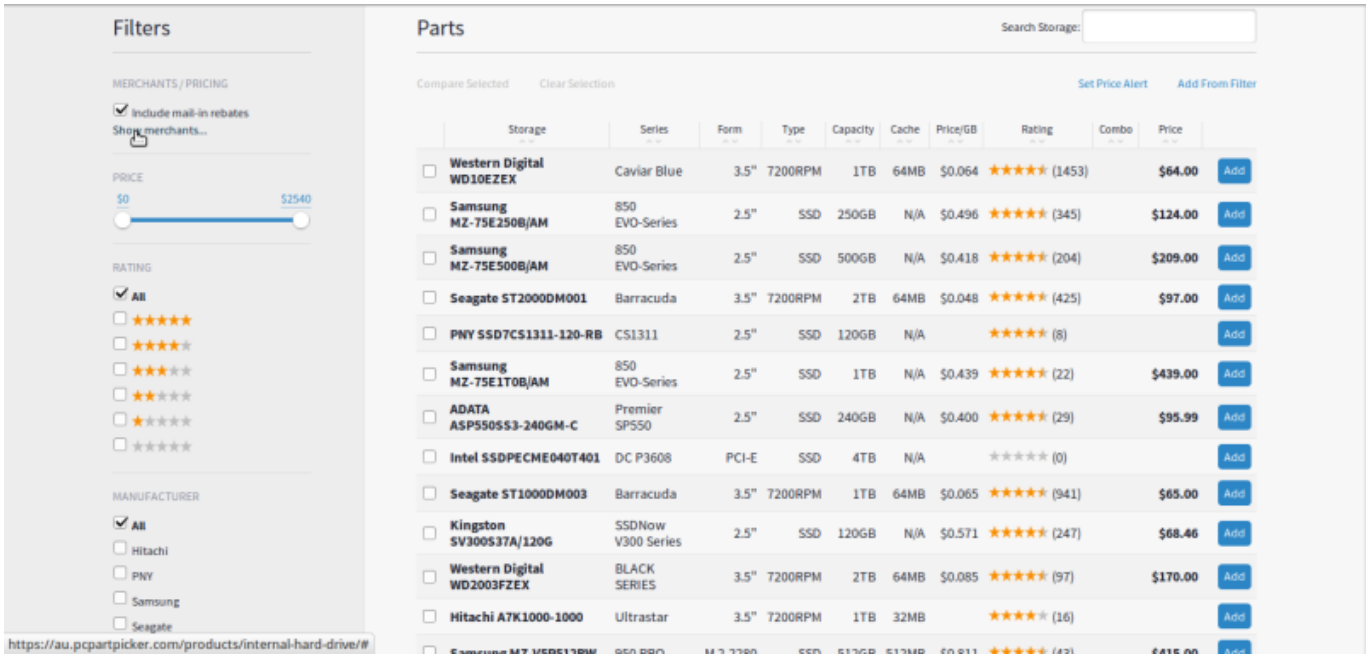
Next select 'storage' from the parts menu



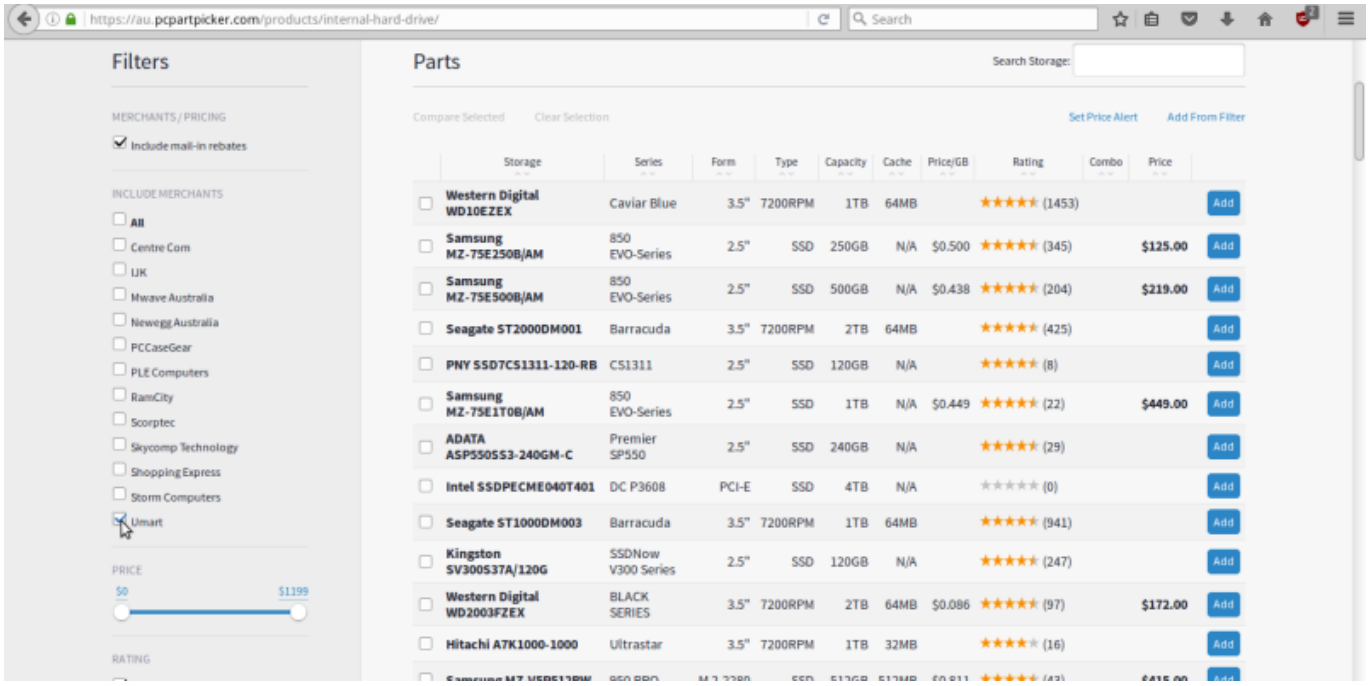
pcpartpicker will now show you all the parts it can find that fit in the storage list. You should see some labels you recognise. Don't worry if there is too much detail, we will be making our choice easier.



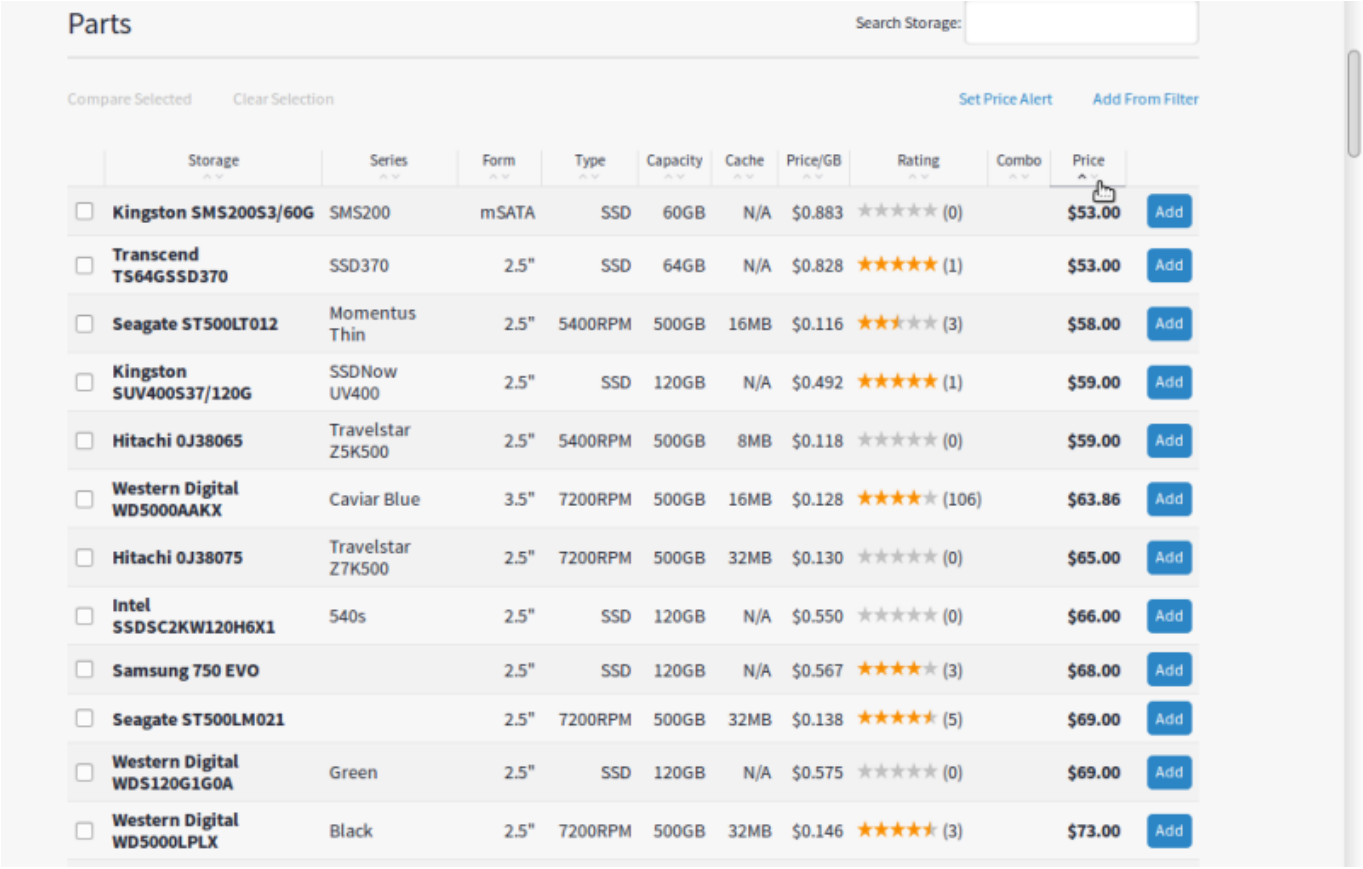
First go over to 'show merchants' -this will show us the shops we can search.



Uncheck the 'all' box and check the 'umart' box. This will show us only what we can buy on umart.



Lets re-sort our list parts, by clicking on the 'price' column.



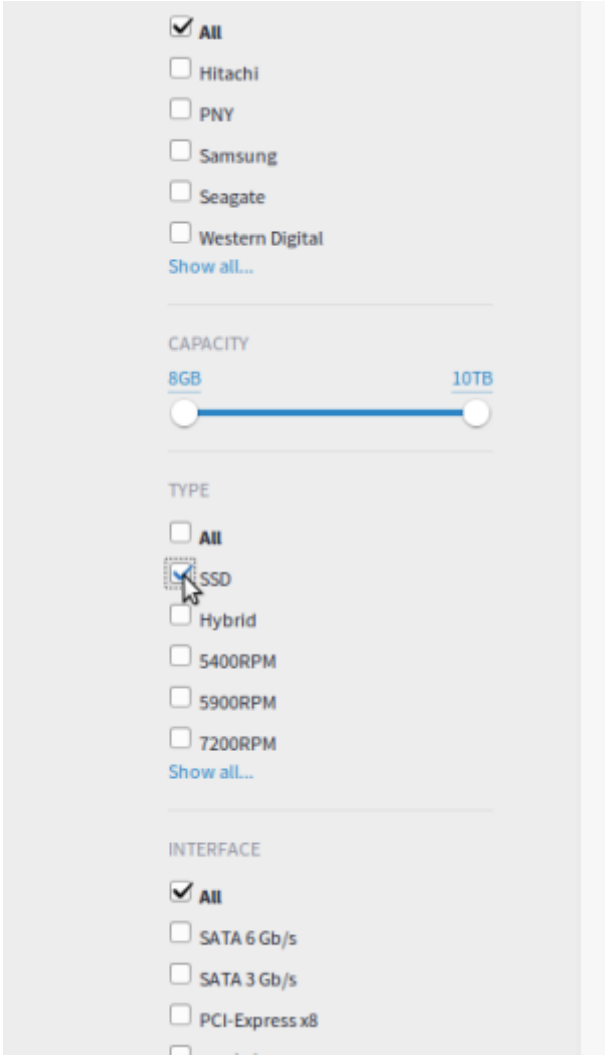
Parts

Search Storage:

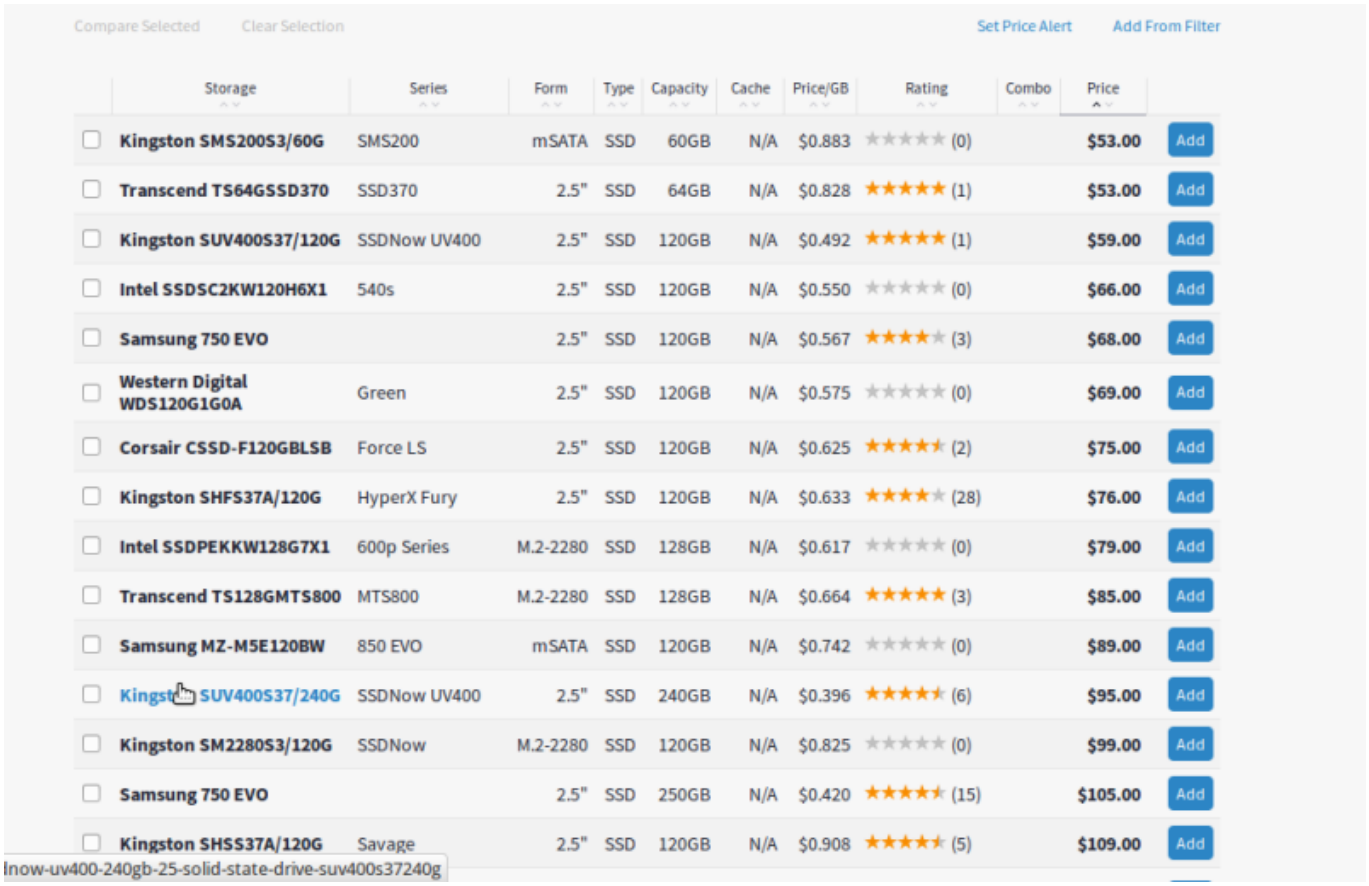
Compare Selected Clear Selection Set Price Alert Add From Filter

	Storage	Series	Form	Type	Capacity	Cache	Price/GB	Rating	Combo	Price	
☐	**Kingston SMS200S3/60G**	SMS200	mSATA	SSD	60GB	N/A	$0.883	★★★★★ (0)		**$53.00**	Add
☐	**Transcend TS64GSSD370**	SSD370	2.5"	SSD	64GB	N/A	$0.828	★★★★★ (1)		**$53.00**	Add
☐	**Seagate ST500LT012**	Momentus Thin	2.5"	5400RPM	500GB	16MB	$0.116	★★½☆☆ (3)		**$58.00**	Add
☐	**Kingston SUV400S37/120G**	SSDNow UV400	2.5"	SSD	120GB	N/A	$0.492	★★★★★ (1)		**$59.00**	Add
☐	**Hitachi 0J38065**	Travelstar Z5K500	2.5"	5400RPM	500GB	8MB	$0.118	★★★★★ (0)		**$59.00**	Add
☐	**Western Digital WD5000AAKX**	Caviar Blue	3.5"	7200RPM	500GB	16MB	$0.128	★★★★☆ (106)		**$63.86**	Add
☐	**Hitachi 0J38075**	Travelstar Z7K500	2.5"	7200RPM	500GB	32MB	$0.130	★★★★★ (0)		**$65.00**	Add
☐	**Intel SSDSC2KW120H6X1**	540s	2.5"	SSD	120GB	N/A	$0.550	★★★★★ (0)		**$66.00**	Add
☐	**Samsung 750 EVO**		2.5"	SSD	120GB	N/A	$0.567	★★★★☆ (3)		**$68.00**	Add
☐	**Seagate ST500LM021**		2.5"	7200RPM	500GB	32MB	$0.138	★★★★½ (5)		**$69.00**	Add
☐	**Western Digital WDS120G1G0A**	Green	2.5"	SSD	120GB	N/A	$0.575	★★★★★ (0)		**$69.00**	Add
☐	**Western Digital WD5000LPLX**	Black	2.5"	7200RPM	500GB	32MB	$0.146	★★★★½ (3)		**$73.00**	Add

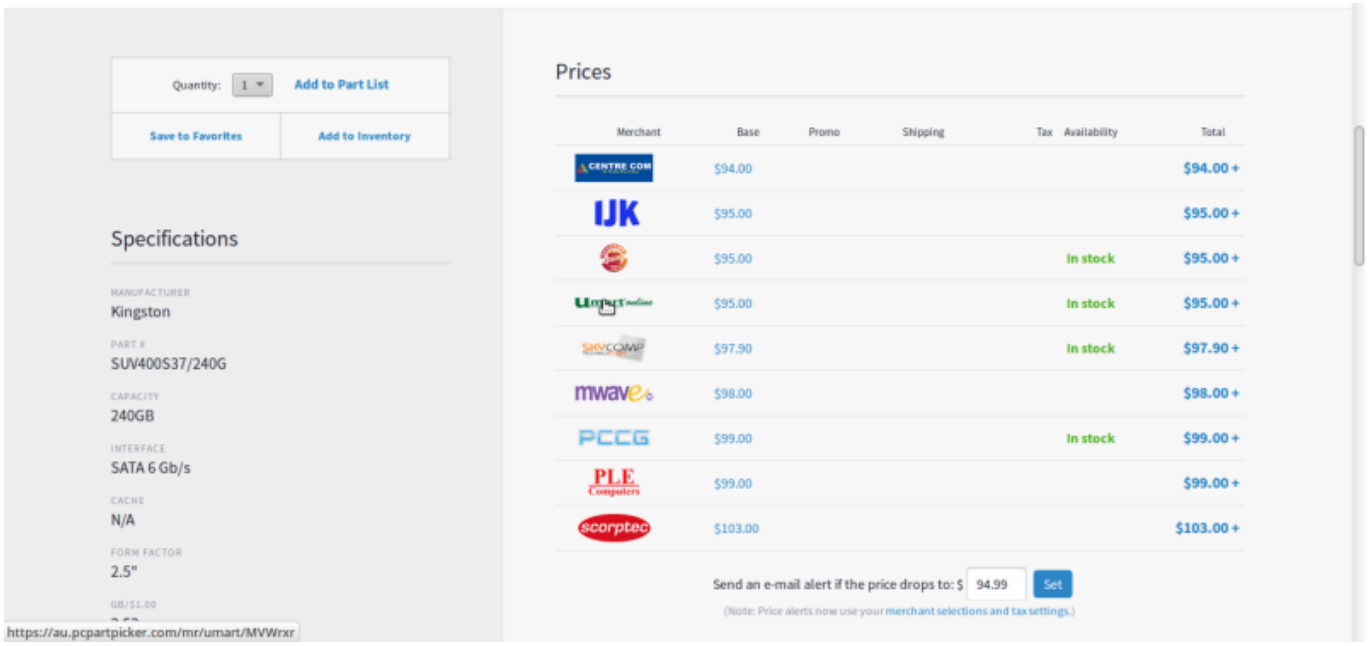
The off to the left - check the SSD box.



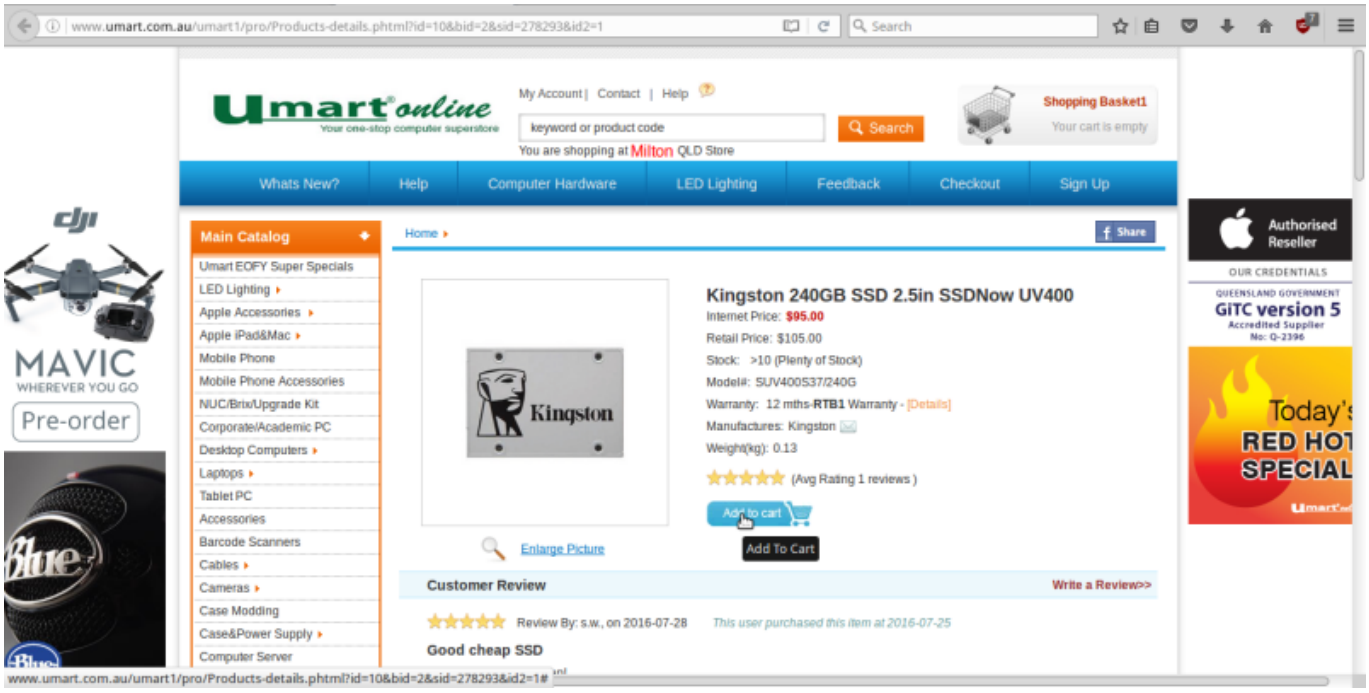
Now lets select an SSD about the size of our current drive...



And we will be shown all the stores we can buy it from. Lets select Umart again.



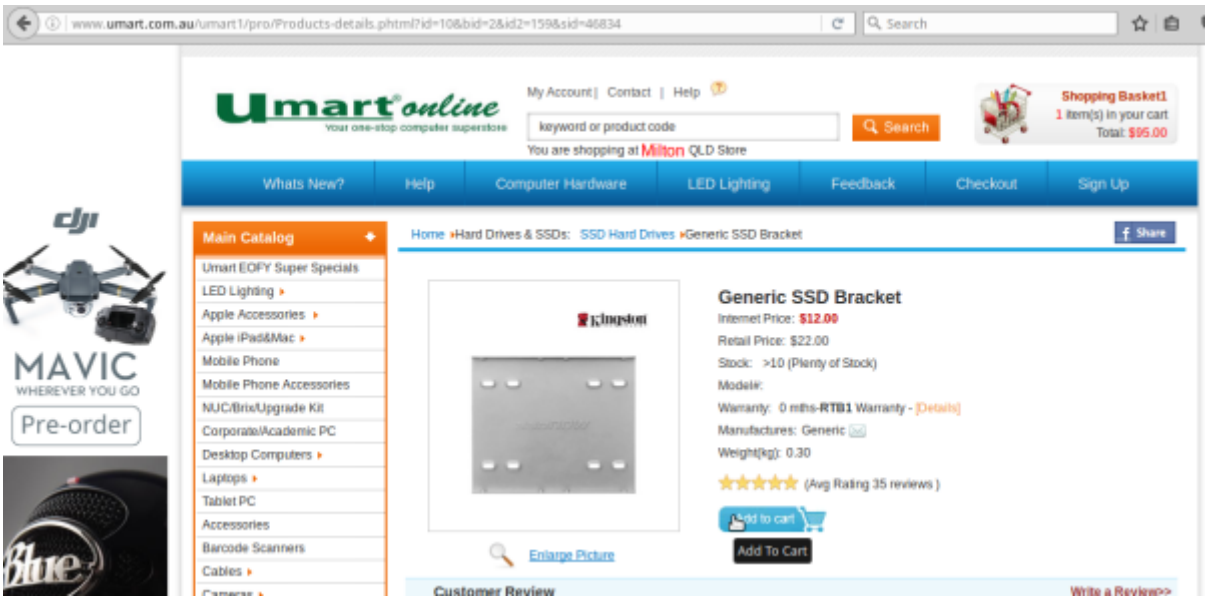
And this time we will be taken from pcpartpicker to the Umart store. Where we can add the drive to our shopping cart.



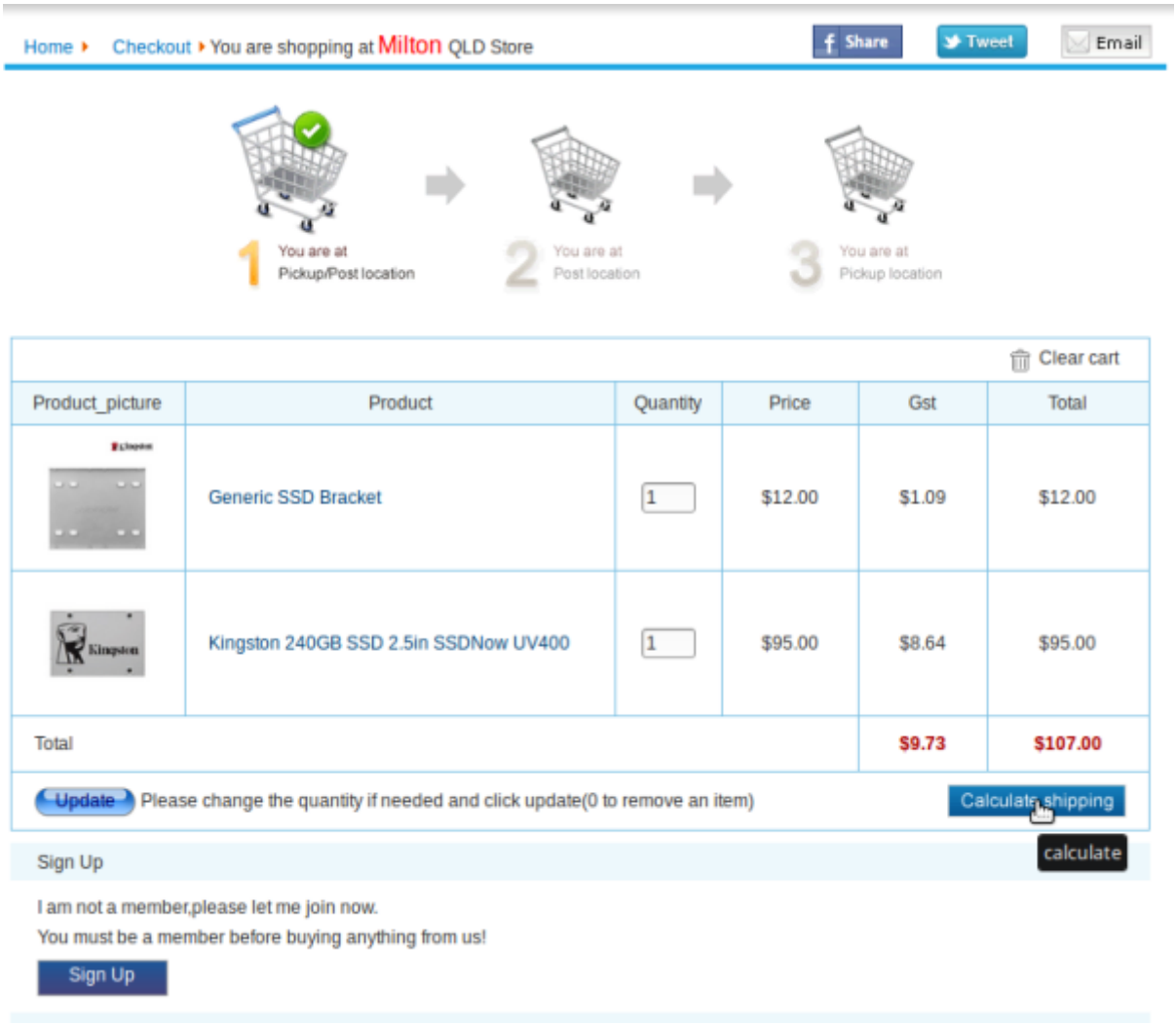
Remember we need an SSD bracket? Lets search umart for one.



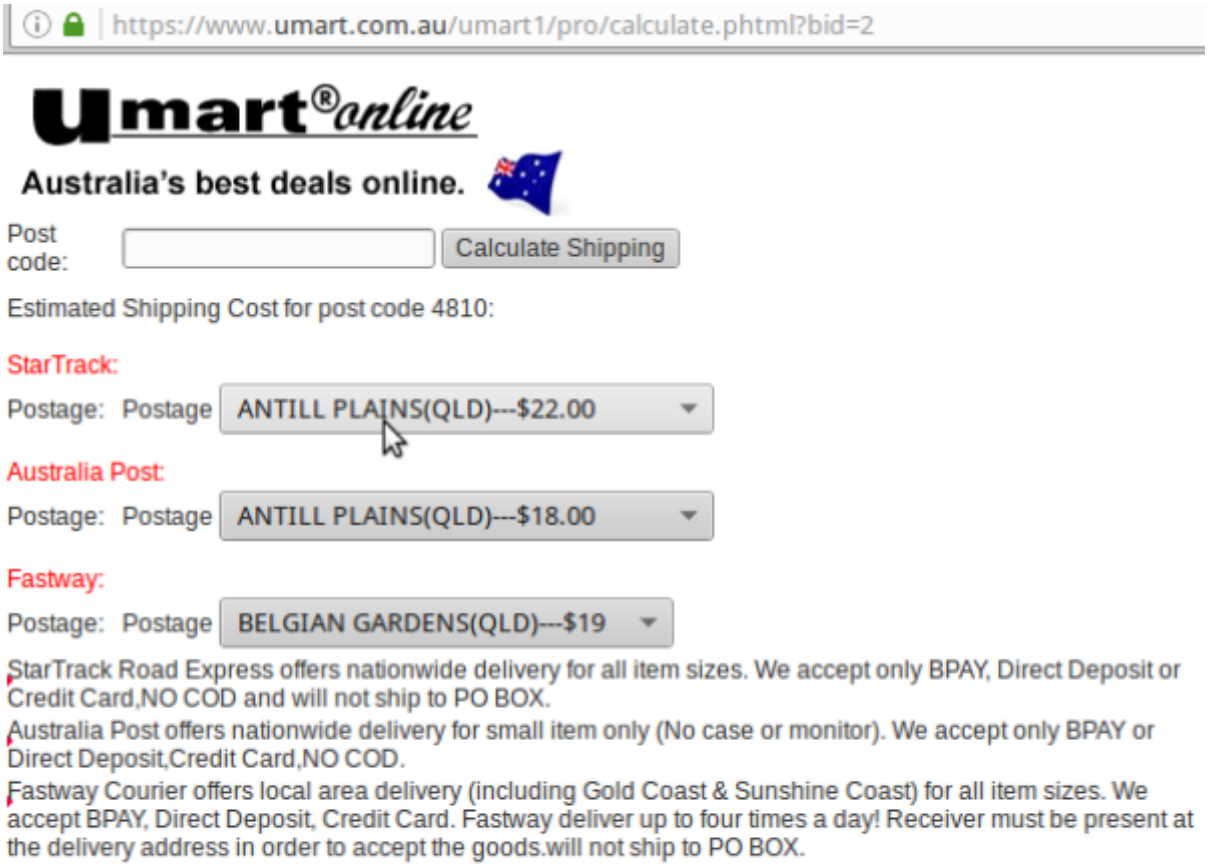
We've got a 'generic' bracket, lets add it to our cart then look at our cart



Its time to check shipping costs - this is something usually done at the shopping cart..



Umart opens another window for us - lett get an estimate for shipping to Townsville - $18 seems about right.



Now its time to sign up - (or login if you've done so already)



Clear cart

Product_picture	Product	Quantity	Price	Gst	Total
	Generic SSD Bracket	1	$12.00	$1.09	$12.00
	Kingston 240GB SSD 2.5in SSDNow UV400	1	$95.00	$8.64	$95.00
Total				**$9.73**	**$107.00**

Update Please change the quantity if needed and click update(0 to remove an item) Calculate shipping

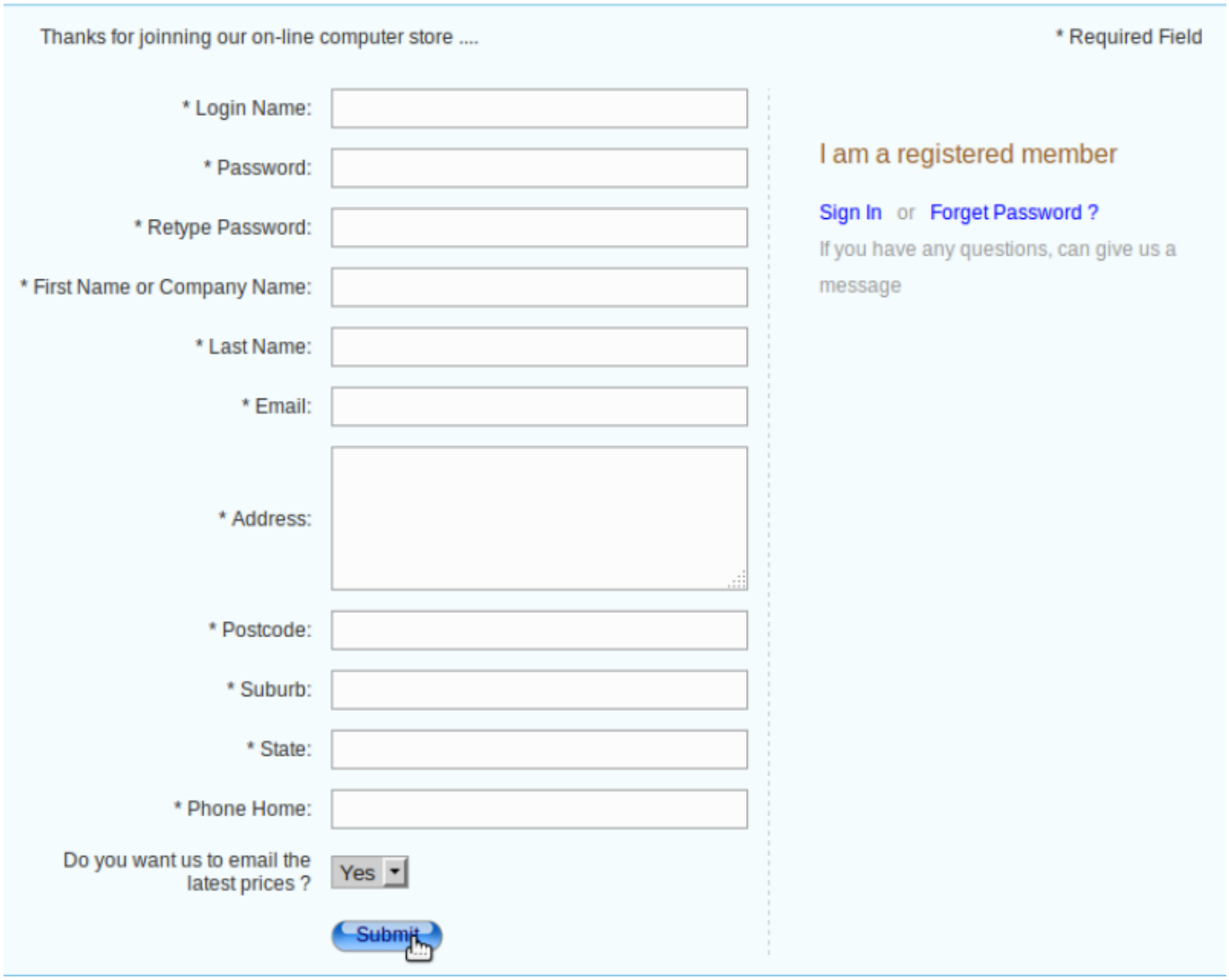
Sign Up

I am not a member,please let me join now.

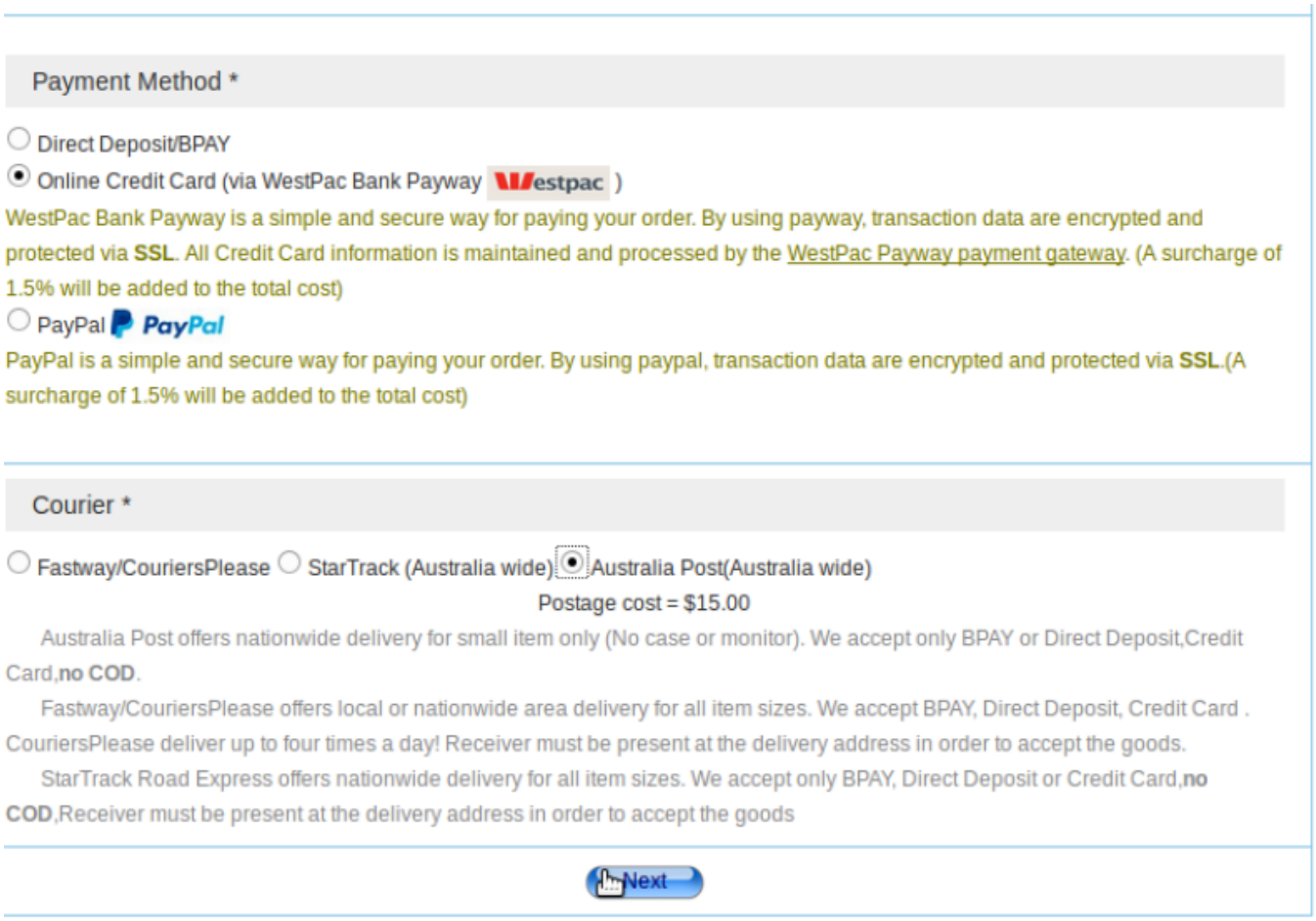
You must be a member before buying anything from us!

Sign Up

And enter your details..



Then choose your payment method and you are done!



Using Your New Drive

To get the best use of your new hard drive, you should use it as your system drive. This means fitting the drive inside your computer, and re-installing Xubuntu.

You can do this by following the instructons from scratch, making sure and copy your files over from your back-up.

Or you can use your own custom distro that you made in Workshop 04.

More RAM

RAM Benefits

Extra RAM will increase the number of tasks your computer can perform at the same time, remember our cooking explanation?

Finding the right kind of RAM is important. For best performance you should use the same kind of RAM you already have installed. In Workshop 01 we found the RAM type when we removed it.

Buying RAM

Because RAM is small and light, it can be cheaper to buy large RAM sizes from overseas. These prices will change over time but as an example;

- a single 8 gig stick of RAM to fit your computer is about $90 to buy locally ship to Townsville.
- The same product costs about $85 to ship New Egg in the U.S.A.
- Two 8 gig sticks (16 gig total) costs about $170 to buy locally ship to Townsville.
- Two 8 gig sticks (16 gig total) costs about $150 to ship from the U.S.A

We will leave it to you to find the best RAM, just remember any RAM that breaks under warranty will need to be shipped back to where you bought it from.

Dedicated GPU

A dedicated GPU is an expansion card that uses a PCIe slot.

While your computer is not designed for gaming, a dedicated GPU card will go along way towards making a budget gaming PC.

Consideration are:

- PCIE slot - GPUs need a 16x PCIe slot. Does your computer have one?
- Form Factor - remember your computer is a low profile form factor? This means you need a GPU card that will fit, meaning a low profile card.
- Power Supply - GPUs are power hungry often needing a separate plug from the main PSU. Check if your computer has this option.

Fortunately, the most popular GPU maker NVIDIA has released a budget range of GPUs called the 1050 to suite these needs. You can read a very technical description on Anandtech.

Buying a GPU

Once again, you can expect to get slightly cheaper prices by buying overseas. However, if your GPU fails, shipping it back overseas to be fixed can remove any savings made.

Software Resources

Troubleshooting

Googling is the quickest way to getting a solution, and most results will come from either:

- https://askubuntu.com/
- https://ubuntuforums.org/

As Xubuntu is based on Ubuntu, most problems and solutions are common across the two systems. Where you will find differences are in the desktop environment (desktop).

Just remember that Xubuntu uses the XFCE desktop when searching or asking for help and you will be off in the right direction.

Desktop Environments

If you would like to try another desktop you can always install it and switch between the two. Switching between desktops uses a desktop manager. Your Xubuntu system comes with LightDM installed. Some alternative desktops are;

- lxde
- gnome 3
- mate
- KDE - Plasma

Upgrading your Packages

Its good practice to upgrade your installed packages when possible. Xubuntu will prompt you to upgrade automatically with a GUI, but you can also upgrade manually with the 'Software & Updates'' from the whisker menu.

Updating with the Command Line

This is as simple as updating your sources.

```
sudo apt-get update
```

Then upgrading packages

```
sudo apt-get upgrade
```

Ugrading your Distribution

Upgrading your distribution (distro) is the process of moving from one *version* of your OS to a more recent version.

Once a newer version of Xubuntu becomes available, you will be prompted to automatically upgrade.

This is a step to be considered carefully, as you may have software that does not work with more a new version of your OS.

Before You Upgrade

Before an upgrade, you should backup your files and if possible make a custom distro and do some research.

As this workshop series is based on Xubuntu 14.04 LTS, a distro upgrade would go to the next LTS version, which is 16.04 LTS.

Upgrading with the GUI

The “Software & Updates” System Settings can be used to upgrade.