Titan Robotics Club: How to …?

This is a document explaining how things are set up in the Titan Robotic Club. Things including:

* The Internet Domain name for the club.
* The hosting of the club’s web site.
* The set up of club email accounts.
* Robot code source control.
* The Scouting tool and other miscellaneous tools.
* Project management software.

# Setting up of the club’s domain name

The private domain name “titanrobotics.net” is registered through <registrar name>. The name is registered for <expiration period>. Registering a domain name is easy. You just pick the name, check the availability and then pay the registration fee for the period you want to own the name. But once you owned the domain name, how do you make use of the name? The use of a domain name can include:

* Hosting a club web site.
* Hosting mailing lists.
* Hosting the source control server for the robot code and other tools.

Although we can have many uses of the domain name, each use can be hosted on a different machine physically. For example, the club web site may not necessarily be on the same server as the source control server. This is doable by carefully designing the private domain name space. Once we own a domain name, we own the name spaces that are derived from the domain name. For example, we can have the following name spaces:

* titanrobotics.net
* [www.titanrobotics.net](http://www.titanrobotics.net)
* mail.titanrobotics.net
* src.titanrobotics.net

Each of the sub-space can be mapped to a different target by carefully configuring the DNS records at the registrar site.

First, we need to redirect the main domain name to a default IP address. Ideally, this could be another Internet address that will resolve to a static IP address. But in reality, it costs a lot to obtain a static IP address. In most of the cases, the main domain site is probably hosted by a student in his/her home that normally obtains its dynamic IP address from the Internet Service Provider (e.g. Comcast). For this scenario, please refer to the *Setting up dynamic DNS* section below.

Secondly, you can add a CNAMES record for each of the name space you want to redirect to a different target. For example,

* Host: www Points To: trc492.web.officelive.com TTL: 3600
* Host: mail Points To: xxxxxxxxx.pamx1.hotmail.com TTL: 3600
* Host: src Points To: @ TTL: 3600

This allows the web site be directed to officelive.com where the club’s web site is being hosted and the email to be directed to hotmail accounts that have the email addresses in the form of [trc492@titanrobotics.net](mailto:trc492@titanrobotics.net). And lastly, the source code access can be redirected to a server in a private home or at the school.

# Setting up Dynamic DNS

If a server is hosted in a private home where the IP address is dynamically assigned by the Internet Service Provider, it is a challenge to access this server from the Internet. We must associate an Internet domain name to this dynamic IP address and be able to update the address when it changes. Fortunately, there are free Internet services that will do just that. The most common provider of this service is <http://www.dyndns.com> (<http://www.no-ip.com> is another). A lot of firewall routers even support dyndns.com. The way it works is that you first obtain a free account with dyndns.com. Then you pick a domain name (e.g. trc492.homelinux.com). If you have a firewall router that supports dyndns.com, you can just enter the dyndns.com account credential and the domain you picked into the router. That’s it! The router will keep track of the IP address assigned by your service provider and report it back to dyndns.com with your account credential to update their DNS lookup table. So when somebody is accessing the domain name you picked, dyndns.com will translate it to your most up-to-date IP address.

What if you don’t have a router that supports dynamic DNS? No problem! The site usually provides software that you can install on your server. This software will monitor the IP address assigned to your home and report it back to dyndns.com to update the DNS lookup table just like what the router would do.

When dynamic DNS and domain redirection at the registrar is setup, you will be able to access your site via two different domain names: titanrobotics.net and trc492.homelinux.com, for example. They will both be resolved to the same IP address (titanrobotics.net=>trc492.homelinux.com=>your home IP).

# Setting up the club’s web site

There are several considerations when deciding where to host the web site:

* The amount of traffic the site will receive.
* The amount of bandwidth the site requires (e.g. hosting video clips for streaming).
* The amount of storage the site needs.

There are two possibilities:

1. Hosting the site on a web hosting service.
   * Pros: A commercial hosting service should be able to handle any amount of traffic.
   * Pros: A commercial hosting service should have sufficient bandwidth.
   * Pros: The hosting service will handle maintenance and ensure no down time.
   * Pros: The hosting service will take care of backing up the site.
   * Cons: May have a cost in the form of monthly or annual service fee.
   * Cons: It may provide enough storage for our use or it may cost more for additional storage.
2. Hosting the site on a private server.
   * Pros: The perceived cost is low (aside from electricity, there is no monthly or yearly service fee).
   * Cons: We assume the maintenance of the site in terms of availability. If the site goes down, it may not be coming back on-line in a timely manner.
   * Cons: Private home may have issues with web traffic and bandwidth. Some ISP may charge if data traffic goes beyond a certain threshold.

After some research, it looks like option 1 is preferred. The service fee could be zero because there are free web hosting services except it may impose some restrictions such as the amount of storage. For example, officelive.com offers free web hosting for “small business”. Regarding storage required, web contents are usually not very big unless it involves videos. But videos can be uploaded to <http://www.youtube.com> and links to them can be placed on the web site. This will alleviate the storage requirement of the web site.

# Setting up club email accounts

Sometimes it is desirable to create email accounts with the club’s domain name (e.g. [ceo@titanrobotics.net](mailto:ceo@titanrobotics.net) or [summercamp@titanrobotics.net](mailto:summercamp@titanrobotics.net)). There is a way to do this for free. <http://domains.live.com> provides a free domain redirection service that allows emails going to the club’s domain address be redirected to basically hotmail accounts. You can create up to 500 email accounts that have 10GB storage each using this service. First, we created an owner account. In our case, it is [trc492@live.com](mailto:trc492@live.com). Once the owner account is created, we go to <http://domains.live.com> to sign up for redirecting titanrobotics.net to use hotmail for email traffics. Once this is done, you can create however many email accounts up to 500. As part of the redirection configuration, you need to go to your registrar site to add the CNAMES DNS record for redirecting email. For example:

* Host: mail Points To: xxxxxxxxx.pamx1.hotmail.com TTL: 3600

Note that xxxxxxxxx is the hotmail account ID provided to you in the domain redirection configuration process. Since these are real email accounts with storage, you can either logon to hotmail using the email address (e.g. [ceo@titanrobotics.net](mailto:ceo@titanrobotics.net)) or you may prefer to configure the hotmail account to forward all emails to your personal email account so that you can check all your email from one place.

# Setting up mailing lists

This is still under investigation. There seems to be no easy way to set up an email reflector for free. There may be some tricks I could use to set up hotmail doing group forwarding. Need to get a hotmail contact to ask.

# Setting up source code for robot code

TBW

# Miscellaneous Tools

* Scouting tool.

# Setting up project management software

We are investigating two different possibilities:

* Windchill provided by first.ptc.com.
* Office Live Space provided by live.com.