

**FEATHER RIVER RAIL SOCIETY
AGENDA REPORT**

DATE: 9/1/2020
TO: Board of Directors
FROM: Kerry Cochran, Paul Finnegan
MEETING: 9/12/2020
ITEM: New Business
SUBJECT: FRRS/WPRM Website Services

Over the past ten months, we have been having trouble with our web hosting service (Hostmonster) that has negatively impacted the society's website.

Our Signal Department (Paul Finnegan, Kenneth Finnegan, and Kerry Cochran) have been working on an approach to move to a more stable web hosting service/location.

Part of this move to a new hosting service also requests for our webmaster to be authorized to hold a FRRS Credit Card to take care of normal expenses and relieve our secretary of one of the time consuming jobs of paying for our domain names and other associate routine website expenses.

The attached report indicates how we can move to a new platform and improve our web service to members and the public at a reduced cost.

This plan has been approved by our Secretary, Eugene Vicknair, as part of our review process.

See Attached Report

ACTION: Review and take action

To: Kerry Cochran, FRRS General Superintendent
Eugene Vicknair, FRRS Secretary
Cc: Kenneth Finnegan, FRRS Signal Department
From: Paul Finnegan, FRRS Webmaster
Date: August 23, 2020
Subject: Change of Website Hosting Provider

Background:

For a long time (probably since May 27, 2008), the FRRS has used Hostmonster as the website service provider. I became the FRRS webmaster in fall of 2015. Over the past five years, the paradigm of the society website has changed from a static, desktop centric website to a custom, mobile friendly, interactive, highly-automated website with significant data-management capabilities.

Although the services promised by Hostmonster are capable of supporting this expanded paradigm, the actual service provided has proven to fall short. In the past 8 months, we have had four serious (multi-day) and two minor service interruptions due to Hostmonster's negligence and/or lack of expertise. In addition to the actual service interruptions, some of the tools/methods required me to implement in strange coding/design/deployment methods to function at Hostmonster.

For several years, Kenneth Finnegan has encouraged me to abandon Hostmonster and move the web service to a dedicated server. Kenneth's suggestion was not to go to a new web hosting service, but rather rent a virtual server at a data center and administer the system ourselves. I was reluctant to pursue this kind of solution because I thought the support services provided by a hosting company would outweigh the advantages of going stand-alone. I did not want to just change the host service vendor since the reviews I kept reading said they are all bad once you stop using the very simple, basic, click and drag created websites. Thus, the devil we knew might be better than the unknown devil of a new provider.

Hostmonster's service over the last few months, and in particular the issue in June, has convinced me I was wrong. Continuing to use Hostmonster as our web hosting service deserves to be discussed.

High Level Description of Proposal:

Rather than change from Hostmonster to another web-hosting provider, I would like to consider Kenneth's proposal and use a dedicated UNIX VM server at a data center. We would have super-user (root) access to the VM server and administer the system ourselves. This would eliminate the dependence on the provider's sys-admin group for fixing problems. It would also insulate us from unknown system changes, inconvenient scheduled downtimes and other system events that we have no control or influence.

Justification:

This is a partial list of the events/conditions that self-hosting would resolve.

1. On the evening of Thursday November 21st, 2019, Hostmonster, moved our website from host257 to host2056, without prior (or any) notification. This change had significant, and immediate, impact to our website. Kenneth and I spent 26 engineer hours to get the moved website back online on by Tuesday November 26th. Additional issues were discovered and it was not until Thursday December 5th that the website was fully functional.
2. With the New Year, I needed to recompile several of our C++ cgi tools for the website. I discovered that another side effect of the host change in November was the C++ compiler, g++, was no longer available to us. I opened a ticket with Hostmonster second level technical support on 1/1/20. It was resolved in about four hours and I was able to update the C++ web tools for 2020.
3. In updating the Crew Training Material for 2020, I discovered the version of mailx Hostmonster was using changed (or at least its configuration.) Attachment of registration forms to the Crew Training Registration Confirmation email no longer worked. I had to change the email message and the users will now have to download the files from the website manually.
4. On Friday April 10th, 2020, I discovered our cron jobs at Hostmonster were not running properly. In UNIX a “cron job” is a scheduled program that runs automatically. We make use of cron jobs to do the daily and weekly reports; daily, weekly and monthly webpage updates; and a few other maintenance tasks. The use of cron jobs is critical to keeping the website up to date. After opening a ticket at Hostmonster and many hours spent on chat with their support team, I was told if the system load gets high, cron jobs are automatically suspended. Unfortunately, our web cam updating system is a cron job, so to the public, they were getting stale webcam images. Since our service at Hostmonster is on a shared server supporting many websites, we have no control over the system load and our cron jobs may be suspended at anytime.
5. On Wednesday May 13th, 2020, I received an email from Hostmonster, that there would be a scheduled maintenance downtime on Friday May 15th starting at 8 p.m. PDT. This was a very inconvenient time since there was a FRRS Board meeting the next day. At 5:30 a.m. on Saturday, the day of the board meeting, I tried to upload the agenda and reports for that day’s meeting. I was unable to log in or upload data. I immediately opened a support ticket with Hostmonster. During the scheduled maintenance, four symbolic links required to log in had been lost. From my previous UNIX sysadmin experience, I knew how to fix it and it would be a two-minute problem. However, the fix required super-user (root) access to fix, which I don’t have at Hostmonster. It took until the following Tuesday to get the issue resolved by the Hostmonster Sysadmin Group. I was unable to update the website and the webcam was down for four days.

6. On Thursday June 25th, about 3 p.m. PDT, the Hostmonster account started refusing to allow the upload of the webcam image files. About 9 p.m., I tried to log into our account at Hostmonster and received the same four error messages I got when we had the same problem on May 16th. I immediately opened a ticket with Hostmonster, referencing the ticket number from May. I stressed that in May it took four days to resolve and since it was the same problem AGAIN and they had a ticket to reference, it should not take so long this time. I requested that the new ticket be escalated, since from the previous event, I knew a level-2 sysadmin tech would need to fix it. I was assured it was escalated. Over the next several days I contacted Hostmonster multiple times and was told the ticket had been escalated, but Hostmonster's sysadmin support commitment was 24~72 hour response time. On Tuesday at 12:25 p.m. PDT, I was about to contact Hostmonster again, but decided to check to make sure the problem had not been resolved. It was still broken, but the error messages had changed, so I watched over the next hour or so and could occasionally log in but then get kicked out. After an hour, the situation stabilized and I could log in and stay logged in. The website was fully functional again. Now for the real insult, I was NEVER contacted by Hostmonster telling me it was resolved. This time I was unable to update the website and the webcams were down for FIVE DAYS rather than FOUR DAYS like the incident in May.

Proof-of-Concept:

To demonstrate the feasibility of the proposal, Kenneth and I have created a proof-of-concept system. The system is located at Hurricane Electric in Fremont on one of Kenneth's servers operating under the aspect of his consulting enterprise, PhirePhly Design. The system configuration is:

- 2 CPUs/Cores
- 2 GB RAM
- 256 GB disk storage (our website is ~ 19 GB)
- running O/S Ubuntu 20.04 LTS
- using an Apache web server

Additionally, I spun up a UNIX system at my home to be the development platform. It also is running O/S Ubuntu 20.04 LTS with an Apache web server so I can test changes before deploying to the system in Fremont. (I have been using a similar system at home to test and then deploy to Hostmonster.)

The proof of concept system is available for viewing at <https://www.beta.wplives.org>

You are welcome to visit the beta site and exercise the website. Please be advised, although all tools are believed to function, the beta system does NOT update the real databases at Hostmonster, so things like signing up for crew will not really sign you up for crew. It will however update the Extra Board on the beta system. All of the tools like change of address, join/renew, run; but only send email to me, not to the membership@wplives.org email forwarder. This is intentional so we can "play" with the beta website without affecting real society interests.

When you visit the beta system it should look and act just like the public website at Hostmonster. To help reduce confusion, I changed the small icon in the webpage tabs. The icon will be a Greek letter beta (β) rather than the FRRS logo and you should see the URL in the address bar has beta in it.

Every night just before midnight, the beta system copies the current real database from Hostmonster. This keeps the beta system up-to-date, but also overwrites any experimental changes (like a test crew signup.)

I created and tested two kinds of sub domains for the proof-of-concept site. The first would create a website that, although hosted under the WPLives.org site, would be independent of the parent site. Kenneth has suggested for a long time that all the member tools (e.g. crew sign up) not be scattered in the public site but be all collected in one place, e.g. members.wplives.org with just the tools and web pages for society members. This example can be seen at subbeta.wplives.org/.

The second type of sub domain I created and tested was very similar to the existing ones that we use for several purposes. These sub domains are used like a simple address to an existing web page in the WPLives.org website. The example I created was betasanta.wplives.org that takes the user to the Santa Trains webpage (in this case 2019.) However, I implemented the redirection to the target webpage using a .htaccess file rather than a UNIX symbolic link. This simplifies the coding of the target page and makes it more portable for some technical reasons.

On Saturday August 23rd, Kenneth and I implemented and tested modifications to the Postfix mail configuration on the proof-of-concept system to support the use of email forwarders. I extracted the list of all current email forwarders from the Hostmonster site and it would be trivial to implement on the PhirePhy system.

Advantages:

The PhirePhy system provides dedicated, non-shared service that Kenneth and I have super-user access so the sysadmin type issues can be immediately addressed.

We will have significant influence on scheduling downtime, system upgrades and related items.

Kenneth has agreed to provide access to the system and related support gratis. Currently we pay Hostmonster \$14.99/month for the bare-bones shared service. Hostmonster charges a minimum of \$24.99 (for 12-month term) for a similar VPS (Virtual Private Server). Therefore, this cost would go to zero.

Currently we pay \$149 per year for SSL certificates. Since we are the system administrators for the new implementation, we are able to deploy our own SSL certificates. Kenneth and I setup and tested no cost SSL certificates for beta.wplives.org using the Let's Encrypt certificate authority. Since then, I have set up and tested SSL certificates for sub domains. I also have set up auto-renew of the SSL certificates. Testing (and first-hand experience) indicates the beta system is about 10% faster than the current system at Hostmonster.

Testing (and fist-hand experience) indicates the beta system is about 10% faster than the current system at Hostmonster.

Disadvantages:

There is some inherent risk to the website (and to the WPLives Cloud too) in the event that Kenneth and I become unexpectedly unavailable, say for example we are killed in a car accident. Sean O'Brien is another, unrelated person, who has super-user access to Kenneth's systems at Hurricane Electric. We can provide his contact information to the General Superintendent and Society Secretary. Additionally, if the website was still functional, anyone could do a wget from the internet and get the vast majority of the website content to port to a new web hosting service. If the website was also unavailable, a wget could be performed on the latest version of the public WPLives.org website from the [internet archive project](#). These items somewhat mitigate the simultaneous loss of Kenneth and me.

I have maintained a set of webmaster documentation that I have provided to the FRRS General Superintendent. If we implement this proposal, I need to update that documentation and would provide to the FRRS General Superintendent.

There is some risk of hardware failure at the PhirePhly installation in Fremont. The disk system is RAID-6, so disk failure is not a real concern. The system is actually in one Hurricane Electric facility, but the system backup is stored at a second facility 1.7 miles away, so a local building fire is not a real concern. An (almost) current copy of the website and all related data is also on the UNIX development system at my home in Sunnyvale that could be uploaded to a new web-hosting vendor to restore service in case of a major incident.

The only real single point hardware failure risk is Kenneth's hypervisor system. It would probably take several weeks to replace due to equipment lead-time and installation. If needed, a temporary web host could be quickly acquired and spun up to bridge service until replacement hardware could be sourced for PhirePhly Design.

Succession Plan:

At some point in time, I will no longer be the FRRS Webmaster. Two courses of succession seem viable.

If the new webmaster is able and willing to also provide the UNIX system administration and ongoing coding activities, the site could remain at PhirePhly.

If the new webmaster wants only to maintain a traditional, static website; the existing website could be moved to a traditional web-hosting service. We have structured the file system on the proof-of-concept server such that all the website material is located in a single directory /var/wplives. A copy (e.g. a UNIX tar file) could be made of the contents of that directory, transferred to a traditional web-hosting provider and placed in the new home directory. The website should essentially work once the DNS records are updated to point to the new provider. It is likely some of the cgi-tools (e.g. crew sign up) will work and some will not, but the new webmaster could remove those items from the menu system and related web pages, resulting in a static website that should be more easily maintained.

I tested the port to a new web hosting service by making a single tar file image of the /var/wplives directory and then loaded it on another domain I had access to. As expected, all the website content successfully ported to the new site. I did not implement the cgi tools (e.g. crew signup) but in a real case I would not expect any major issues provided the new service allowed user cgi tools.

The succession plan if the website stays at Hostmonster is essentially the same. Our website has grown into a sophisticated content management system that would require a new webmaster to expend significant effort to support. I have created documentation about routine tasks, but it is an intricate website.

Next Steps & Open Items:

We want to get everyone on board for this change before impacting the public website. Additionally we envision this as an opportunity to consolidate related items.

1. Kenneth has suggested we consolidate all our domains under [Google Domains](#). This will reduce cost and simplify our management of the domains and sub-domains we use. Additional domain cost information is in the appendix.
2. I would like to propose the webmaster be empowered to authorize payment for routine website expenses, e.g. domain name registration renewals. Currently all payments require the society secretary to authorize payments and this adds a layer of bureaucracy and delay in routine payments.
3. Once approved, the final data from the Hostmonster site will need to be used to update the beta site, the DNS records updated and the Hostmonster account closed.

Appendix (Cost Information):

Domain registration cost usually depends on the top-level domain (TLDs) (e.g. .org).

wplives.org – registered at NameSecure –\$12.95 (last renewed for 9 years, expires in 2024)

wprrhs.org Lost years ago, not currently available.

The following are registered at Hostmonster – we get one free and pay for the others.

runalocomotive.com - FREE
wpmuseum.com - \$17.99/year
runalocomotive.org - \$17.99/year
runalocomotive.net - \$18.99/year
runalocomotive.info - \$15.99/year
runalocomotive.us - \$15.99/year
sacramentonorthern.net - \$18.99/year
sacramentonorthern.info - \$15.99/year
sacramentonorthern.org - \$17.99/year
wpmuseum.net - \$18.99/year
wpmuseum.info - \$15.99/year

At Google Domains, .com, .info, .et, .org and .us are all \$12/year.

Transfer cost - To transfer a domain to Google Domains from another registrar, you must typically buy one additional year of registration. In these cases, this additional year of registration is the only cost involved with transferring a domain.

Hostmonster charges \$5.99/month (\$71.88/year) for a Dedicated IP – this would go to zero.

Rev. 1 2020-07-17 Paul Finnegan – new

Rev. 2 2020-07-28 Paul Finnegan – more information added.

Rev. 3 2020-08-03 Paul Finnegan – fixed several spelling errors, added sub-domain information, routine payment authorizations, minor rewording.

Rev. 4 2020-08-23 Paul Finnegan – added Kenneth’s comments by email.

C:\Finnegan\frs\webmaster_documentation\PhirePhly System http1\Website Move Project Statement 200823.doc