



Network Monitoring and Management

Presenting Your NOC



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The Network Operations Center

NOC = Network Operations Center

- Come in many forms and depend on the size of your organization and your goals.
- “One or more locations from which control is exercised over your network.”
- NOCs can be:
 - Virtual
 - Located at the core of your network
 - With your help desk
 - Built in pieces
 - Etc.

The Network Operations Center

For purposes of this class each of you will create a virtual NOC using the project management software Trac already installed and partially configured on your machines.

A BIG NOC



There are even bigger NOCs out there...

A small NOC

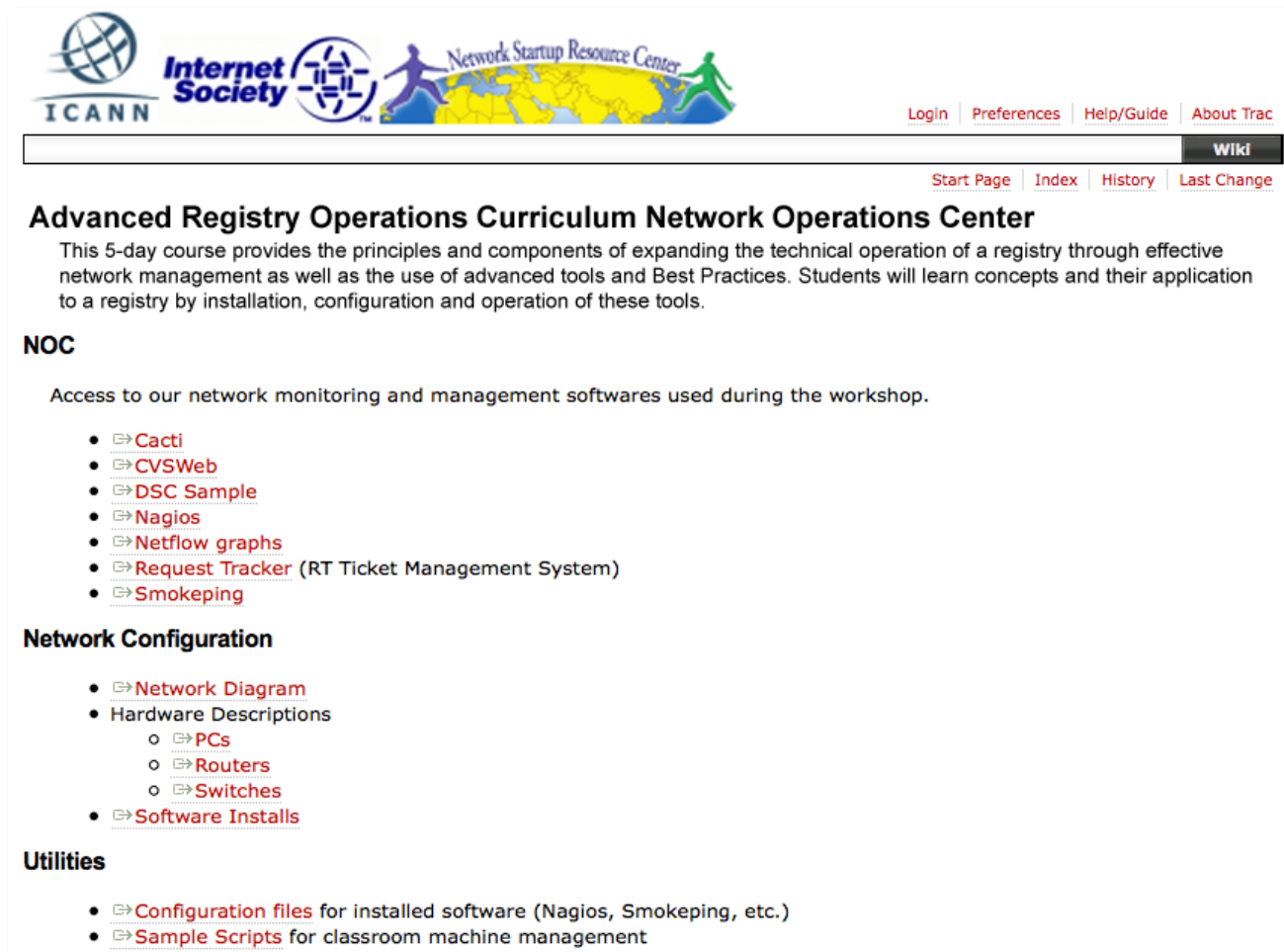


In the same room there is a desk with a phone, another computer and a monitor. This acted as the group's Help Desk.

Many network problems could be detected and solved on the spot!

Our Virtual NOC

We are working towards something like this:



The screenshot shows the homepage of the Internet Society Network Startup Resource Center. The header features logos for ICANN, Internet Society, and the Network Startup Resource Center, along with navigation links for Login, Preferences, Help/Guide, About Trac, and a Wiki button. Below the header, the main heading is "Advanced Registry Operations Curriculum Network Operations Center". A paragraph describes a 5-day course. The "NOC" section lists access to network monitoring and management software. The "Network Configuration" section lists resources for network diagrams, hardware descriptions, and software installs. The "Utilities" section lists configuration files and sample scripts.

Internet Society Network Startup Resource Center

[Login](#) | [Preferences](#) | [Help/Guide](#) | [About Trac](#)

[Wiki](#)

[Start Page](#) | [Index](#) | [History](#) | [Last Change](#)

Advanced Registry Operations Curriculum Network Operations Center

This 5-day course provides the principles and components of expanding the technical operation of a registry through effective network management as well as the use of advanced tools and Best Practices. Students will learn concepts and their application to a registry by installation, configuration and operation of these tools.

NOC

Access to our network monitoring and management softwares used during the workshop.

- [Cacti](#)
- [CVSWeb](#)
- [DSC Sample](#)
- [Nagios](#)
- [Netflow graphs](#)
- [Request Tracker](#) (RT Ticket Management System)
- [Smokeping](#)

Network Configuration

- [Network Diagram](#)
- Hardware Descriptions
 - [PCs](#)
 - [Routers](#)
 - [Switches](#)
- [Software Installs](#)

Utilities

- [Configuration files](#) for installed software (Nagios, Smokeping, etc.)
- [Sample Scripts](#) for classroom machine management

Keeping “Trac” of it All

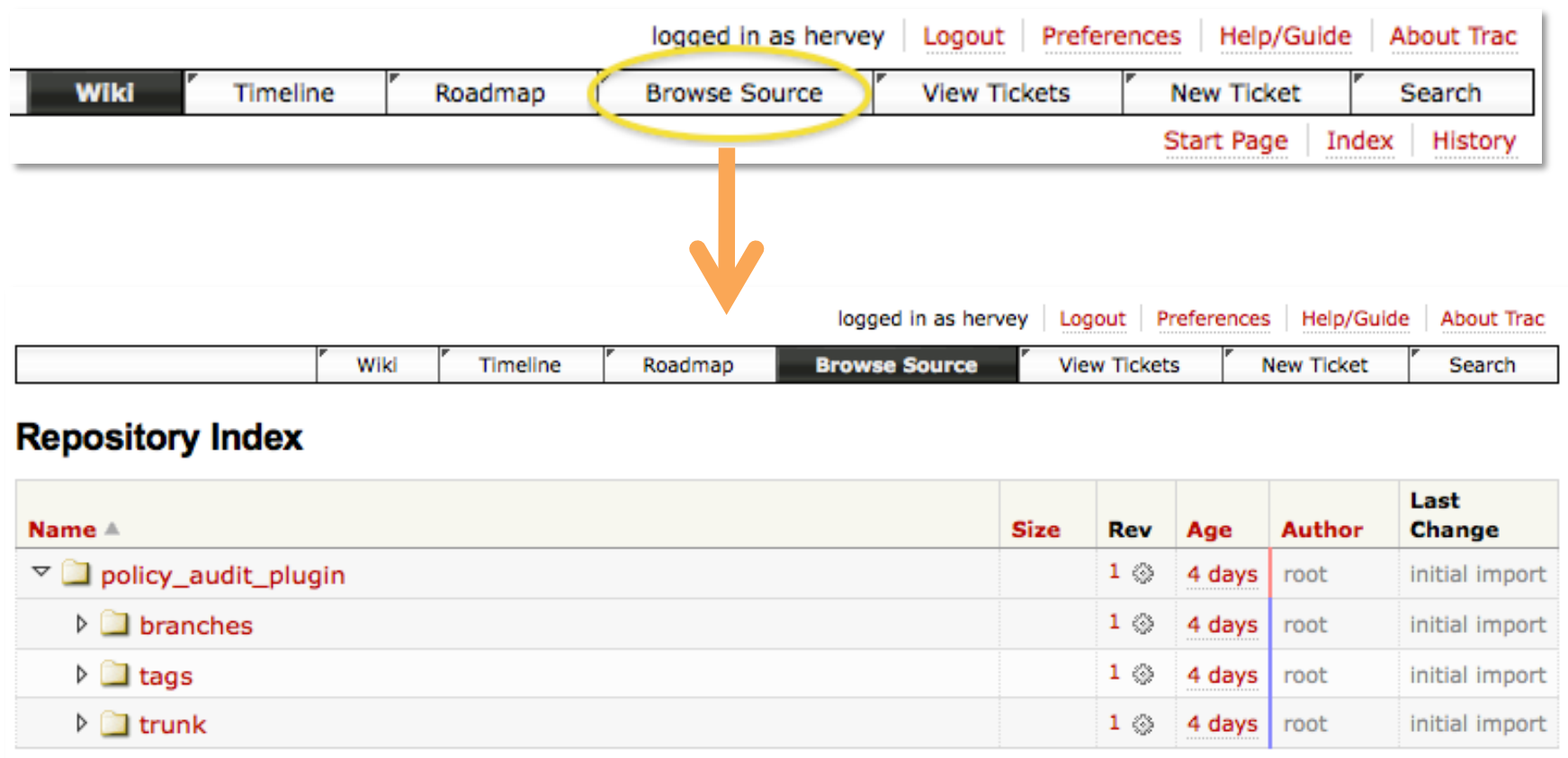
Note that Trac includes a *Timeline* feature.
This includes:

- Changes to wiki pages.
 - Updates, creation, deletion and responsible user.
- Ticket history
 - Updates, creation, deletion and responsible user.
- Milestone updates

This is part of the built-in Version Control System (VCS) in Trac. Trac uses the *Subversion* VCS by default.

Trac and Subversion

You can link trac to Subversion repositories and access them via the Wiki:



The screenshot shows the Trac web interface. At the top, a navigation bar includes links for 'logged in as hervey', 'Logout', 'Preferences', 'Help/Guide', and 'About Trac'. Below this is a secondary navigation bar with 'Wiki', 'Timeline', 'Roadmap', 'Browse Source' (highlighted with a yellow circle), 'View Tickets', 'New Ticket', and 'Search'. An orange arrow points from the 'Browse Source' link to the 'Repository Index' table below.

Repository Index

Name ▲	Size	Rev	Age	Author	Last Change
▼ policy_audit_plugin		1	4 days	root	initial import
▷ branches		1	4 days	root	initial import
▷ tags		1	4 days	root	initial import
▷ trunk		1	4 days	root	initial import

Versioning and Documentation

Version Control Systems are part of any good documentation project.

During the week you will be exposed to this concept several more times.

There are many version control systems:

- CVS
- Subversion
- Mercurial
- git

Wikipedia has a good article on the concepts of “Revision Control”:

http://en.wikipedia.org/wiki/Revision_control

Using Trac

Use the built-in documentation:

Help

- **TracGuide** -- Built-in Documentation
- **TitleIndex** -- Complete list of local wiki pages

Located at the bottom of the Trac main page.

- If you have questions ask an instructor.
- You can find Trac here:

<http://trac.edgewall.org/>



Installing Trac

It's pretty hard to do the first time. Here is a Trac install Cookbook for Ubuntu:

<https://nsrc.org/trac/01-install-quickstart.txt>



Your Assignment

Document your network!

- *After each software install and configuration link to the new software.*
- Create an entry for your PC, other PCs, routers and switches in the classroom.
- Create or copy a classroom network diagram.
- Consider using Trac's Timeline and ticket features for outstanding issues and projects.
- Create a repository of configuration files and link to this.

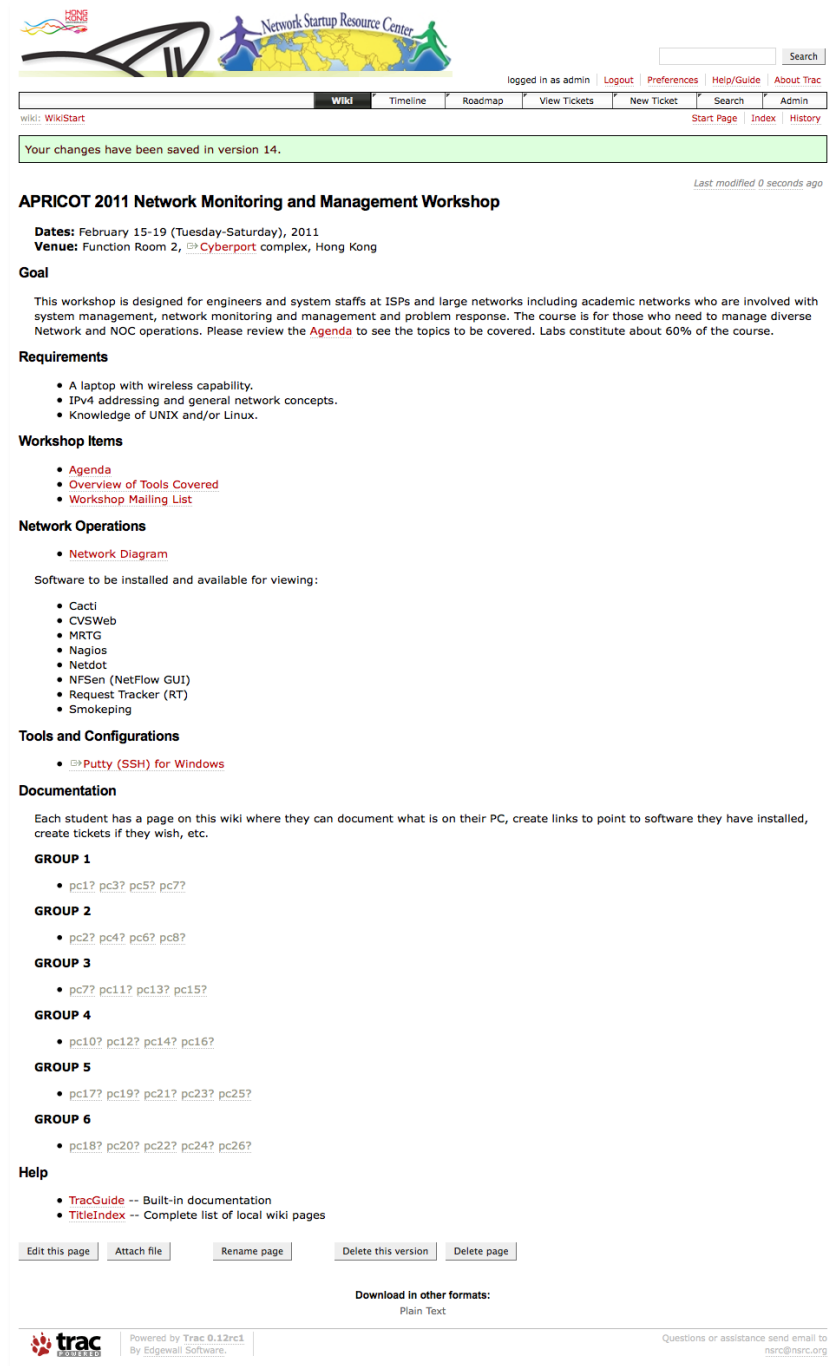
Your Assignment cont.

Documenting your network...

- Make note of what software is installed and versions.
- Document anything else that you think will make managing and monitoring your network easier.
- By the end of the week you could have a wiki instance similar to or better than the main page instance installed and configured on the workshop NOC machine.

Getting Started

Go to <http://noc/wiki/>



The screenshot shows a web browser displaying a Trac wiki page for the "APRICOT 2011 Network Monitoring and Management Workshop". The page has a header with logos for "HONG KONG" and "Network Startup Resource Center", a search bar, and navigation links like "logged in as admin", "Logout", "Preferences", "Help/Guide", and "About Trac". Below the header is a breadcrumb trail: "wiki: WikiStart" > "Timeline" > "Roadmap" > "View Tickets" > "New Ticket" > "Search" > "Admin". A green status bar indicates "Your changes have been saved in version 14." and "Last modified 0 seconds ago".

APRICOT 2011 Network Monitoring and Management Workshop

Dates: February 15-19 (Tuesday-Saturday), 2011
Venue: Function Room 2, [Cyberport](#) complex, Hong Kong

Goal

This workshop is designed for engineers and system staffs at ISPs and large networks including academic networks who are involved with system management, network monitoring and management and problem response. The course is for those who need to manage diverse Network and NOC operations. Please review the [Agenda](#) to see the topics to be covered. Labs constitute about 60% of the course.

Requirements

- A laptop with wireless capability.
- IPv4 addressing and general network concepts.
- Knowledge of UNIX and/or Linux.

Workshop Items

- [Agenda](#)
- [Overview of Tools Covered](#)
- [Workshop Mailing List](#)

Network Operations

- [Network Diagram](#)

Software to be installed and available for viewing:

- Cacti
- CVSWeb
- MRTG
- Nagios
- Netdot
- NFSen (NetFlow GUI)
- Request Tracker (RT)
- Smokeping

Tools and Configurations

- [Putty \(SSH\) for Windows](#)

Documentation

Each student has a page on this wiki where they can document what is on their PC, create links to point to software they have installed, create tickets if they wish, etc.

GROUP 1

- [pc1?](#) [pc3?](#) [pc5?](#) [pc7?](#)

GROUP 2

- [pc2?](#) [pc4?](#) [pc6?](#) [pc8?](#)

GROUP 3

- [pc7?](#) [pc11?](#) [pc13?](#) [pc15?](#)

GROUP 4

- [pc10?](#) [pc12?](#) [pc14?](#) [pc16?](#)

GROUP 5

- [pc17?](#) [pc19?](#) [pc21?](#) [pc23?](#) [pc25?](#)

GROUP 6

- [pc18?](#) [pc20?](#) [pc22?](#) [pc24?](#) [pc26?](#)

Help

- [TracGuide](#) -- Built-in documentation
- [TitleIndex](#) -- Complete list of local wiki pages

At the bottom of the page, there are buttons for "Edit this page", "Attach file", "Rename page", "Delete this version", and "Delete page". Below these buttons is a section for "Download in other formats:" with a link for "Plain Text". The footer includes the "trac" logo, "Powered by Trac 0.12rc1 By Edgewall Software.", and contact information: "Questions or assistance send email to nsrc@nsrc.org".

Getting Started

Log in to the Trac instance on the NOC



Network Startup Resource Center

[Login](#) | [Preferences](#) | [Help/Guide](#) | [About Trac](#) | [Register](#)

[Wiki](#)

wiki: [WikiStart](#)

[Start Page](#) | [Index](#) | [History](#)

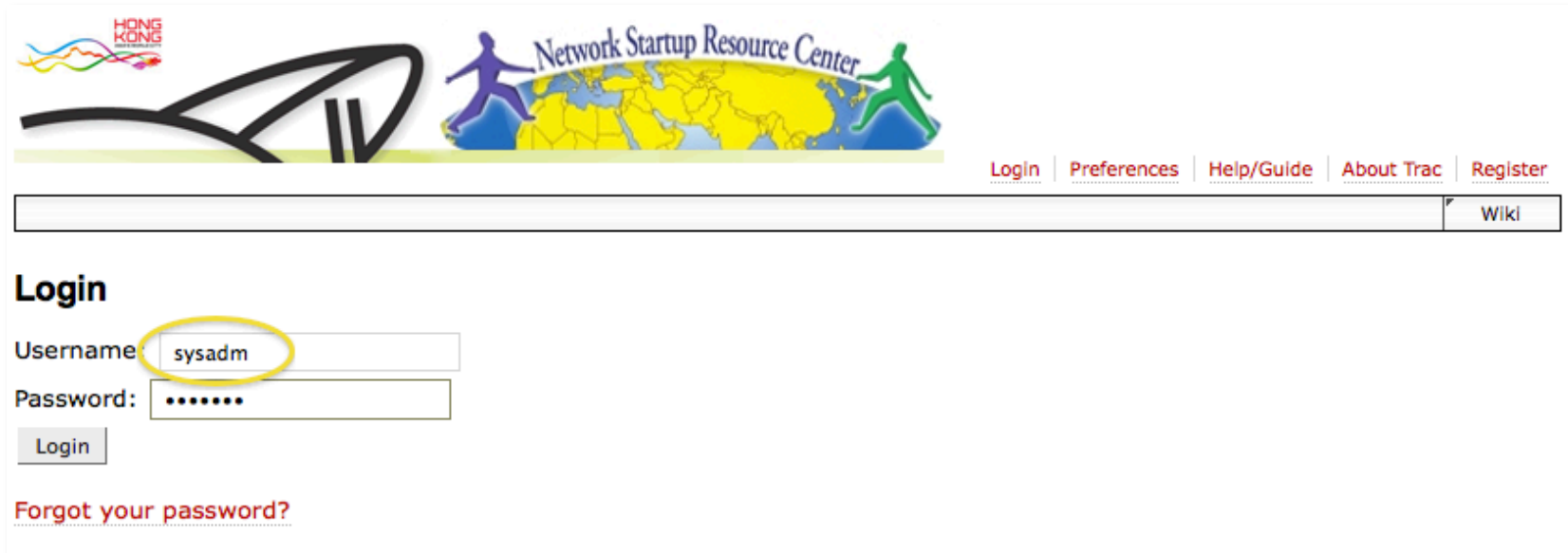
Last modified 3 minutes ago

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Getting Started

Use the “sysadm” user and same password as used in class:



Network Startup Resource Center

[Login](#) | [Preferences](#) | [Help/Guide](#) | [About Trac](#) | [Register](#)

Wiki

Login



Username:

Password:

[Forgot your password?](#)

You will now be able to update, create, delete pages in the trac wiki. Click on the “Edit” button at the bottom of each page to do this...

Getting Started



logged in as sysadm | [Logout](#) | [Preferences](#) | [Help/Guide](#) | [About Trac](#)

[Wiki](#) | [Timeline](#) | [Roadmap](#) | [View Tickets](#) | [New Ticket](#) | [Search](#)

wiki: [WikiStart](#) [Start Page](#) | [Index](#) | [History](#)
Last modified 6 minutes ago

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GROUP 5

- [pc17?](#) [pc19?](#) [pc21?](#) [pc23?](#) [pc25?](#)

GROUP 6

- [pc18?](#) [pc20?](#) [pc22?](#) [pc24?](#) [pc26?](#)

Help

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- [TitleIndex](#) -- Complete list of local wiki pages

[Edit this page](#) [Attach file](#)

Document, Document

1. Click on the “pcN” entry for your PC image.
2. This will create a new page. Click on the “Create this page” button at the bottom of the page and enter some information.
3. You can see the “example” entry for ideas. Click on “Edit this page” to see how the wiki formatting works.

Questions

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