Peregrine: Web-enhanced Antelope

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Papagayo, Costa Rica AUG

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Peregrine

- Web-based Monitoring
- Web-based Information distribution
- Web-based Interaction
- Antelope Base System + Web Infrastructure
  - New program ***rtwebserver***
  - New program ***rtcache***
  - Host of supporting python libraries

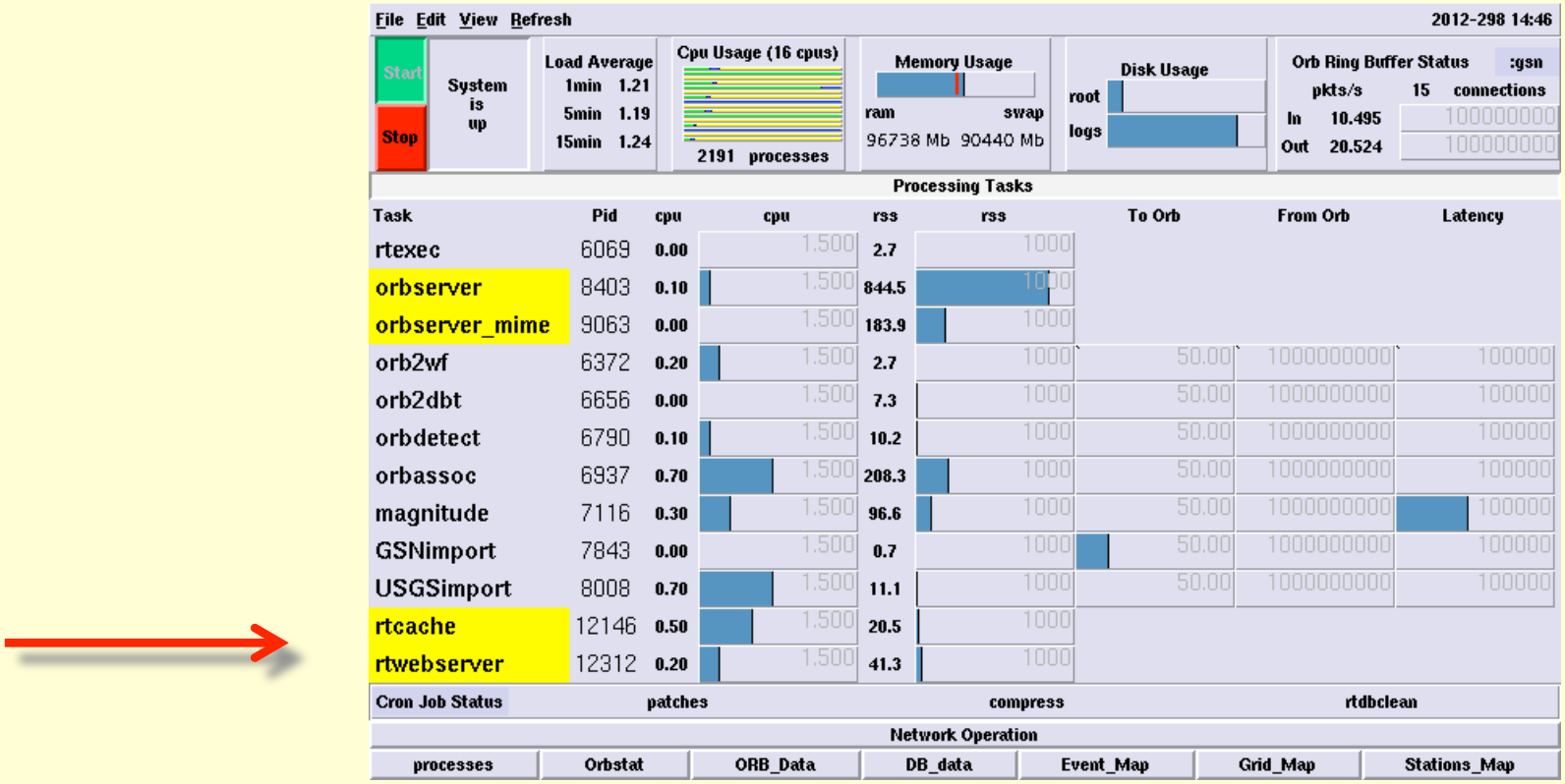
Peregrine Goals

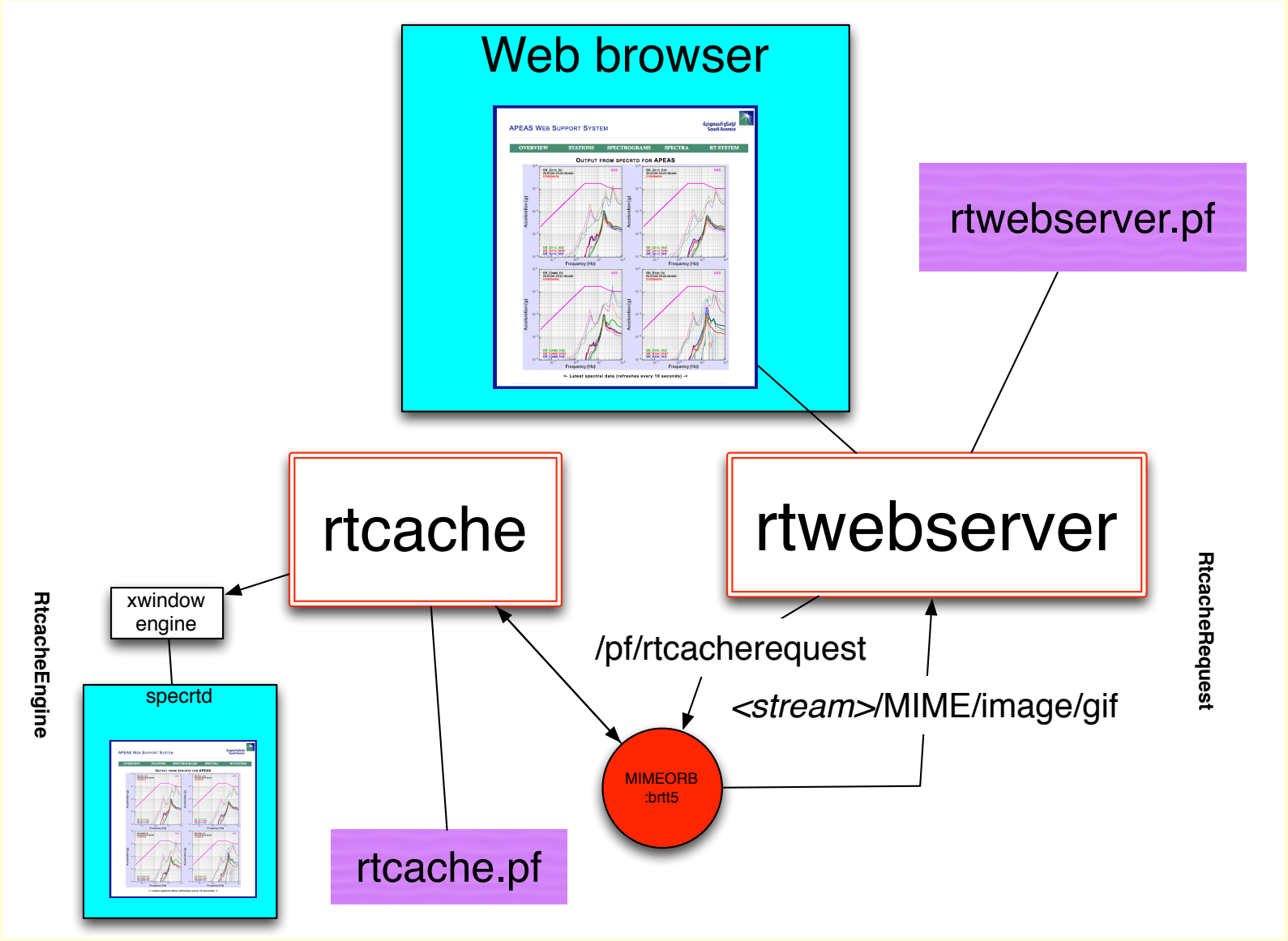
- Robust Web Presence for users and operators
- Capitalize on informative power of real-time system
- Platform for revealing more about RT system to operators
- Clean integration with real-time system
- Familiar configuration patterns for operators
- Low user-maintenance cost and complexity
- Flexible and Extensible
- Self-contained
- Maintainable software base

What We Did

- Wrote our own web server
- Made it run under a real-time system (rtexec)
- Made it look and feel like our existing programs
- Made it connect easily to Antelope
- Wrote a caching daemon to generate products for it

rtwebserver / rtcache
in real-time system





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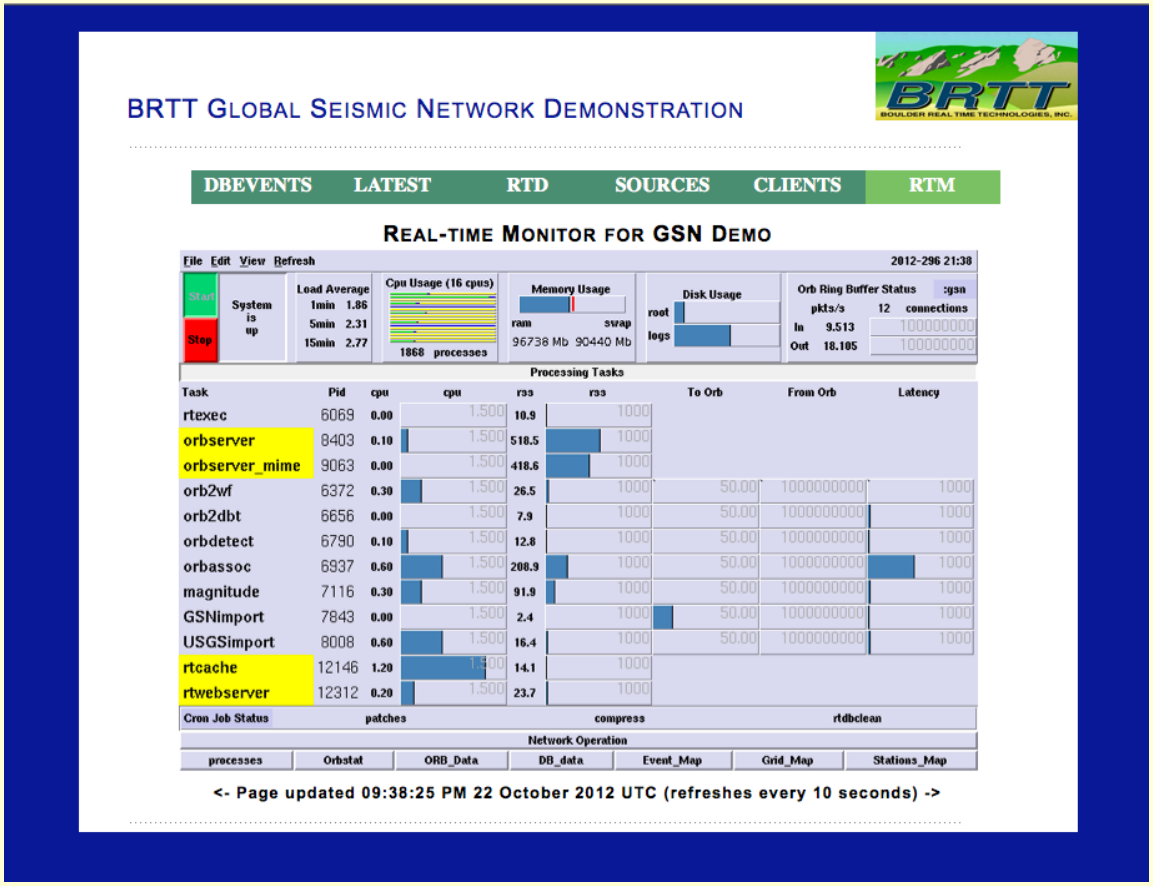
Peregrine Example: *RTM* on the Web

For Operators



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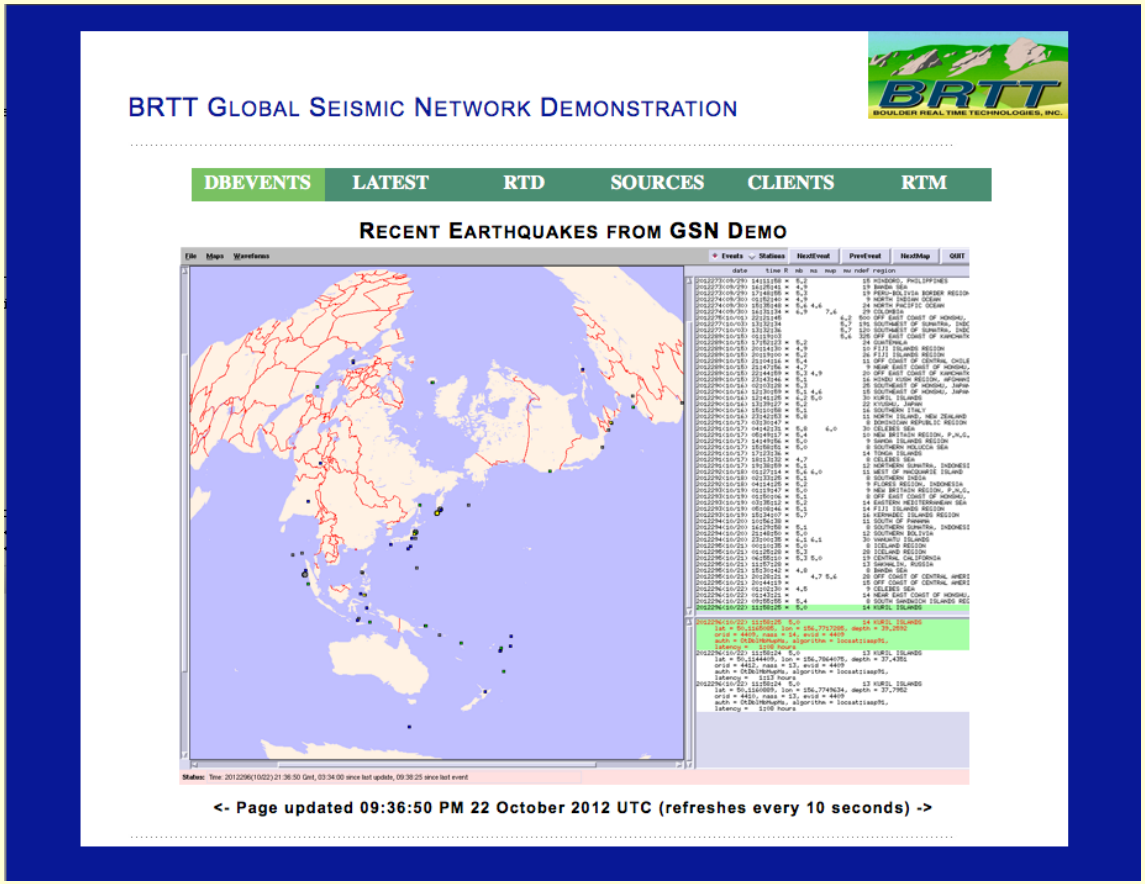
Peregrine Example: *dbevents* on the Web

For
Users
And
Operators



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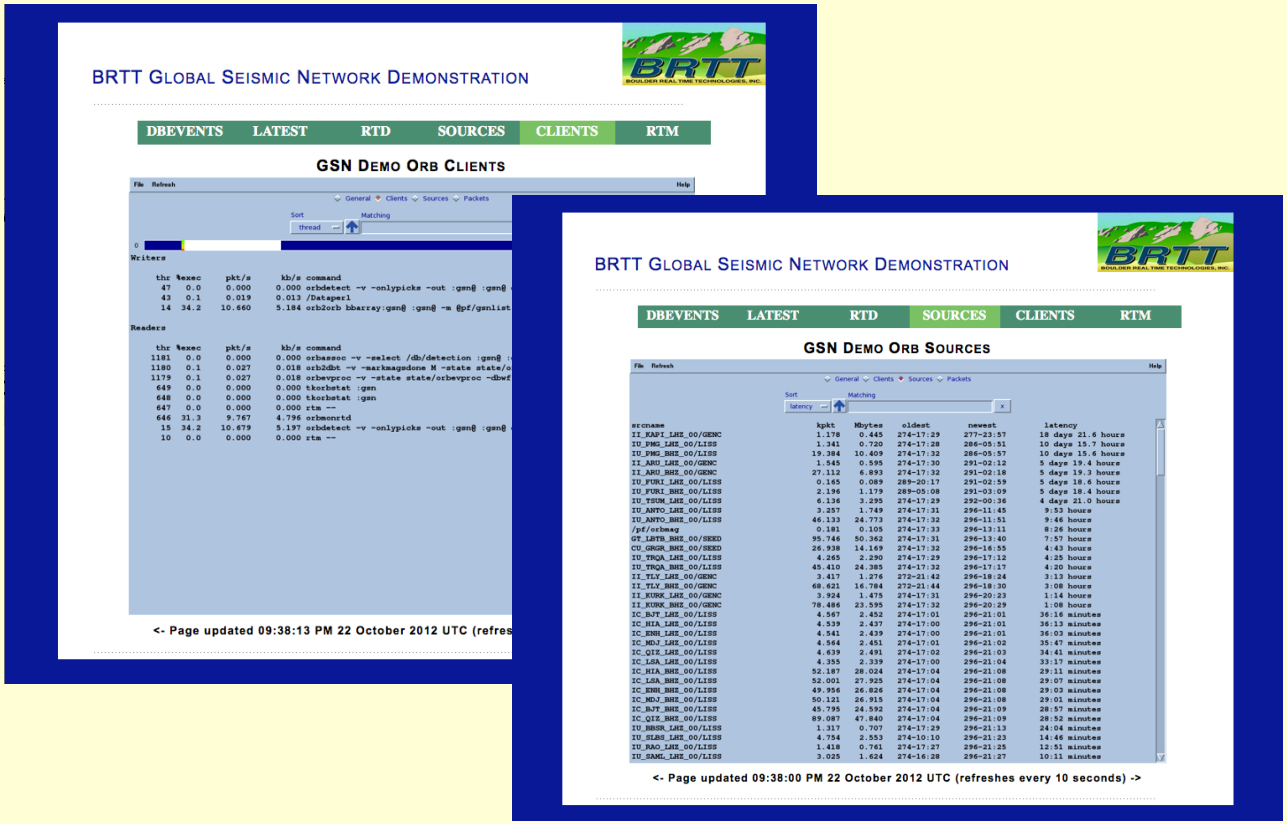
Easy display of generic X clients



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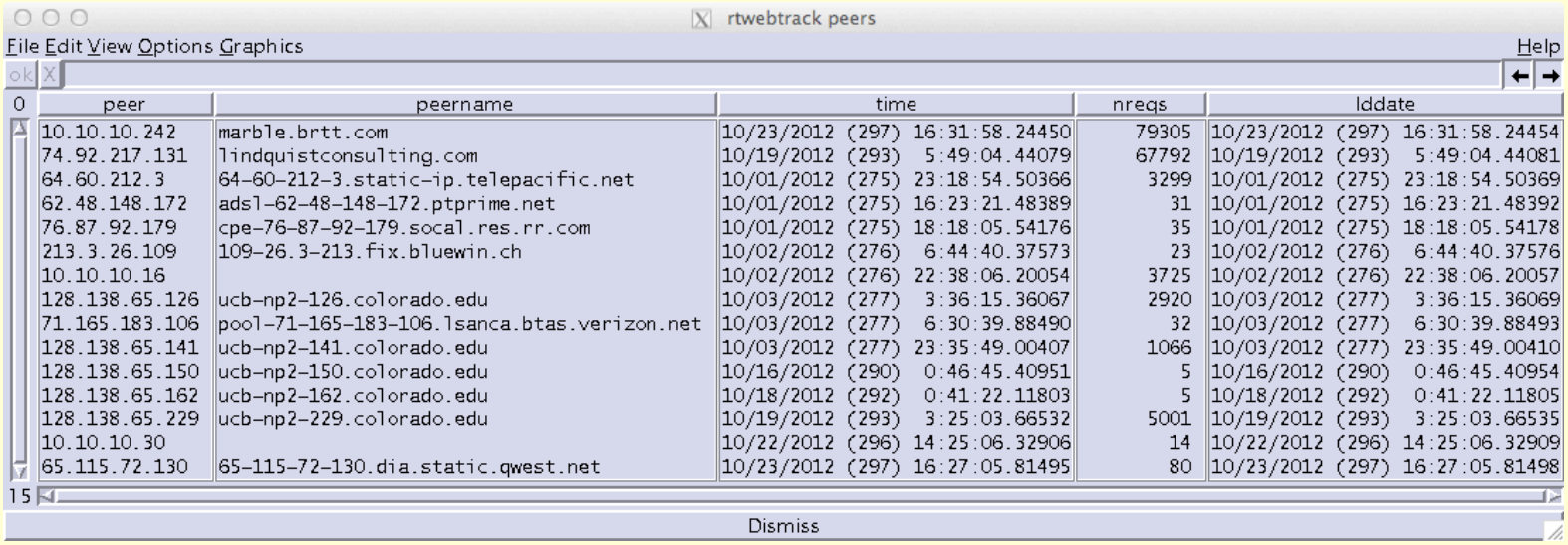
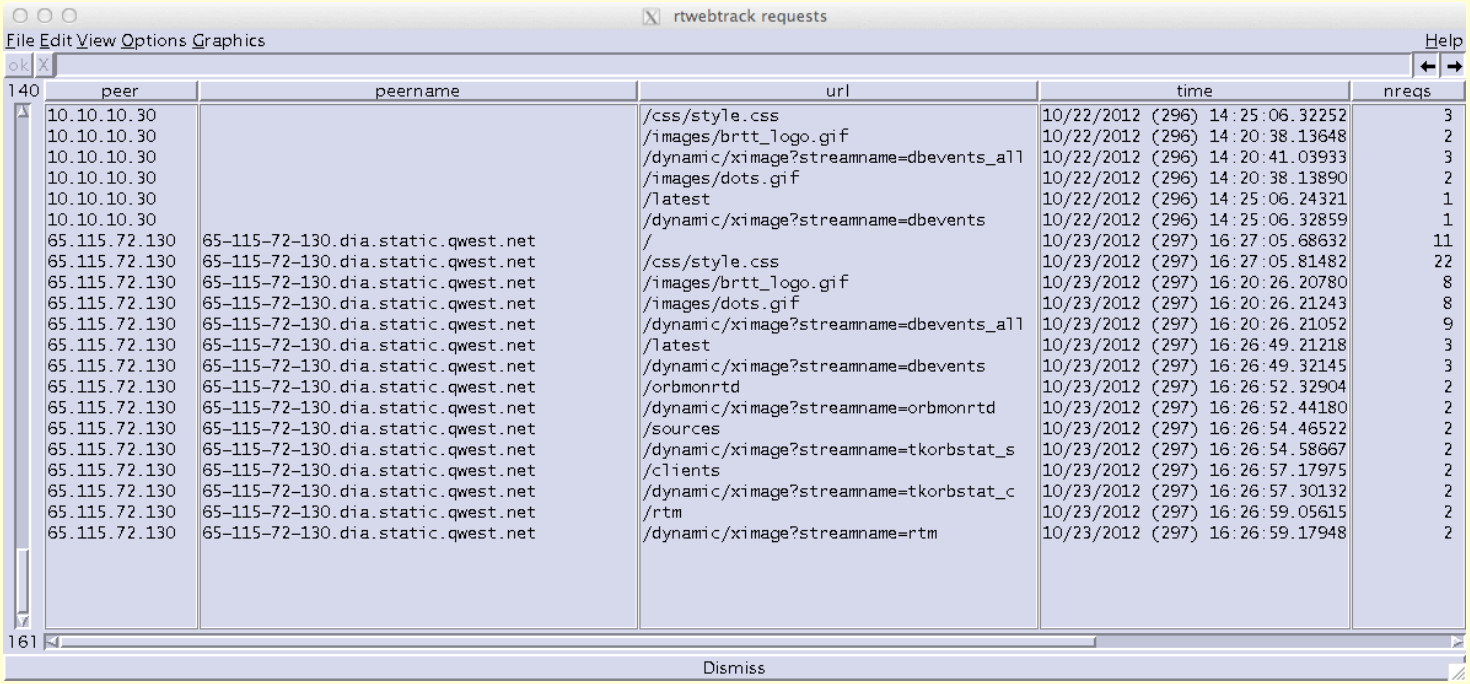
rtwebserver connection logging: who is connecting



peer	peername	time	nreqs	lddate
10.10.10.242	marble.brtt.com	10/23/2012 (297) 16:31:58.24450	79305	10/23/2012 (297) 16:31:58.24454
74.92.217.131	lindquistconsulting.com	10/19/2012 (293) 5:49:04.44079	67792	10/19/2012 (293) 5:49:04.44081
64.60.212.3	64-60-212-3.static-ip.telepacific.net	10/01/2012 (275) 23:18:54.50366	3299	10/01/2012 (275) 23:18:54.50369
62.48.148.172	adsl-62-48-148-172.ptprime.net	10/01/2012 (275) 16:23:21.48389	31	10/01/2012 (275) 16:23:21.48392
76.87.92.179	cpe-76-87-92-179.socal.res.rr.com	10/01/2012 (275) 18:18:05.54176	35	10/01/2012 (275) 18:18:05.54178
213.3.26.109	109-26.3-213.fix.bluewin.ch	10/02/2012 (276) 6:44:40.37573	23	10/02/2012 (276) 6:44:40.37576
10.10.10.16		10/02/2012 (276) 22:38:06.20054	3725	10/02/2012 (276) 22:38:06.20057
128.138.65.126	ucb-np2-126.colorado.edu	10/03/2012 (277) 3:36:15.36067	2920	10/03/2012 (277) 3:36:15.36069
71.165.183.106	pool-71-165-183-106.lsanca.btas.verizon.net	10/03/2012 (277) 6:30:39.88490	32	10/03/2012 (277) 6:30:39.88493
128.138.65.141	ucb-np2-141.colorado.edu	10/03/2012 (277) 23:35:49.00407	1066	10/03/2012 (277) 23:35:49.00410
128.138.65.150	ucb-np2-150.colorado.edu	10/16/2012 (290) 0:46:45.40951	5	10/16/2012 (290) 0:46:45.40954
128.138.65.162	ucb-np2-162.colorado.edu	10/18/2012 (292) 0:41:22.11803	5	10/18/2012 (292) 0:41:22.11805
128.138.65.229	ucb-np2-229.colorado.edu	10/19/2012 (293) 3:25:03.66532	5001	10/19/2012 (293) 3:25:03.66535
10.10.10.30		10/22/2012 (296) 14:25:06.32906	14	10/22/2012 (296) 14:25:06.32909
65.115.72.130	65-115-72-130.dia.static.qwest.net	10/23/2012 (297) 16:27:05.81495	80	10/23/2012 (297) 16:27:05.81498

rtwebserver connection logging: what are they asking for



peer	peername	url	time	nreqs
10.10.10.30		/css/style.css	10/22/2012 (296) 14:25:06.32252	3
10.10.10.30		/images/brtt_logo.gif	10/22/2012 (296) 14:20:38.13648	2
10.10.10.30		/dynamic/ximage?streamname=dbevents_all	10/22/2012 (296) 14:20:41.03933	3
10.10.10.30		/images/dots.gif	10/22/2012 (296) 14:20:38.13890	2
10.10.10.30		/latest	10/22/2012 (296) 14:25:06.24321	1
10.10.10.30		/dynamic/ximage?streamname=dbevents	10/22/2012 (296) 14:25:06.32859	1
65.115.72.130	65-115-72-130.dia.static.qwest.net	/	10/23/2012 (297) 16:27:05.68632	11
65.115.72.130	65-115-72-130.dia.static.qwest.net	/css/style.css	10/23/2012 (297) 16:27:05.81482	22
65.115.72.130	65-115-72-130.dia.static.qwest.net	/images/brtt_logo.gif	10/23/2012 (297) 16:20:26.20780	8
65.115.72.130	65-115-72-130.dia.static.qwest.net	/images/dots.gif	10/23/2012 (297) 16:20:26.21243	8
65.115.72.130	65-115-72-130.dia.static.qwest.net	/dynamic/ximage?streamname=dbevents_all	10/23/2012 (297) 16:20:26.21052	9
65.115.72.130	65-115-72-130.dia.static.qwest.net	/latest	10/23/2012 (297) 16:26:49.21218	3
65.115.72.130	65-115-72-130.dia.static.qwest.net	/dynamic/ximage?streamname=dbevents	10/23/2012 (297) 16:26:49.32145	3
65.115.72.130	65-115-72-130.dia.static.qwest.net	/orbmonrtd	10/23/2012 (297) 16:26:52.32904	2
65.115.72.130	65-115-72-130.dia.static.qwest.net	/dynamic/ximage?streamname=orbmonrtd	10/23/2012 (297) 16:26:52.44180	2
65.115.72.130	65-115-72-130.dia.static.qwest.net	/sources	10/23/2012 (297) 16:26:54.46522	2
65.115.72.130	65-115-72-130.dia.static.qwest.net	/dynamic/ximage?streamname=tkorbstat_s	10/23/2012 (297) 16:26:54.58667	2
65.115.72.130	65-115-72-130.dia.static.qwest.net	/clients	10/23/2012 (297) 16:26:57.17975	2
65.115.72.130	65-115-72-130.dia.static.qwest.net	/dynamic/ximage?streamname=tkorbstat_c	10/23/2012 (297) 16:26:57.30132	2
65.115.72.130	65-115-72-130.dia.static.qwest.net	/rtm	10/23/2012 (297) 16:26:59.05615	2
65.115.72.130	65-115-72-130.dia.static.qwest.net	/dynamic/ximage?streamname=rtm	10/23/2012 (297) 16:26:59.17948	2

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Peregrine: What's New

- Heavily improved image-serving architecture
- Robustness fixes
- Smoother auto-updates of images
- Rtcache enhancements
  - Autoharvest mode
  - Interaction support
  - Xvfb restarting
  - Enhanced image harvest
- Basic Interaction

Peregrine: What's coming

- RTM remote control
- Further work on interaction
- Log-file monitoring
- Authentication and Password protection
- Enhanced Mapping

Thank You

- For Purchase Information on Peregrine, contact Ogie Kuraica at Kinemetrics, Inc.
  - ogie@kmi.com

Peregrine

- Python-based web server
- Along with the various python extensions, provides a comprehensive toolkit for developing custom web servers that are highly integrated into the Antelope environment (configuration, connectivity, etc.)
- Along with other components, will be sold as a separate BRTT product or as an addon to existing Antelope site licenses
- A demo version of the complete ***Peregrine*** product will be made available on request

Why not Existing Technologies?

- E.g. operator-managed Apache?
- And open-source PHP?
- And hand-linked Python?
- And user-compiled ImageMagick?
- And consultant-developed custom apps?

Why not Existing Technologies?

- One Simple Reason:
  - It hasn't worked in commercial context
    - (works for a few places with advanced development staff and strong sysadmin resources)
  - Hasn't provided generally accessible platform
- Apache installations are highly variable
- Linking in buzzword technologies is complex
- Configurable elements are heterogeneous
- Underlying open-source is constantly changing
- High cost of ownership, high cost of development

Why not distribute an existing stack?

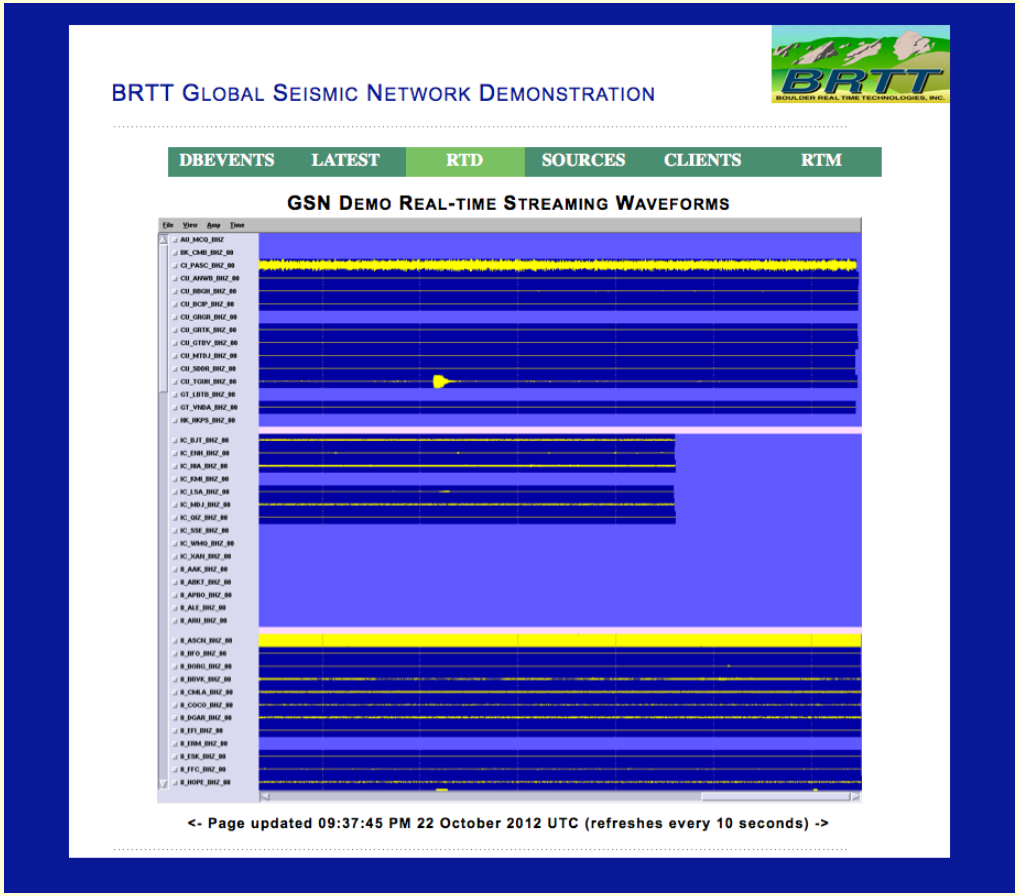
- Lots of work; worth doing right
- We can create something better tuned for our users
- Ours is fully self-contained
- Ours is maintainable by us
- Actually we did start with an existing stack:
  - Python
  - Twisted Web Platform

Summary --

- Hard to maintain what we don't control
- Hard to support what we haven't built
- Hard to come up with strategies to integrate our apps with organic free-for-all code base
  - Much less explain those strategies…

- ("Hard" => "Very Expensive")

Peregrine Example: *orbmonrtd* on the web



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Peregrine: What's the difference?

- No ImageMagick! (whew)
- No Installation sysadmin of open-source code
- No Configuration sysadmin of 3rd party code
- Little or no custom development
- Much more plug-n-play
- Generalized Platform, Streamlined Tools
  - Custom development still possible!

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Peregrine: What's the difference?

- Single command-lines to launch programs
- Entirely contained within rtexec system
- Parameter-file configured
- Python modules included to provide capabilities

rtwebserver

- Self-contained web-server

```
% rtwebserver -v -P 8000
```

- Runs under rtexec
- Parameter-file configures entire site
  - *rtwebserver.pf*
- Logs connections to database
- Python and Twisted (*http://twistedmatrix.com*)

rtcache

- Generalized Caching Daemon
- Pre-builds products for the web server
- E.g.:
  - Dynamic X-window screen-shots
  - Strong-motion alarm reports
  - Anything you can code into Python
- Exchanges request/response via orbserver
- Can show on the web any GUI you can run as X-client

rtwebserver.pf

```
site &Arr{
   pages &Arr{
      index              rpy:webitems/index.rpy  index
      latest             rpy:webitems/latest.rpy
      rtm                rpy:webitems/rtm.rpy
      orbmonrtd          rpy:webitems/orbmonrtd.rpy
      sources            rpy:webitems/sources.rpy
      clients            rpy:webitems/clients.rpy
      dynamic &Arr{
        ximage           rtcache:ximage
      }
      images &Arr{
        brtt_logo.gif    file:webitems/images/brtt_logo.gif
        dots.gif         file:webitems/images/dots.gif
      }
      css &Arr{
        style.css        pf:stylesheet   text/css
      }
   }
```

rtwebserver page types

- file
- pf
- rpy
- rtcache
- (revproxy)

rtwebserver.pf

```
site &Arr{
   siteconfig &Arr{
        time_format             %I:%M:%S %p %d %B %Y %Z
        centerimage_width       640
        refresh_sec             10
   }
   ximage &Arr{
        orbname                 :gsn2
        diagnostics             1
        maxwait_sec             5.0
        rtcache_targetname
    }
    phrases &Arr{
        header &Literal{
                <div id="header">
                <span class="private"><img id="logo" src="/images/brtt_logo.gif"/></span>
                <p id="banner">BRTT Global Seismic Network Demonstration</p>
                </div>
                <img class="dots" alt="dots" src="/images/dots.gif"/>
        }
    }
}
```

rtwebserver.pf

```
site &Arr{
 stylesheet &Literal{

        html, body {
          background: #0c2093 ;
          margin: 0px ;
          padding: 0px ;
        }

        h1 {
          color: #000 ;
          font-family: arial, helvetica, geneva, sans-serif ;
          font-size: 1.3em ;
          margin: 2px ;
          margin-top: 20px ;
          font-variant: small-caps ;
          letter-spacing: 1px ;
          text-align: center ;
        }
   }
}
```

rtcache.pf

```
caches &Arr{
    defaults &Arr{
        enginetype xwindow
        command_env &Arr{
                PATH    &env(PATH)
                ANTELOPE        &env(ANTELOPE)
                PFPATH          &env(PFPATH)
}
        image_format GIF
        window_name
        virtual_display auto
        virtual_screen_geometry 1280x1024
        startup_sleep_sec 0.2
        xwindow_restart_sec 86400
    }
    rtm &Arr{
        command rtm
    }
    dbevents &Arr{
        command dbevents db/gsn
    }
    orbmonrtd &Arr{
        command orbmonrtd :gsn -wmax 1200 -hmax 1000
    }
```

Peregrine Development Successes

- Easy display of generic X clients
- rtdemo_gsn web display
- Bighorn Web interaction platform

Peregrine Future

- Web sockets
- Interaction
- More applications
  - (Wish list?)