

A large, stylized graphic of a sun or moon, colored in a gradient of yellow and orange, with a blue sky background. The graphic is positioned behind the text, creating a backdrop effect.

BPQ

Willem A Schreüder AC0KQ
willem@prinmath.com

RMHAM University
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What is BPQ?

- **NET/ROM compatible Packet Switch**
 - **Multiple ports**
 - **Serial, USB, I2C, IP**
 - **You need to provide the TNCs**
 - **Multiple protocols**
 - **Packet, Pactor, AXIP, VARA, ...**
 - **Multiple functions**
 - **BBS, Chat, APRS**

What can we use BPQ for?

- **Access point (packet, VARA, pactor, ...)**
 - BPQ is typically what you connect to
- **Cross band, cross mode gateway**
- **Bulletin Board System (BBS)**
- **Radio Message Server (RMS)**
 - BPQ forms the backbone of the NTS-D system
- **APRS Internet Gateway**
- **Application Gateway**

How does it work?

- **BPQ is a software program**
 - Runs on most computers
 - Somewhat complex configuration file
- **Connects to radio via Terminal Node Controller (TNC)**
 - Usually serial, USB or I2C
- **Interconnects via IP**
- **Built-in BBS, iGate, Chat server, ...**

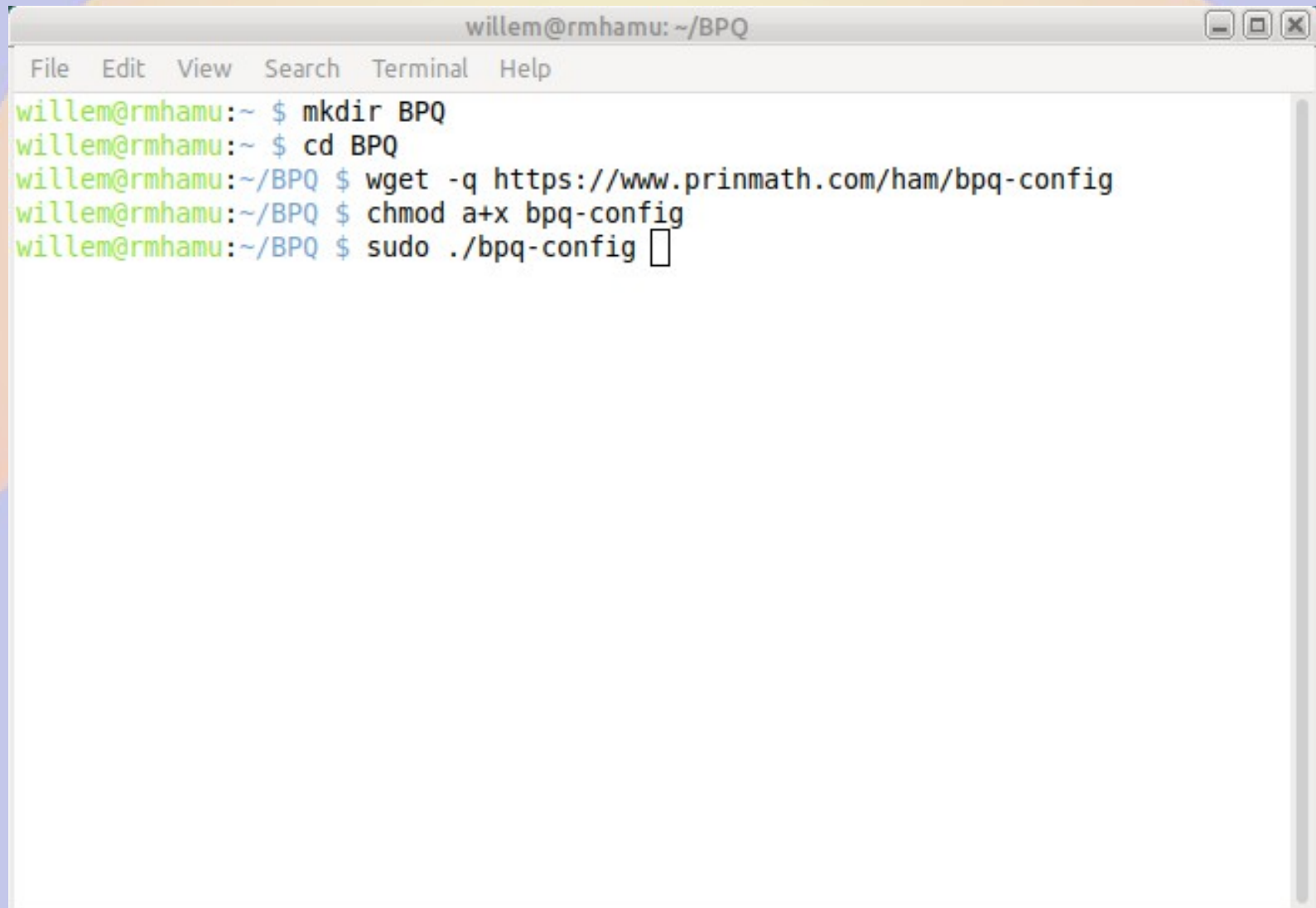
Complaint: Hard to set up BPQ

- BPQ is very sophisticated, and that necessarily adds a lot of complexity
- Solutions:
 - Use *bpq-config* to get started
 - Web interface once configured
 - Join a support group

Brief history of BPQ

- **Written by John Wiseman G8BPQ**
- **Originally called BPQCODE**
- **Became BPQ32 in late 90s**
- **Ported to OSX/Linux in 2000s**
- **Ported to Raspberry Pi/TNC-PI and Beagle Bone Black/TNC-Black**

Download and run bpq-config

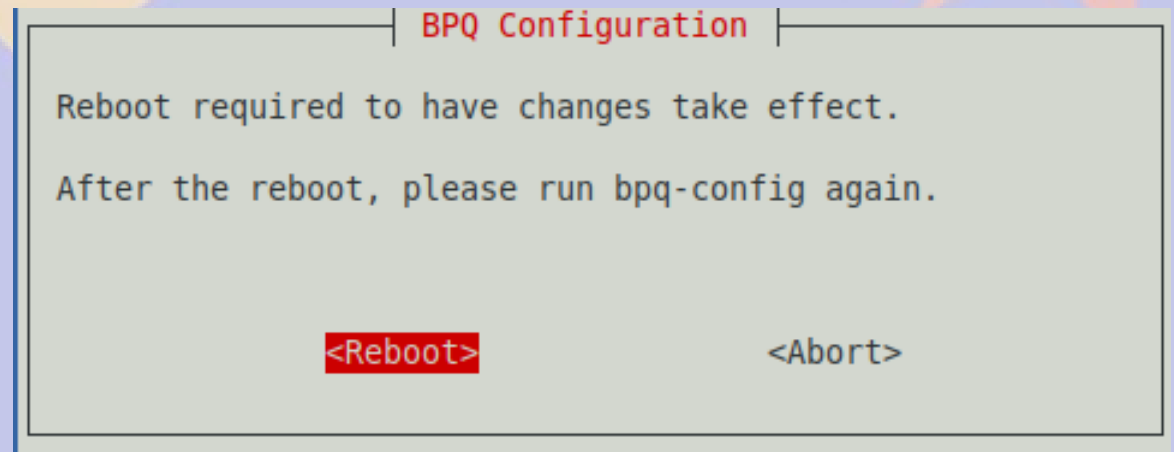
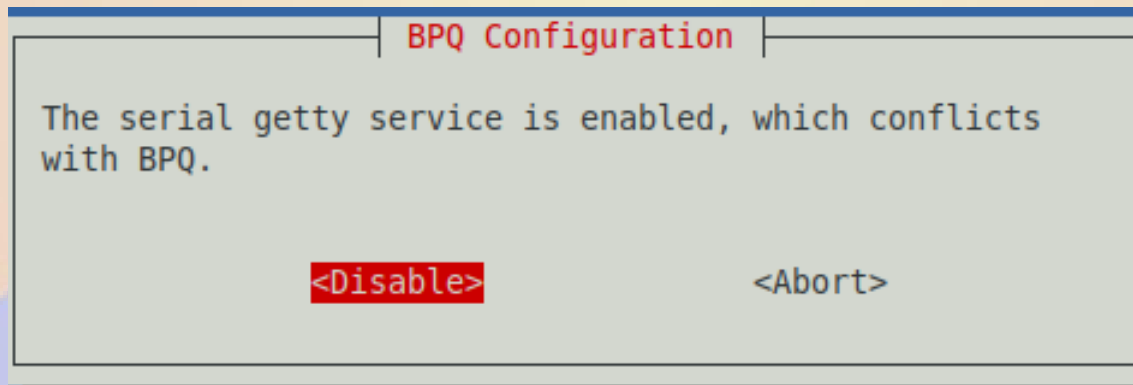
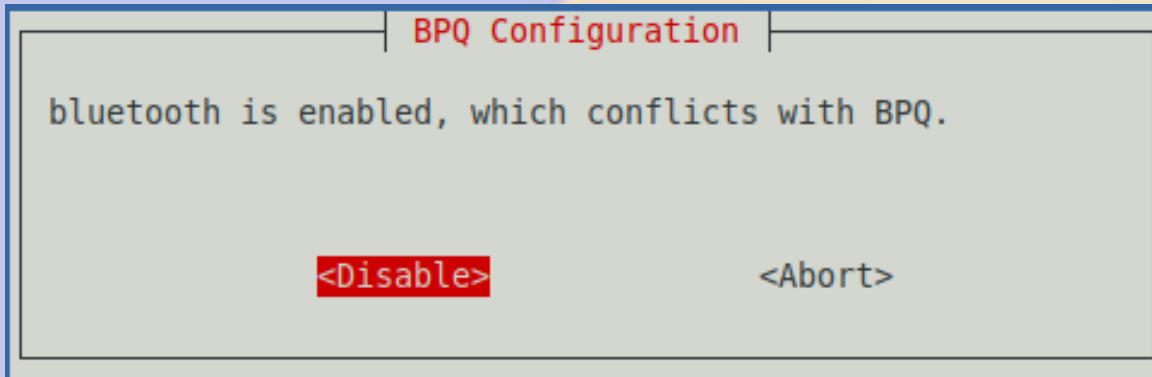


```
willem@rmhamu: ~/BPQ
File Edit View Search Terminal Help
willem@rmhamu:~ $ mkdir BPQ
willem@rmhamu:~ $ cd BPQ
willem@rmhamu:~/BPQ $ wget -q https://www.prinmath.com/ham/bpq-config
willem@rmhamu:~/BPQ $ chmod a+x bpq-config
willem@rmhamu:~/BPQ $ sudo ./bpq-config
```

The image shows a terminal window titled "willem@rmhamu: ~/BPQ". The window has a menu bar with "File", "Edit", "View", "Search", "Terminal", and "Help". The terminal content shows the following commands and their execution:

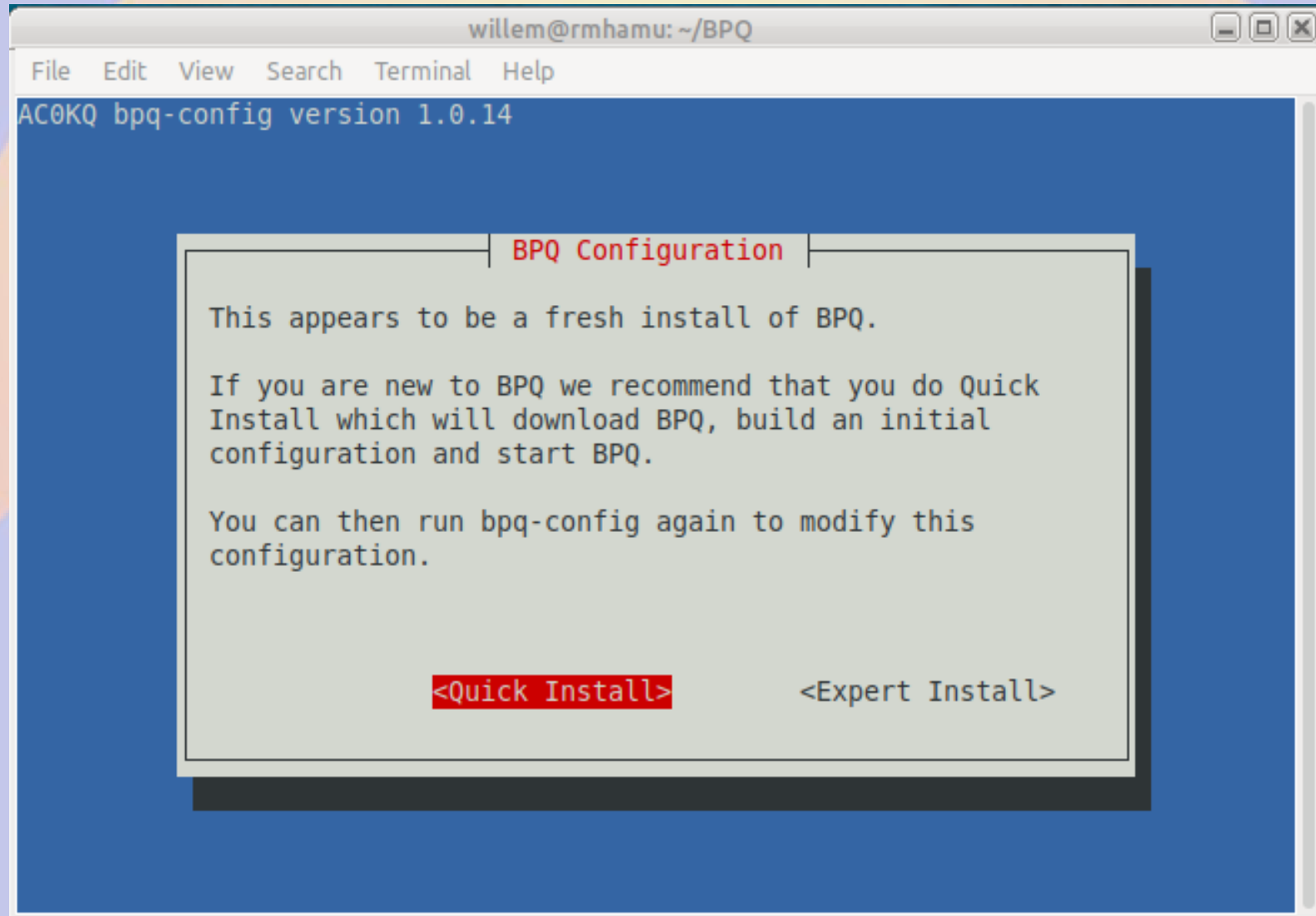
- `willem@rmhamu:~ $ mkdir BPQ`
- `willem@rmhamu:~ $ cd BPQ`
- `willem@rmhamu:~/BPQ $ wget -q https://www.prinmath.com/ham/bpq-config`
- `willem@rmhamu:~/BPQ $ chmod a+x bpq-config`
- `willem@rmhamu:~/BPQ $ sudo ./bpq-config` (with a cursor at the end)

Disable conflicting stuff



Do the Quick Install

This downloads a BPQ and everything else needed



The screenshot shows a terminal window titled "willem@rmhamu: ~/BPQ". The window has a menu bar with "File", "Edit", "View", "Search", "Terminal", and "Help". The terminal output shows "AC0KQ bpq-config version 1.0.14". A dialog box titled "BPQ Configuration" is displayed in the center. The dialog contains the following text:

This appears to be a fresh install of BPQ.

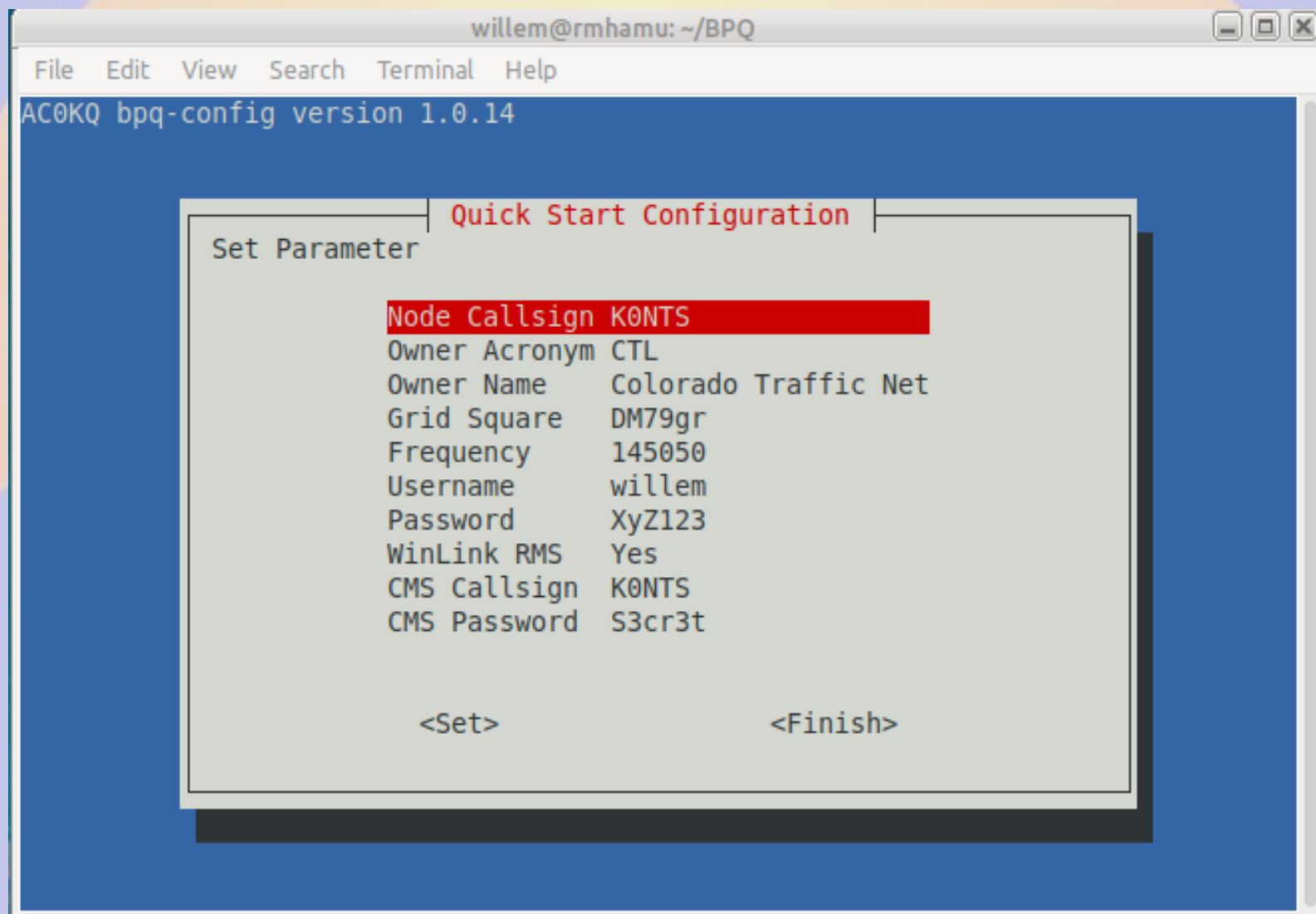
If you are new to BPQ we recommend that you do Quick Install which will download BPQ, build an initial configuration and start BPQ.

You can then run bpq-config again to modify this configuration.

At the bottom of the dialog, there are two buttons: "<Quick Install>" and "<Expert Install>". The "<Quick Install>" button is highlighted in red.

Quick Start Configuration

Fill in all the fields with your values



The screenshot shows a terminal window titled 'willem@rmhamu: ~/BPQ'. The terminal output is 'AC0KQ bpq-config version 1.0.14'. A dialog box titled 'Quick Start Configuration' is displayed. It has a 'Set Parameter' label and a list of configuration fields. The 'Node Callsign' field is highlighted in red. At the bottom of the dialog are '<Set>' and '<Finish>' buttons.

```
willem@rmhamu: ~/BPQ
File Edit View Search Terminal Help
AC0KQ bpq-config version 1.0.14
```

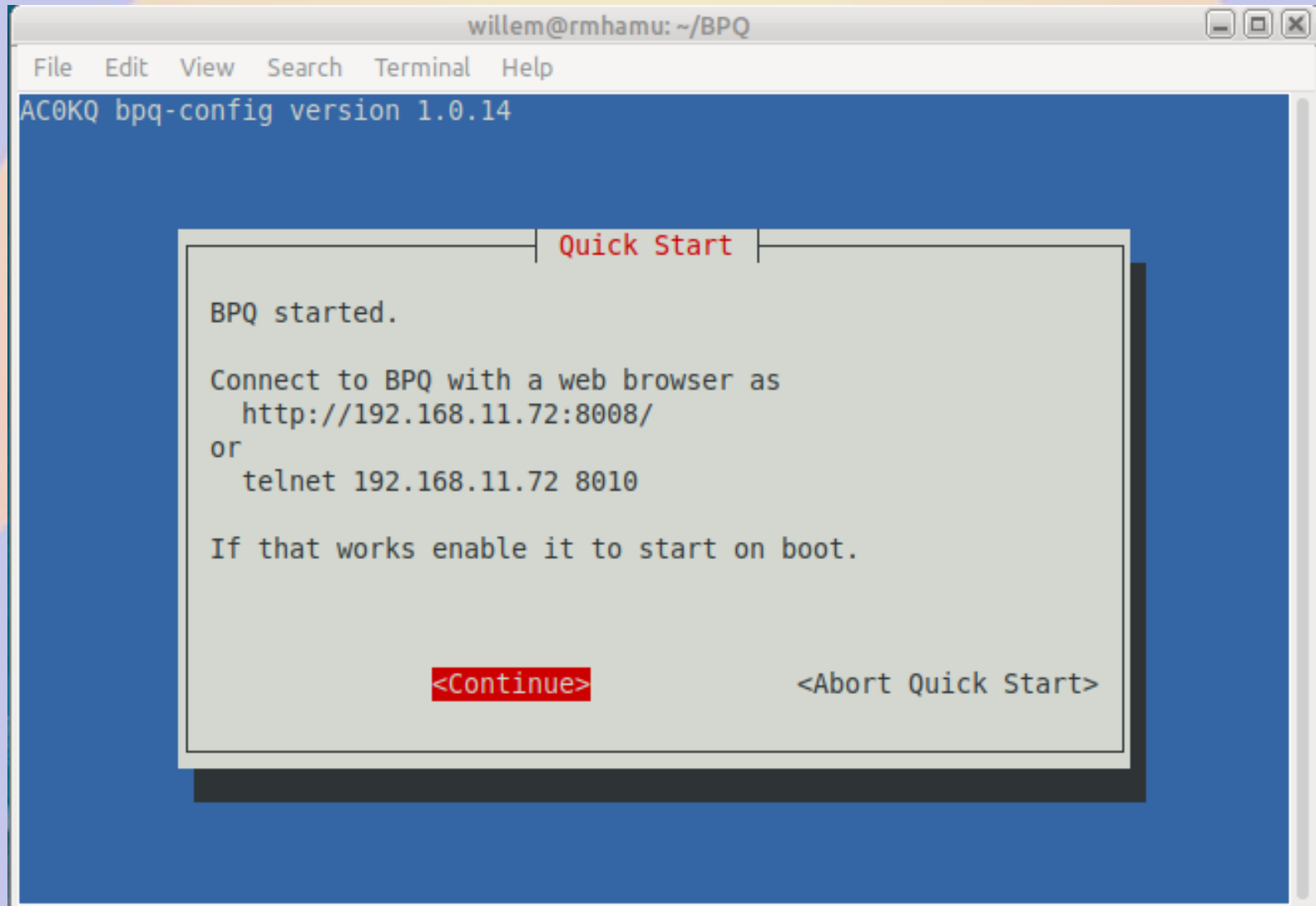
Quick Start Configuration

Set Parameter

| | |
|---------------|----------------------|
| Node Callsign | K0NTS |
| Owner Acronym | CTL |
| Owner Name | Colorado Traffic Net |
| Grid Square | DM79gr |
| Frequency | 145050 |
| Username | willem |
| Password | XyZ123 |
| WinLink RMS | Yes |
| CMS Callsign | K0NTS |
| CMS Password | S3cr3t |

<Set> <Finish>

Where to find BPQ



The image shows a terminal window titled "willem@rmhamu: ~/BPQ". The window has a menu bar with "File", "Edit", "View", "Search", "Terminal", and "Help". The terminal output shows the command "AC0KQ bpq-config version 1.0.14" followed by a blue screen with a white box containing the "Quick Start" instructions. The instructions state that BPQ has started and provide two ways to connect: via a web browser at "http://192.168.11.72:8008/" or via telnet at "telnet 192.168.11.72 8010". It also suggests enabling it to start on boot. At the bottom of the box are two options: "<Continue>" (highlighted in red) and "<Abort Quick Start>".

```
willem@rmhamu: ~/BPQ
File Edit View Search Terminal Help
AC0KQ bpq-config version 1.0.14
```

Quick Start

BPQ started.

Connect to BPQ with a web browser as
http://192.168.11.72:8008/
or
telnet 192.168.11.72 8010

If that works enable it to start on boot.

<Continue> <Abort Quick Start>

Port Configuration

Quickstart defaults to first serial port – edit if necessary

Installation Steps

Select next step

- 1 Update BPQ
- 2 Configure BPQ**
- 3 Restart BPQ
- 4 Stop BPQ
- 5 Disable BPQ start at boot
- 6 BPQ status
- 7 About bpq-config

<Select>

<Finish>

Configuration Steps

Select next step

- 1 Node Configuration
- 2 Port configuration**
- 3 Telnet users
- 4 AXIP Node Maps
- 5 Write Configuration

<Select>

<Finish>

Port Configuration

Select port to

- 1 Add port
- 2 Delete port
- 3 Port 1**

<Select>

<Finish>

Configure port

Set Parameter

| Type | Packet |
|---------------|--------|
| Device Type | Serial |
| Device Number | 0 |
| Speed | 1200 |
| Frequency | 145050 |
| Digipeat | Yes |
| WL2K | No |

<Set>

<Finish>

Adding more ports

Port Configuration

Select port to

- 1 Add port**
- 2 Delete port
- 3 Port 1

<Select> <Finish>

Configure port

Set Parameter

| Type | Packet |
|---------------|--------|
| Device Type | I2C |
| Device Number | 3 |
| Speed | 9600 |
| Frequency | 441075 |
| Digipeat | Yes |
| WL2K | Yes |
| Power | 35 |
| Height | 20 |
| Gain | 6 |

<Set> <Finish>

of port **Type**

- (*) Packet**
- () APRS
- () APRS rx only

<Select> <Cancel>

Device Type

There is only one serial port numbered 0
I2C bus addresses are in decimal
USB devices are numbered 0,1,2,...

- (*) Serial**
- () I2C**
- () USB

<Select> <Cancel>

Add Telnet users

Quickstart adds a system user

| Configuration Steps | |
|---------------------|---------------------|
| Select next step | |
| 1 | Node Configuration |
| 2 | Port configuration |
| 3 | Telnet users |
| 4 | AXIP Node Maps |
| 5 | Write Configuration |
| | |
| <Select> | <Finish> |

| User Configuration | |
|--------------------|-------------|
| Select user to | |
| 1 | Add user |
| 2 | Delete user |
| 3 | willem |
| | |
| <Select> | <Finish> |

| Configure user | |
|----------------|----------|
| Set Parameter | |
| Username | willem |
| Password | XyZ123 |
| Callsign | K0NTS |
| Application | NODE |
| SysOp | Yes |
| | |
| <Set> | <Finish> |

Configure AXIP Node Maps

Uses UDP packet to encapsulate packets
May need to allow this in your router firewall

Configuration Steps

Select next step

1 Node Configuration

2 Port configuration

3 Telnet users

4 AXIP Node Maps

5 Write Configuration

<Select>

<Finish>

Map Configuration

Select map to

1 Add map

2 Delete map

<Select>

<Finish>

Configure map

Set Parameter

Callsign NV0N

Address 8.13.28.248

Port 10093

<Set>

<Finish>

Write configuration and restart

Configuration Steps

Select next step

- 1 Node Configuration
- 2 Port configuration
- 3 Telnet users
- 4 AXIP Node Maps
- 5 Write Configuration**

<Select>

<Finish>

bpq-config save

Renamed existing bpq32.cfg to bpq32.cfg.0
Wrote bpq32.cfg

<Ok>

Installation Steps

Select next step

- 1 Update BPQ
- 2 Configure BPQ
- 3 Restart BPQ**
- 4 Stop BPQ
- 5 Disable BPQ start at boot
- 6 BPQ status
- 7 About bpq-config

<Select>

<Finish>

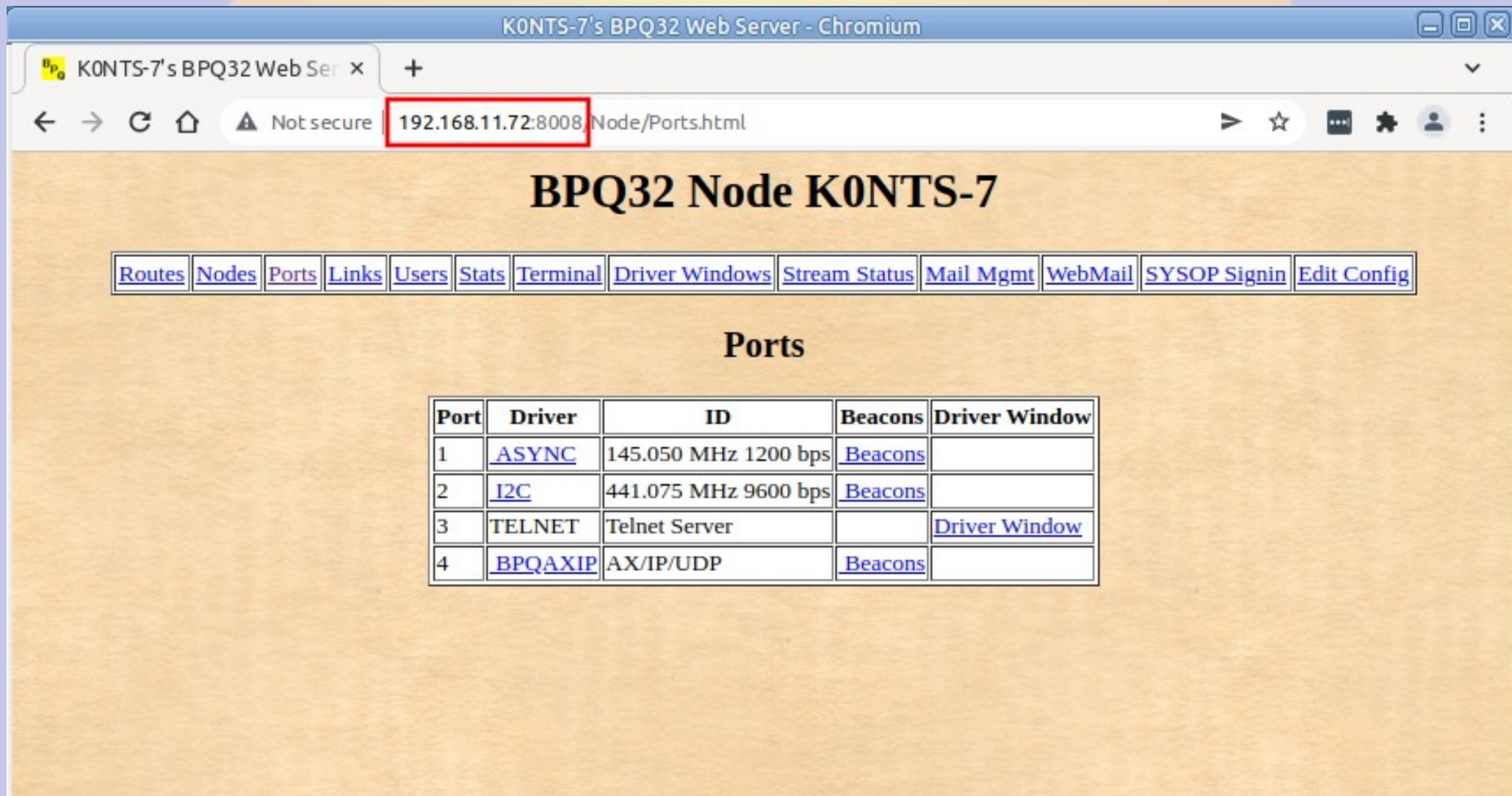
BPQ status: active

Connect to BPQ with a web browser as
<http://192.168.11.72:8008/>
or
telnet 192.168.11.72 8010

<Ok>

Browse to BPQ node port 8008

(Use the IP and port on the status page)



K0NTS-7's BPQ32 Web Server - Chromium

K0NTS-7's BPQ32 Web Ser x +

← → ↻ 🏠 ⚠ Not secure 192.168.11.72:8008 Node/Ports.html

BPQ32 Node K0NTS-7

[Routes](#) [Nodes](#) [Ports](#) [Links](#) [Users](#) [Stats](#) [Terminal](#) [Driver Windows](#) [Stream Status](#) [Mail Mgmt](#) [WebMail](#) [SYSOP Signin](#) [Edit Config](#)

Ports

| Port | Driver | ID | Beacons | Driver Window |
|------|-------------------------|----------------------|-------------------------|-------------------------------|
| 1 | ASYNC | 145.050 MHz 1200 bps | Beacons | |
| 2 | I2C | 441.075 MHz 9600 bps | Beacons | |
| 3 | TELNET | Telnet Server | | Driver Window |
| 4 | BPQAXIP | AX/IP/UDP | Beacons | |

BBS Configuration

(bpq-config set most of these in linmail.cfg)

Main Configuration - Chromium

Main Configuration

Not secure | ctnpi.ac0kq.rmham:8008/Mail/Config?M000086A45EAD

BPQ32 BBS K0NTS

[Status](#) [Configuration](#) [Users](#) [Messages](#) [Forwarding](#) [Welcome Msgs & Prompts](#) [Housekeeping](#) [WP Update](#) [Node Menu](#)

Main Configuration

BBS Params

BBS Call SYSOP Call

H Route ☒ Redirect msgs to BBS Call to SYSOP Call

BBS APPL No Streams

☒ Send System Msgs to SYSOP Call
☐ Refuse Bulls
☒ Enable FBB UI System
Send Mail For Beacons every Minutes [Config UI Ports and Digis](#)

☒ Don't Hold Messages From New Users
☐ Set Don't add WINLINK.ORG flag on new users
☒ Don't Request Name
☒ Don't Request Home BBS
☐ Dont Check From Call

Forwarding to NTS-D

BPQ32 BBS K0NTS

[Status](#) [Configuration](#) [Users](#) [Messages](#) [Forwarding](#) [Welcome Msgs & Prompts](#) [Housekeeping](#) [WP Update](#) [Node Menu](#)

Max size to Send

99999

Max Size to Receive

99999

Max age for Bulls

365

Warn if no route
for P or T ☒

Use Local Time ☐

Send P Msgs to more
than one BBS ☐

Aliases

Update

[AC0KQ](#)
[AC0VC](#)
[K0FBS](#)
[K0JSC](#)
[K0NTS](#)
[K0WAV](#)
[K8ZTT](#)
[KF0BPN](#)
[N0GQ](#)
[NV0N](#)
[RMS](#)

Forwarding Config for K0FBS - 0 Messages Queued

TO

K0FBS

AT

NTSAK
NTSAL
NTSAB
NTSAZ
NTSAR
NTSBC
NTSCA
NTSCT

TIMES

Connect Script

C 2 W0ARP-7
C 4 K0FBS-1

Hierarchical Routes (Flood Bulls) HR (Personals and Directed Bulls)

BBS HA

Enable Forwarding ☒ Interval (Secs)

Request Reverse ☒ Interval (Secs)

Send new messages without waiting for poll timer ☒

FBB Blocked ☒ Max Block Send Personal Mail Only ☐

Allow Binary ☒ Use B1 Protocol ☒ Use B2 Protocol ☐

Send ctrl/Z instead of /ex in text mode forwarding ☐

Incoming Connect Timeout (Secs)

Copy from BBS

Update

Start Forwarding

Forwarding to WinLink

BPQ32 BBS K0NTS

[Status](#) [Configuration](#) [Users](#) [Messages](#) [Forwarding](#) [Welcome Msgs & Prompts](#) [Housekeeping](#) [WP Update](#) [Node Menu](#)

Max size to Send

99999

Max Size to Receive

99999

Max age for Bulls

365

Warn if no route
for P or T ☒

Use Local Time ☐

Send P Msgs to more
than one BBS ☐

Aliases

Update

[AC0KQ](#)
[AC0VC](#)
[K0FBS](#)
[K0JSC](#)
[K0NTS](#)
[K0WAV](#)
[K8ZTT](#)
[KFOBPN](#)
[N0GQ](#)
[NV0N](#)
[RMS](#)

Forwarding Config for RMS - 0 Messages Queued

| TO | AT | TIMES | Connect Script |
|--|----|-------|----------------|
| <div>RMS K0TER K6HTN N1IQI AL7N NX9K AG5S WM0G</div> | | | <div>RMS</div> |

Hierarchical Routes (Flood Bulls) HR (Personals and Directed Bulls)

BBS HA

Enable Forwarding ☒ Interval (Secs)

Request Reverse ☒ Interval (Secs)

Send new messages without waiting for poll timer ☒

FBB Blocked ☒ Max Block Send Personal Mail Only ☐

Allow Binary ☒ Use B1 Protocol ☒ Use B2 Protocol ☒

Send ctrl/Z instead of /ex in text mode forwarding ☐

Incoming Connect Timeout (Secs)

Copy from BBS

Update

Start Forwarding

Forwarded Users

Edit Forwarding - Chromium

Edit Forwarding

192.168.11.114:8080/Mail/FWD?M0000399D835D

BPQ32 BBS N0SZ

[Status](#) [Configuration](#) [Users](#) [Messages](#) [Forwarding](#) [Welcome Msgs & Prompts](#) [Housekeeping](#) [WP Update](#) [Node Menu](#)

Max size to Send

Max Size to Receive

Max age for Bulls

Warn if no route for P or T ☒

Use Local Time ☐

Aliases

[KB1SGJ](#)
[N0SZ](#)
[RMS](#)

Forwarding Config for KB1SGJ - 0 Messages Queued

| TO | AT | TIMES | Connect Script |
|---|-------------|---|--|
| <div><div>KB1SGJ KD0LDR</div></div> | <div></div> | <div><input type="text" value="0000-1000"/></div> | <div><input type="text" value="C 1 KB1SGJ-1"/></div> |

Hierarchical Routes (Flood Bulls) HR (Personals and Directed Bulls)

RRS HA

Enable Forwarding ☒

Request Reverse ☒

Send new messages without waiting for poll timer ☒

FBB Max Block

Allow Binary ☒

Send ctrl/Z instead of /ex in text mode forwarding ☐

Interval (Secs)

Interval (Secs)

Send Personal Mail Only ☐

Use B1 Protocol ☐

Use B2 Protocol ☐

Connect in via RF (as AC0KQ)

```
willem@bashful: ~  
File Edit View Search Terminal Help  
  
cmd c N0SZ  
cmd:*** CONNECTED to N0SZ  
Welcome to the Aid Station 2 BPQ32 Node.  
N0SZ> BBS CONNECT BYE INFO NODES ROUTES PORTS USERS MHEARD  
info  
N0SZ} This is the BPQ32 Node for the Aid Station 2.  
Sysop KD0ZYF.  
Traffic left on this node will be forwarded  
using the National Traffic System.  
Type BBS to connect to the BBS.  
ports  
N0SZ} Ports  
1 145.030 MHz 1200 bps  
2 Telnet Server  
3 AX/IP/UDP  
bbs  
N0SZ} Connected to BBS  
[BPQ-6.0.12.35-IHJM$]  
Hello AC0KQ. Latest Message is 2, Last listed is 2  
de N0SZ>  
b  
*** DISCONNECTED  
cmd:
```

Connect via RF to WinLink

```
willem@bashful: ~  
File Edit View Search Terminal Help  
cmd: c N0SZ-10  
cmd: *** CONNECTED to N0SZ-10  
Trying brentwood.winlink.org  
*** AC0KQ Connected to CMS  
[WL2K-3.2-B2FWIHJM$]  
;PQ: 72781840  
Brentwood CMS via N0SZ >  
lm  
Login [246]:  
Brentwood CMS via N0SZ >  
CR 067MRW  
Hello AC0KQ  
Brentwood CMS via N0SZ >  
lm  
2884_K0TER 2016/05/07 01:27 676 K0TER@winlink.org QTC 2  
3KYUXDSAP727 2016/05/02 15:51 889 K6HTN@winlink.org Re: QTC 1 K6HTN  
2882_K0TER 2016/05/04 16:40 1180 K0TER@winlink.org QTC 4  
6AQ9DQG3C59D 2016/05/04 18:30 1295 WA3QLW@winlink.org QTC 8  
2883_K0TER 2016/05/05 18:35 2281 K0TER@winlink.org QTC 7  
2868_K0TER 2016/05/03 17:26 2803 K0TER@winlink.org QTC 9  
2886_K0TER 2016/05/07 21:52 3103 K0TER@winlink.org QTC 10  
Brentwood CMS via N0SZ >  
b  
Disconnecting...  
*** DISCONNECTED  
cmd: 
```

RF > N0SZ & AXIP > K0NTS-1

```
willem@bashful: ~  
File Edit View Search Terminal Help  
  
cmd:c N0SZ  
cmd:*** CONNECTED to N0SZ  
Welcome to the Aid Station 2 BPQ32 Node.  
N0SZ> BBS CONNECT BYE INFO NODES ROUTES PORTS USERS MHEARD  
ports  
N0SZ} Ports  
  1 145.030 MHz 1200 bps  
  2 Telnet Server  
  3 AX/IP/UDP  
c 3 K0NTS-1  
N0SZ} Connected to K0NTS-1  
[BPQ-6.0.12.35-IHJM$]  
CTN BBS>  
l  
No New Messages  
CTN BBS>  
b  
73 de CTN BBS  
*** DISCONNECTED  
cmd:  
cmd:  
cmd:  
cmd:
```

APRS Page

Home

All Stations

RF Stations

All WX Stations

RF WX Stations

All Mobile Stations

RF Mobile Stations

All Objects

RF Objects

Information

Node Pages

N0SZ-14's BPQ32 APRS Web Server

All Stations

(This page will automatically refresh every five minutes)

The following is a list of all the stations heard in the past 120 minutes, both on RF and on the internet.

There are 90 callsigns in the list, click a callsign to get an information page for that station.

| | | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|---------------------------|---------------------------|---------------------------|--------------------------|
| AC0VP-10 | AC0XW-1 | AC0YV-9 | AD0WB-B | AE5VQ | ALMGRE | BVILLE | K0BAN |
| K0HEY-9 | K0JSC-1 | K0QED | K0QED-10 | K0RTS-9 | K1DDN-4 | K7HRO-9 | K7RFW-9 |
| K7YE-3 | K8ZTT-9 | KB0JIT | KB0USF | KB9UZO-9 | KC0D | KC0D-6 | KC0FAC-7 |
| KC0LAD-1 | KC0WUV | KC6ETE-9 | KD0FPY-9 | KD0JZX-10 | KD0KVJ-15 | KD0LAC-10 | KD0SQA-4 |
| KD0SQA-9 | KE0GDJ-7 | KG4JAM | KI4GYZ-1 | KJ0CFW-9 | KN0MAP-1 | KT0AM-9 | N0BN-1 |
| N0EB | N0LNE | N0OJ | N0RUX-13 | N0SZ-14 | N0SZ-2 | N0WAR-9 | N0WGM-3 |
| N1GEP-1 | N2XGL-5 | N2XGL-9 | N3GPS | N4ATA-7 | N4JJR-9 | N7GN-5 | N7MJ-9 |
| N7SOI-9 | NOADM | SAG1 | W0AKO-B | W0ARP | W0BSP-10 | W0BSP-13 | W0CDS-A |
| W0CDS-B | W0CDS-C | W0DPD-1 | W0JAW | W0JAW-9 | W0JRL-15 | W0LRA-5 | W0QEY-5 |
| W0RDR-9 | W0UPS-5 | W8XAL-10 | W8XAL-9 | WA0GEH | WA0TOG | WA5VRL | WA6IFI-3 |
| WB5PJB-B | WB7GR-3 | WB7GR-9 | WD4IXD | WD4IXD-10 | WQ8M-1 | WQ8M-9 | WR0AEN-B |
| WR0AEN-D | WY7ATH-2 | | | | | | |

Station Map

Home

All Stations

RF Stations

All WX Stations

RF WX Stations

All Mobile Stations

RF Mobile Stations

All Objects

RF Objects

Information

Node Pages

N0SZ-14's BPQ32 APRS Web Server

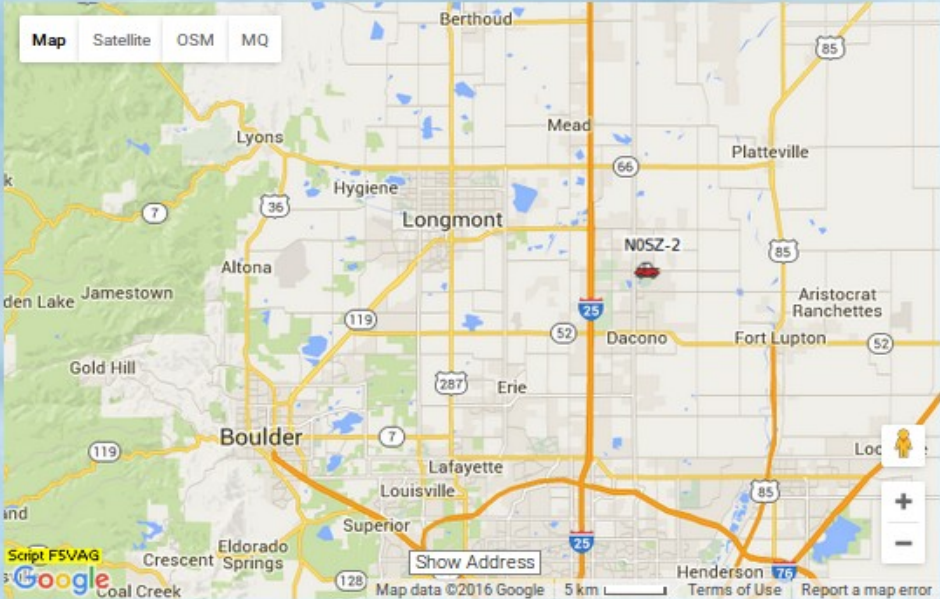
(This page will automatically refresh every five minutes)

Information about [N0SZ-2](#)
Click the callsign to look it up on qrz.com
Location: 40°07.91'N 104°55.75'W
The bearing from N0SZ-14 to N0SZ-2 is 028 degrees, the distance is 47.9 Miles

Last posit: APTT4,W0UPS-5,WIDE1,KC0D,WIDE2*

Status: /TinyTrak4 Alpha
Last heard 00:54:36 ago

Map Satellite OSM MQ



Script FSVA6
Google
Map data ©2016 Google 5 km Terms of Use Report a map error

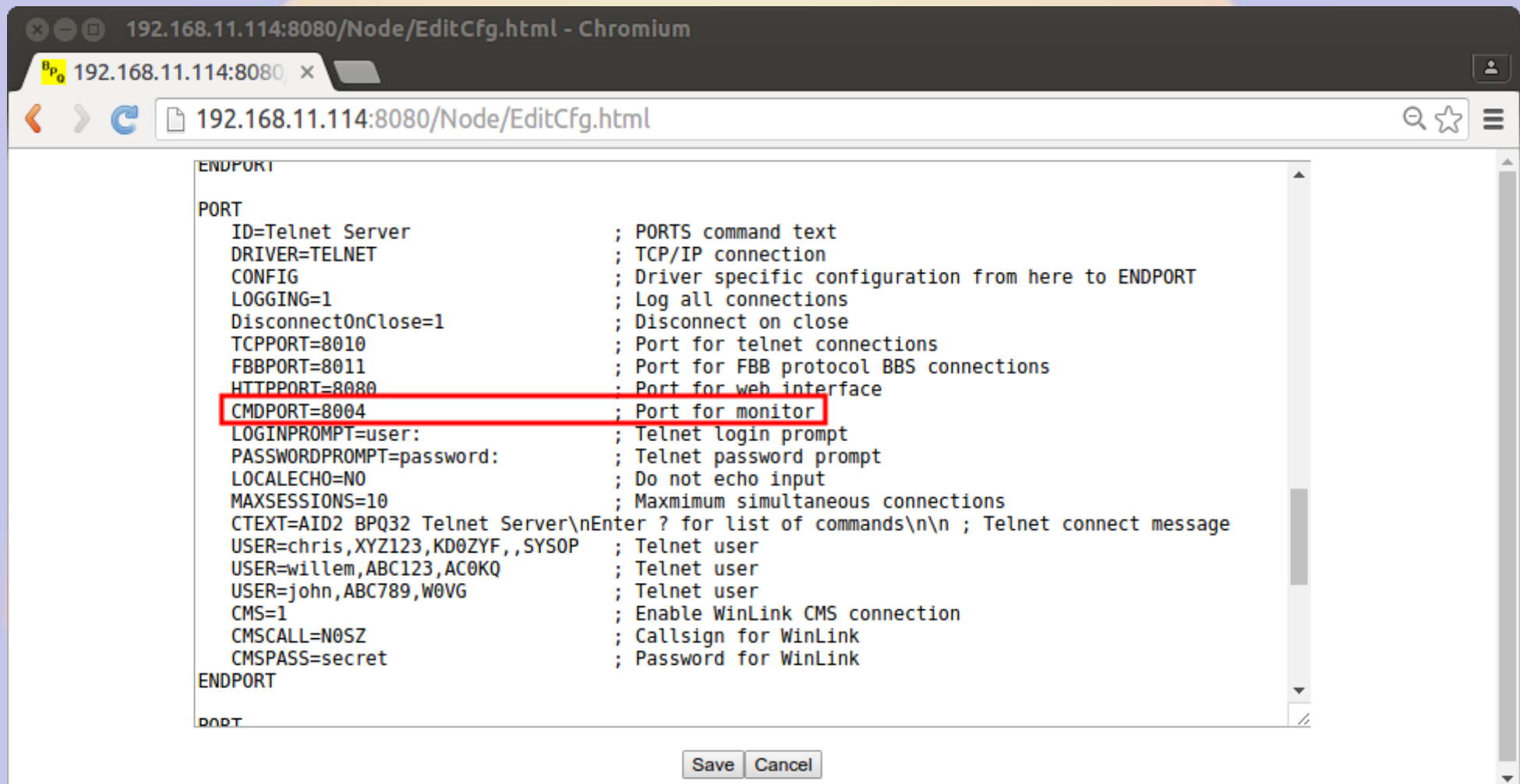
Adding a new service

- BPQ adds new services via TCP/IP
- BPQ connects to local port
- Received stream piped to *stdin*
- Transmits output from *stdout*
- First line is connected station call

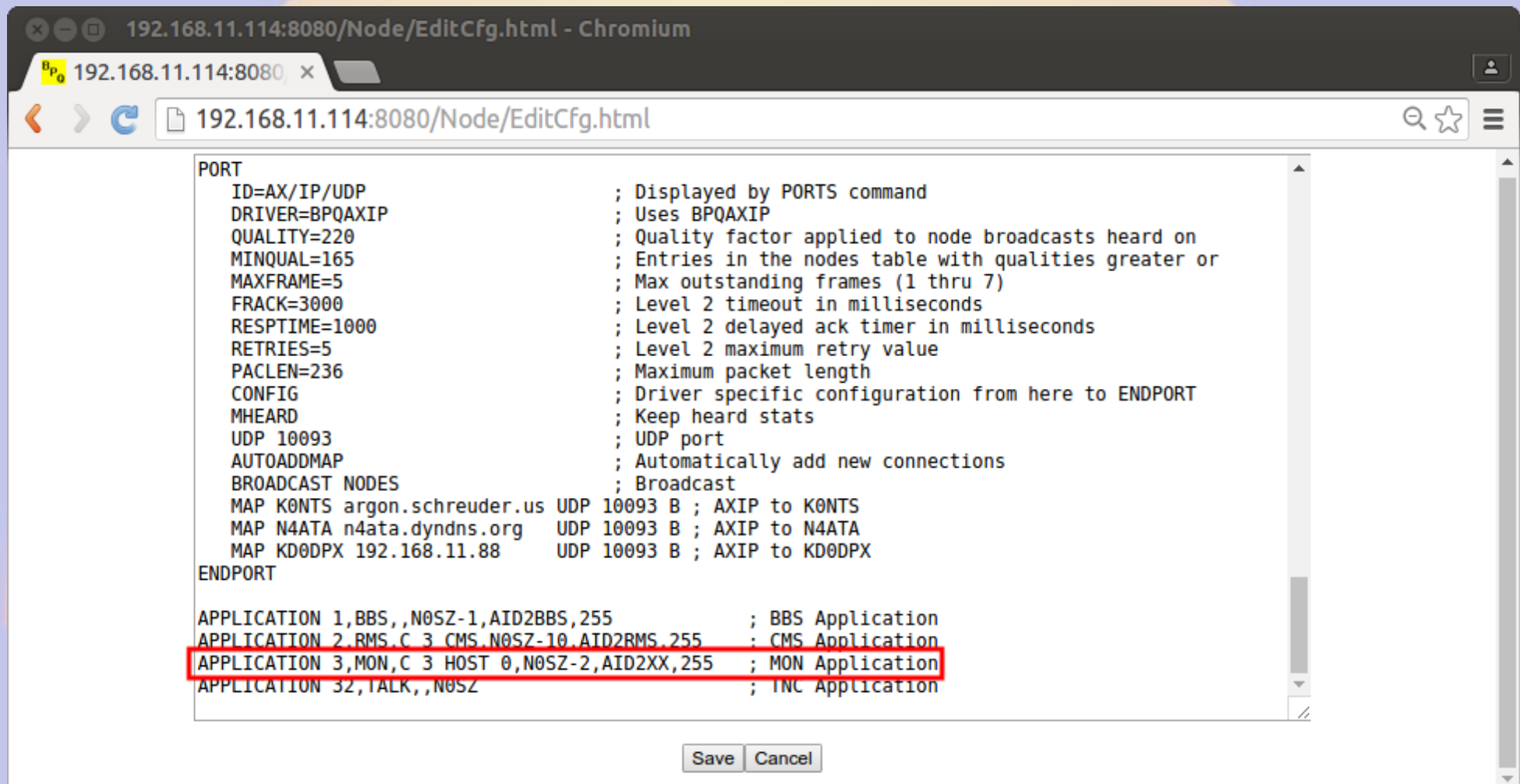
Monitor service

- **Written in Perl**
- **Interprets commands**
- **Used to get system time and disk**
- **Bye to exit**
- **Mapped to N0SZ-2 and port 8004**

Command Port



Application



systemd Socket Service

/lib/systemd/systemd/mon.socket /lib/systemd/systemd/mon@.service

[Unit]
Description=MON
socket

[Socket]
ListenStream=8004
Accept=yes

[Install]
WantedBy=sockets.target

[Unit]
Description=MON server

[Service]
ExecStart=/home/willem/BPQ/
mon.pl
StandardInput=socket

mon.pl

```
#!/usr/bin/perl -w -T

# Monitor server
# Willem AC0KQ

use strict;
$ENV{PATH} = '/bin';

# Set autoflush
my $old_fh = select(STDOUT);
$| = 1;
select($old_fh);

# Read callsign of connecting station
my $call = <STDIN>;
$call =~ s/^\\s*//;
$call =~ s/\\s*$//;

#
# Match command
#
sub match
{
    my ($cmd,$pat) = @_;
    $pat = substr($pat,0,length($cmd));
    return ($pat eq $cmd);
}

# Welcome message
print "N0SZ Monitor\\nConnect from '$call'\\n> ";
```

```
# Read lines
while(my $line = <STDIN>)
{
    # Split on whitespace
    my ($cmd,@line) = split(' ', $line);
    $cmd = defined($cmd) ? lc $cmd : '';

    # Do nothing
    if ($cmd eq '')
    {
    }
    # Help
    elsif($cmd eq '?')
    {
        print "Commands: time disk bye\\n";
    }
    # Bye
    elsif (match($cmd,'bye'))
    {
        die "73 $call\\n";
    }
    # Print time
    elsif (match($cmd,'time'))
    {
        print "Time ".localtime(),"\\n";
    }
    # Print disk usage
    elsif (match($cmd,'disk'))
    {
        my @disk = `df -kh /`;
        my (undef,$size,$used,$avail,$pct) = split(' ', $disk[1]);
        print "Disk size=$size used=$used ($pct) available=$avail\\n";
    }
    else
    # Unknown command
    {
        print "Unknown command $cmd args @line\\n";
    }
    # Print command prompt
    print "N0SZ> ";
}
```

Enable the service

- Enable and start the service
 - `sudo systemctl enable mon.socket`
 - `sudo systemctl start mon.socket`

```
willem@bashful: ~  
File Edit View Search Terminal Help  
cmd c N0SZ-2  
cmd:*** CONNECTED to N0SZ-2  
Connected to  
N0SZ Monitor  
Connect from 'AC0KQ'  
> ?  
Commands: time disk bye  
N0SZ> t  
Time Sun May 8 17:48:49 2016  
N0SZ> d  
Disk size=15G used=3.5G (26%) available=11G  
N0SZ> b  
73 AC0KQ  
*** DISCONNECTED  
cmd:
```