ARFNET2 deployment

After the disastrous ISP schism

Masterplan

Stage 1: very safe

- Close all ports
- Nuke (or stop) all old VMs (exclude OPNSense)
- Make DMZ
- Make new basic VMs (cloning deb12 template)
- Open basic ports

Stage 2: new services

- IONOS VPS for mail
- Some new very safe services
- HE IPv6 tunnel
- Own authoritative nameservers for domain zone

Stage 3*: finally

- Another VPS in unknown provider for
  - Tor
  - Reverse-proxying the media library
- PHP on main site with more web services from scratch, hopefully secure
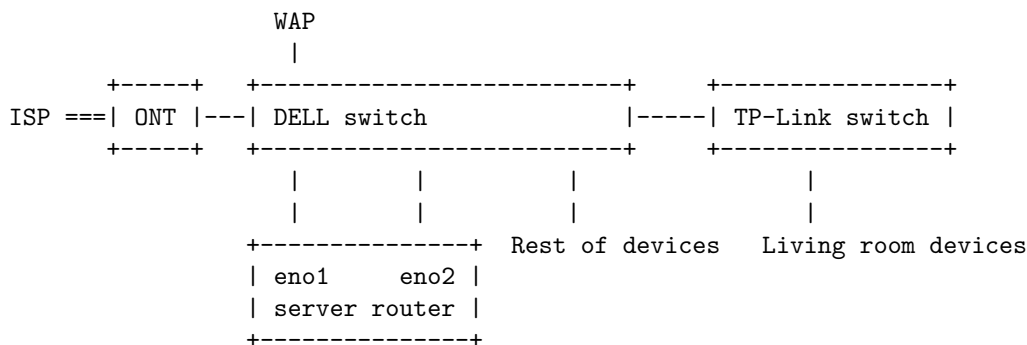- More new services

Domain

arf20.com

Registrar: namecheap

Name sever glue records at registrar

Nameserver	Name	IP
NS1	ns1.arf20.com	2.59.235.35 2600:70ff:f039:4::13
NS2	ns2.arf20.com	5.250.186.185 2001:ba0:210:d600::1

Networking

Hardware

```
                WAP
                 |
       +-----+   +------------------------+     +----------------+
ISP ===| ONT |---| DELL switch            |-----| TP-Link switch |
       +-----+   +------------------------+     +----------------+
                   |        |        |                  |
                   |        |        |                  |
            +---------------+  Rest of devices   Living room devices
            | eno1     eno2 |
            | server router |
            +---------------+
```

```
- 1000BASE-T
= GPON fiber
```

12U rack

```
+--------------+--------+
| drawer       |        |
| drawer       | PDU    |
| patch panel  |        |
| switch       |        |
|              |        |
|              |        |
| R720         |        |
| R720         |        |
|              |        |
|              |        |
|              |        |
|              | UPS    |
+--------------+--------+
```
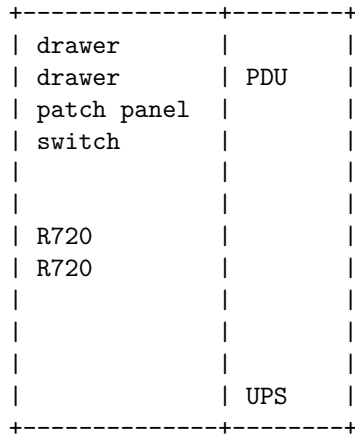
DELL PowerConnect 5424 switch   Port assignents

port	endpoint	options
g2	ONT	VLAN access 2
g4	server eno2 WAN	VLAN access 2
g6	test2	VLAN access 2
g3	WAP	VLAN access 5
g5	PC	VLAN access 4
g7	Living R.	VLAN access 5
g9	server eno1 DMZ+LAN	VLAN trunk 4, 5
g15	test4	VLAN access 4
g17	test1	VLAN access 1
g19	test5	VLAN access 5
g21	iDRAC	VLAN access 4
g23	printer	VLAN access 4

Management

- interface vlan 4: 192.168.4.2/24 gw 192.168.4.1

Public IPs

- AVANZA_STATIC: 2.59.235.35
- AVANZA_CGNAT: dynamic
- HE prefixes
  - 2001:470:1f21:125::/64
  - 2600:70ff:f039::/48
- IONOS VPS: 5.250.186.185 2001:ba0:210:d600::1

Gateways

- AVANZA
  - WAN_STATIC: 2.59.235.1
  - WAN_CGNAT: dynamic
- HE v6 tunnel

– server: 216.66.87.102, 2001:470:1f20:125::1/64
– client: 2.59.235.35, 2001:470:1f20:125::2

Physical and Logical Networks

name	VLAN	net	desc
WAN	2		
DMZ	4	192.168.4.0/24	Services
		2600:70ff:f039:4::/64	
LAN	5	192.168.5.0/24	Clients
		2600:70ff:f039:5::/64	
VPN		192.168.6.0/24	Wireguard clients
		2600:70ff:f039:6::/64	

Firewall

Interface Rules

- WAN_CGNAT in
    - deny *
- WAN_STATIC in
    - allow v4 from * to {services} –> NAT rules
- DMZ in
    - deny v4 to LAN net
    - allow v4 to firewall
    - allow v4 to * gw WAN_STATIC
    - allow v6 to * gw HE_TUNNELV6
- LAN in
    - allow v4 ICMP to firewall
    - allow v4 IP DNS to firewall
    - allow v4 to DMZ net
    - allow v4 to * gw WAN_CGNAT
    - allow v6 to * gw HE_TUNNELV6
- Wireguard in
    - allow v4+6 to DMZ net
    - allow v4 to * gw WAN_CGNAT
    - allow v6 to * gw HE_TUNNELV6

IPv4 NAT Rules

Service	Customer	IPProto	Ext Port	Host	Re Port
WireGuard		UDP	51820	router	
DNS NS1		TCP/UDP	53	misc	
iperf3		TCP	5201	misc	
NNTP		TCP	119	misc	
Web		TCP	80,443	web	
Git		TCP	9418	web	
bittorrent		TCP/UDP	8999	nas	
rsync		TCP/UDP	873	nas	
IRC		TCP	6667	comm	
IRCS		TCP	6697	comm	
XMPP c2s		TCP	5222	comm	

Service	Customer	IPProto	Ext Port	Host	Re Port
XMPP s2s		TCP	5269	comm	
TURN STUN		TCP/UDP	3478	comm	
TURN		TCP/UDP	5349	comm	
TURN UDP relay		TCP/UDP	49152-50176	comm	
mc-waterfall-proxy		TCP	25565	game	25567
css-ds		TCP/UDP	27015	game	
exo-ssh	exo	TCP	4041	exovps	22
exo-extra	exo	TCP	4040	exovps	4040
yero-ssh	yero	TCP	1511	yerovps	22
yero-sql	yero	TCP	1512	yerovps	3306
FiveM SuperioresRP	yero	TCP/UDP	30120,40120	yerovps	

IPv6 port rules

Service	Customer	IPProto	Dest Host	Dest Port
DNS NS1		TCP/UDP	misc	53
Web		TCP	web	80,443
NNTP		TCP	misc	119
iperf3		TCP	misc	5201
Git		TCP	9418	web
bittorrent		TCP/UDP	8999	nas
rsync		TCP/UDP	873	nas
IRC		TCP	6667	comm
IRCS		TCP	6697	comm
XMPP c2s		TCP	5222	comm
XMPP s2s		TCP	5269	comm
TURN STUN		TCP/UDP	3478	comm
TURN		TCP/UDP	5349	comm
TURN UDP relay		TCP/UDP	49152-50176	comm
mc-waterfall-proxy		TCP	25565	game
exo-ssh	exo	TCP	4041	exovps
exo-extra	exo	TCP	4040	exovps
yero-ssh	yero	TCP	1511	yerovps
yero-sql	yero	TCP	1512	yerovps
FiveM SuperioresRP	yero	TCP/UDP	30120,40120	yerovps

Hosts

- server - DELL PowerEdge R720 running Proxmox PVE - ...
- mail - IONOS VPS running Debian 12 - 5.250.186.185 2001:ba0:210:d600::1

Management

- OPNSense router DMZ.1
- DELL switch DMZ.2
- TP-Link WAP LAN.2
- Proxmox hypervisor DMZ.4
- DELL server iDRAC DMZ.5
- HP printer DMZ.7

server VMs and services

server runs Proxmox PVE.

All VMs are Debian 12 (templated) with wazuh agent

proxmox DMZ.4 (hypervisor)

- SSH
- Proxmox management interface :8006
- smartmon + node exporter :9100
- sensor exporter*
- NUT - Network UPS TOols daemon (and proper UPS)*

router DMZ.1

- (routing/firewalling)
- SSH
- DHCP
- unbound DNS
- OpenVPN
- WireGuard
- IPsec*
- ntopng :3000
- telegraf - note: editing config via webfig breaks (timeout and unbound config)

nas DMZ.6

RAID attached here (with the grey stuff) (local only)

- SSH
- NFS
- Samba SMB*
- MiniDLNA*
- FTP
- qBittorrent-nox
- jellyfin
- nginx
- mpd :8000

vhost	webroot/proxy	Comment
dark.arf20.com*	/d/FTPServer/	Allow only VPS and private

web DMZ.9

- SSH
- cerbot
- nginx (status at :8080)
- fastcgi PHP
- mariadb SQL
- nginx-prometheus-exporter :9113
- prometheus :9090
- telegraf
- influxdb :8086
- grafana :3000
    - Proxmox

- – nginx
  - – iDRAC
- zabbix*
- netbox*
- fcgiwrap
- git-http-backend - git smart http server CGI
- gitd - git daemon
- cgit - web frontend for git
- phpBB - forum software
- Jekyll - blog static site generator thing
- opentracker? - bittorrent tracker*
- gophernicus - gopher server*
- photoprism - photo shit
- squid - http proxy server :3128

vhost	webroot/proxy	Comment
default	<return 418 im a teapot>	
default:8080	<return nstub_status>	
arf20.com	/var/www/arf20.com/html/	
www.arf20.com	<301 redirect arf20.com>	
matrix.arf20.com	http://comm.lan:8008/_matrix	
webmail.arf20.com	/var/www/webmail.arf20.com/html/	SquirrelMail
nextcloud.arf20.com	/var/www/nextcloud.arf20.com/html/	
grafana.arf20.com	http://localhost:3000	
jellyfin.arf20.com	http://nas.lan:8096	
git.arf20.com	/srv/git/	
cgit.arf20.com	fastcgi:/usr/lib/cgit/cgit.cgi	
blog.arf20.com	/var/www/blog.arf20.com/_site/	
forum.arf20.com	/var/www/forum.arf20.com/html/	
deb.arf20.com	/d/FTPServer/software/debian/	
memes.arf20.com	/var/www/memes.arf20.com/, /d/FTPserver/{dcimg, dcmemes, explosionsandfire}	
news.arf20.com	Web-News NNTP newsgroups frontend	
dash.arf20.com	/var/www/dash.arf20.com/html/	CSTIMS
ftp.arf20.com	/d/FTPServer/public/	
photo.arf20.com*	[::1]:2342	photoprism
status.yero.dev	http://yerovps.lan:3001	
panaland.arf20.com	/var/www/panaland.arf20.com/html/	
radio.arf20.com	/ = /var/www/radio.arf20.com/html/; /stream = nas:8000	

wazuh DMZ.10 -> secure*

- SSH
- wazuh
- password manager server*

game DMZ.11

- SSH
- waterfall (minecraft reverse proxy) :25565
  - – mclobby (auth)

- – minepau*
- panaland mc modded :25566
- css dedicated server :27015

comm DMZ.12

- SSH
- cerbot
- unrealircd - IRC
- synapse - matrix
- postgresql - DB for synapse
- pantalaimon - encrypt matterbridge traffic to matrix
- matterbridge - bridge channels with different protocols
    - – discord
    - – matrix
    - – irc
    - – xmpp
- prosody - XMPP
- coturn - TURN server for matrix and xmpp
- asterisk - VoIP SIP PBX*

misc (Deb12 LXC) DMZ.13

- SSH
- iperf3
- bind9 - master authoritative nameserver for arf20.com zone NS1
    - – public recursive*
- OpenLDAP LDAP*
- INN2 - NNTP USENET server with SDF peering
- Discord servers
    - – gDebrid (gookie)

t2 (T/2 SDE) DMZ.15

pubnix (OpenBSD 7.5) DMZ.16

- SSH

mail (ARFNET-IONOS VPS) 5.250.186.185 2001:ba0:210:d600::1

- SSH
- certbot
- postfix - MTA smtpd, submission, submissions config
- dovecot - imapd
- opendkim
- opendmarc
- bind9 - slave authoritative nameserver NS2
- mlmmj - mailing list manager
    - – installed to /usr/local/bin/mlmmj-webarchiver.sh and /etc/mlmmj-webarchiver
- mlmmj-webarchiver - mailing list archiver

vhost	webroot/proxy	Comment
default	<return 418 im a teapot>	
lists.arf20.com	/ = /var/www/lists.arf20.com/html/ /archive = /srv/www/htdocs/archive/	Mailing lists

proxy (ARFNET-HOSTMENOW VPS) 92.60.77.4

- SSH
- IPsec tunnel
- nginx reverse proxy to nas

vhost	webroot/proxy	Comment
default	\<return 418 im a teapot\>	
jokesondmca.mooo.com	http://nas/	Stuff

---

yero-debian VPS DMZ.192 (yero)

- SSH
- mariadb
- FiveM SuperioresRP

exo-debian VPS DMZ.195 (exo)

- SSH
- netbox

loofa-debian VPS DMZ.196 (loofa)

- SSH
- ?

*TODO

Internal Name and Number Assignation Table

DMZ IPv4s and IPv6 ends in the same way

Addr	Name
DMZ.1	router.lan
DMZ.2	switch.lan
DMZ.3	wap.lan
DMZ.4	proxmox.lan
DMZ.5	idrac.lan
DMZ.6	nas.lan
DMZ.7	printer.lan
DMZ.8	desktop.lan
DMZ.9	web.lan
DMZ.10	wazuh.lan
DMZ.11	game.lan
DMZ.12	comm.lan
DMZ.13	misc.lan
DMZ.15	(t2)
DMZ.16	pubnix
DMZ.192	yero-debian
DMZ.195	exo-debian
DMZ.196	loofa-debian

DNS

Domain zone

Name	Type	Content	Comment
@	NS	ns1.arf20.com	
@	NS	ns2.arf20.com	
ns1	A	2.59.235.35	
ns1	AAAA	2600:70ff:f039:4::13	
ns2	A	5.250.186.185	
ns2	AAAA	2001:ba0:210:d600::1	
arf20.com	A	2.59.235.35	
arf20.com	AAAA	2600:70ff:f039:4::9	
mail.arf20.com	A	5.250.186.185	ARFNET-IONOS
mail.arf20.com	AAAA	2001:ba0:210:d600::1	ARFNET-IONOS
web.arf20.com	A	2.59.235.35	
web.arf20.com	AAAA		
game.arf20.com	A	2.59.235.35	
game.arf20.com	AAAA	2600:70ff:f039:4::11	
comm.arf20.com	A	2.59.235.35	
comm.arf20.com	AAAA	2600:70ff:f039:4::12	
misc.arf20.com	A	2.59.235.35	
misc.arf20.com	AAAA	2600:70ff:f039:4::13	
pubnix.arf20.com	A	2.59.235.35	
pubnix.arf20.com	AAAA	2600:70ff:f039:4::16	
irc.arf20.com	CNAME	comm.arf20.com	
jellyfin.arf20.com	CNAME	web.arf20.com	
matrix.arf20.com	CNAME	web.arf20.com	
nextcloud.arf20.com	CNAME	web.arf20.com	
turn.arf20.com	CNAME	comm.arf20.com	
webmail.arf20.com	CNAME	web.arf20.com	
www.arf20.com	CNAME	web.arf20.com	
xmpp.arf20.com	CNAME	comm.arf20.com	
xmppconf.arf20.com	CNAME	comm.arf20.com	
grafana.arf20.com	CNAME	web.arf20.com	
git.arf20.com	CNAME	web.arf20.com	
cgit.arf20.com	CNAME	web.arf20.com	
blog.arf20.com	CNAME	web.arf20.com	
forum.arf20.com	CNAME	web.arf20.com	
deb.arf20.com	CNAME	web.arf20.com	
zabbix.arf20.com	CNAME	web.arf20.com	
memes.arf20.com	CNAME	web.arf20.com	
news.arf20.com	CNAME	misc.arf20.com	
dash.arf20.com	CNAME	web.arf20.com	
ftp.arf20.com	CNAME	web.arf20.com	
photo.arf20.com	CNAME	web.arf20.com	
lahomosexualidadde.arf20.com	CNAME	weonpollo.xyz	
panaland.arf20.com	CNAME	web.arf20.com	

Name	Type	Content	Comment
_acme-challenge.jellyfin	CNAME	(challenge)	
_acme-challenge.irc	CNAME	(challenge)	
_acme-challenge.matrix	CNAME	(challenge)	
_acme-challenge.mail	CNAME	(challenge)	
_acme-challenge.xmpp	CNAME	(challenge)	
arf20.com	MX	mail.arf20.com	
selector._domainkey	TXT	(DKIM)	DKIM for selector 'selector'
_dmarc	TXT	(DMARC)	
arf20.com	TXT	(SPF)	

HE v6 rDNS zone

Name	Type	Content	Comment
2600:70ff:f039:4::13	PTR	ns1.arf20.com	
2600:70ff:f039:4::9	PTR	arf20.com	
2600:70ff:f039:4::195	PTR	arfnet.nexo.moe.	

IONOS rDNS zone

Name	Type	Content	Comment
5.250.186.185	PTR	mail.arf20.com	

Custom ARFNET software

- cstims: client, service, ticket and invoice management system
- status page (TODO)