fortress
Sun

marble
Sun

stone
Sun

king(solaris)
Sun

GDS
10.4/16

broadcasters (qty 2)

GDS machines (qty 8)

CDS
10.1/16

h1pslopc(win)
dell server

H1 PSL
10.200.0/24

hanford1,2,3,4,5
NFS servers

BACKUP
10.11.11/24

eLIGO front ends (qty 2)

MYR

DAQ Data Concentrator

IB
192.168/16

DAQ Computers (qty 9)

GC
198.129.208/
24

LHO CDS NAT ROUTER
X2200M2 ruby(Centos)

H2
10.22/16

TEST
10.238.0/24

CDS servers,
workstations, VME
systems, frontends, DAQ,
etc.

Axis Video Server
198.129.208.74

ADMIN
10.10/16

Administration ports on
switches, routers, raids,
tapes, LOM, netmgt, etc.

DMZ
10.2.0/24

Web servers (ilog, http),
FMCS computers, Access
Controls computers

frame writer 0

ldas gateway 0

frame writer 1

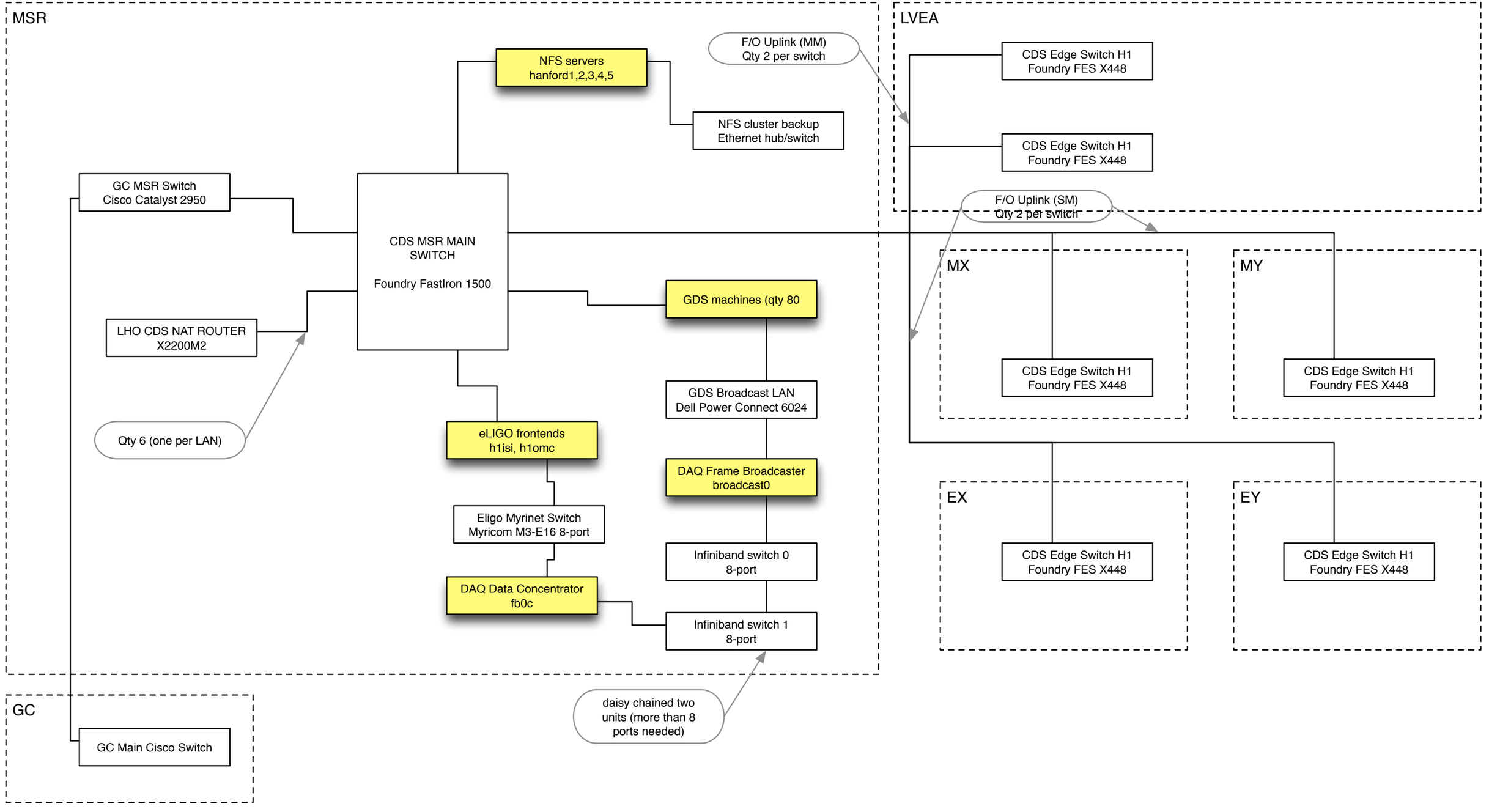
ldas gateway 1

QFS
10.124/16

QFS
10.124/16

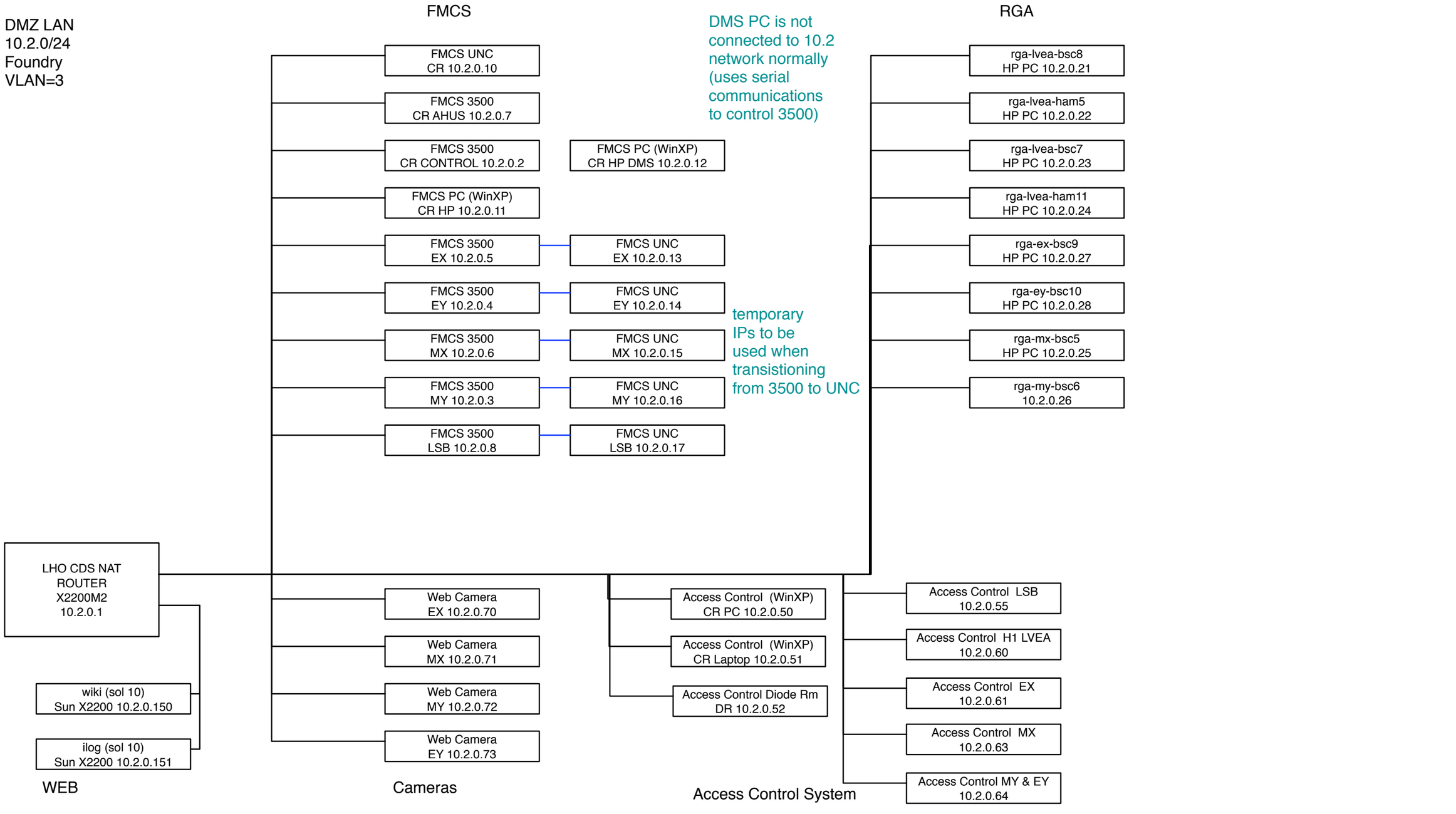
VLANs:
GC (General Computing) Between CDS LANs and the Internet
GDS (Global Diagnostics) DAQ data distributed to GDS monitors
CDS (Controls and Data Systems) The main IFO controls system
ADMIN (Administration) network management ports of all CDS hardware
DMZ (DeMilitarized Zone) auxiliary and windows systems
PSL (Pre Stabilized Laser) private network for Beckhof controls
BACKUP Private network for NFS servers and tape backup systems
MYR (Myrinet) Pseudo ethernet network for eligo frontend to DAQ data
IB (Infini Band) Fast ethernet network between DAQ machines
QFS LDAS solaris file system
TEST (obsolete) was used for EE test stand
H2 (obsolete) not used, standby if h1awg0 needed private network

Notes:	Sep 2010: the original neoOffice odt document was redrawn in omnigraffle. The drawings were corrected against the iLIGO LHO CDS as-built system at the end of S6 Small boxes represent machines, Large boxes represent the types of machines on the LAN.	Notes:	This overview shows the main subnets and LANs within the iLIGO LHO CDS system and the major computers (routers, dual-ported machines). Only a small fraction of the CDS computers are shown. Some are represented twice (e.g. broadcaster on GDS, but also part of the DAQ block).	title:	LHO CDS iLIGO LANS AND GATEWAYS [OVERVIEW]
				DCC:	LIGO-D070125
				Author:	David Barker
				Date:	23 Sep 2010



Notes:	Main CDS Networking Switches and Routers. Hosts or clusters of hosts shown in yellow, switches in white. Some 4 port ethernet hubs/switches may be missing. Only ethernet/IP networks are shown, reflective memory networks are not shown.	Notes:	GC = GC server room OSB F/O = Fiber Optic connection MM = Multimode F/O SM = Singlemode F/O	title:	LHO CDS iLIGO LANS AND GATEWAYS [NETWORKING EQUIPMENT]
				DCC:	LIGO-D070125
				Author:	David Barker
				Date:	27 Sep 2010

DMZ LAN
10.2.0/24
Foundry
VLAN=3



Notes:	CR = Control Room (OSB) FMCS = Facilities Monitoring and Controls System RGA = Residual Gas Analysis DR = Diode Room (OSB)

Notes:	**IP Allocations**			
	FMCS	2 - 19	Phase Cams	60 69
	RGA	20 - 49	Cameras	70 - 89
	Access Controls	50 - 59	Web	150 - 200

title:	LHO CDS iLIGO LANS AND GATEWAYS [DMZ LAN]
DCC:	LIGO-D070125
Author:	David Barker
Date:	23 Sep 2010

ADMIN LAN
10.10/16
Foundry
VLAN=5

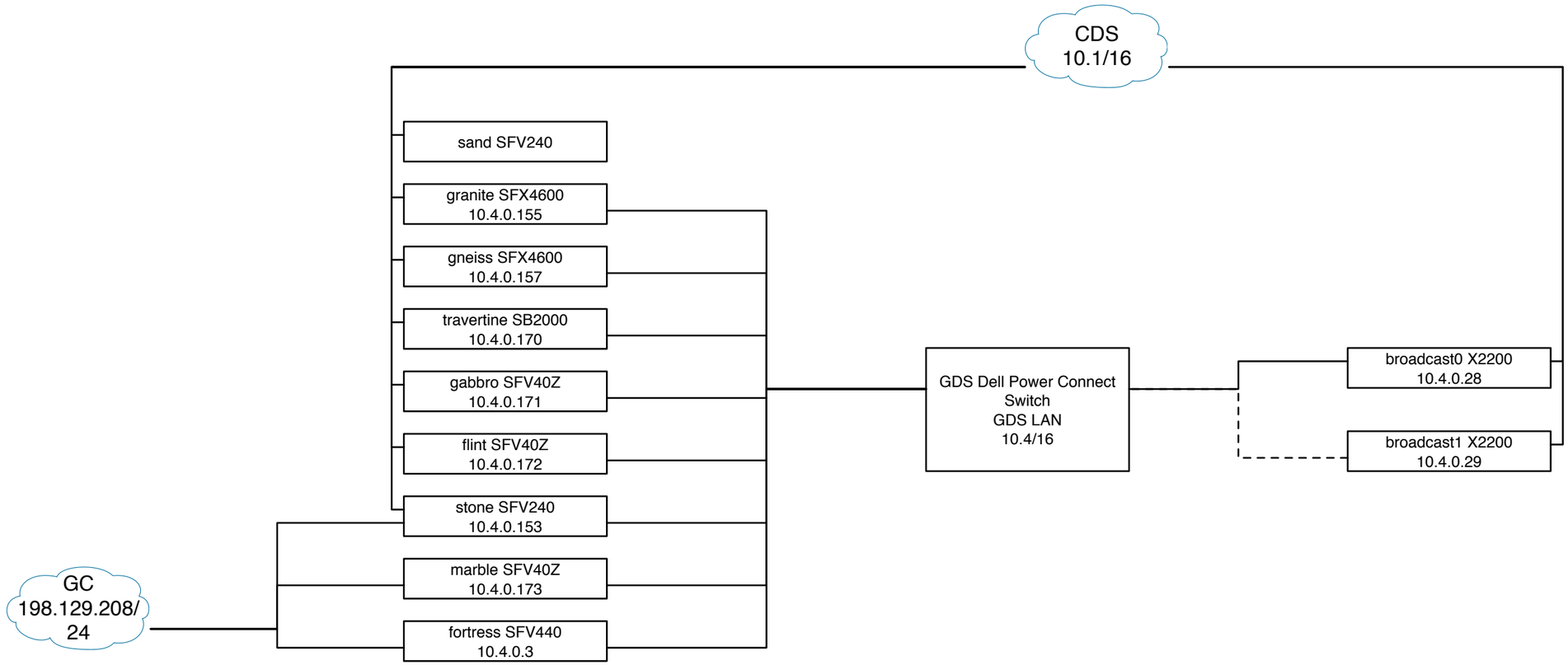
FOUNDRY SWITCHES

- FastIron 1500 h0gemsr
  MSR 10.10.50.1
- FastIron X448 h0gel1
  LVEA 10.10.50.20
- FastIron X448 h0gesp
  LVEA 10.10.50.80 *
- FastIron X448 h0gemx
  MX 10.10.50.40
- FastIron X448 h0gemy
  MY 10.10.50.50
- FastIron X448 h0geex
  EX 10.10.50.60
- FastIron X448 h0geey
  EY 10.10.50.70

LHO CDS NAT
ROUTER
X2200M2
10.10.0.1

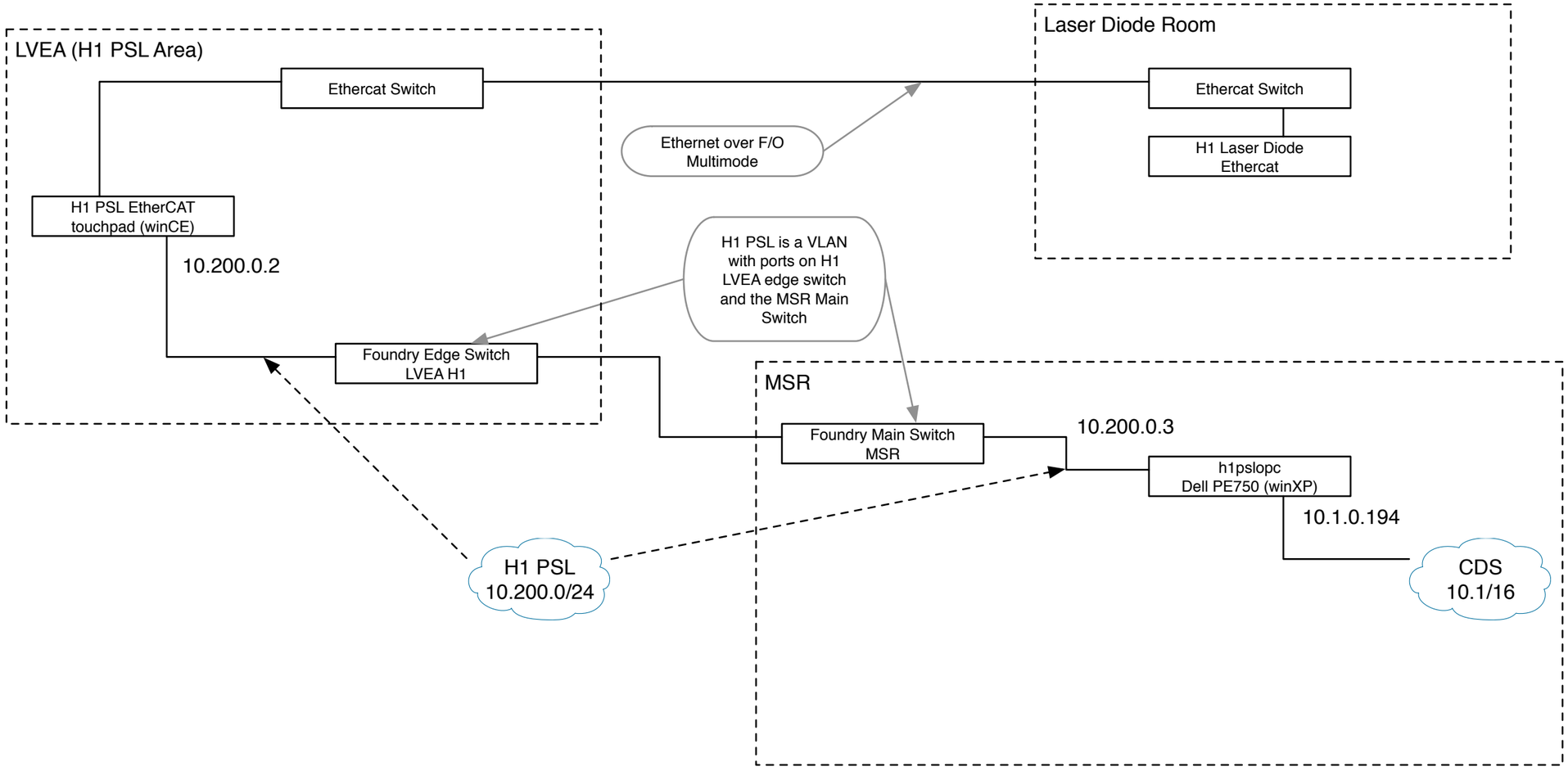
Notes:	Notes:		title:	LHO CDS iLIGO LANS AND GATEWAYS [ADMIN LAN]
* h0gel2 was replaced with h0gesp (spare switch) some time ago. No problems were found with h0gel2, and it was left in storage as a spare.			DCC:	LIGO-D070125
			Author:	David Barker
			Date:	23 Sep 2010

GDS LAN
10.4/16



Notes:	GDS LAN is controlled by a Dell Power Connect Router Located in the GDS Rack in the MSR. Frames are broadcasted every second by the broadcaster machine over a gigabit GDS network (sent as Jumbo Frames, MTU=9000)	Notes:	broadcast0 and broadcast1 are identical systems for data redundancy. Either can be connected to the GDS switch, but they should never both be connected at the same time. The frames are broadcasted over the 10.4 network, the IP address of the frame source is not important.	title:	LHO CDS iLIGO LANS AND GATEWAYS [GDS LAN]
				DCC:	LIGO-D070125
				Author:	David Barker
				Date:	23 Sep 2010

H1 PSL LAN
10.200.0/24



Notes:		Notes:		title:	LHO CDS iLIGO LANS AND GATEWAYS [H1 PSL LAN]
				DCC:	LIGO-D070125
				Author:	David Barker
				Date:	27 Sep 2010

CDS LAN
10.1/16

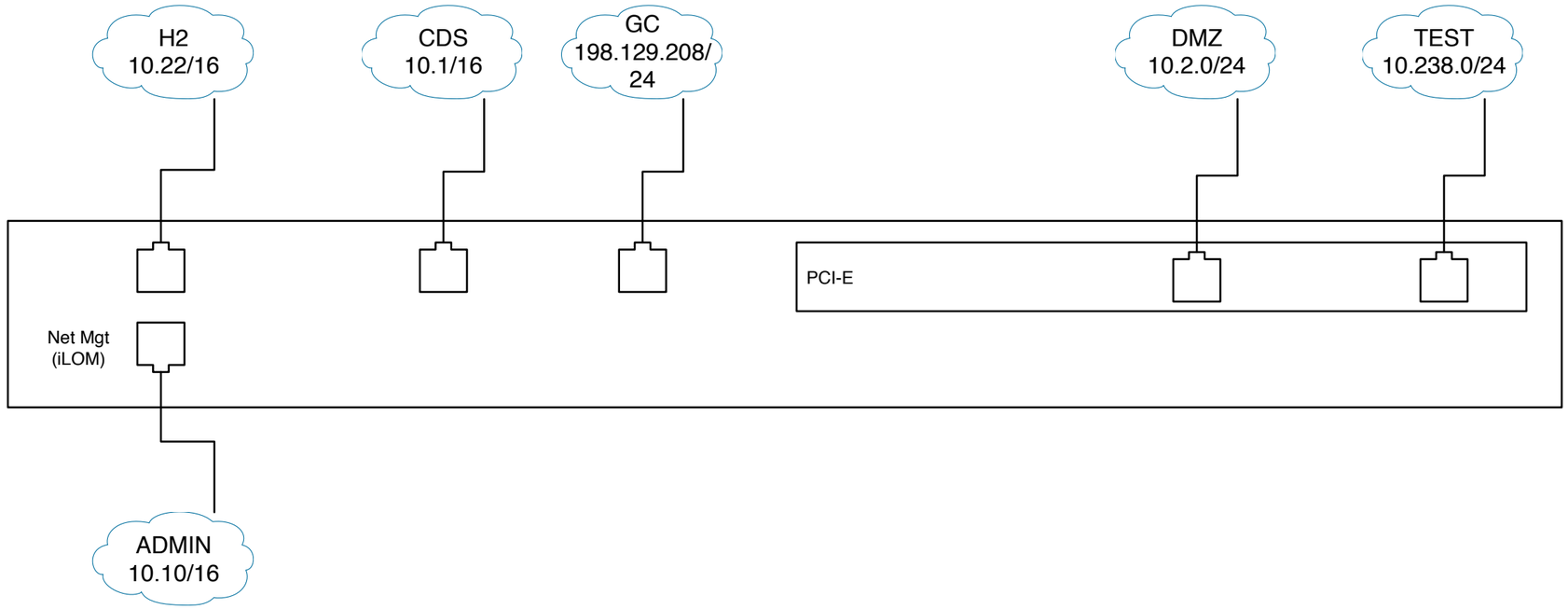
h2iscauxmy (VxWorks) 10.1.0.102	ruby (centos) 10.1.0.1	control6 (centos) 10.1.0.46	h0epics0 (centos) 10.1.3.53	h1ascauxl0 (VxWorks) 10.1.4.100	h1sunl0 (??) 10.1.4.157	pstrip0 (PowerStrip) 10.1.4.20	redhat1 (rh8) 10.1.20.1
h2iscauxmx (VxWorks) 10.1.0.103	king (Solaris) 10.1.0.201	control7 (centos) 10.1.0.47	h0epics1 (centos) 10.1.3.54	h1lscauxl0 (VxWorks) 10.1.4.101	h1sunl1 (??) 10.1.4.158	pstrip1 (PowerStrip) 10.1.4.21	ntpServer (symmetricom) 10.1.240.1
cdsman 10.1.0.105	script1 (centos) 10.1.0.202	control8 (centos) 10.1.0.48	h0epics2 (centos) 10.1.3.55	h1iscauxex (VxWorks) 10.1.4.102	h1sunl2 (??) 10.1.4.159	pstrip2 (PowerStrip) 10.1.4.22	
h0pemms (VxWorks) 10.1.0.110	nds0 (centos) 10.1.0.28	h1psl (VxWorks) 10.1.0.57	h0serialms (comtrol) 10.1.3.60	h1iscauxey (VxWorks) 10.1.4.103	h1sunl3 (??) 10.1.4.160	pstrip3 (PowerStrip) 10.1.4.23	
h0peml0 (VxWorks) 10.1.0.115	broadcast1 (centos) 10.1.0.29	h0veex (VxWorks) 10.1.0.60	h0serialmx (comtrol) 10.1.3.61	h1susauxl0 (VxWorks) 10.1.4.108	h1sunl4 (??) 10.1.4.161	pstrip4 (PowerStrip) 10.1.4.24	
cdscolor0 (HP printer) 10.1.0.121	hanford1 (Solaris) 10.1.0.2	h0vemx (VxWorks) 10.1.0.61	h0serialmy (comtrol) 10.1.3.62	h1dscl0 (VxWorks) 10.1.4.109	h1sunex (??) 10.1.4.162	pstrip5 (PowerStrip) 10.1.4.25	
clock1 (Wall Clock) 10.1.0.138	fb0w (centos) 10.1.0.30	h0velx (VxWorks) 10.1.0.62	h0serialex (comtrol) 10.1.3.63	h0timingmsr (VxWorks) 10.1.4.112	h1suney (??) 10.1.4.163	pstrip6 (PowerStrip) 10.1.4.26	
clock2 (Wall Clock) 10.1.0.139	h0bypassctrl (5595) 10.1.0.31	h0vemr (VxWorks) 10.1.0.63	h0serialey (comtrol) 10.1.3.64	h1iool0 (VxWorks) 10.1.4.116	h1bypass0 (RFM) 10.1.4.171	pstrip7 (PowerStrip) 10.1.4.27	
h0ldas (Solaris) 10.1.0.143	fb0c (centos) 10.1.0.32	h0vely (VxWorks) 10.1.0.64	h0seriall0 (comtrol) 10.1.3.65	h1iool1 (VxWorks) 10.1.4.117	h1injection (centos) 10.1.4.173	hanford2 (centos) 10.1.4.2	
granite (Solaris) 10.1.0.155	nds0 (centos) 10.1.0.33	h0veemy (VxWorks) 10.1.0.65	h0seriall1 (comtrol) 10.1.3.66	h0tidal (VxWorks) 10.1.4.122	h1susepics (rh8) 10.1.4.183	h1conlog (Solaris) 10.1.4.3	
gneiss (Solaris) 10.1.0.157	nds3 (centos) 10.1.0.34	h0veey (VxWorks) 10.1.0.66	h0seriall2 (comtrol) 10.1.3.67	h2dscl0 (VxWorks) 10.1.4.133	h2susepics (rh8) 10.1.4.184	hanford4 (centos) 10.1.4.4	
control10 10.1.0.160	broadcast0 (centos) 10.1.0.35	waplvea (Wireless) 10.1.0.67	h0seriall3 (comtrol) 10.1.3.68	h2susauxl0 (VxWorks) 10.1.4.142	h1bcs (win2k) 10.1.4.186	hanford5 (ubuntu) 10.1.4.5	
control11 10.1.0.161	nds1 (centos) 10.1.0.36	h0vsunex (Solaris) 10.1.0.70	h0seriall4 (comtrol) 10.1.3.69	projector0 (Solaris) 10.1.4.147	h0cdsmsr (Solaris) 10.1.4.189	hanford6 (?????) 10.1.4.6	
control12 10.1.0.162	ldasgw0 (Solaris) 10.1.0.37	h0vsunmx (Solaris) 10.1.0.71	h0seriall5 (comtrol) 10.1.3.70	projector1 (Solaris) 10.1.4.148	h0grbsn (Solaris) 10.1.4.198	h1ascl0 (VxWorks) 10.1.4.91	
control13 10.1.0.163	nds2 (centos) 10.1.0.38	h0vsunlx (Solaris) 10.1.0.72	h0serialm0 (comtrol) 10.1.3.71	projector2 (Solaris) 10.1.4.149	h0tempmon (Solaris) 10.1.4.199	control2 (Solaris) 10.1.100.42	
travertine (Solaris) 10.1.0.170	ldasgw1 (Solaris) 10.1.0.39	h0vsunly (Solaris) 10.1.0.74	h0serialm1 (comtrol) 10.1.3.72	h0cosmic (VxWorks) 10.1.4.152	ups (MSR UPS) 10.1.4.205	control3 (centos) 10.1.100.43	
gabbro (Solaris) 10.1.0.171	hanford3 (centos) 10.1.0.3	h0vsunmy (Solaris) 10.1.0.75	h0serialee (comtrol) 10.1.3.73	h1dcuepics (rh8) 10.1.4.153	h1binj (centos) 10.1.4.208	control100 (centos) 10.1.10.100	
flint (Solaris) 10.1.0.172	control0 (centos) 10.1.0.40	h0vsuney (Solaris) 10.1.0.76		h2dcuepics (rh8) 10.1.4.154	silverstar (centos) 10.1.4.211	control101 (ubuntu) 10.1.10.101	
apache (Solaris) 10.1.0.18	control1 (Solaris) 10.1.0.41			h1iscepics (rh8) 10.1.4.155		projector3 (Solaris) 10.1.10.23	
h1isi (RTL) 10.1.0.197	control4 (centos) 10.1.0.44					projector4 (Solaris) 10.1.10.24	
h1omc (RTL) 10.1.0.198	control5 (centos) 10.1.0.45						

VxWorks
Linux
Solaris
Windows
Other

Notes:		Notes:		title:	LHO CDS iLIGO LANS AND GATEWAYS [CDS LAN]
				DCC:	LIGO-D070125
				Author:	David Barker
				Date:	04 Oct 2010

NAT ROUTER
Sun X2200 1U rack mount

Back View:
Network Connections



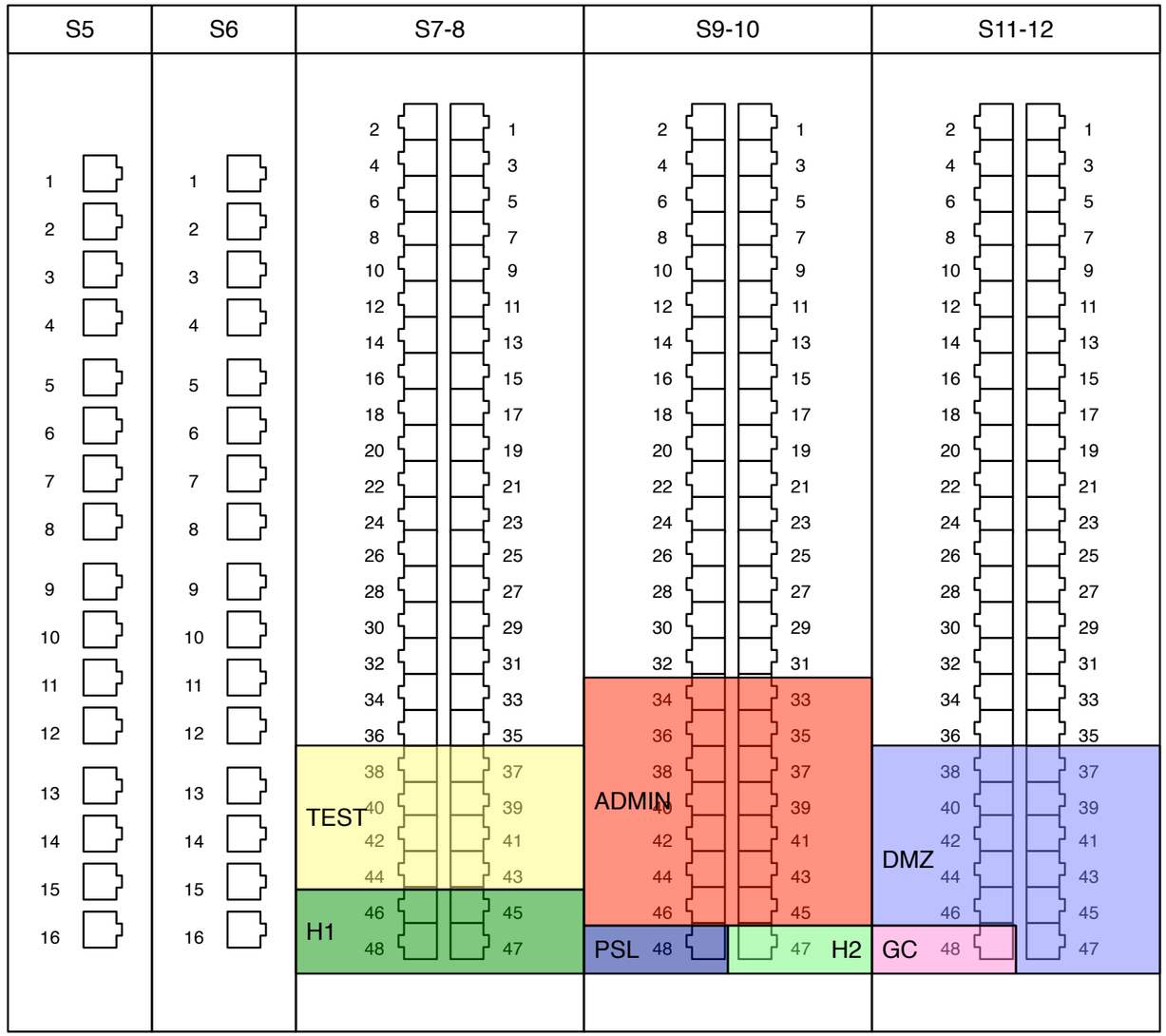
Notes:		Notes:		title:	LHO CDS iLIGO LANS AND GATEWAYS [NAT ROUTER NETWORK CONNECTIONS]
				DCC:	LIGO-D070125
				Author:	David Barker
				Date:	24 Sep 2010

Foundry FastIron 1500
Main Switch in MSR
Front View:
Network Cards, Distribution of ports to VLANS

All Ports Belong to the CDS VLAN Unless Labeled Differently

Single width cards are 16 10/100/1000 BaseT

Double width cards are 48 10/100BaseT



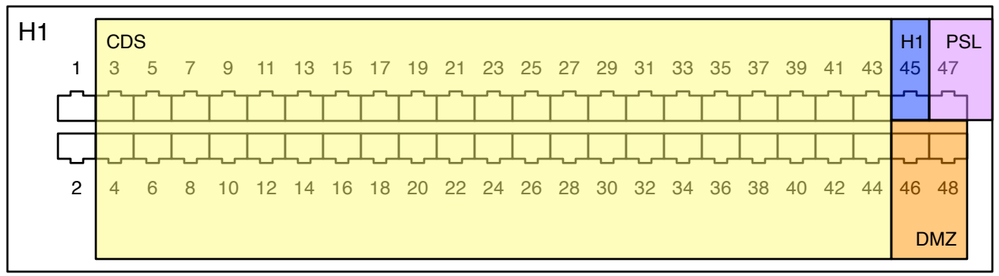
Notes:	H1 VLAN was used to isolate the h1iool[0,1] from CDS to make the rotation stages more robust. The porting of the rotation controllers from VxWorks to linux made this VLAN obsolete and the front ends were returned to the CDS VLAN. The H1 ports on the switch are legacy from this system.

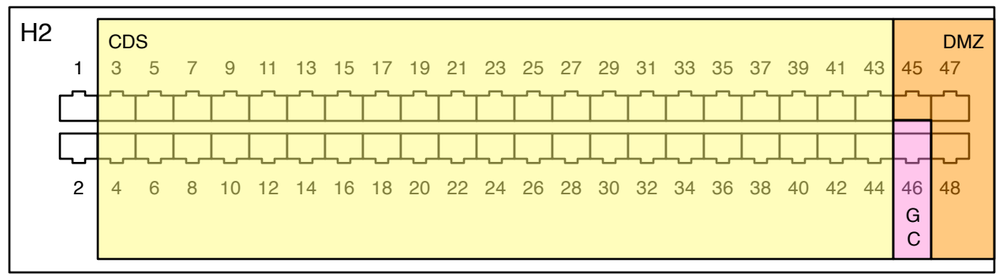
Notes:	The H2 VLAN was established in case we needed to isolate h2awg0 from the CDS VLAN if it was being swamped with network traffic preventing its reboot. This was never implemented and became moot at the end of S5 when H2 was decommissioned. This H3 port on the switch are legacy.

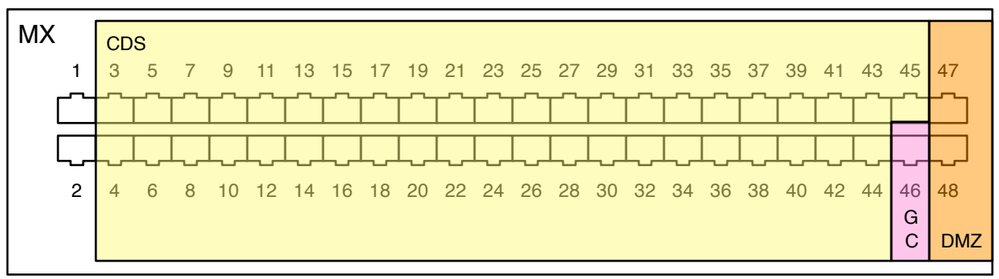
title:	LHO CDS iLIGO LANS AND GATEWAYS [FOUNDRY MAIN SWITCH]
DCC:	LIGO-D070125
Author:	David Barker
Date:	24 Sep 2010

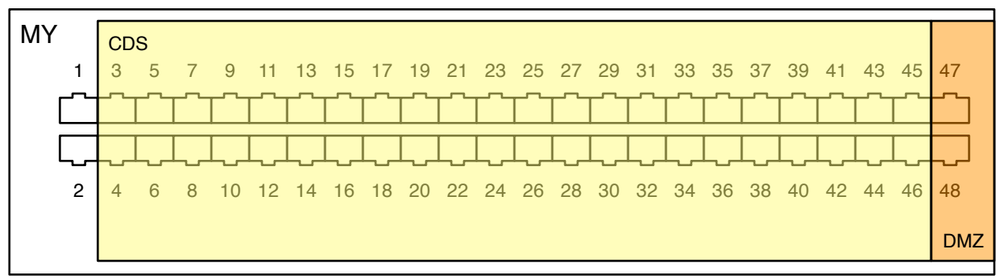
Foundry Edge Switches
FastIron Edge X448

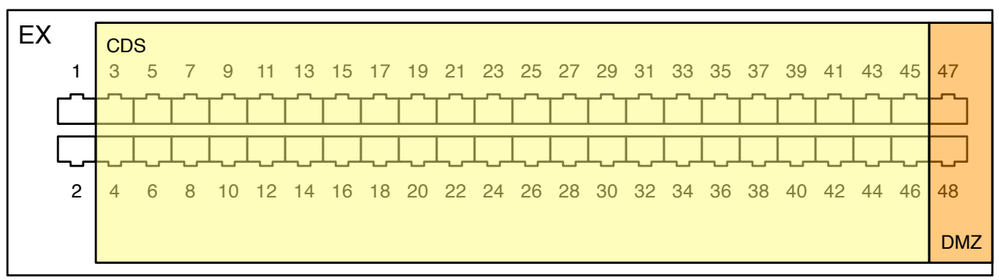
Ports 1 and 2 are taken by the uplinks, ports 3 - 48 available to the VLANs

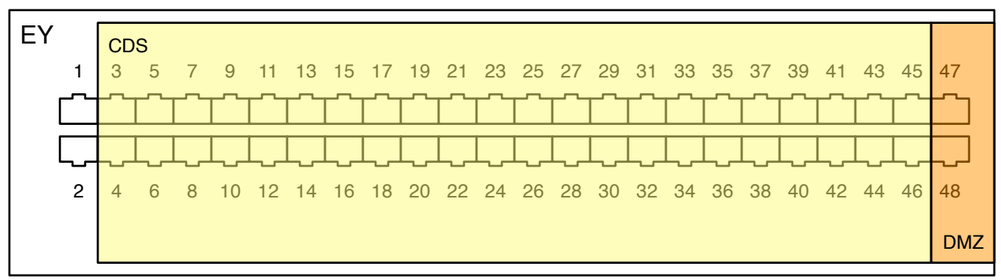












Notes:		Notes:	

title:	LHO CDS iLIGO LANS AND GATEWAYS [FOUNDRY EDGE SWITCHES]
DCC:	LIGO-D070125
Author:	David Barker
Date:	24 Sep 2010