

MARS_TBD_DCS_Procedures
3/28/2006

This document covers operational procedures for the MARS System

Shown on the next page is the complete IP network for MARS. It can be described as follows:

The backbone, as mentioned on the prior page, is a 4Gbs EtherChannel backbone connecting the Sea and Shore CISCO stacks. The backbone is placed in subnet 10.1.254.0/30

There are two primary class B subnets for MARS.

The Sea is subnet 10.1.0.0 /16

The Shore is subnet 10.91.0.0/16

These B subnets are further partitioned into management subnets of

Sea Management 10.1.128.0/24

Shore Management 10.91.128.0/24.

All IP addresses relating to the operation of the network infrastructure, such as control and monitoring, is contained in the 10.x.128.0 subnets

The subsea subnet is also further partiioned into B subnets for containing each of the 8 science ports and the science equipment attached thereon:

10.1.11.0/24 for science port 1

10.1.12.0/24 for science port 2

..... etc

10.1.18.0/24 for science port 8.

The shore subnet is also further partiioned into a B subnet for containing the shore science servers.

10.91.4.0/24

The MARS network contains 3 ancillary switches in addition to the 3750 backbone switches:

sia91-1 is a managment switch, into which the various network managment servers are connected

sia91-3 is a science server switch, to which the science data servers are attached. Its ports are placed in subnet 10.91.4.0/24

sia91-2 is the shore station switch remotod to the beach via fibers. It contains the power-system servers (PMACs client & server)

Accessing MARS Devices from outside the lab

The basic devices which need to be accessed on the MARS system are:

- 1) Sub Sea Network and Control devices: subnet=10.1.128.0/24
- 2) Shore Network and Control devices: subnet=10.91.128.0/24
- 3) Sub Sea Science Instruments: subnet=10.1.11.0/24 thru 10.1.18.0/24
- 4) Shore Science Servers: subnet=10.91.4.0/24

These subnets must be accessed either

- 1) From within the lab, attaching a PC to 10.91.128.0 via the 3512 switch sia91-1
- 2) From outside the lab, via the PIX firewall at 10.91.128.12 alias 134.89.42.xxx

METHOD 1 (lab access)

- 1) Hard code an IP address from the 10.91.128.0 pool into the PC
- 2) Use a GW of 10.91.128.1 and a netmask of 255.255.255.0
- 3) It is imperative that MBARI maintain a table of the pool of IP addresses in use.

METHOD 2 (outside access from MBARI or internet)

- 1) If you are outside MBARI you will need to have your own subnet permitted into the lab via MBARI network services
- 2) In the MARS firewall code a permission from your subnet into the lab
- 3) The devices which you want to access must be accessed via their alias as per the following table:

Device Location	Inside Address	Outside Address
shore managment	10.91.128.N	134.89.42.N
sea managment	10.1.128.N	134.89.42.1N
subsea science devices	10.1.11.N	134.89.42.2N

Accessing MARS Devices from outside the lab

Some Examples are shown in the Following table:

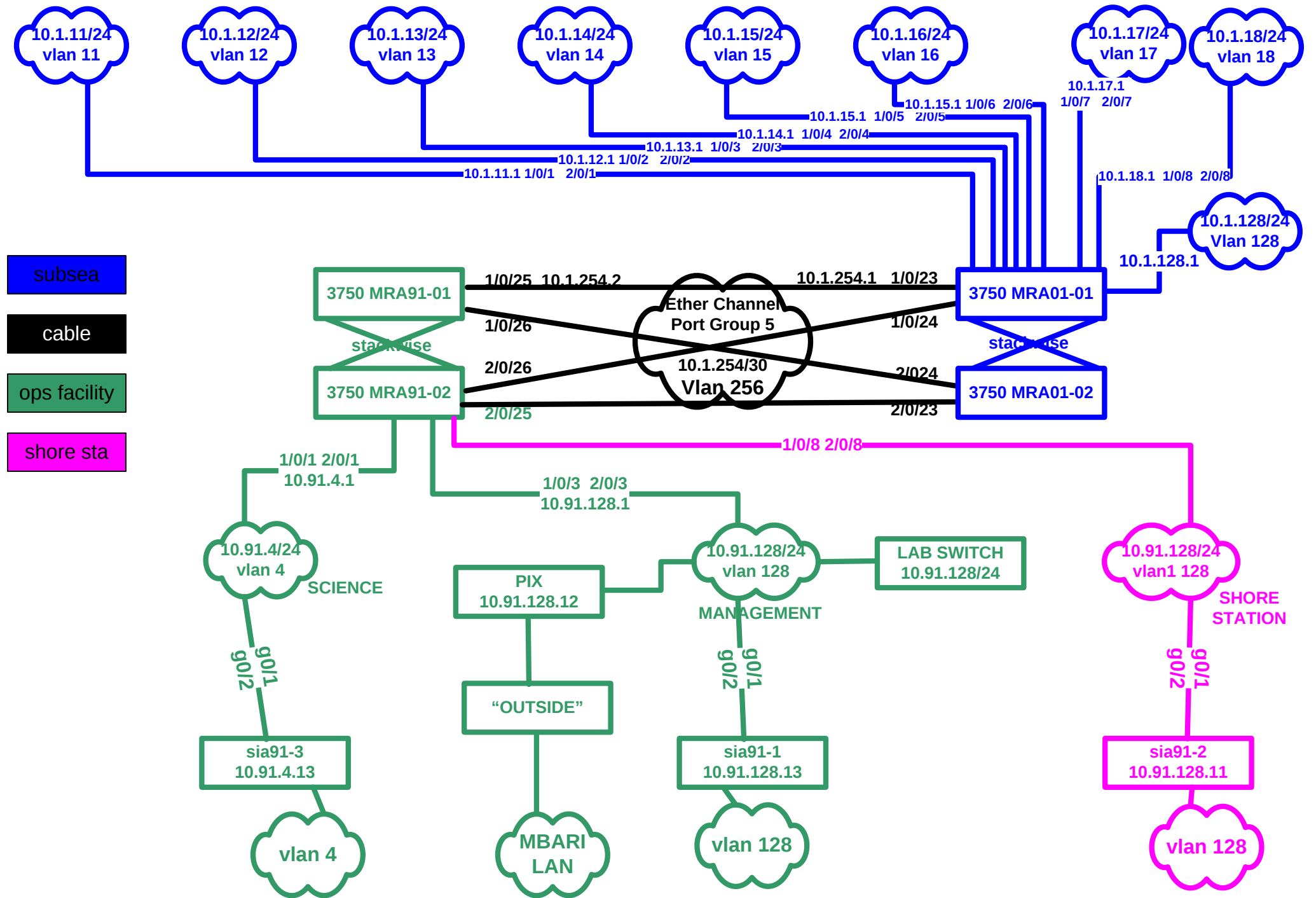
Device	Inside Address	Outside Address
camera1	10.91.128.23	134.89.42.23
camera2	10.91.128.30	134.89.42.30
NPC	10.1.128.15	134.89.42.115
shore GYDA	10.91.128.14	134.89.42.14
subsea GYDA	10.1.128.14	134.89.42.114

The diagrams and tables on the pages that follow should be useful by network engineering to trouble-shoot or to configure the firewall.

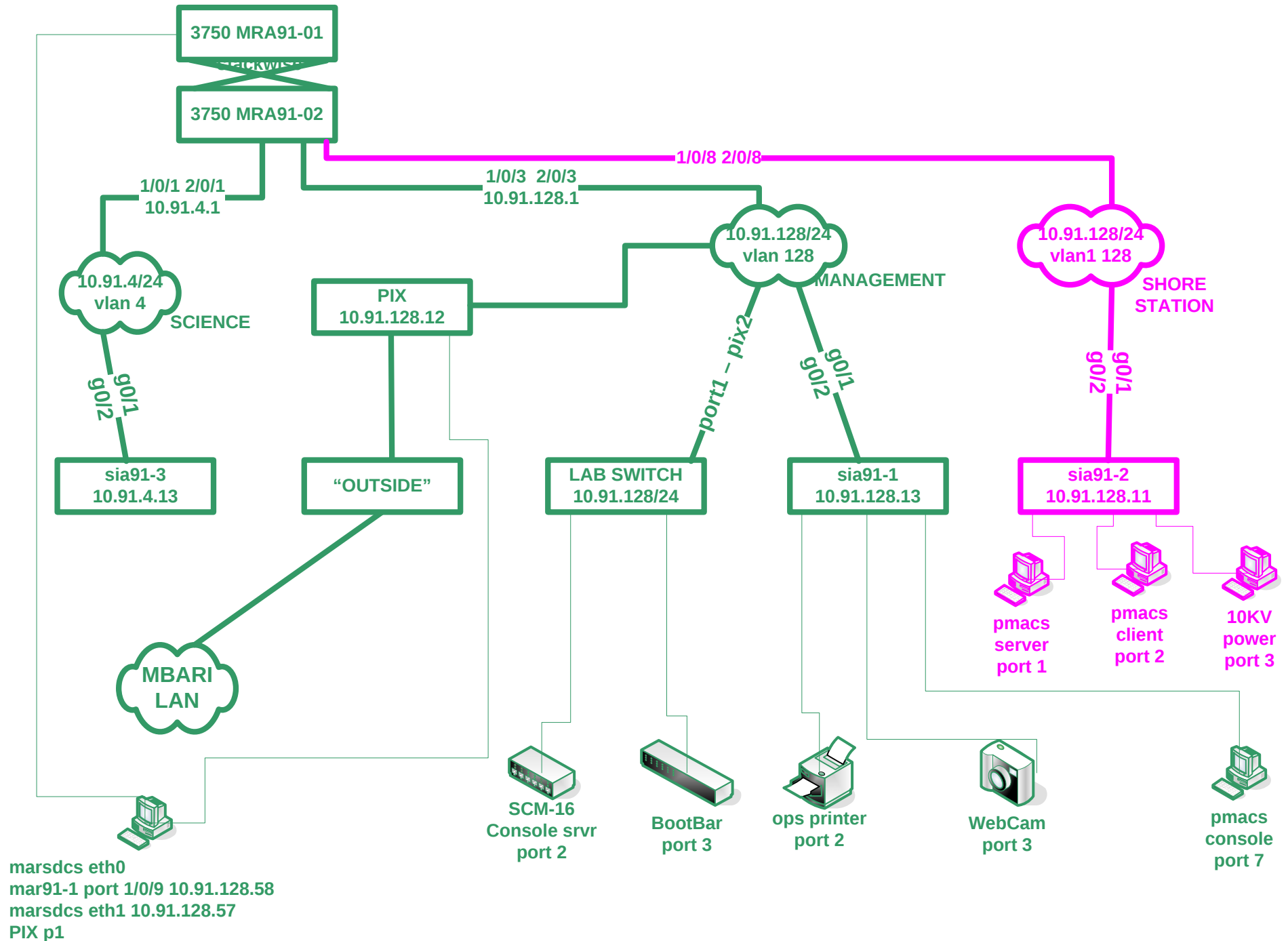
Subnets for MARS System

Location	Subnet	Purpose
Sea	10.1.0.0/16	subsea network
Sea	10.1.128.0/24	subsea network devices
Sea	10.1.11.0/24	subsea science devices on science port 1
Sea	10.1.12.0/24	subsea science devices on science port 2
Sea	10.1.13.0/24	subsea science devices on science port 3
Sea	10.1.14.0/24	subsea science devices on science port 4
Sea	10.1.15.0/24	subsea science devices on science port 5
Sea	10.1.16.0/24	subsea science devices on science port 6
Sea	10.1.17.0/24	subsea science devices on science port 7
Sea	10.1.18.0/24	subsea science devices on science port 8
Shore	10.91.0.0/16	shore network
Shore	10.91.128.0/24	shore network devices
Shore	10.91.4.0/24	shore science servers
Cable	10.1.254.0/24	sea to shore ether channels

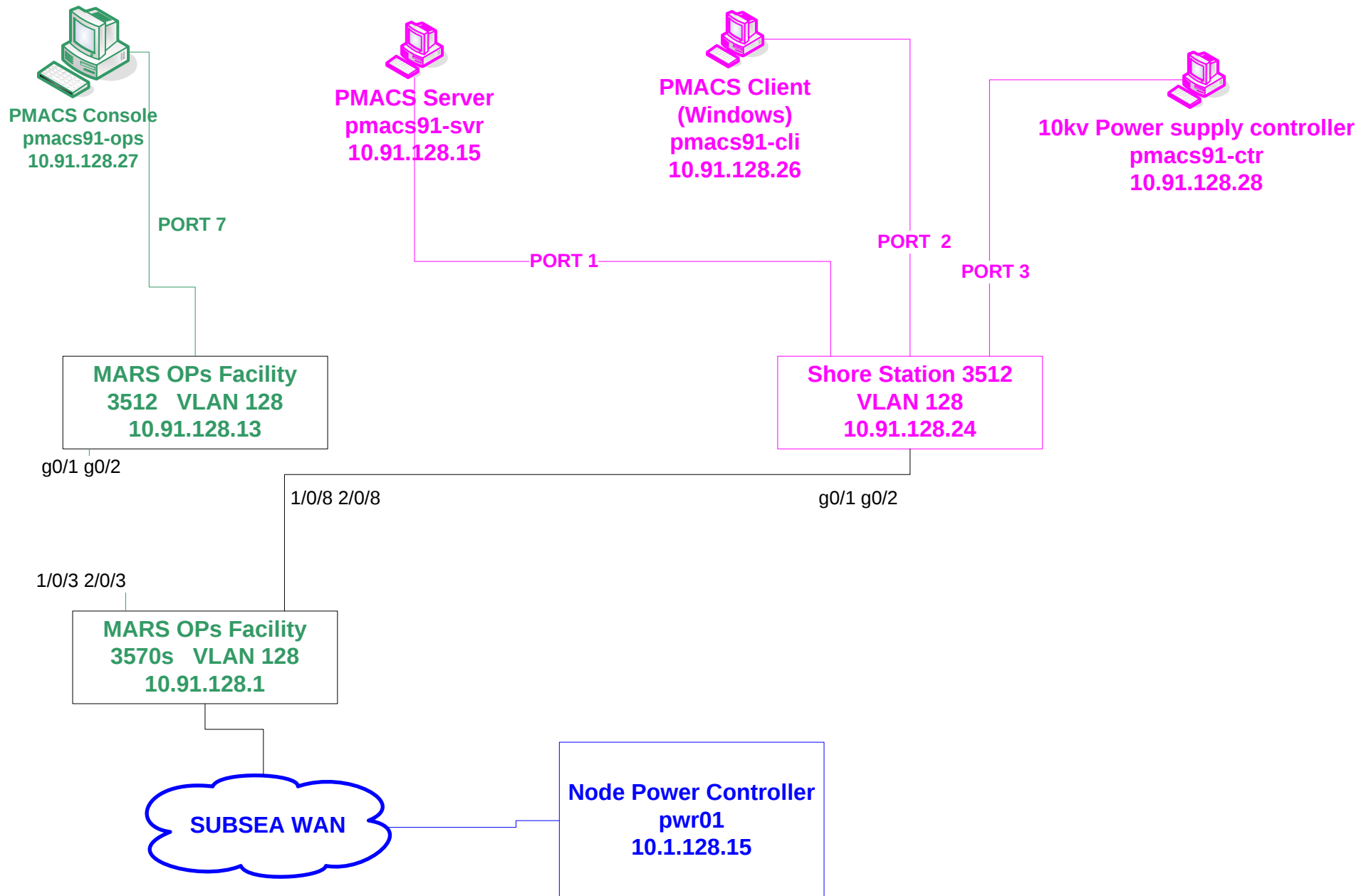
Subnets for MARS System



Detail of 10.91.128.0/24 shore management subnet



Detail of MARS power systems Elements



3750 Ports Allocated on MARS Shore Routers

01-East

SHORE

02-West

port	vlangs	to	port	Desc
1/0/01	4T	Sia91-3	Gi0/1	Science switch
1/0/02	4			
1/0/03	128T	Sia91-1	Gi0/1	ops fac switch
1/0/04	128			
1/0/05	128	linksys	1	linksys
1/0/06	128			
1/0/07	128	(lanf-temp)		eth0
1/0/08	128T	sia91-2	Gi0/1	shore sta switch
1/0/09	128	marsdcs	eth0	mars mgt svr .58
1/0/10	128	eth2ser	1	eth to serial
1/0/11	128	(lanf-temp)		eth2
1/0/12	128			
1/0/13	128			
1/0/14	128	PIX		10.91.128.12
1/0/15	128	GYDA		10.91.128.14
1/0/16	128			
1/0/17	128	ntp		10.91.128.55
1/0/18	128			
1/0/19				
1/0/20				
1/0/21				
1/0/22				
1/0/23				
1/0/24				
1/0/25	256	Mra01-01	1/0/23	etherchannel
1/0/26	256	Mra01-02	2/0/24	etherchannel
1/0/27				
1/0/28				

port	vlangs	to	port	Desc
2/0/01	4T	Sia91-3	Gi0/2	Science switch
2/0/02	4			
2/0/03	128T	Sia91-1	Gi0/2	ops fac switch
2/0/04	128			
2/0/05	128			
2/0/06	128			
2/0/07	128			
2/0/08	128T	sia91-2	Gi0/2	shore sta switch
2/0/09	128			
2/0/10	128			
2/0/11	128			
2/0/12	128			
2/0/13	128			
2/0/14	128			
2/0/15	128			
2/0/16	128			
2/0/17	128			
2/0/18	128			
2/0/19				
2/0/20				
2/0/21				
2/0/22				
2/0/23				
2/0/24				
2/0/25	256	Mra01-02	2/0/23	etherchannel
2/0/26	256	Mra01-01	1/0/24	etherchannel
2/0/27				
2/0/28				

3750 Ports Allocated on MARS Sea Routers

01 (A51)

SEA

02 (A52)

port	vlangs	to	port	Desc
1/0/01	11	ADCP		science
1/0/02	12			science
1/0/03	13			science
1/0/04	14			science
1/0/05	15			science
1/0/06	16			science
1/0/07	17			science
1/0/08	18			science
1/0/09	128	Node pwr ctl		10.1.128.15
1/0/10	128	HA7 Sensors		10.1.128.21
1/0/11	128			
1/0/12	128			
1/0/13				
1/0/14				
1/0/15				
1/0/16				
1/0/17				
1/0/18				
1/0/19				
1/0/20				
1/0/21				
1/0/22				
1/0/23	256	Mra91-01	1/0/25	A51J23 – B04
1/0/24	256	Mra91-02	2/0/26	A51J24 – B06
1/0/25				
1/0/26				
1/0/27				
1/0/28				

port	vlangs	to	port	Desc
2/0/01	11			science
2/0/02	12			science
2/0/03	13			science
2/0/04	14			science
2/0/05	15			science
2/0/06	16			science
2/0/07	17			science
2/0/08	18			science
2/0/09	128	GYDA	A52J09	10.1.128.14 – B03
2/0/10	128	HA7 Sensors		10.1.128.21
2/0/11	128	cyclades	A51J11	10.1.128.20 – B02
2/0/12	128			
2/0/13				
2/0/14				
2/0/15				
2/0/16				
2/0/17				
2/0/18				
2/0/19				
2/0/20				
2/0/21				
2/0/22				
2/0/23	256	Mra91-02	2/0/25	A52J23 – B07
2/0/24	256	Mra91-01	1/0/26	A52J24 – B05
2/0/25				
2/0/26				
2/0/27				
2/0/28				

LOGS are on /var/log/ciscl.log

Ports for aux switches and firewalls

sia91-1	10.91.128.13	MARS operations facility		
port	vlangs	to	port	Desc
1/0/01	128	<i>broken port</i>		<i>dont use</i>
1/0/02	128	pmacs cons	na	10.91.128.27
1/0/03	128	mars printer	na	10.91.128.29
1/0/04	128	web cam	na	10.91.128.23
1/0/05	128	marsdcs	eth1	10.91.128.57
1/0/06	128			
1/0/07	128			
1/0/08	128			
1/0/09	128			
1/0/10	128			
1/0/11	128			
1/0/12	128			
g0/1	po2	mra91-01	g1/0/3	
g0/2	po2	mra91-02	g2/0/3	

sia91-3	10.91.4.13	science hosting switch		
port	vlangs	to	port	Desc
1/0/01	4			
1/0/02	4			
1/0/03	4			
1/0/04	4			
1/0/05	4			
1/0/06	4			
1/0/07	4			
1/0/08	4			
1/0/09	4			
1/0/10	4			
1/0/11	4			
1/0/12	4			
g0/1	po1	mra91-01	g1/0/1	
g0/2	po1	mra91-02	g2/0/1	

sia91-2	10.91.128.24	shore station		
port	vlangs	to	port	Desc
1/0/01	128	pmacs svr		10.91.128.15
1/0/02	128	pmcas client	nic 1	10.91.128.26
1/0/03	128			
1/0/04	128			
1/0/05	128			
1/0/06	128			
1/0/07	128			
1/0/08	128			
1/0/09	128			
1/0/10	128			
1/0/11	128			
1/0/12	128			
g0/1	po3	mra91-01	g1/0/8	
g0/2	po3	mra91-02	g2/0/8	

PIX Firewall 10.91.128.12 / 134.89.42.12			
port	to	port	Desc
0	MBARI inet		
1	mra91-01	g1/0/14	
2	LAB SWITCH	1	
3			
4			
5			

LAB Switch			
port	to	port	Desc
01	PIX	2	
02	SCM16		10.91.128.17
03	Boot Bar		10.91.128.19
04			
05			
..... 16			