institute of mine seismology

IT Requirements

for

IMS Services

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www.IMSeismology.org

Contact IMS

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1 General

The IMS has been contracted to provide support and seismological processing services. In order to provide these services, certain IT connections need to be enabled.

The establishment of a link to the client enables IMS to access seismic data recorded by the seismic network. The IMS will regard both the status of the seismic network and the data recorded by this network as confidential information. Access onto the client network will be used strictly for services related to the transfer of seismic data, remote maintenance of the seismic system and any other services in line with the agreed upon scope of work between the IMS and the client.

The details of the required connections are detailed in the following paragraphs and summarised in a block diagram in figure 1.

2 IMS Domain migration

IMS is in the process of migrating certain services of the imseismology.org domain to the imsi.org domain.

3 Connections to IMS Servers

These connections can be direct or via a proxy within the client LAN. If a proxy is used for the connection, the proxy account details (IP address, port, type of proxy and authentication credentials) need to be supplied to the IMS for the setup of the seismic server. For an authenticating proxy a non-expiring password is preferred to prevent the sudden loss of data transfer.

3.1 Data Transfer

To enable data transfer, the servers installed at the client site need to have access to the IMS Data servers as detailed in Table 1.

Data transfer is used for remote seismological data processing, configuration updates and to enable IMS to complete their reporting obligations. The method used for transferring data uses the HTTP protocol on port 80/5080 or HTTPS on port 443/50443. Software is set up on the seismic computer which connects to an authenticated access web server at IMS. All communication is initiated by the seismic computer on the client side and the transfer rate is limited. IMS has fixed IP addresses for data transfer providing redundancy. The software will switch the address if the other cannot be reached.

Allow for future migration of domain from *.imseismology.org to *.imsi.org.

Table 1: Data transfer connections

Source	Destination	DNS Name	Port	Protocol
Seismic Server	196.44.37.99 (South Africa)	portal1.imseismology.org	443	HTTPS
	41.0.209.203 (South Africa)	portal2.imseismology.org		
	196.22.244.59 (South Africa)	portal3.imseismology.org		
	120.29.243.116 (Australia)	portal5.imseismology.org		
	14.1.74.190 (Australia)	portal6.imseismology.org		
	142.115.255.58 (Canada)	portal7.imseismology.org		

3.2 Software Updates and Authentication

Software updates for the seismic server and client PC's running IMS software as well as the connections to the Google Fireabse authentication services.

Allow for future migration of domain from *.imseismology.org to *.imsi.org.

Table 2: External software connections

Source	Destination	DNS Name (URL)	Port	Protocol
All customer sources (Server, , employee workstations, remote access systems)	196.44.37.98 (South Africa)	updates.imseismology.org devupdates.imseismology.org software.imseismology.org downloads.imseismology.org www.imseismology.org	443	HTTPS
	120.29.241.81 (Australia)	updates5.imseismology.org devupdates5.imseismology.org software5.imseismology.org downloads5.imseismology.org services.au.imseismology.org nexus.au.imseismology.org licensing5.imseismology.org		
	184.149.7.253 (Canada)	updates7.imseismology.org devupdates7.imseismology.org software7.imseismology.org downloads7.imseismology.org		
	Country specific	https://*.googleapis.com https://*.gstatic.com *.google.com *.googleusercontent.com		
Seismic server	Country specific	archive.ubuntu.com	80	HTTP
		ntp.ubuntu.com (if local NTP not available)	123	NTP

3.3 Software Licensing

Software licenses for the seismic server and client PC's running IMS software are also made available from the IMS Servers.

Allow for future migration of domain from *.imseismology.org to *.imsi.org.

Table 3: Software license connections

Source	Destination	DNS Name (URL)	Port	Protocol
All customer sources	120.29.241.81	licensing5.imseismology.org	443	HTTPS
	196.44.37.100	licensing1.imseismology.org		

3.4 Secure Ports for Customer Access

The service level settings for seismological processing customers can be accessed via a secure web page after registration.

Customers using Ticker 3D on a mobile device can access the event data via a secure port.

Allow for future migration of domain from *.imseismology.org to *.imsi.org.

Table 4: Secure Customer Access

Source	Destination	DNS Name (URL)	Port	Protocol
Any	196.44.37.100 (South Africa)	issues.imseismology.org	443	HTTPS
	196.44.37.101 (South Africa)	myservices.imseismology.org		
	196.44.37.98 (South Africa)	mobile.imseismology.org		
	120.29.241.81 (Australia)	services.au.imseismology.org		
	13.248.203.52 (primary) 35.71.138.35 (backup)	nexus.imseismology.org		

4 External remote from IMS

IMS provides support, maintenance, upgrading and trouble-shooting of the seismic system. To do this IMS support staff need to connect to the seismic PC.

Options for this include

1. Secure shell (ssh) (preferred method). This can be restricted to the fixed IMS IP addresses (table 5) for added security. Access from all addresses is preferred for redundancy. The external port should be changed but the connection should route to port 22 on the seismic PC.

2. A connection via a a secure VPN (this can restrict the access to specific PC's within the IMS).

Allow for future migration of domain from *.imseismology.org to *.imsi.org.

Table 5: IMS Public IPs for direct remote SSH access

Source	DNS Name (URL)	Destination	Port	Protocol
196.44.37.100 (IMS South Africa)	access1.imseismology.org	Seismic PC	remote port	SSH
41.0.209.204 (IMS South Africa)	access2.imseismology.org			
196.22.244.60 (IMS South Africa)	access3.imseismology.org			
120.29.241.81 (IMS Australia)	access5.imseismology.org			
184.149.7.253 (IMS Canada)	access7.imseismology.org			

5 Internal Connections (seismic server to hardware)

The installed IMS equipment is all Ethernet based and communicates with the IMS server located on the client's LAN. Normally there are no firewalls which need to be configured for this traffic but if use is made of VLAN's the details of the ports used are documented in Table 6.

Table 6: IMS equipment connections

Function	**Port**	**Protocol**
Ping	-	ICMP
Remote administration	80	HTTP
Communication between seismometers and seismic server	8001,8003	HTTP
	8101,8103	HTTPS
SSH connection between server and equipment	22	SSH
Telnet session between server and equipment	23	Telnet
File transfer	69	TFTP
	20-21	FTP
Moxa Nport Device server	950-981,4900 4800	TCP UDP
Timing protocols to seismic equipment	123, 319-320	UDP, NTP, PTP
- PTP system require IP multicast between GPS master on surface and slave devices. (For detailed PTP requirements, please consult the IMS PTP advisory.		

6 Internal Connections (seismic server to customer workstations)

The installed IMS equipment is all Ethernet based and communicates with the IMS server located on the client's LAN. Normally there are no firewalls which need to be configured for this traffic but if use is made of VLAN's the details of the ports used are documented in Table 7.

Table 7: IMS equipment connections

Function	**Port**	**Protocol**
Ping	-	ICMP
SSH connection between server and equipment	22	SSH
Ports to interface Software application with seismic server (all required)	8001 - 8099	HTTP
	8101 - 8199	HTTPS
File sharing	137-139,445	UDP, TCP, SMB, CIFS

7 Block Diagram

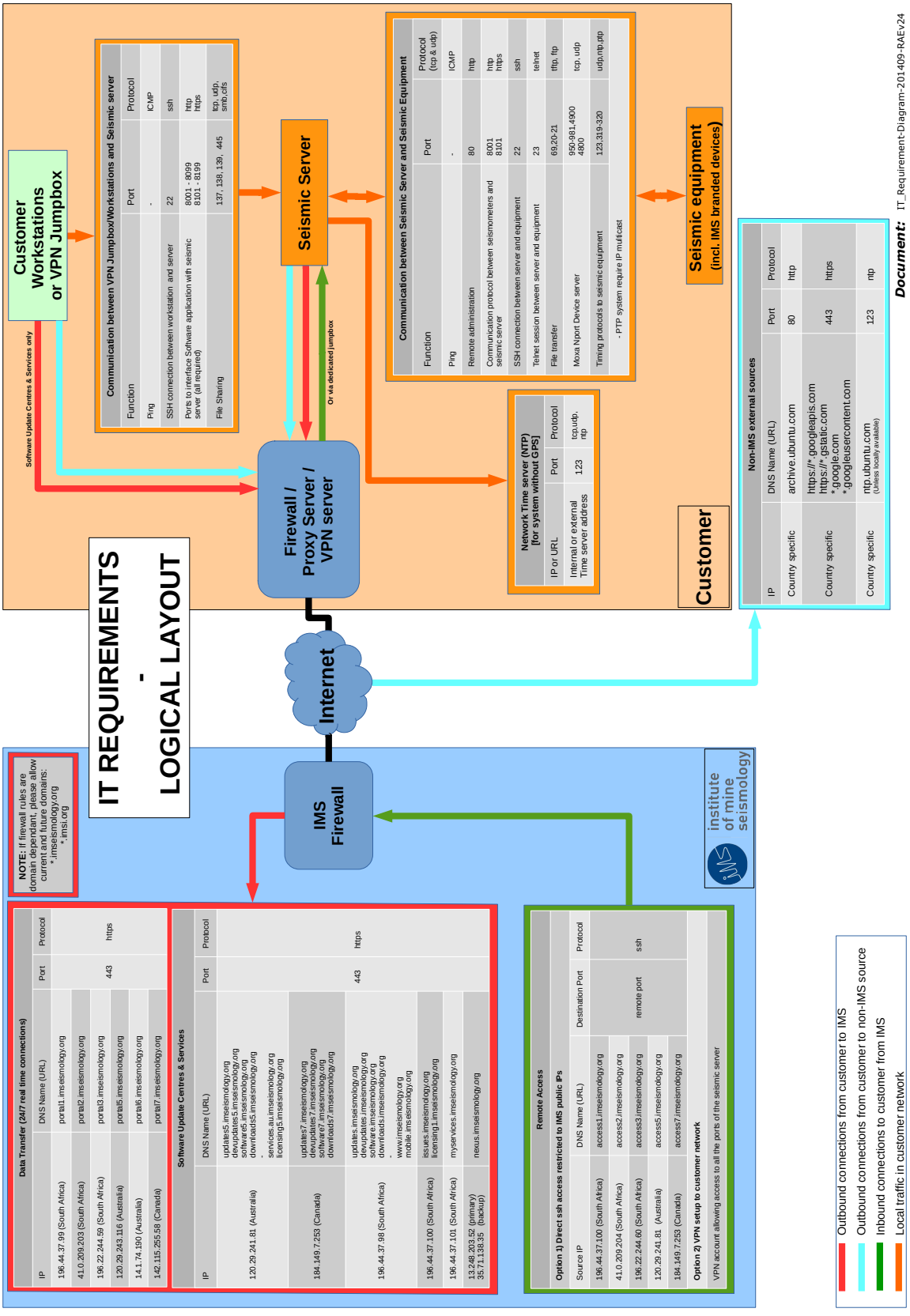

Figure 1: Diagram of Connections

Table 8: Change record

Change Control Record		
Date	Description	Revision
2013/06/14	Original document - EDK	1
2013/07/12	Added licensing server - EDK	2
2014/01/30	Updated IMS AU external IP address - EDK	3
2014/10/15	Added Diagram - EDK	4
2015/05/19	Updated diagram and IMS AU external IP's - EDK	5
2015/10/12	Updated diagram and IMS AU new external IP's - EDK	6
2016/04/11	Updated diagram and IMS ZA external IP's - EDK	7
2016/10/28	Updated diagram and added https - EDK	8
2017/10/31	Updated diagram, corrected AU ports, added Internal section - EDK	9
2018/06/01	Updated diagram, additional AU ports, updates to internal section - RE	10
2019/07/03	Updated diagram, new portal for IMS ZA	11
2019/08/15	Fixed Ubuntu update centers (archives -> archive)	12
2019/09/27	Added Ubuntu update centers (security) and changed DNS mobile4 to mobile, added portal4 back with port 8010	13
2020/05/04	Fixed licensing table	14
24/03/2021	Added access3 IP and Moxa Nport device requirements	15
03/12/2021	Support for HTTPS and removed some less used links	16
04/01/2023	Change links to HTTPS only, changes to portal links for AU and CA, general services	17
03/08/2023	Public IP correction of IMS CA	18
14/02/2024	Added Google fire base ports and bigger port range for http(s) between server and workstations.	19
14/06/2024	Removed individual Nexus link and replaced with single global link	20
18/03/2025	Updated IP of portal6 and removed HTTP for portal	21