CRFCA ITT

Appendix D – List of Equipment

1 PH2 VDI

1.1 Virtual Destop infrastructure

The PH2 VDI is hosted on 7 physical servers, and an All Flash SAN. VMWare Horizon v6.2.4 provides the virtualisation software. These servers have the capacity to run 60 VDT each. There are 14 other virtual servers (see below) directly supporting the VDT environment.

The VMWare version is due to be upgraded to 6.5 or 6.7 soon.

Server	Type	Memory	CPU	Storage
ESXi1	Fujitsu RX2540 M1	393081.30Mb	24	
ESXi2	Fujitsu RX2540 M1	393081.30Mb	24	
ESXi3	Fujitsu RX2540 M1	393081.30Mb	24	
ESXi4	Fujitsu RX2540 M1	393081.30Mb	24	
ESXi5	Fujitsu RX2540 M1	393081.30Mb	24	
ESXi6	Fujitsu RX2540 M1	393081.30Mb	24	
ESXi7	Fujitsu RX2540 M1	393081.30Mb	24	
SAN	NexGen N5 SAN			55TB

To support these hosts there are the following support servers

SQL Server		
DHCP Server		
Connection server1		
Connection server2		
Connection server3		
Connection server4		
Security Server1		
Security Server2		
Security Server3		
Security Server4		
vCentre Server		
AntiVirus Server		
Profile Server		
File Server		

1.2 Virtual Desktop Pools

A virtual desktop pool is a group of virtual desktops hosted on virtual machines (VDT's) that are configured with the same settings and features. CRFCA VDT are configured as floating-assignment pools meaning that users are assigned a random VDT and their profile (personal preferences) are pulled down from a centralized profile server. Documents and Downloads are redirected to a

separate filestore server. Once the user logs off that VDT is destroyed and a new one is created. This ensures that there is no data left on the VDT and on next use the user gets a clean VDT.

Pooling VDT's makes it easier to configure desktop settings and centralizes management. This allows you to deliver identical applications to groups of users. Pooling also ensures that patching and updating critical applications is managed closely.

1.3 CRFCA Virtual Desktop Environment

1.3.1 RFCA and ACF users:

870 - Active users that log on to the system

310 – Users concurrently logged on (highest noted, however increasing each day due to new users from ACFs needing to access the RLI Applications).

400 – VDT available for users at any time, this will increase to 600 soon.

1.3.2 VDT pool structure:

There are 3 Active pools, The General and Estates pool are identical and are used for load balancing and high availability. Users are manually allocated to these pools via security groups. JPA MJDI pool is allocated to JPA and ACF users who need access to JAMES and other MOD applications.

Gold Template	Poole Name	JAVA Version	Status	Qty
JPA-GOLD-4	JPA-DC	7 update 79	Active	70
General-G9	General O2013	8 update 131	Active	180
General-G9	Estates O2013	8 update 131	Active	120
General-G8	General O2016	8 update 131	Standby	2
General-G8	Estates O2016	8 update 131	Standby	2
PH2-SH-DC-SPOC	SPOC	8 update 131	Active	20

2 PH2E Servers

There are physical and virtual servers running within PH2E.
The CRFCA and RFCAs' LANs contain Fujitsu RX100 servers, there are 14 of them (13 x RFCAs, 1 X CRFCA)
The ACFs' LAN contain Fujitsu TX120 servers X 56

There are 72 Virtual servers hosted on the PH2E virtualisation infrastructure which comprises;
VMWare 6.5
Fujitsu RX2540 Servers X 3
Fujitsu SAN AF250 X 1
Brocade VDX 6740 X 2

Sr No	OS	Role	Network Subnet	Storage Size	Notes
1	Microsoft Windows Server 2012 R2	File Server for Softwares	Centralised.0	465	

2	Microsoft Windows Server 2012 R2	SP Development environment	Centralised.0	250	
3	Microsoft Windows Server 2012 R2	Secure Data Erasure for HDDs/SSDs in Systems	Centralised.0	70	
4	Microsoft Windows Server 2012 R2	Backup Castra DB Server	Centralised.0	954	
5	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	RFCA173.6.0	465	
6	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.152.0	465	
7	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.151.0	465	
8	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	RFCA4.11.0	465	
9	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.158.0	465	
10	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.157.0	465	
11	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.156.0	465	
12	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	RFCA164.207.0	465	
13	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.155.0	232	
14	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.154.0	232	
15	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.153.0	232	
16	Microsoft Windows Server 2008 R2	Central file Server	Centralised.0	6000	
17	Microsoft Windows Server 2016	Central file Server	Centralised.0	6030	
18	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.193.0	232	
19	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	RFCA173.3.0	465	
20	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.194.0	232	
21	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.195.0	232	
22	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.196.0	232	
23	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.171.0	232	
24	Microsoft Windows Server 2012 R2	Domain Controller, DNS and File Server	ACF.DR0	232	
25	Microsoft Windows Server 2012 R2	Domain Controller, DNS and File Server	ACF.173.0	232	
26	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.174.0	232	
27	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.175.0	232	
28	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	RFCA14.168.0	465	
29	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	RFCA4.13.0	479	
30	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.178.0	232	
31	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.179.0	232	
32	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.180.0	232	
33	Microsoft Windows Server 2008 R2	Skype Server	Centralised.0	190	
34	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.181.0	232	
35	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	RFCA53.191.0	465	
36	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.182.0	232	
37	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.183.0	232	
38	Microsoft Windows Server 2012 R2	Domain Controller, DNS and File Server	ACF.190.0	232	
39	Microsoft Windows Server 2012 R2	Domain Controller, DNS and File Server	ACF.191.0	232	
40	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	RFCA2.RFCA0	465	
41	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.184.0	232	
42	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.185.0	232	
43	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	RFCA14.52.0	465	
44	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.186.0	232	
45	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.187.0	232	

46	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.188.0	232	
47	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.189.0	232	
48	Microsoft Windows Server 2008 R2	Castra Application Server	Centralised.0	160	
49	Microsoft Windows Server 2008 R2	Castra Application Server	ACF.31.0	160	
50	Microsoft Windows Server 2012 R2	Castra Database Server	Centralised.0	1117	
51	Microsoft Windows Server 2016	Central server for Remote connections	Centralised.0	80	
52	Microsoft Windows Server 2012 R2	PH2e DR vCentre	DR18.11.0	100	
53	Microsoft Windows Server 2016	KMS Server	Centralised.0	80	Windows and Office Licensing
54	Microsoft Windows Server 2016	Exchange Mailbox Server	Centralised.0	4322	
55	Microsoft Windows Server 2016	Exchange Mailbox Server	Centralised.0	4323	Live Mailbox Server
56	Microsoft Windows Server 2012 R2	Rights Management Server	Centralised.0	100	
57	Microsoft Windows Server 2012 R2	Rights Management Server	Centralised.0	100	
58	Microsoft Windows Server 2012 R2	Rights Management Server	Centralised.0	100	
59	Microsoft Windows Server 2016	Password Management Server	Centralised.0	130	
60	Microsoft Windows Server 2012 R2	PH2e Old vCentre Server	Centralised.0	100	
61	Microsoft Windows Server 2012 R2	Office Online Server	Centralised.0	100	
62	Microsoft Windows Server 2012 R2	Office Online Server	Centralised.0	100	
63	Microsoft Windows Server 2008 R2	Print server	Centralised.0	50	
64	Microsoft Windows Server 2012 R2	Remote App Server	Centralised.0	180	For DWG True View application
65	Microsoft Windows Server 2008 R2	McAfee AV and DLP Management Server	Centralised.0	180	
66	Microsoft Windows Server 2008 R2	Owncloud Server	Centralised.0	330	
67	Microsoft Windows Server 2008 R2	Domain Controller, DNS and Certificate Authority	Centralised.0	80	
68	Microsoft Windows Server 2008 R2	Domain Controller and DNS	Centralised.0	80	
69	Microsoft Windows Server 2008 R2	Domain Controller and DNS	Centralised.0	80	
70	Microsoft Windows Server 2012 R2	Domain Controller and DNS	Centralised.0	80	
71	Microsoft Windows Server 2012 R2	Domain Controller and DNS	ACF.63.0	466	In Goa
72	Microsoft Windows Server 2012 R2	PDQ report and Deployment Server	Centralised.0	180	
73	Microsoft Windows Server 2016	Log-360 event log analyser	Centralised.0	300	
74	Microsoft Windows Server 2012 R2	Backup Server	Centralised.0	23175	
75	Microsoft Windows Server 2012 R2	PNAC Server	Centralised.0	80	
76	Microsoft Windows Server 2012 R2	PNAC Server	Centralised.0	80	
77	Microsoft Windows Server 2012 R2	Remote App Server	Centralised.0	150	For Sage HR
78	Microsoft Windows Server 2012 R2	Sharepoint Server	Centralised.0	200	
79	Microsoft Windows Server 2012 R2	Sharepoint Server	Centralised.0	200	
80	Microsoft Windows Server 2012 R2	Sharepoint Server	Centralised.0	200	
81	Microsoft Windows Server 2008 R2	Spice application Server	Centralised.0	150	
82	Microsoft Windows Server 2012 R2	Sharepoint Frontend Server	Centralised.0	200	
83	Microsoft Windows Server 2012 R2	Sharepoint Frontend Server	Centralised.0	200	
84	Microsoft Windows Server 2008 R2	Network Management Server	Centralised.0	130	
85	Microsoft Windows Server 2016	Windows Patching Server	Centralised.0	300	
86	Microsoft Windows Server 2016	XIMA Multimedia Server	Centralised.0	100	
87	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.41.0	465	
88	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.47.0	465	
89	Microsoft Windows Server 2012 R2	Domain Controller, DNS and File Server	RFCA12.17.0	930	

90	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.46.0	465	
91	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.39.0	465	
92	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.43.0	465	
93	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.51.0	465	
94	Microsoft Windows Server 2012 R2	Domain Controller, DNS and File Server	ACF.49.0	465	
95	Microsoft Windows Server 2012 R2	Application Server	Centralised.0	450	
96	Microsoft Windows Server 2008 Enterprise	Application Server	ACF.31.0	130	
97	Microsoft Windows Server 2008 R2	Application Server	Centralised.0	40	
98	Microsoft Windows Server 2008 R2	Application Server	ACF.31.0	60	Footprints
99	Microsoft Windows Server 2008 R2	SQL backend Server home page and footprints	Centralised.0	450	
100	Microsoft Windows Server 2008 R2	Serfca Domain Controller	Centralised.0	80	
101	Microsoft Windows Server 2012 R2	Serfca Web Server	ACF.31.0	180	
102	Microsoft Windows Server 2008 R2	Castra Secure Envoy Application Server	ACF.31.0	50	
103	Other 2.6.x Linux 64 bit	Kemp Load Balancer	ACF.31.0	20	
104	Ubuntu Linux 64 bit	Watchguard Logging Server	Centralised.0	500	
105	Ubuntu Linux 64 bit	Switch Logging Server	Centralised.0	100	
106	Centos 6 64 bit	Nagios Monitoring Server	Centralised.0	60	
107	Redhat Enterprise Linux 7	Solarwinds Windows and third party patching Server	Centralised.0	50	
108	Microsoft Windows Server 2012 R2	Exchange Edge Server	ACF.31.0	200	
109	Microsoft Windows Server 2016	Exchange Edge Server	ACF.31.0	400	
110	Redhat Enterprise Linux 6	MDM Server	ACF.31.0	80	
111	Redhat Enterprise Linux 6	MDM Server	ACF.31.0	20	
112	Debian GNU/Linux 6	Artica Proxy Server	ACF.31.0	110	
113	Debian GNU/Linux 6	Artica Proxy Server	ACF.31.0	60	
114	Debian GNU/Linux 6	Artica Proxy Server	ACF.31.0	110	
115	Debian GNU/Linux 6	Artica Stats Server	ACF.31.0	80	
116	Other 3.x or later 64 bit	New PH2e vCentre Server	Centralised.0	115	
117	Other 3.x or later 64 bit	New PH2e Platform Services Controller	Centralised.0	400	
118	Microsoft Windows Server 2012 R2	Sharepoint SQL Server	Centralised.0	560	AlwaysOn Availability Cluster
119	Microsoft Windows Server 2012 R2	Sharepoint SQL Server	Centralised.0	560	AlwaysOn Availability Cluster
120	Microsoft Windows Server 2012 R2	DR Backup Server	DR18.11.13	6184	
121	Microsoft Windows Server 2008 R2	VoiceMail Server	Centralised.0	232	
122	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.32.0	232	
123	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.33.0	232	
124	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	RFCA170.30.0	465	
125	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.34.0	232	
126	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.36.0	232	
127	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	RFCA170.33.0	465	
128	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	RFCA6.4.0	465	
129	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.169.0	232	
130	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.162.0	232	
131	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.168.0	232	
132	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.170.0	232	

133	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.166.0	232	
134	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.164.0	232	
135	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.160.0	232	
136	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.161.0	465	
137	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.167.0	232	
138	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.163.0	232	
139	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.165.0	232	
140	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	RFCA14.17.0	465	
141	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.16.0	232	
142	Microsoft Windows Server 2008 R2	Domain Controller, DNS and File Server	ACF.192.0	232	

3   PH2E Intranet

This segment contains all RFCAs and ACFs Local Area Networks (LAN) plus local and centralised servers and services.

## 3.1   End User Devices (EUD)

- There are over 1000 user devices as well as printers, scanners and franking machines connected to the PH2E intranet. See the hardware list for more details. All these devices are managed by the Single Point of Contact (SPOC) service provided by the Managed Service Provider (MSP).

3.2   Remote Site connectivity

There are 69 sites (CRFCA, 13 RFCAs and 55 ACFs) that make up the PH2E Intranet. This is distributed over an Internet Protocol Security (IPSec) Branch Office Virtual Private Network (BOVPN). They each have their own local domain controller which also acts as a file server, print server and Domain Name Server (DNS). This is a closed network with force routed tunnels to allow only one gateway to the internet.

All incoming and outgoing traffic are filtered at central PH2E firewall using Web/Spam Blocker, Gateway Anti-Virus (AV), Intrusion Prevention System (IPS), Reputation Enable Defence (RED) and Application Control Proxy. Only allowed or 'Safe' category internet sites and services are allowed to be accessed. Content download blocking is also handled at the central PH2E firewall.
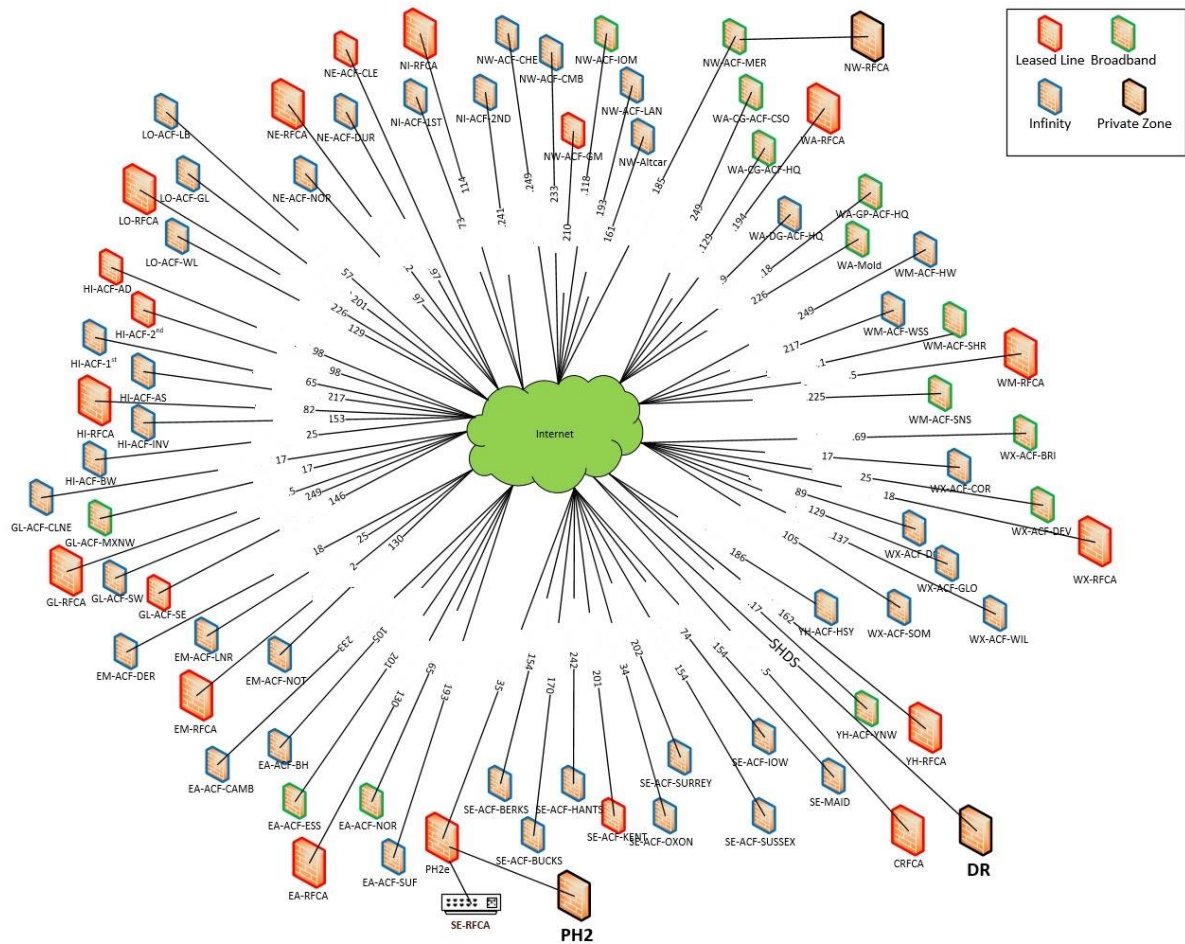
PH2 Intranet Hub and Spoke layout showing all remote sites

3.3 Infrastructure

The PH2E Private Cloud is hosted on 3 physical hosts and a SAN (see hardware lists for more details). VMWare is used to provide the virtualisation within a tight security configuration to run the following applications and services;

- 71 Virtual Servers providing various services as listed below and also used for management and logging/reporting utilities.
- System backups of various types using Physical Server, Network Attached Storage (NAS), and backup tape drive. Tapes are kept offsite at SPOC.
- PH2E emails. Used by all ACFs and RFCA HQ mobile phone users
- MS Office Applications
- Public Calendars (available within the Intranet only)
- Sage HR
- Log 360 – Audit software
- Controlpoint – SharePoint audit software
- File Store - duplicate copy of all data held on the 75 local servers, they are replicated to this central file store, which is then backed up
- Centralised Domain Control

- Client Management using various tools
- Data Loss Prevention Management
- Anti-Virus Management
- Centralised Patching
- Hardware Audits
- Management Systems
- Software Distribution System
- Skype for Business
- SPOC Helpdesk and system management Software
- User Access Control (UAC) software
- Asset Management Software
- Remote users' connections software and routing to data
- Mobile Device Management (MDM) Software
- Port based Network Access Control (PNAC)
- PH2 Web Applications (some PH2 applications are available as Web Applications in PH2E without using the virtual desktops in PH2)

3.4   Gateway to PH2

The PH2E Intranet is the platform to access the PH2 Gateway. Access to PH2 is only allowed from the PH2E Intranet. All traffic accessing PH2 is routed to the PH2 Gateway Demilitarized Zone (DMZ) from the PH2E Intranet and through Internet Protocol (IP) Network Address Translation (NAT) it is passed over to PH2 DMZ. Specific routes and rules for access to PH2 are configured on the PH2E Intranet firewall to allow or deny access to PH2. Additional levels of firewall based security are enabled for PH2 communication.

3.5   Remote Users

Secure IPSec Mobile VPN with Active Directory authentication to make PH2E EUD dedicated to be used over VPN and traffic is forced to route through centralised firewall where all types of filtering like Web blocker, Gateway AV, IPS, RED for remote workers logging in to domain from standalone internet connections. Automatic drive mapping on VPN connection for EUD to save and retrieve data from centralised file server while working remotely.

3.6   PH2E Proxy

Artica Proxy is a caching and forwarding HTTP web proxy. It has a wide variety of uses, including speeding up a web server by caching repeated requests, caching web, DNS and other computer network lookups for a group of people sharing network resources, and aiding security by filtering traffic. Below are some of the features

- Personalized/ Automatized Internet Filtering.
- Over 30 million internet sites classified under 150 categories
- Web sites DNS requests filtering
- Antivirus and Antispam automatically updated
- IPS/Intrusion Detection System (IDS)
- Creation of caching rules for bandwidth optimisation and speedy access.

- Proxy configuration on EUD using Proxy Auto Config (PAC) system for bypassing proxy for locally hosted sites and services in PH2E Intranet including PH2 Gateway.
- High Availability (HA) using Proxy Load Balancing.
- Identity server to record user details for logging and reporting purposes.