VIETTEL GROUP

VIETTEL PERU S.A.C



**LOW LEVEL DESIGN**

**DESIGN OF CRBT ELCOM 2016**

**(VIETTEL PERU)**

**(FOR INTERNAL CIRCULATION ONLY)**

LIMA, 11/2016

VIETTEL GROUP

VIETTEL PERU S.A.C



**LOW LEVEL DESIGN**

**DESIGN OF VOICEMAIL PLUS**

**(VIETTEL PERU)**

LIMA, 11/2016

Hà nội,12-2010

CONTENTS

[1. Introduction 1](#_Toc85551178)

[1.1. Purpose and scope 1](#_Toc85551179)

[1.2. Who will use this document 1](#_Toc85551180)

[2. General Design. 2](#_Toc85551181)

[2.1. Device list and name 2](#_Toc85551182)

[2.2. Room layout 3](#_Toc85551183)

[2.3. Rack layout 4](#_Toc85551184)

[2.4. Power layout 5](#_Toc85551185)

[2.5. Device power Consumption 5](#_Toc85551186)

[3. Network and Firewall design 7](#_Toc85551187)

[3.1. Network Topology 7](#_Toc85551188)

[3.2. Detail of Network Topology 8](#_Toc85551189)

[3.3. VLAN planing 9](#_Toc85551190)

[3.4. IP Planning Detail for Network 9](#_Toc85551191)

[3.5. IP Planning Detail for Server 10](#_Toc85551192)

[3.6. Port connect planning detail 11](#_Toc85551193)

[3.7. Ethernet Switch and Firewall Identification Information 15](#_Toc85551194)

[SW\_CRBT\_01\_02 (Stack) –2 SW cùng IP 10.121.55.65 15](#_Toc85551195)

[FW\_CRBT\_01\_02 (HA) 15](#_Toc85551196)

[4. Server design 16](#_Toc85551197)

[4.1. CCS1 server 16](#_Toc85551198)

[4.2. CCS2 server 16](#_Toc85551199)

[4.3. CMS1 server 17](#_Toc85551200)

[4.4. CMS2 server 18](#_Toc85551201)

[4.5. CMS3 server 18](#_Toc85551202)

[4.6. CMS4 server 19](#_Toc85551203)

[4.7. CMS5 server 20](#_Toc85551204)

[4.8. CMS6 server 21](#_Toc85551205)

[4.9. CMS7 server 21](#_Toc85551206)

[4.10. APS1 server 22](#_Toc85551207)

[4.11. APS2 server 23](#_Toc85551208)

[4.12. APS3 server 23](#_Toc85551209)

[4.13. APS4 server 24](#_Toc85551210)

[4.14. CMP server 25](#_Toc85551211)

[4.15. WEB server 25](#_Toc85551212)

[4.16. DSU1 server 26](#_Toc85551213)

[4.17. DSU2 server 27](#_Toc85551214)

[5. cSOFTWARE DESIGN 29](#_Toc85551215)

[**5.1 System connection** 29](#_Toc85551216)

[**5.2 System capacity** 29](#_Toc85551217)

[**5.3 System conection paramenter** 30](#_Toc85551218)

[**5.4 Logic connection** 33](#_Toc85551219)

[**5.4.1 Connection diagram** 33](#_Toc85551220)

[**5.4.2 Software module diagram** 33](#_Toc85551221)

[**5.4.3 Module deployment** 35](#_Toc85551222)

[**5.5 System flow** 36](#_Toc85551223)

[**5.5.1 Missed call flow** 36](#_Toc85551224)

[5.5.2 Call to system flow 38](#_Toc85551225)

[5.5.3 Deletec subscriber B’s status 39](#_Toc85551226)

# Introduction

## Purpose and scope

* This document is detailed design of new CRBT infrastructure which will be deployed in CRBT:
* As a basis for the deployment, operation, exploitation, resource allocation and optimization of CRBT system of Peru.

## Who will use this document

* The deploying engineers will use this document to build and configure the new system.
* The maintain engineers will use this to operate and monitor the configuration changes of running system.

# General Design.

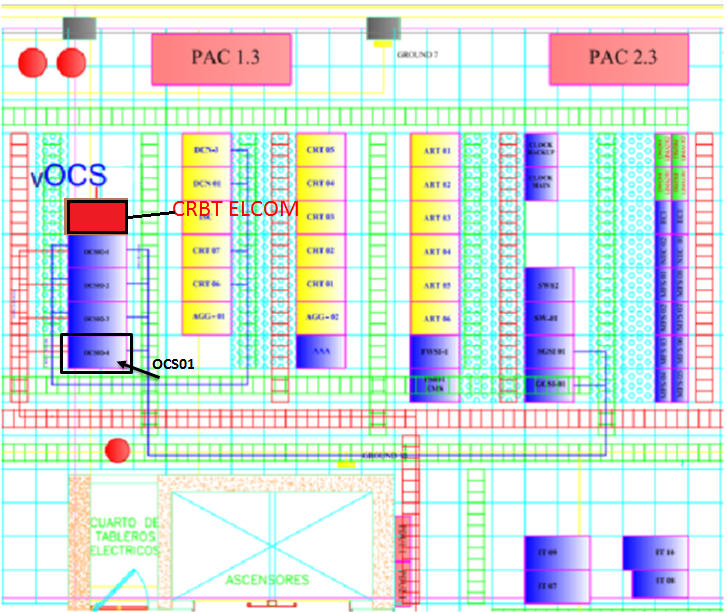
## Device list and name

Below table list model of new devices and name (use for design) for these devices.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Model** | **Basic specification** | **Qty** |  |
| **Name** |
| A | Equipment for CRBT | |  |  |
| 1 | Dell Networking N3048 | 48x 1GbE, 2xCombo, 2x 10GbE SFP+ fixed ports, Stacking, IO to PSU airflow, 1x AC PSU | 2 | CRBT\_SW\_01  CRBT\_SW\_02 |
| 2 | FortiGate-100D | FortiGate-100D: DMZ port, 1 x Mgmt port, 2 x HA port, 16 x internal switch ports, 2 x shared media pairs (including 2 x GE RJ45, 2 x GE SFP slots), 32GB onboard storage | 2 | CRBT\_FW\_01  CRBT\_FW\_02 |
| B | Equipment Server for CRBT | | | |
| 1 | PowerEdge R630 Server | 2\*Intel Xeon E5-2603v4, 16GB RAM, 2\*600GB HDD, 4\*1G Network ports | 13 | CCS1  CCS2  CMS1  CMS2  CMS3  CMS4  CMS5  CMS6  CMS7  APS1  APS2  APS3  APS4 |
| 2 | PowerEdge R630 Server | 2\*Intel Xeon E5-2603v4, 16GB RAM, 2\*600GB HDD, 4\*1G Network ports, HBA 2\* 8Gb FC ports | 4 | CMP  WEB  DSU1  DSU2 |
| 3 | Compellent SC220 Enclosure | 12\* 600GB HDD | 1 | Storage |

## Room layout

The new servers and network switches for CRBT are installed on rack IT17. The position in DC room is as below diagram:



## Rack layout

The new devices are installed in Rack with brown color as below layout:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | SIO9102IT12 |  | SIO9102IT17 |  |
| U42 |  | U42 |  | U42 |
| U41 | **SAN\_SW\_300\_02** | U41 | **FW\_CRBT\_01** | U41 |
| U40 |  | U40 | **FW\_ CRBT\_02** | U40 |
| U39 | **SAN\_SW\_300\_01** | U39 |  | U39 |
| U38 |  | U38 | **SW\_ CRBT\_01** | U38 |
| U37 | **VASDB01** | U37 |  | U37 |
| U36 | U36 | **SW\_ CRBT\_02** | U36 |
| U35 | U35 |  | U35 |
| U34 | U34 |  | U34 |
| U33 | **DATAREPORT01** | U33 |  | U33 |
| U32 | U32 |  | U32 |
| U31 | U31 |  | U31 |
| U30 | U30 |  | U30 |
| U29 | **BILL-ERP-DG01** | U29 |  | U29 |
| U28 | U28 |  | U28 |
| U27 | U27 |  | U27 |
| U26 | U26 |  | U26 |
| U25 | **ICON-ITBL-DG01** | U25 |  | U25 |
| U24 | U24 |  | U24 |
| U23 | U23 |  | U23 |
| U22 | U22 |  | U22 |
| U21 | **PRECUS-VAS-DG01** | U21 |  | U21 |
| U20 | U20 |  | U20 |
| U19 | U19 |  | U19 |
| U18 | U18 | **CCS1** | U18 |
| U17 |  | U17 | **CCS2** | U17 |
| U16 |  | U16 | **CMS1** | U16 |
| U15 | **New SC220 Enclosure #5** | U15 | **CMS2** | U15 |
| U14 | U14 | **CMS3** | U14 |
| U13 | **SC220 Enclosure #1** | U13 | **CMS4** | U13 |
| U12 | U12 | **CMS5** | U12 |
| U11 | **SC220 Enclosure #2** | U11 | **CMS6** | U11 |
| U10 | U10 | **CMS7** | U10 |
| U9 | **SC220 Enclosure #3** | U9 | **APS1** | U9 |
| U8 | U8 | **APS2** | U8 |
| U7 | **SC220 Enclosure #4** | U7 | **APS3** | U7 |
| U6 | U6 | **APS4** | U6 |
| U5 | **Storage SC8000 ControllerB** | U5 | **CMP** | U5 |
| U4 | U4 | **WEB** | U4 |
| U3 | **Storage SC8000 ControllerA** | U3 | **DSU1** | U3 |
| U2 | U2 | **DSU2** | U2 |
| U1 |  | U1 |  | U1 |

*Note: Green color is new devices*

## Power layout



## Device power Consumption

| No. | Rack |  | Equipment Description | Max Load (W) | BTU/Hour | Unit Qty |
| --- | --- | --- | --- | --- | --- | --- |
| 1 | IT 17 |  | Firewall Fortinet 100D | 63.1 | 215.3 | 2 |
| 2 | IT 17 |  | Dell N3048 | 200 | 220.97 | 2 |
| 3 | IT 17 |  | PowerEdge R630 Server | 750 | 2550 | 17 |
| 4 | IT 12 |  | Compellent SC220 Enclosure | 450 | 1621 | 1 |
|  |  |  | Total: | 13726.2 | 51640.5 |  |

# Network and Firewall design

## Network Topology



## Detail of Network Topology



## VLAN planing

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No | Vlan Name | Vlan-id | Sub. Net | IP Range | Description |
| Start IP - End IP |
| 1 | Connect DNC | 100 | 10.121.56.0/29 | 10.121.56.1-3 | Connect DNC |
| 2 | Connect MPBN | 200 | 10.121.140.0/29 | 10.121.140.1-3 | Connect MPBN |
| 3 | Connect FW | 300 | 10.121.140.64/29 | 10.121.140.65-67 | Connect FW |
| 4 | Public IPBN | 400 | 181.176.241.224/29 | 181.176.241.225-230 | Public IPBN |
| 5 | DCN ZONE | 402 | 10.121.55.64/26 | 10.121.55.65-106 | CRBT DCN ZONE |
| 6 | MPBN ZONE | 401 | 10.121.140.32/27 | 10.121.140.33-63 | CRBT MPBN ZONE |
| 8 | CRBT Management | 402 | 10.121.55.64/26 | 10.121.55.106-127 | CRBT MGMT |

## IP Planning Detail for Network

| No | Device | Network | Description | Vlan | IP | Virtual IP |
| --- | --- | --- | --- | --- | --- | --- |
| 1 | CRBT-SW-01 | 10.121.55.64/26 | DCN subnet for servers | 401 | 10.121.55.65/26 |  |
| CRBT-SW-02 |
| 2 | CRBT-SW-01 | 10.121.140.32/27 | MPBN subnet for servers | 402 | 10.121.140.33/27 |  |
| CRBT-SW-02 |
| 3 | CRBT-SW-01 | 10.121.55.0/29 | Subnet btw CRBT switch 1&2 and PE DCN 1&2 | 100 | 10.121.55.1/29 |  |
| CRBT-SW-02 |  |
| PE DCN 1  S3560\_AG05 | 10.121.55.4/29 | 10.121.55.6/29 |
| PE DCN 1  S3560\_AG06 | 10.121.55.5/29 |
| 4 | CRBT-SW-01 | 10.121.140.0/29 | Subnet btw CRBT switch 1&2 and PE MPBN 1&2 | 200 | 10.121.140.1/29 |  |
| CRBT-SW-02 |
| PE MPBN 1  ASR9K\_PE01 | 10.121.140.4/29 | 10.121.140.6/29 |
| PE MPBN 2  ASR9K\_PE02 | 10.121.140.5/29 |
| 5 | CRBT-FW-01 | 181.176.241.225/29 | Subnet btw CRBT FW 1&2 and PE IPBN |  | 181.176.241.225/29 |  |
| CRBT-FW-02 |
| PE IPBN 1 | 181.176.241.228/29 | 181.176.241.230/29 |
| PE IPBN 2 | 181.176.241.229/29 |
| 6 | CRBT-SW-01 | 10.121.140.64/29 | Subnet btw CRBT Switch 1&2 and CRBT FW 1&2 | 300 | 10.121.140.66/29 |  |
| CRBT-SW-02 |
| CRBT-FW-01 | 10.121.140.68/29 |  |
| CRBT-FW-02 |
| 8 | CRBT Public | 181.176.241.226/29  181.176.241.227/29 | IP Public |  | 10.121.55.99/26  10.121.140.48/27 |  |
|
| 9 | DSU 1 | 192.168.9.0/29 | Private IP for ORACLE RAC | 900 | 192.168.9.1/29 |  |
| DSU 2 | 192.168.9.2/29 |

## IP Planning Detail for Server

| No | SERVER | IP MBPN | IP DCN | IP VIP | IP Local | IP MGMT |
| --- | --- | --- | --- | --- | --- | --- |
| 1 | CCS1 | 10.121.140.34/27 | 10.121.55.66/26 |  |  | 10.121.55.110/26 |
| 2 | CCS2 | 10.121.140.35/27 | 10.121.55.67/26 |  |  | 10.121.55.111/26 |
| 3 | CMS1 | 10.121.140.36/27 | 10.121.55.68/26 |  |  | 10.121.55.112/26 |
| 4 | CMS2 | 10.121.140.37/27 | 10.121.55.69/26 |  |  | 10.121.55.113/26 |
| 5 | CMS3 | 10.121.140.38/27 | 10.121.55.70/26 |  |  | 10.121.55.114/26 |
| 6 | CMS4 | 10.121.140.39/27 | 10.121.55.71/26 |  |  | 10.121.55.115/26 |
| 7 | CMS5 | 10.121.140.40/27 | 10.121.55.72/26 |  |  | 10.121.55.116/26 |
| 8 | CMS6 | 10.121.140.41/27 | 10.121.55.73/26 |  |  | 10.121.55.117/26 |
| 9 | CMS7 | 10.121.140.42/27 | 10.121.55.74/26 |  |  | 10.121.55.118/26 |
| 10 | APS1 | 10.121.140.43/27 | 10.121.55.75/26 | 10.121.55.77/26 10.121.140.45/27 |  | 10.121.55.129/26 |
| 11 | APS2 | 10.121.140.44/27 | 10.121.55.76/26 |  | 10.121.55.120/26 |
| 12 | APS3 | 10.121.140.46/27 | 10.121.55.78/26 | 10.121.55.80/26 10.121.140.48/27 |  | 10.121.55.121/26 |
| 13 | APS4 | 10.121.140.47/27 | 10.121.55.79/26 |  | 10.121.55.122/26 |
| 14 | CMP | 10.121.140.49/27 | 10.121.55.81/26 | 10.121.55.99/26 |  | 10.121.55.123/26 |
| 15 | WEB | 10.121.140.50/27 | 10.121.55.82/26 |  | 10.121.55.124/26 |
| 16 | DSU1 | Don’t have | 10.121.55.90/26  10.121.55.91/26 | 10.121.55.94/26  10.121.55.95/26  10.121.55.96/26 | 192.168.9.1/29 (private RAC) | 10.121.55.125/26 |
| 17 | DSU2 | Don’t have | 10.121.55.92/26  10.121.55.93/26 | 192.168.9.2/29 (private RAC) | 10.121.55.126/26 |

## Port connect planning detail

| **No** | **Source** | | | | **Destination** | | | | **Port Type** | **Speed** | **VLAN** | **Mode** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Device** | **Rack No.** | **Position** | **Interface** | **Device** | **Rack No.** | **Position** | **Interface** |
| 1 | SW\_N3048\_01 | IT17 | U38 | Gi1/0/1 | CCS1 | IT17 | U18 | Port1 | RJ45 | 1Gbps | 402 | Access |
| 2 | SW\_N3048\_01 | IT17 | U38 | Gi1/0/2 | CCS2 | IT17 | U17 | Port1 | RJ45 | 1Gbps | 402 | Access |
| 3 | SW\_N3048\_01 | IT17 | U38 | Gi1/0/3 | CMS1 | IT17 | U16 | Port1 | RJ45 | 1Gbps | 402 | Access |
| 4 | SW\_N3048\_01 | IT17 | U38 | Gi1/0/4 | CMS2 | IT17 | U15 | Port1 | RJ45 | 1Gbps | 402 | Access |
| 5 | SW\_N3048\_01 | IT17 | U38 | Gi1/0/5 | CMS3 | IT17 | U14 | Port1 | RJ45 | 1Gbps | 402 | Access |
| 6 | SW\_N3048\_01 | IT17 | U38 | Gi1/0/6 | CMS4 | IT17 | U13 | Port1 | RJ45 | 1Gbps | 402 | Access |
| 7 | SW\_N3048\_01 | IT17 | U38 | Gi1/0/7 | CMS5 | IT17 | U12 | Port1 | RJ45 | 1Gbps | 402 | Access |
| 8 | SW\_N3048\_01 | IT17 | U38 | Gi1/0/8 | CMS6 | IT17 | U11 | Port1 | RJ45 | 1Gbps | 402 | Access |
| 9 | SW\_N3048\_01 | IT17 | U38 | Gi1/0/9 | CMS7 | IT17 | U10 | Port1 | RJ45 | 1Gbps | 402 | Access |
| 10 | SW\_N3048\_01 | IT17 | U38 | Gi1/0/10 | APS1 | IT17 | U9 | Port1 | RJ45 | 1Gbps | 402 | Access |
| 11 | SW\_N3048\_01 | IT17 | U38 | Gi1/0/11 | APS2 | IT17 | U8 | Port1 | RJ45 | 1Gbps | 402 | Access |
| 12 | SW\_N3048\_01 | IT17 | U38 | Gi1/0/12 | APS3 | IT17 | U7 | Port1 | RJ45 | 1Gbps | 402 | Access |
| 13 | SW\_N3048\_01 | IT17 | U38 | Gi1/0/13 | APS4 | IT17 | U6 | Port1 | RJ45 | 1Gbps | 402 | Access |
| 14 | SW\_N3048\_01 | IT17 | U38 | Gi1/0/14 | CMP | IT17 | U5 | Port1 | RJ45 | 1Gbps | 402 | Access |
| 15 | SW\_N3048\_01 | IT17 | U38 | Gi1/0/15 | WEB | IT17 | U4 | Port1 | RJ45 | 1Gbps | 402 | Access |
| 16 | SW\_N3048\_01 | IT17 | U38 | Gi1/0/16 | DSU1 | IT17 | U3 | Port1 | RJ45 | 1Gbps | 402 | Access |
| 17 | SW\_N3048\_01 | IT17 | U38 | Gi1/0/17 | DSU2 | IT17 | U2 | Port1 | RJ45 | 1Gbps | 402 | Access |
| 18 | SW\_N3048\_01 | IT17 | U38 | Gi1/0/25 | CCS1 | IT17 | U18 | Port3 | RJ45 | 1Gbps | 401 | Access |
| 19 | SW\_N3048\_01 | IT17 | U38 | Gi1/0/26 | CCS2 | IT17 | U17 | Port3 | RJ45 | 1Gbps | 401 | Access |
| 20 | SW\_N3048\_01 | IT17 | U38 | Gi1/0/27 | CMS1 | IT17 | U16 | Port3 | RJ45 | 1Gbps | 401 | Access |
| 21 | SW\_N3048\_01 | IT17 | U38 | Gi1/0/28 | CMS2 | IT17 | U15 | Port3 | RJ45 | 1Gbps | 401 | Access |
| 22 | SW\_N3048\_01 | IT17 | U38 | Gi1/0/29 | CMS3 | IT17 | U14 | Port3 | RJ45 | 1Gbps | 401 | Access |
| 23 | SW\_N3048\_01 | IT17 | U38 | Gi1/0/30 | CMS4 | IT17 | U13 | Port3 | RJ45 | 1Gbps | 401 | Access |
| 24 | SW\_N3048\_01 | IT17 | U38 | Gi1/0/31 | CMS5 | IT17 | U12 | Port3 | RJ45 | 1Gbps | 401 | Access |
| 25 | SW\_N3048\_01 | IT17 | U38 | Gi1/0/32 | CMS6 | IT17 | U11 | Port3 | RJ45 | 1Gbps | 401 | Access |
| 26 | SW\_N3048\_01 | IT17 | U38 | Gi1/0/33 | CMS7 | IT17 | U10 | Port3 | RJ45 | 1Gbps | 401 | Access |
| 27 | SW\_N3048\_01 | IT17 | U38 | Gi1/0/34 | APS1 | IT17 | U9 | Port3 | RJ45 | 1Gbps | 401 | Access |
| 28 | SW\_N3048\_01 | IT17 | U38 | Gi1/0/35 | APS2 | IT17 | U8 | Port3 | RJ45 | 1Gbps | 401 | Access |
| 29 | SW\_N3048\_01 | IT17 | U38 | Gi1/0/36 | APS3 | IT17 | U7 | Port3 | RJ45 | 1Gbps | 401 | Access |
| 30 | SW\_N3048\_01 | IT17 | U38 | Gi1/0/37 | APS4 | IT17 | U6 | Port3 | RJ45 | 1Gbps | 401 | Access |
| 31 | SW\_N3048\_01 | IT17 | U38 | Gi1/0/38 | CMP | IT17 | U5 | Port3 | RJ45 | 1Gbps | 401 | Access |
| 32 | SW\_N3048\_01 | IT17 | U38 | Gi1/0/39 | WEB | IT17 | U4 | Port3 | RJ45 | 1Gbps | 401 | Access |
| 33 | SW\_N3048\_01 | IT17 | U38 | Gi1/0/40 | DSU1 | IT17 | U3 | Port3 | RJ45 | 1Gbps | 401 | Access |
| 34 | SW\_N3048\_01 | IT17 | U38 | Gi1/0/41 | DSU2 | IT17 | U2 | Port3 | RJ45 | 1Gbps | 401 | Access |
| 89 | SW\_N3048\_01 | IT17 | U36 | Gi1/0/43 | FW\_CRBT\_01 | IT17 | U41 | MGMT | RJ46 | 1Gbps | 401 | Access |
| 44 | SW\_N3048\_01 | IT17 | U38 | Gi1/0/44 | DCN\_SI\_S3560\_AG05 | DCN02 | DCN02 | Gi0/30 | RJ45 | 1Gbps | 100 | Access |
| 45 | SW\_N3048\_01 | IT17 | U38 | Gi1/0/45 | MPBN\_SI\_ASR9K\_PE01 | CRT06 | CRT06 | Gi0/7/0/7 | RJ45 | 1Gbps | 200 | Access |
| 46 | SW\_N3048\_01 | IT17 | U38 | Gi1/0/46 | FW\_CRBT\_01 | IT17 | U41 | G0/2 | RJ45 | 1Gbps | 300 | Access |
| 47 | SW\_N3048\_02 | IT17 | U36 | Gi2/0/1 | CCS1 | IT17 | U18 | Port2 | RJ45 | 1Gbps | 402 | Access |
| 48 | SW\_N3048\_02 | IT17 | U36 | Gi2/0/2 | CCS2 | IT17 | U17 | Port2 | RJ45 | 1Gbps | 402 | Access |
| 49 | SW\_N3048\_02 | IT17 | U36 | Gi2/0/3 | CMS1 | IT17 | U16 | Port2 | RJ45 | 1Gbps | 402 | Access |
| 50 | SW\_N3048\_02 | IT17 | U36 | Gi2/0/4 | CMS2 | IT17 | U15 | Port2 | RJ45 | 1Gbps | 402 | Access |
| 51 | SW\_N3048\_02 | IT17 | U36 | Gi2/0/5 | CMS3 | IT17 | U14 | Port2 | RJ45 | 1Gbps | 402 | Access |
| 52 | SW\_N3048\_02 | IT17 | U36 | Gi2/0/6 | CMS4 | IT17 | U13 | Port2 | RJ45 | 1Gbps | 402 | Access |
| 53 | SW\_N3048\_02 | IT17 | U36 | Gi2/0/7 | CMS5 | IT17 | U12 | Port2 | RJ45 | 1Gbps | 402 | Access |
| 54 | SW\_N3048\_02 | IT17 | U36 | Gi2/0/8 | CMS6 | IT17 | U11 | Port2 | RJ45 | 1Gbps | 402 | Access |
| 55 | SW\_N3048\_02 | IT17 | U36 | Gi2/0/9 | CMS7 | IT17 | U10 | Port2 | RJ45 | 1Gbps | 402 | Access |
| 56 | SW\_N3048\_02 | IT17 | U36 | Gi2/0/10 | APS1 | IT17 | U9 | Port2 | RJ45 | 1Gbps | 402 | Access |
| 57 | SW\_N3048\_02 | IT17 | U36 | Gi2/0/11 | APS2 | IT17 | U8 | Port2 | RJ45 | 1Gbps | 402 | Access |
| 58 | SW\_N3048\_02 | IT17 | U36 | Gi2/0/12 | APS3 | IT17 | U7 | Port2 | RJ45 | 1Gbps | 402 | Access |
| 59 | SW\_N3048\_02 | IT17 | U36 | Gi2/0/13 | APS4 | IT17 | U6 | Port2 | RJ45 | 1Gbps | 402 | Access |
| 60 | SW\_N3048\_02 | IT17 | U36 | Gi2/0/14 | CMP | IT17 | U5 | Port2 | RJ45 | 1Gbps | 402 | Access |
| 61 | SW\_N3048\_02 | IT17 | U36 | Gi2/0/15 | WEB | IT17 | U4 | Port2 | RJ45 | 1Gbps | 402 | Access |
| 62 | SW\_N3048\_02 | IT17 | U36 | Gi2/0/16 | DSU1 | IT17 | U3 | Port2 | RJ45 | 1Gbps | 402 | Access |
| 63 | SW\_N3048\_02 | IT17 | U36 | Gi2/0/17 | DSU2 | IT17 | U2 | Port2 | RJ45 | 1Gbps | 402 | Access |
| 64 | SW\_N3048\_02 | IT17 | U36 | Gi2/0/25 | CCS1 | IT17 | U18 | Port4 | RJ45 | 1Gbps | 401 | Access |
| 65 | SW\_N3048\_02 | IT17 | U36 | Gi2/0/26 | CCS2 | IT17 | U17 | Port4 | RJ45 | 1Gbps | 401 | Access |
| 66 | SW\_N3048\_02 | IT17 | U36 | Gi2/0/27 | CMS1 | IT17 | U16 | Port4 | RJ45 | 1Gbps | 401 | Access |
| 67 | SW\_N3048\_02 | IT17 | U36 | Gi2/0/28 | CMS2 | IT17 | U15 | Port4 | RJ45 | 1Gbps | 401 | Access |
| 68 | SW\_N3048\_02 | IT17 | U36 | Gi2/0/29 | CMS3 | IT17 | U14 | Port4 | RJ45 | 1Gbps | 401 | Access |
| 69 | SW\_N3048\_02 | IT17 | U36 | Gi2/0/30 | CMS4 | IT17 | U13 | Port4 | RJ45 | 1Gbps | 401 | Access |
| 70 | SW\_N3048\_02 | IT17 | U36 | Gi2/0/31 | CMS5 | IT17 | U12 | Port4 | RJ45 | 1Gbps | 401 | Access |
| 71 | SW\_N3048\_02 | IT17 | U36 | Gi2/0/32 | CMS6 | IT17 | U11 | Port4 | RJ45 | 1Gbps | 401 | Access |
| 72 | SW\_N3048\_02 | IT17 | U36 | Gi2/0/33 | CMS7 | IT17 | U10 | Port4 | RJ45 | 1Gbps | 401 | Access |
| 73 | SW\_N3048\_02 | IT17 | U36 | Gi2/0/34 | APS1 | IT17 | U9 | Port4 | RJ45 | 1Gbps | 401 | Access |
| 74 | SW\_N3048\_02 | IT17 | U36 | Gi2/0/35 | APS2 | IT17 | U8 | Port4 | RJ45 | 1Gbps | 401 | Access |
| 75 | SW\_N3048\_02 | IT17 | U36 | Gi2/0/36 | APS3 | IT17 | U7 | Port4 | RJ45 | 1Gbps | 401 | Access |
| 76 | SW\_N3048\_02 | IT17 | U36 | Gi2/0/37 | APS4 | IT17 | U6 | Port4 | RJ45 | 1Gbps | 401 | Access |
| 77 | SW\_N3048\_02 | IT17 | U36 | Gi2/0/38 | CMP | IT17 | U5 | Port4 | RJ45 | 1Gbps | 401 | Access |
| 78 | SW\_N3048\_02 | IT17 | U36 | Gi2/0/39 | WEB | IT17 | U4 | Port4 | RJ45 | 1Gbps | 401 | Access |
| 79 | SW\_N3048\_02 | IT17 | U36 | Gi2/0/40 | DSU1 | IT17 | U3 | Port4 | RJ45 | 1Gbps | 401 | Access |
| 80 | SW\_N3048\_02 | IT17 | U36 | Gi2/0/41 | DSU2 | IT17 | U2 | Port4 | RJ45 | 1Gbps | 401 | Access |
| 90 | SW\_N3048\_02 | IT17 | U36 | Gi2/0/43 | FW\_CRBT\_02 | IT17 | U40 | MGMT | RJ45 | 1Gbps | 401 | Access |
| 91 | SW\_N3048\_02 | IT17 | U36 | Gi2/0/44 | DCN\_SI\_S3560\_AG06 | DCN02 | DCN02 | Gi0/30 | RJ45 | 1Gbps | 100 | Access |
| 92 | SW\_N3048\_02 | IT17 | U36 | Gi2/0/45 | MPBN\_SI\_ASR9K\_PE02 | CRT07 | CRT06 | Gi0/7/0/7 | RJ45 | 1Gbps | 200 | Access |
| 93 | SW\_N3048\_02 | IT17 | U36 | Gi2/0/46 | FW\_CRBT\_02 | IT17 | U40 | G0/2 | RJ45 | 1Gbps | 300 | Access |
| 94 | FW\_CRBT\_01 | IT17 | U41 | Gi0/1 | IPBN\_SI\_ASR9K\_PE01 | CRT03 | CRT03 | Gi0/1/0/11 | RJ45 | 1Gbps | 400 | Route |
| 95 | FW\_CRBT\_01 | IT17 | U41 | Gi0/2 | SW\_N3048\_01 | IT17 | U38 | Gi1/0/48 | RJ45 | 1Gbps | 300 | Access |
| 96 | FW\_CRBT\_01 | IT17 | U41 | MGMT | SW\_N3048\_02 | IT17 | U36 | Gi1/0/43 | RJ45 | 1Gbps | 402 | Access |
| 97 | FW\_CRBT\_01 | IT17 | U41 | Ha1 | FW\_CRBT\_02 | IT17 | U40 | Ha1 | RJ45 | 1Gbps | IP | Route |
| 98 | FW\_CRBT\_01 | IT17 | U41 | Ha2 | FW\_CRBT\_02 | IT17 | U40 | Ha2 | RJ45 | 1Gbps | IP | Route |
| 99 | FW\_CRBT\_02 | IT17 | U40 | Gi0/1 | IPBN\_SI\_ASR9K\_PE01 | CRT04 | CRT04 | Gi0/1/0/11 | RJ45 | 1Gbps | 400 | Route |
| 100 | FW\_CRBT\_02 | IT17 | U40 | Gi0/2 | SW\_N3048\_02 | IT17 | U36 | Gi1/0/48 | RJ45 | 1Gbps | 300 | Access |
| 101 | FW\_CRBT\_02 | IT17 | U40 | MGMT | SW\_N3048\_02 | IT17 | U36 | Gi1/0/44 | RJ45 | 1Gbps | 402 | Access |
| 102 | FW\_CRBT\_02 | IT17 | U40 | Ha1 | FW\_CRBT\_01 | IT17 | U41 | Ha1 | RJ45 | 1Gbps | IP | Route |
| 103 | FW\_CRBT\_02 | IT17 | U40 | Ha2 | FW\_CRBT\_01 | IT17 | U41 | Ha2 | RJ45 | 1Gbps | IP | Route |

## Ethernet Switch and Firewall Identification Information

### SW\_CRBT\_01\_02 (Stack) –2 SW cùng IP 10.121.55.65

|  |  |
| --- | --- |
| Vendor / Model: | Dell Networking N3048 |
| Service tag SW01/02 | 4PY2Y42/ DLY2Y42 |
| Switch Name: | SW\_ CRBT\_HA |
| Management IP: | 10.121.55.65/26 |
| Mgmt Username: | admin |
| Mgmt Password: | admin@123 |

### FW\_CRBT\_01\_02 (HA)

|  |  |
| --- | --- |
| Vendor / Model: | Fortinet 100D |
| Serial Number FW01/02 | FG100D3G16822212/ FG100D3G16822086 |
| FW Name: | FW\_ CRBT\_01 |
| Management IP: | 10.121.55.108/26 (NAT 181.176.241.234) |
| Mgmt Username: | admin |
| Mgmt Password: | PlaKtm\*24NfoqOkg |

**Ngày 5/7/2017: change password and change zone access**

# Server design

The system have 17 new servers, these servers will be setup from initialization to Operating System. The configuration parameters does not include design parameters of application software.

## CCS1 server

|  |  |  |  |
| --- | --- | --- | --- |
| **Hostname** | **CCS1** | | |
| Raid configuration | 1 (two disks) | | |
| Operating System | Redhat Enterprise Linux 6.7 | | |
| Package | Base System (All optional packages) Development (All optional packages) Desktop (all optional packages except KDE desktop) | | |
| Language | English | | |
| Keyboard | U.S. English | | |
| Time Zone: | America/Lima; System clock uses UTC | | |
| NTP | 10.121.3.65, 10.121.3.81 | | |
| **Interface** | **IP** | **Netmask** | **gateway** |
| bond0 (em1 & em1). Mode 1 (active-standby) | 10.121.140.34/27 | 255.255.255.224 | N/A |
| bond1 (em3 & em4) Mode 1 (active-standby) | 10.121.55.66 | 255.255.255.192 | 10.121.55.65 |
| iDrac | 10.121.55.110 | 255.255.255.192 | 10.121.55.65 |
| **Local LVM** | | | |
| **Device** | **Type** | **Size(MB)** | **Mount point** |
| /dev/sdc1 | ext4 | 500 | /boot |
| lv\_swap | swap | 8192 |  |
| lv\_home | ext4 | 10240 | /home |
| lv\_root | ext4 | 552840 | / |
| **Account for OS** | | | |
| **Username** | **password** | **home directory** |  |
| root | [Root@123](mailto:RBT@dmin16) | /root |  |
| crbt | [crbt@B1T3L@rbt16](mailto:crbt@B1T3L@rbt16) | /opt/crbt |  |

## CCS2 server

|  |  |  |  |
| --- | --- | --- | --- |
| **Hostname** | **CCS2** | | |
| Raid configuration | 1 (two disks) | | |
| Operating System | Redhat Enterprise Linux 6.7 | | |
| Package | Base System (All optional packages) Development (All optional packages) Desktop (all optional packages except KDE desktop) | | |
| Language | English | | |
| Keyboard | U.S. English | | |
| Time Zone: | America/Lima; System clock uses UTC | | |
| NTP | 10.121.3.65, 10.121.3.81 | | |
| **Interface** | **IP** | **Netmask** | **gateway** |
| bond0 (em1 & em1). Mode 1 (active-standby) | 10.121.140.35/27 | 255.255.255.224 | N/A |
| bond1 (em3 & em4) Mode 1 (active-standby) | 10.121.55.67 | 255.255.255.192 | 10.121.55.65 |
| iDrac | 10.121.55.111 | 255.255.255.192 | 10.121.55.65 |
| **Local LVM** |  |  |  |
| **Device** | **Type** | **Size(MB)** | **Mount point** |
| /dev/sdc1 | ext4 | 500 | /boot |
| lv\_swap | swap | 8192 |  |
| lv\_home | ext4 | 10240 | /home |
| lv\_root | ext4 | 552840 | / |
| **Account for OS** |  |  |  |
| **Username** | **password** | **home directory** |  |
| root | [Root@123](mailto:RBT@dmin16) | /root |  |
| crbt | [crbt@B1T3L@rbt16](mailto:crbt@B1T3L@rbt16) | /opt/crbt |  |

## CMS1 server

|  |  |  |  |
| --- | --- | --- | --- |
| **Hostname** | **CMS1** | | |
| Raid configuration | 1 (two disks) | | |
| Operating System | Redhat Enterprise Linux 6.7 | | |
| Package | Base System (All optional packages) Development (All optional packages) Desktop (all optional packages except KDE desktop) | | |
| Language | English | | |
| Keyboard | U.S. English | | |
| Time Zone: | America/Lima; System clock uses UTC | | |
| NTP | 10.121.3.65, 10.121.3.81 | | |
| **Interface** | **IP** | **Netmask** | **gateway** |
| bond0 (em1 & em1). Mode 1 (active-standby) | 10.121.140.36/27 | 255.255.255.224 | N/A |
| bond1 (em3 & em4) Mode 1 (active-standby) | 10.121.55.68 | 255.255.255.192 | 10.121.55.65 |
| iDrac | 10.121.55.112 | 255.255.255.192 | 10.121.55.65 |
| **Local LVM** |  |  |  |
| **Device** | **Type** | **Size(MB)** | **Mount point** |
| /dev/sdc1 | ext4 | 500 | /boot |
| lv\_swap | swap | 8192 |  |
| lv\_home | ext4 | 10240 | /home |
| lv\_root | ext4 | 552840 | / |
| **Account for OS** |  |  |  |
| **Username** | **password** | **home directory** |  |
| root | [Root@123](mailto:RBT@dmin16) | /root |  |
| crbt | [crbt@B1T3L@rbt16](mailto:crbt@B1T3L@rbt16) | /opt/crbt |  |

## CMS2 server

|  |  |  |  |
| --- | --- | --- | --- |
| **Hostname** | **CMS2** | | |
| Raid configuration | 1 (two disks) | | |
| Operating System | Redhat Enterprise Linux 6.7 | | |
| Package | Base System (All optional packages) Development (All optional packages) Desktop (all optional packages except KDE desktop) | | |
| Language | English | | |
| Keyboard | U.S. English | | |
| Time Zone: | America/Lima; System clock uses UTC | | |
| NTP | 10.121.3.65, 10.121.3.81 | | |
| **Interface** | **IP** | **Netmask** | **gateway** |
| bond0 (em1 & em1). Mode 1 (active-standby) | 10.121.140.37/27 | 255.255.255.224 | N/A |
| bond1 (em3 & em4) Mode 1 (active-standby) | 10.121.55.69 | 255.255.255.192 | 10.121.55.65 |
| iDrac | 10.121.55.113 | 255.255.255.192 | 10.121.55.65 |
| **Local LVM** |  |  |  |
| **Device** | **Type** | **Size(MB)** | **Mount point** |
| /dev/sdc1 | ext4 | 500 | /boot |
| lv\_swap | swap | 8192 |  |
| lv\_home | ext4 | 10240 | /home |
| lv\_root | ext4 | 552840 | / |
| **Account for OS** |  |  |  |
| **Username** | **password** | **home directory** |  |
| root | [Root@123](mailto:RBT@dmin16) | /root |  |
| crbt | [crbt@B1T3L@rbt16](mailto:crbt@B1T3L@rbt16) | /opt/crbt |  |

## CMS3 server

|  |  |  |  |
| --- | --- | --- | --- |
| **Hostname** | **CMS3** | | |
| Raid configuration | 1 (two disks) | | |
| Operating System | Redhat Enterprise Linux 6.7 | | |
| Package | Base System (All optional packages) Development (All optional packages) Desktop (all optional packages except KDE desktop) | | |
| Language | English | | |
| Keyboard | U.S. English | | |
| Time Zone: | America/Lima; System clock uses UTC | | |
| NTP | 10.121.3.65, 10.121.3.81 | | |
| **Interface** | **IP** | **Netmask** | **gateway** |
| bond0 (em1 & em1). Mode 1 (active-standby) | 10.121.140.38/27 | 255.255.255.224 | N/A |
| bond1 (em3 & em4) Mode 1 (active-standby) | 10.121.55.70 | 255.255.255.192 | 10.121.55.65 |
| iDrac | 10.121.55.114 | 255.255.255.192 | 10.121.55.65 |
| **Local LVM** |  |  |  |
| **Device** | **Type** | **Size(MB)** | **Mount point** |
| /dev/sdc1 | ext4 | 500 | /boot |
| lv\_swap | swap | 8192 |  |
| lv\_home | ext4 | 10240 | /home |
| lv\_root | ext4 | 552840 | / |
| **Account for OS** |  |  |  |
| **Username** | **password** | **home directory** |  |
| root | [Root@123](mailto:RBT@dmin16) | /root |  |
| crbt | [crbt@B1T3L@rbt16](mailto:crbt@B1T3L@rbt16) | /opt/crbt |  |

## CMS4 server

|  |  |  |  |
| --- | --- | --- | --- |
| **Hostname** | **CMS4** | | |
| Raid configuration | 1 (two disks) | | |
| Operating System | Redhat Enterprise Linux 6.7 | | |
| Package | Base System (All optional packages) Development (All optional packages) Desktop (all optional packages except KDE desktop) | | |
| Language | English | | |
| Keyboard | U.S. English | | |
| Time Zone: | America/Lima; System clock uses UTC | | |
| NTP | 10.121.3.65, 10.121.3.81 | | |
| **Interface** | **IP** | **Netmask** | **gateway** |
| bond0 (em1 & em1). Mode 1 (active-standby) | 10.121.140.39/27 | 255.255.255.224 | N/A |
| bond1 (em3 & em4) Mode 1 (active-standby) | 10.121.55.71 | 255.255.255.192 | 10.121.55.65 |
| iDrac | 10.121.55.115 | 255.255.255.192 | 10.121.55.65 |
| **Local LVM** |  |  |  |
| **Device** | **Type** | **Size(MB)** | **Mount point** |
| /dev/sdc1 | ext4 | 500 | /boot |
| lv\_swap | swap | 8192 |  |
| lv\_home | ext4 | 10240 | /home |
| lv\_root | ext4 | 552840 | / |
| **Account for OS** |  |  |  |
| **Username** | **password** | **home directory** |  |
| root | [Root@123](mailto:RBT@dmin16) | /root |  |
| crbt | [crbt@B1T3L@rbt16](mailto:crbt@B1T3L@rbt16) | /opt/crbt |  |

## CMS5 server

|  |  |  |  |
| --- | --- | --- | --- |
| **Hostname** | **CMS5** | | |
| Raid configuration | 1 (two disks) | | |
| Operating System | Redhat Enterprise Linux 6.7 | | |
| Package | Base System (All optional packages) Development (All optional packages) Desktop (all optional packages except KDE desktop) | | |
| Language | English | | |
| Keyboard | U.S. English | | |
| Time Zone: | America/Lima; System clock uses UTC | | |
| NTP | 10.121.3.65, 10.121.3.81 | | |
| **Interface** | **IP** | **Netmask** | **gateway** |
| bond0 (em1 & em1). Mode 1 (active-standby) | 10.121.140.40/27 | 255.255.255.224 | N/A |
| bond1 (em3 & em4) Mode 1 (active-standby) | 10.121.55.72 | 255.255.255.192 | 10.121.55.65 |
| iDrac | 10.121.55.116 | 255.255.255.192 | 10.121.55.65 |
| **Local LVM** |  |  |  |
| **Device** | **Type** | **Size(MB)** | **Mount point** |
| /dev/sdc1 | ext4 | 500 | /boot |
| lv\_swap | swap | 8192 |  |
| lv\_home | ext4 | 10240 | /home |
| lv\_root | ext4 | 552840 | / |
| **Account for OS** |  |  |  |
| **Username** | **password** | **home directory** |  |
| root | [Root@123](mailto:RBT@dmin16) | /root |  |
| crbt | [crbt@B1T3L@rbt16](mailto:crbt@B1T3L@rbt16) | /opt/crbt |  |

## CMS6 server

|  |  |  |  |
| --- | --- | --- | --- |
| **Hostname** | **CMS6** | | |
| Raid configuration | 1 (two disks) | | |
| Operating System | Redhat Enterprise Linux 6.7 | | |
| Package | Base System (All optional packages) Development (All optional packages) Desktop (all optional packages except KDE desktop) | | |
| Language | English | | |
| Keyboard | U.S. English | | |
| Time Zone: | America/Lima; System clock uses UTC | | |
| NTP | 10.121.3.65, 10.121.3.81 | | |
| **Interface** | **IP** | **Netmask** | **gateway** |
| bond0 (em1 & em1). Mode 1 (active-standby) | 10.121.140.41/27 | 255.255.255.224 | N/A |
| bond1 (em3 & em4) Mode 1 (active-standby) | 10.121.55.73 | 255.255.255.192 | 10.121.55.65 |
| iDrac | 10.121.55.117 | 255.255.255.192 | 10.121.55.65 |
| **Local LVM** |  |  |  |
| **Device** | **Type** | **Size(MB)** | **Mount point** |
| /dev/sdc1 | ext4 | 500 | /boot |
| lv\_swap | swap | 8192 |  |
| lv\_home | ext4 | 10240 | /home |
| lv\_root | ext4 | 552840 | / |
| **Account for OS** |  |  |  |
| **Username** | **password** | **home directory** |  |
| root | [Root@123](mailto:RBT@dmin16) | /root |  |
| crbt | [crbt@B1T3L@rbt16](mailto:crbt@B1T3L@rbt16) | /opt/crbt |  |

## CMS7 server

|  |  |  |  |
| --- | --- | --- | --- |
| **Hostname** | **CMS7** | | |
| Raid configuration | 1 (two disks) | | |
| Operating System | Redhat Enterprise Linux 6.7 | | |
| Package | Base System (All optional packages) Development (All optional packages) Desktop (all optional packages except KDE desktop) | | |
| Language | English | | |
| Keyboard | U.S. English | | |
| Time Zone: | America/Lima; System clock uses UTC | | |
| NTP | 10.121.3.65, 10.121.3.81 | | |
| **Interface** | **IP** | **Netmask** | **gateway** |
| bond0 (em1 & em1). Mode 1 (active-standby) | 10.121.140.42/27 | 255.255.255.224 | N/A |
| bond1 (em3 & em4) Mode 1 (active-standby) | 10.121.55.74 | 255.255.255.192 | 10.121.55.65 |
| iDrac | 10.121.55.118 | 255.255.255.192 | 10.121.55.65 |
| **Local LVM** |  |  |  |
| **Device** | **Type** | **Size(MB)** | **Mount point** |
| /dev/sdc1 | ext4 | 500 | /boot |
| lv\_swap | swap | 8192 |  |
| lv\_home | ext4 | 10240 | /home |
| lv\_root | ext4 | 552840 | / |
| **Account for OS** |  |  |  |
| **Username** | **password** | **home directory** |  |
| root | [Root@123](mailto:RBT@dmin16) | /root |  |
| crbt | [crbt@B1T3L@rbt16](mailto:crbt@B1T3L@rbt16) | /opt/crbt |  |

## APS1 server

|  |  |  |  |
| --- | --- | --- | --- |
| **Hostname** | **APS1** | | |
| Raid configuration | 1 (two disks) | | |
| Operating System | Redhat Enterprise Linux 6.7 | | |
| Package | Base System (All optional packages) Development (All optional packages) Desktop (all optional packages except KDE desktop) | | |
| Language | English | | |
| Keyboard | U.S. English | | |
| Time Zone: | America/Lima; System clock uses UTC | | |
| NTP | 10.121.3.65, 10.121.3.81 | | |
| **Interface** | **IP** | **Netmask** | **gateway** |
| bond0 (em1 & em1). Mode 1 (active-standby) | 10.121.140.43/27 | 255.255.255.224 | N/A |
| bond1 (em3 & em4) Mode 1 (active-standby) | 10.121.55.75 | 255.255.255.192 | 10.121.55.65 |
| iDrac | 10.121.55.119 | 255.255.255.192 | 10.121.55.65 |
| **Local LVM** |  |  |  |
| **Device** | **Type** | **Size(MB)** | **Mount point** |
| /dev/sdc1 | ext4 | 500 | /boot |
| lv\_swap | swap | 8192 |  |
| lv\_home | ext4 | 10240 | /home |
| lv\_root | ext4 | 552840 | / |
| **Account for OS** |  |  |  |
| **Username** | **password** | **home directory** |  |
| root | [Root@123](mailto:RBT@dmin16) | /root |  |
| crbt | [crbt@B1T3L@rbt16](mailto:crbt@B1T3L@rbt16) | /opt/crbt |  |

## APS2 server

|  |  |  |  |
| --- | --- | --- | --- |
| **Hostname** | **APS2** | | |
| Raid configuration | 1 (two disks) | | |
| Operating System | Redhat Enterprise Linux 6.7 | | |
| Package | Base System (All optional packages) Development (All optional packages) Desktop (all optional packages except KDE desktop) | | |
| Language | English | | |
| Keyboard | U.S. English | | |
| Time Zone: | America/Lima; System clock uses UTC | | |
| NTP | 10.121.3.65, 10.121.3.81 | | |
| **Interface** | **IP** | **Netmask** | **gateway** |
| bond0 (em1 & em1). Mode 1 (active-standby) | 10.121.140.44/27 | 255.255.255.224 | N/A |
| bond1 (em3 & em4) Mode 1 (active-standby) | 10.121.55.76/26 | 255.255.255.192 | 10.121.55.65 |
| iDrac | 10.121.55.120 | 255.255.255.192 | 10.121.55.65 |
| **Local LVM** |  |  |  |
| **Device** | **Type** | **Size(MB)** | **Mount point** |
| /dev/sdc1 | ext4 | 500 | /boot |
| lv\_swap | swap | 8192 |  |
| lv\_home | ext4 | 10240 | /home |
| lv\_root | ext4 | 552840 | / |
| **Account for OS** |  |  |  |
| **Username** | **password** | **home directory** |  |
| root | [Root@123](mailto:RBT@dmin16) | /root |  |
| crbt | [crbt@B1T3L@rbt16](mailto:crbt@B1T3L@rbt16) | /opt/crbt |  |

## APS3 server

|  |  |  |  |
| --- | --- | --- | --- |
| **Hostname** | **APS3** | | |
| Raid configuration | 1 (two disks) | | |
| Operating System | Redhat Enterprise Linux 6.7 | | |
| Package | Base System (All optional packages) Development (All optional packages) Desktop (all optional packages except KDE desktop) | | |
| Language | English | | |
| Keyboard | U.S. English | | |
| Time Zone: | America/Lima; System clock uses UTC | | |
| NTP | 10.121.3.65, 10.121.3.81 | | |
| **Interface** | **IP** | **Netmask** | **gateway** |
| bond0 (em1 & em1). Mode 1 (active-standby) | 10.121.140.46/27 | 255.255.255.224 | N/A |
| bond1 (em3 & em4) Mode 1 (active-standby) | 10.121.55.78/26 | 255.255.255.192 | 10.121.55.65 |
| iDrac | 10.121.55.121 | 255.255.255.192 | 10.121.55.65 |
| **Local LVM** |  |  |  |
| **Device** | **Type** | **Size(MB)** | **Mount point** |
| /dev/sdc1 | ext4 | 500 | /boot |
| lv\_swap | swap | 8192 |  |
| lv\_home | ext4 | 10240 | /home |
| lv\_root | ext4 | 552840 | / |
| **Account for OS** |  |  |  |
| **Username** | **password** | **home directory** |  |
| root | [Root@123](mailto:RBT@dmin16) | /root |  |
| crbt | [crbt@B1T3L@rbt16](mailto:crbt@B1T3L@rbt16) | /opt/crbt |  |

## APS4 server

|  |  |  |  |
| --- | --- | --- | --- |
| **Hostname** | **APS4** | | |
| Raid configuration | 1 (two disks) | | |
| Operating System | Redhat Enterprise Linux 6.7 | | |
| Package | Base System (All optional packages) Development (All optional packages) Desktop (all optional packages except KDE desktop) | | |
| Language | English | | |
| Keyboard | U.S. English | | |
| Time Zone: | America/Lima; System clock uses UTC | | |
| NTP | 10.121.3.65, 10.121.3.81 | | |
| **Interface** | **IP** | **Netmask** | **gateway** |
| bond0 (em1 & em1). Mode 1 (active-standby) | 10.121.140.47/27 | 255.255.255.224 | N/A |
| bond1 (em3 & em4) Mode 1 (active-standby) | 10.121.55.79/26 | 255.255.255.192 | 10.121.55.65 |
| iDrac | 10.121.55.122 | 255.255.255.192 | 10.121.55.65 |
| **Local LVM** |  |  |  |
| **Device** | **Type** | **Size(MB)** | **Mount point** |
| /dev/sdc1 | ext4 | 500 | /boot |
| lv\_swap | swap | 8192 |  |
| lv\_home | ext4 | 10240 | /home |
| lv\_root | ext4 | 552840 | / |
| **Account for OS** |  |  |  |
| **Username** | **password** | **home directory** |  |
| root | [Root@123](mailto:RBT@dmin16) | /root |  |
| crbt | [crbt@B1T3L@rbt16](mailto:crbt@B1T3L@rbt16) | /opt/crbt |  |

## CMP server

|  |  |  |  |
| --- | --- | --- | --- |
| **Hostname** | **CMP** | | |
| Raid configuration | 1 (two disks) | | |
| Operating System | Redhat Enterprise Linux 6.7 | | |
| Package | Base System (All optional packages) Development (All optional packages) Desktop (all optional packages except KDE desktop) | | |
| Language | English | | |
| Keyboard | U.S. English | | |
| Time Zone: | America/Lima; System clock uses UTC | | |
| NTP | 10.121.3.65, 10.121.3.81 | | |
| **Interface** | **IP** | **Netmask** | **gateway** |
| bond0 (em1 & em1). Mode 1 (active-standby) | 10.121.140.49/27 | 255.255.255.224 | N/A |
| bond1 (em3 & em4) Mode 1 (active-standby) | 10.121.55.81 | 255.255.255.192 | 10.121.55.65 |
| iDrac | 10.121.55.123 | 255.255.255.192 | 10.121.55.65 |
| **Local LVM** |  |  |  |
| **Device** | **Type** | **Size(MB)** | **Mount point** |
| /dev/sdc1 | ext4 | 500 | /boot |
| lv\_swap | swap | 8192 |  |
| lv\_home | ext4 | 10240 | /home |
| lv\_root | ext4 | 552840 | / |
| **Account for OS** |  |  |  |
| **Username** | **password** | **home directory** |  |
| root | [Root@123](mailto:RBT@dmin16) | /root |  |
| crbt | [crbt@B1T3L@rbt16](mailto:crbt@B1T3L@rbt16) | /opt/crbt |  |

## WEB server

|  |  |  |  |
| --- | --- | --- | --- |
| **Hostname** | **WEB** | | |
| Raid configuration | 1 (two disks) | | |
| Operating System | Redhat Enterprise Linux 6.7 | | |
| Package | Base System (All optional packages) Development (All optional packages) Desktop (all optional packages except KDE desktop) | | |
| Language | English | | |
| Keyboard | U.S. English | | |
| Time Zone: | America/Lima; System clock uses UTC | | |
| NTP | 10.121.3.65, 10.121.3.81 | | |
| **Interface** | **IP** | **Netmask** | **gateway** |
| bond0 (em1 & em1). Mode 1 (active-standby) | 10.121.140.50/27 | 255.255.255.224 | N/A |
| bond1 (em3 & em4) Mode 1 (active-standby) | 10.121.55.82 | 255.255.255.192 | 10.121.55.65 |
| iDrac | 10.121.55.124 | 255.255.255.192 | 10.121.55.65 |
| **Local LVM** |  |  |  |
| **Device** | **Type** | **Size(MB)** | **Mount point** |
| /dev/sdc1 | ext4 | 500 | /boot |
| lv\_swap | swap | 8192 |  |
| lv\_home | ext4 | 10240 | /home |
| lv\_root | ext4 | 552840 | / |
| **Account for OS** |  |  |  |
| **Username** | **password** | **home directory** |  |
| root | [Root@123](mailto:RBT@dmin16) | /root |  |
| crbt | [crbt@B1T3L@rbt16](mailto:crbt@B1T3L@rbt16) | /opt/crbt |  |

## DSU1 server

|  |  |  |  |
| --- | --- | --- | --- |
| **Hostname** | **DSU1** | | |
| Raid configuration | 1 (two disks) | | |
| Operating System | Redhat Enterprise Linux 6.7 | | |
| Package | Base System (All optional packages) Development (All optional packages) Desktop (all optional packages except KDE desktop) | | |
| Language | English | | |
| Keyboard | U.S. English | | |
| Time Zone: | America/Lima; System clock uses UTC | | |
| NTP | 10.121.3.65, 10.121.3.81 | | |
| **Interface** | **IP** | **Netmask** | **gateway** |
| bond0 (em1 & em1). Mode 1 (active-standby) | 192.168.9.1 | 255.255.255.248 | N/A |
| bond1 (em3 & em4) Mode 1 (active-standby) | 10.121.55.90 | 255.255.255.192 | 10.121.55.65 |
| iDrac | 10.121.55.125 | 255.255.255.192 | 10.121.55.65 |
| **Local LVM** |  |  |  |
| **Device** | **Type** | **Size(MB)** | **Mount point** |
| /dev/sdc1 | ext4 | 500 | /boot |
| lv\_swap | swap | 8192 |  |
| lv\_home | ext4 | 10240 | /home |
| lv\_root | ext4 | 552840 | / |
| **SAN LVM** |  |  |  |
| **Device** | **Note** | **Size** | **Function** |
| /dev/sdb | Share with DSU2 | 5 GB | voting |
| /dev/sdd | Share with DSU2 | 50 GB | FR |
| /dev/sdc | Share with DSU2 | 1,5 TB | DATA |
| /dev/sde | Share with DSU2 | 1,2 TB | songandcdr |
| **Account for OS** |  |  |  |
| **Username** | **password** | **home directory** |  |
| root | [Root@123](mailto:RBT@dmin16) | /root |  |
| crbt | [crbt@B1T3L@rbt16](mailto:crbt@B1T3L@rbt16) | /opt/crbt |  |

## DSU2 server

|  |  |  |  |
| --- | --- | --- | --- |
| **Hostname** | **DSU2** | | |
| Raid configuration | 1 (two disks) | | |
| Operating System | Redhat Enterprise Linux 6.7 | | |
| Package | Base System (All optional packages) Development (All optional packages) Desktop (all optional packages except KDE desktop) | | |
| Language | English | | |
| Keyboard | U.S. English | | |
| Time Zone: | America/Lima; System clock uses UTC | | |
| NTP | 10.121.3.65, 10.121.3.81 | | |
| **Interface** | **IP** | **Netmask** | **gateway** |
| bond0 (em1 & em1). Mode 1 (active-standby) | 192.168.9.2 | 255.255.255.248 | N/A |
| bond1 (em3 & em4) Mode 1 (active-standby) | 10.121.55.92 | 255.255.255.192 | 10.121.55.65 |
| iDrac | 10.121.55.126 | 255.255.255.192 | 10.121.55.65 |
| **Local LVM** |  |  |  |
| **Device** | **Type** | **Size(MB)** | **Mount point** |
| /dev/sdc1 | ext4 | 500 | /boot |
| lv\_swap | swap | 8192 |  |
| lv\_home | ext4 | 10240 | /home |
| lv\_root | ext4 | 552840 | / |
| **SAN LVM** |  |  |  |
| **Device** | **Type** | **Size** | **Function** |
| /dev/sdb | Share with DSU1 | 5 GB | voting |
| /dev/sdd | Share with DSU1 | 50 GB | FR |
| /dev/sdc | Share with DSU1 | 1,5 TB | DATA |
| /dev/sde | Share with DSU1 | 1,2 TB | songandcdr |
| **Account for OS** |  |  |  |
| **Username** | **password** | **home directory** |  |
| root | [Root@123](mailto:RBT@dmin16) | /root |  |
| crbt | [crbt@B1T3L@rbt16](mailto:crbt@B1T3L@rbt16) | /opt/crbt |  |

# cSOFTWARE DESIGN

**5.1 System connection**



|  |  |  |
| --- | --- | --- |
| **No** | **Interface** | **Description** |
| 1 | GMSC | Connect to GMSC to receive missed call |
| 2 | Provisioning | Connect to Provisioning to on/off HLR flag |
| 3 | SMSC | Connect to SMSC for sending and receiving message |
| 4 | BCCSGW | Connect to BCCSGW to view subscriber information |

**5.2 System capacity**

|  |  |  |  |
| --- | --- | --- | --- |
| Node | Product Name | Qty | Capacity |
| Lima | VoicemailPlus | 1 | 6.0 Msub |

**5.3 System conection paramenter**

**5.3.1 Connection to SMSC**

|  |  |  |  |
| --- | --- | --- | --- |
| Number | Items | SMSC parameter | VoicemialPlus parameter |
| 1 | IP | 10.121.61.36  10.121.61.37  10.221.3.12 | 10.121.5.33  10.121.5.34 |
| 2 | Port | 9876 | |
| 3 | User | Private information | |
| 4 | Password |
| 5 | Short code | 154 | |

**5.3.2 Connection to GMSC**

|  |  |  |  |
| --- | --- | --- | --- |
| Number | Items | GMSC parameter | VoicemialPlus parameter |
| 1 | IP | 10.131.1.1/32  10.131.2.1/32  10.131.3.1/32  10.131.4.1/32 | 10.121.5.33  10.121.5.34 |
| 2 | Port | 5060 | |

|  |  |  |  |
| --- | --- | --- | --- |
| Number | Items | Media Server parameter | VoicemialPlus parameter |
| 1 | IP | 10.131.1.64/25  10.131.2.64/25  10.131.3.64/25  10.131.4.64/25 | 10.121.5.33  10.121.5.34 |
| 2 | Port | 20-65535 | |

**5.3.3 Connection to Provisioning**

|  |  |  |  |
| --- | --- | --- | --- |
| Number | Items | Provisioning parameter | VoicemialPlus parameter |
| 1 | IP | 10.121.5.43  10.121.5.44 | 10.121.5.33  10.121.5.34 |
| 2 | Port | 8070 | |
| 3 | User | vmail | |
| 4 | Password | GFjUd6aK | |
| 5 | Command | on/off HLR flag | |

**5.3.4 Connection to BCCSGW**

|  |  |  |  |
| --- | --- | --- | --- |
| Number | Items | BCCSGW parameter | VoicemialPlus parameter |
| 1 | IP | 10.121.8.133 | 10.121.5.33  10.121.5.34 |
| 2 | Port | 8560 | |
| 3 | User | aa37debe54bdab61 | |
| 4 | Password | 45037153e4312bba | |

**5.4 Logic connection**

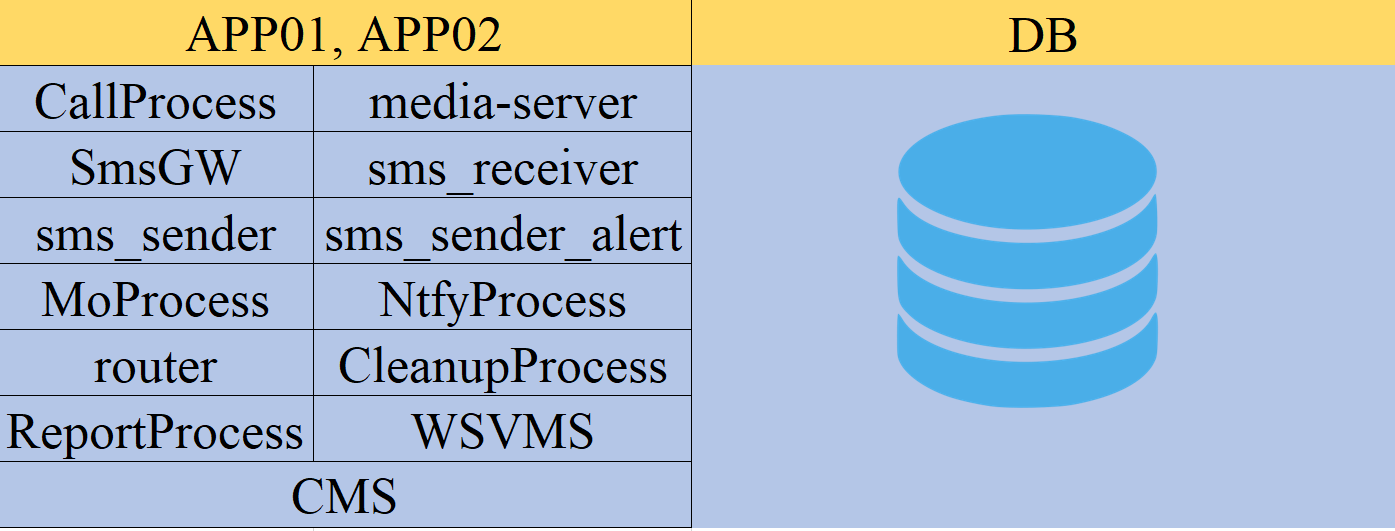
**5.4.1 Connection diagram**



**5.4.2 Software module diagram**



**5.4.3 Module deployment**



**5.5 System flow**

**5.5.1 Missed call flow**



* + Step 1: Subscriber A call to subscriber B (B is offline or out of coverage), the call is forwarded to VoicemailPlus System.
  + Step 2: VoicemailPlus system establish call to B and play voice announcement to confirm with subscriber A send a voice message to absent subscriber B.
  + Step 3: Subscriber A accept to send a voice message
  + Step 4: Subscriber leave a voice message, the system store it on storage
  + Step 5: VoicemailPlus system save this call history and send SMS to subscriber to B to detect when B is online back.

### 5.5.2 Call to system flow



* + Step 1: Subscriber call to VoicemailPlus system over service prefix
  + Step 2: VoicemailPlus system establish call to B and play voice to guide subscriber.
  + Step 3: Subscriber do follow the guide to listen the voice message.
  + Step 4: Subscriber hangup this call, VoicemailPlus save this call history.

### 5.5.3 Deletec subscriber B’s status



* + Step 1: VoicemailPlus send a silence SMS to subscriber B to detect B’s status
  + Step 2: Subscriber B is online back, SMSC send notify to VoicemailPlus
  + Step 3: VoicemailPlus receive SMSC’s notification and know B is online back.
  + Step 4: VoicemailPlus system send a notification SMS to subscriber A about subscriber B’s status