VIETTEL GROUP

VIETTEL PERU S.A.C



**LOW LEVEL DESIGN**

**DESIGN OF CRBT ELCOM 2016**

**(VIETTEL PERU)**

**(FOR INTERNAL CIRCULATION ONLY)**

LIMA, 11/2016

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**DESIGN OF CRBT ELCOM 2016**

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LIMA, 11/2016

Hà nội,12-2010

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# 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.

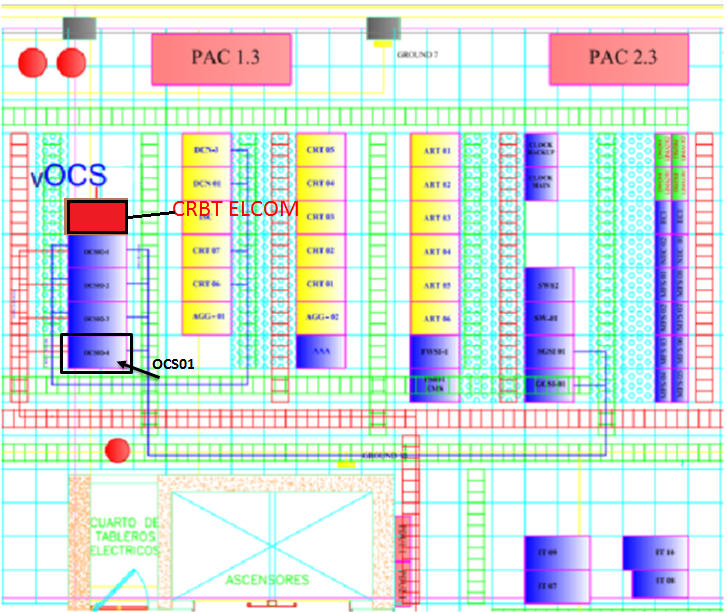
## Device list and name

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 |  |

# SOFTWARE DESIGN

**5.1 System connection**



|  |  |  |
| --- | --- | --- |
| **No** | **Interface** | **Description** |
| 1 | GMSC | Connect to GMSC for play tones when calling subcriber call to called (has CRBT service) |
| 2 | Provisioning | Connect to Provisioning to on/off HLR flag, rechagre |
| 3 | SMSC | Connect to SMSC for sending and receiving message |
| 4 | Billing | Connect to Billing for export CDR for post paid open subcriber |
| 5 | Noc | Connect to Noc system for monitoring |
| 6 | Internet | Connect to Internet for Web-based subscriber self-provisioning, Customer Care services and CMP services. |

**5.2 System capacity**

|  |  |  |  |
| --- | --- | --- | --- |
| Node | Product Name | Qty | Capacity |
| Lima | CRBT | 1 | 1.5 Msub |

**5.3 System conection paramenter**

**5.3.1 Connection to SMSC**

|  |  |  |  |
| --- | --- | --- | --- |
| Number | Items | SMSC parameter | CRBT parameter |
| 1 | IP | 10.121.49.151 | Dải IP DCN:  APS 1: 10.121.55.75/26  APS 2: 10.121.55.76/26  APS 3: 10.121.55.78/26  APS 4: 10.121.55.79/26  VIP APS 1&2:  10.121.55.77/26  VIP APS 3&4:  10.121.55.80/26  Dải IP MPBN:  APS 1: 10.121.140.43/27  APS 2: 10.121.140.44/27  APS 3: 10.121.140.46/27  APS 4: 10.121.140.47/27  VIP APS 1&2:  10.121.140.45/27  VIP APS 3&4:  10.121.140.48/27 |
| 2 | Port | 5016 | |
| 3 | User | Private information | |
| 4 | Password |
| 5 | Short code | 121 | |

**5.3.2 Connection to GMSC**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Source node** | **OPC**  **(PC MS** | **DPC (CRBT)** | **Source IP1 MSC** | **Source port No.** | **Dest. IP1 (CRBT)** | **Role** | **Dest. port No** |
| MSC 1 | **1301** | 1152 | **10.121.128.40/32** | **2905** | 10.121.140.34/27 | client | **2905** |
| MSC 1 | **1301** | 1152 | **10.121.128.100/32** | **2906** | 10.121.140.35/27 | client | **2906** |
|  |  |  |  |  |  |  |  |
| MSC 2 | **1302** | 1152 | **10.121.129.40/32** | **2909** | 10.121.140.34/27 | client | **2909** |
| MSC 2 | **1302** | 1152 | **10.121.129.100/32** | **2910** | 10.121.140.35/27 | client | **2910** |

**5.3.3 Connection to Provisioning**

|  |  |  |  |
| --- | --- | --- | --- |
| Number | Items | Parameter | CRBT parameter |
| 1 | IP | 10.121.5.12  10.121.5.13 | Dải IP DCN:  APS 1: 10.121.55.75/26  APS 2: 10.121.55.76/26  APS 3: 10.121.55.78/26  APS 4: 10.121.55.79/26  VIP APS 1&2:  10.121.55.77/26  VIP APS 3&4:  10.121.55.80/26  Dải IP MPBN:  APS 1: 10.121.140.43/27  APS 2: 10.121.140.44/27  APS 3: 10.121.140.46/27  APS 4: 10.121.140.47/27  VIP APS 1&2:  10.121.140.45/27  VIP APS 3&4:  10.121.140.48/27 |
| 2 | Port | 8068 | |
| 3 | User | rbt\_elcom | |
| 4 | Password | rbt\_elcom | |
| 5 | Command | Deduce, query sub, check balance, on/off HLR flag | |

**5.3.4 Connection to Billing**

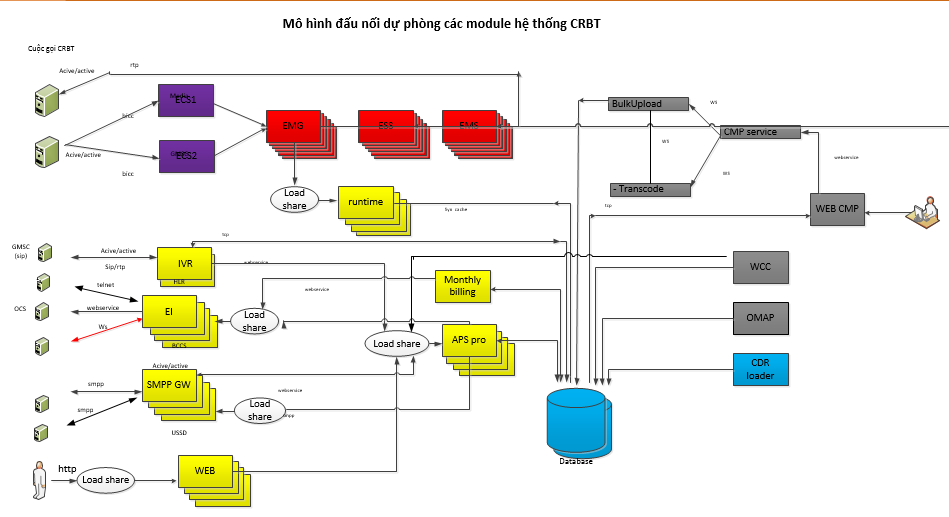
|  |  |  |  |
| --- | --- | --- | --- |
| Number | Items | BillingSystem parameter | CRBT parameter |
| 1 | IP | 10.121.4.5 | Dải IP DCN:  APS 1: 10.121.55.75/26  APS 2: 10.121.55.76/26  APS 3: 10.121.55.78/26  APS 4: 10.121.55.79/26  VIP APS 1&2:  10.121.55.77/26  VIP APS 3&4:  10.121.55.80/26  Dải IP MPBN:  APS 1: 10.121.140.43/27  APS 2: 10.121.140.44/27  APS 3: 10.121.140.46/27  APS 4: 10.121.140.47/27  VIP APS 1&2:  10.121.140.45/27  VIP APS 3&4:  10.121.140.48/27 |
| 2 | Port | 21 | |
| 3 | User | cdr\_crbt | |
| 4 | Password | cdr\_crbt | |
| 5 | Path | /bgw\_vol01/cdr/cdr\_crbt/ | |
| 6 | Backup Path | /bgw\_vol01/cdr/cdr\_crbt/backup/ | |

**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 Register service**

\* Pre paid and post paid control



\* Post paid open



**5.5.2 Buy song**

\* Pre paid and post paid control



\* Post paid open



**5.5.3 Renew service and songs**

Pre paid and post paid control



Post paid open



**5.5.4 Cancel service**

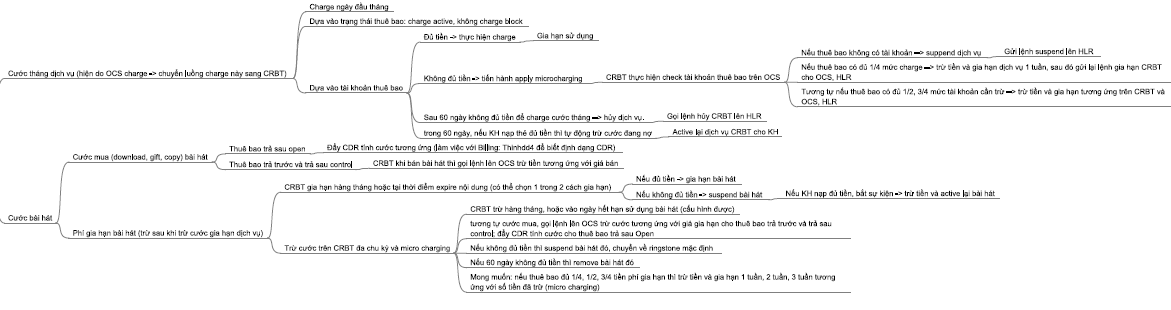
Prepaid and postpaid control



Post paid open



**5.6 Charing policy**



Note for charging policy:

- Renew process is based on subscriber period and top up action [OCS will trigger CDR and send to RBT; RBT will check subscriber balance and apply micro segment (3/4 ; 1/2; 1/4 ; original price)]

- Register service: we will check the following sequence before charge; the priority is from top down

                    + Sub type (postpaid control, prepaid, postpaid open)

                     + Sub package type (Ex: cà chua, cà rốt,…)

                     + Subscriber duration from active time (Vào mạng VT bao lâu)

                     + Promotion based on input channel (IVR or SMS or web/wap)

                     + Promotion based on input list (Import a list of subscribers to get promotion in period of time)

+ When CRBT receive Top Up CDR from OCS and charge success; CRBT will re-open service (no MO confirmation at this step) and the new CRBT period of that sub is starting from that time.

- Suspend state as 2 types:

+ Service suspend: will be cancel service if over 60 days, RBT can’t charge this sub success. During 60 days RBT waiting to renew, this sub is unable to use RBT service (hear any song).

+ Song suspend: if song expired, this sub still can use CRBT with default song.