



# **ECOWAS Bank for Investment and Development (EBID) IT Infrastructure and Power Assessment Final Report**

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**16 September 2013**

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## 1. EXECUTIVE SUMMARY

Ostec was selected in a bidding process to assess the communication and Power Infrastructure of ECOWAS Bank for Investment and Development (EBID) in Lome (Togo), to advise on improving the IT Local Area Network infrastructure, messaging system, banking software, IT staff capability/skill Enhancement and power needs.

A delegation made up of two lead consultants from Ostec; Jonathan Tawiah and lead IT Infrastructure consultant Nazaire Finoude together with a member from Africa Lead; deputy chief of party Carla Denizard, attended a kick-off meeting with key members of staff from EBID at the EBID Headquarters in Lome (Togo) on June 4<sup>th</sup> 2013.

The objective for Ostec's team that attended the kick-off meeting was to engage the bank's IT team in order to gain an in-depth understanding of the existing IT and Power infrastructure at EBID.

Various Teams from Ostec made two further visits to EBID in Lome. The first visit took place on 23 July and the second on 19<sup>th</sup> August through to 20<sup>th</sup> August both assessment meetings were used to carefully examine the IT and power infrastructure of the bank and to obtain detailed information on the setup.

Our findings contained in this report show IT Infrastructure at the bank that is not fit for purpose. The nonexistence of an enterprise level banking application means bank is unable to manage funds to a level that meets best practise. There are design faults with the Power protection systems in place that minimise or completely eliminate the ability to do maintenance on sections of the Power systems.

We have made a recommendation for deployment of Oracle's FLEXCUBE Banking application together with specific steps that must be taken on Power, Cabling and Device upgrade to improve stability and increase performance.

## 2. METHODOLOGY

### Overall Approach

The industry recognized methodology for evaluating IT Infrastructure is well established under the international ITIL rules. The IT Information Library (ITIL) covers the build, operational, functionality of IT systems. In order to evaluate compliance with ITIL Standards, we will be conducting kick-off meetings to establish rules of engagement, face-to-face meetings with relevant department heads and a comprehensive review of current IT Policies at the institution. Our teams will seek to understand the overall deployment approach of IT Systems at the institution plus test and review of system performance.

### 2.1. IT Infrastructure

#### Interviews

The main point of contact at EBID was the sole IT staff, Mr Assih Leopold the IT manager. During our visits to EBID, we had a number of scheduled interviews with the IT manager to better understand the setup of their IT infrastructure. These interviews provided significant insight on current IT Operations.

#### Infrastructure Inspection

We conducted a number of review meetings with the IT Manager in their server / equipment room for a more interactive feel and understanding of what was contained in design documentation. We were granted access into the devices to evaluate their state and configuration.

#### Mails

Emails correspondence between our teams and the IT Manager further provided useful and material information in a relatively brief time period.

### 2.2. Power

#### Interviews

Our point of contact was the head of General Services, Mr.Adjou Albert. Due to time constraint, his subordinate Mr. Dovlemey Justin was assigned to take us through the power infrastructure setup.

#### Infrastructure inspection

Our activities started in the generator room. Detailed explanation was given on the architecture of the generators and how they worked, after which we moved on to the UPS and solar panel invertors' room. Power installation in the IT rooms was also examined starting from the sixth floor, then to the ground floor. All power components were inspected including the earth system, lighting arrestor, solar panel system, and samples of power sockets.

### 2.3. Banking Applications

We accessed the secure nature, stability and functionality of the current application in use.

### 3. FINDINGS

#### 3.1.1 IT Infrastructure

##### Explanation of the Current System

We were given an extensive overview of the current IT infrastructure by the EBID Head of IT; Mr Assih. The following areas were discussed...

- Servers,
- Laptops and workstations,
- Switches,
- Cabling Infrastructure
- Routers,
- Firewalls,
- Printers, etc.

Below are details of the above equipment...

#### SERVERS

	Server Model	OS	Function/Role	Processor speed	RAM	Hard Drive Capacity
1	<b>10 SERVERS IBM x3550 M3, Bi-pro Xeon Six Core E5675</b>  In physical cluster	Windows Server 2008 R2 SP1	- Domain	3.43 GHZ x 2	48 Go	600 Go Mirrored
2			- Exchange			
3			- DNS			
4			- TMG (PROXY)			
5			- File server			
6			- E-Learn BUREATIQUE			
			- WDS			
			- WSUS			
			- Antivirus			
			- SUNSYSTEMS (Accounting, Stock manager)			
			- SWIFT			
			- GRH ( human resource management)			
			- Physical Backup			
			- TESTS			
	<b>2 Servers IBM x3550 Xeon Quad Core</b>		- Secondary backup	1.06 GHZ	12 Go	600 Go Mirrored

These servers work in a virtual environment.

**Network Storage**

1	2 IBM System Storage DS3524	Windows	Storage	2 redundant controllers hot swappable	1 Go cache/per card	600 Go x 12
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**120 Workstations**

1	120 HP	Windows 7	Users machines	3.4 GHZ*2	4 Go	72 Go
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**40 Laptops**

1	40 HP EliteBook 8440p	Windows 7	Users Machines	Intel Core i7 2.67 GHZ	4 Go	320 Go
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**Printers**

1	10 HP Laserjet	Network Printers	Network printing
2	3 HP Colour 5500 Laserjet series	Network Printers	Network printing
3	10 HP Colour CP Laserjet	Colour Printer for departments	Department use

**Others equipment**

- Scanners,
- Digital camera,

**Active Network Devices**

	Equipment	Manufacture	Model	Fuction	Number
1	Distribution Switch	CISCO	- CATALYST 6506	Network Backbone	2 with one active and one standby
2	Access Switches	CISCO	- CATALYST 3560 X	Users connection	7 (48 ports)
3	Interconnection	CISCO	- CATALYST 3560 X	Interconnect	2

	Switches		- CATALYST 2900	network Network equipment	(48 ports)
4	Router	CISCO	- 3825	Routing	2 with one active and one standby
5	ly with the EBID IT r (MARS)	CISCO	- CS-MARS 25 Appliance	Security barrier	1
6	Access Control Server (ACS)	CISCO	- ACS 1121 Appliance With 5.1 SW And Base license	Security barrier	1
7	NAC SERVER	CISCO	- NAC Appliance 3315 Server	Physical Security	1
8	NAC MANAGER	CISCO	- NAC Appliance 3315 Manager	Physical Security	1
9	CISCO ASA	CISCO	- ASA 5520	Firewall + IPS	1
10	CISCO ASA	CISCO	- ASA 5520	VPN Access	1
11	FIREWALL JUNIPER	JUNIPER	- SG 140	Firewall	1
12	Access Point	Various	- Various	Wireless Connection	4
13	PABX	ASTRA NORTEL 6510	- Telephone System	Users communication	1

### 3.1.2 The various Network Devices and their roles on the Network

#### Domain Controller

The domain controller (DC) server handles all security requests from computers and servers within the Windows Server domain. Security requests include requests to log in to another server and checking permissions for various functions that need to be performed (e.g., accessing a file folder on a server or modifying a file within a folder). The domain controller manages the access to various resources granted to users and other servers through the use of a username and password.

#### Microsoft Exchange

The Microsoft exchange server plays the role of mail server, calendar software and contact manager. The exchange environment enables users to share information (mails, calendars...) using the Microsoft Office Outlook as its email platform.

**DNS: - (Domain Name System)**

The main role of the DNS is to translate domain names into IP addresses, thus its enables and facilitates internet browsing. The Internet is really based on IP addresses so every time a user uses a domain name, the DNS service translates the name into the corresponding IP address. For example, let say a user is trying to access www.example.com, the DNS service translates it to 198.105.232.4.

**TMG (Proxy)**

This is a Microsoft Forefront Threat Management Gateway (Forefront TMG), formerly known as Microsoft Internet Security and Acceleration Server (ISA Server). This device plays the role of a firewall and antivirus program.

The system filters out malware, attempts to exploit security vulnerabilities and content that does not match a predefined security policy.

**File Server**

The bank has a set of servers which provide shared disk access, i.e. shared files (such as documents, sound files, photographs, movies, images, databases, etc.) and can be accessed by the workstations that are attached to the network.

**Storage System**

An IBM storage system is used to provide central storage for all the servers to communication with the storage system through fibre connection to the SAN (Storage Area Network) Switch.

**Distribution Switch**

There are two Cisco Catalyst 6509 Switches acting as the backbone of the network. This improves robustness and decreases network downtime. The network is a collapse layer network where the distribution and core are merged. All the access switches are connected to distribution and host users' data points.

The Enhanced Interior Gateway Routing Protocol (EIGRP) is the routing protocol deployed on the network. EIGRP represents an evolution from its predecessor IGRP. Additionally, EIGRP contains several important protocols that greatly increase its operational efficiency relative to other routing protocols. One of these protocols is the Diffusing Update Algorithm (DUAL). This enables easy

packet routing within the network. DUAL enables to determine whether a path advertised by a neighbour is looped or loop-free, and allows the distribution switches running EIGRP will find alternate paths without waiting on updates from other routers. This feature of EIGRP allows fast traffic routing for the data exchanges. Because of its ability of fast convergence, support for variable-length subnet mask, support for partial updates, and support for multiple network layer protocols, EIGRP is seen the appropriate routing protocol for small and medium business. The Virtual Local Area Network are configured on the distribution and propagated to the access switches.

### **Access Switches**

The access layer is composed of a mix of Cisco Catalyst 3560x and Catalyst 2900. All users' workstations are connected to the network and access the network resources through these switches. This layer ensures that packets are delivered to end user computers.

### **Router**

Two Cisco 3825 routers are installed. These routers assure communication between the bank's network and the external world. These routers are the critical devices that keep data flowing between the internal network and the external networks on one hand and on the other hand they keep the network connected to the Internet.

### **CISCO ASA: Adaptive Security Appliance**

Two Cisco ASAs 5520 are installed and configured and act as the main firewall/IPS devices. They provide proactive threat defence that stops attacks before they spread through the network.

## **3.1.3 Current State of the above equipment's**

Majority of the equipment's are in good working condition with the exception of the Cisco3825 routers, the Storage system, one Cisco 6509 switch and one ASA firewall.

- Cisco 3825 Routers

The Cisco 3800 Series Integrated Services Router became end-of-life product in November 2011. For this reason Cisco customers with the above series of routers will not receive support from Cisco in the event of any support requirement for the products. It will be advisable for EBID to upgrade to Cisco's replacement in order to obtain full support from Cisco.

- Cisco 6509 Switch

One (1) Cisco 6509 Switch is not functioning due to damage caused by power fluctuations. There is a need to investigate whether the equipment is covered by Cisco Smartnet (A technical support service). The results of the investigation will determine whether new equipment should be purchased in replacement or, Cisco should be contacted to provide a replacement of the equipment.

### 3.2. Power

Power is very unstable in the whole building. This causes regular damage to IT equipment as described above. The bank has two power sources; one from the Electricity Company of Togo and the other from an installed solar panel. The bank has two (2) 11 KVA UPSs, one for each equipment room.

#### Generator

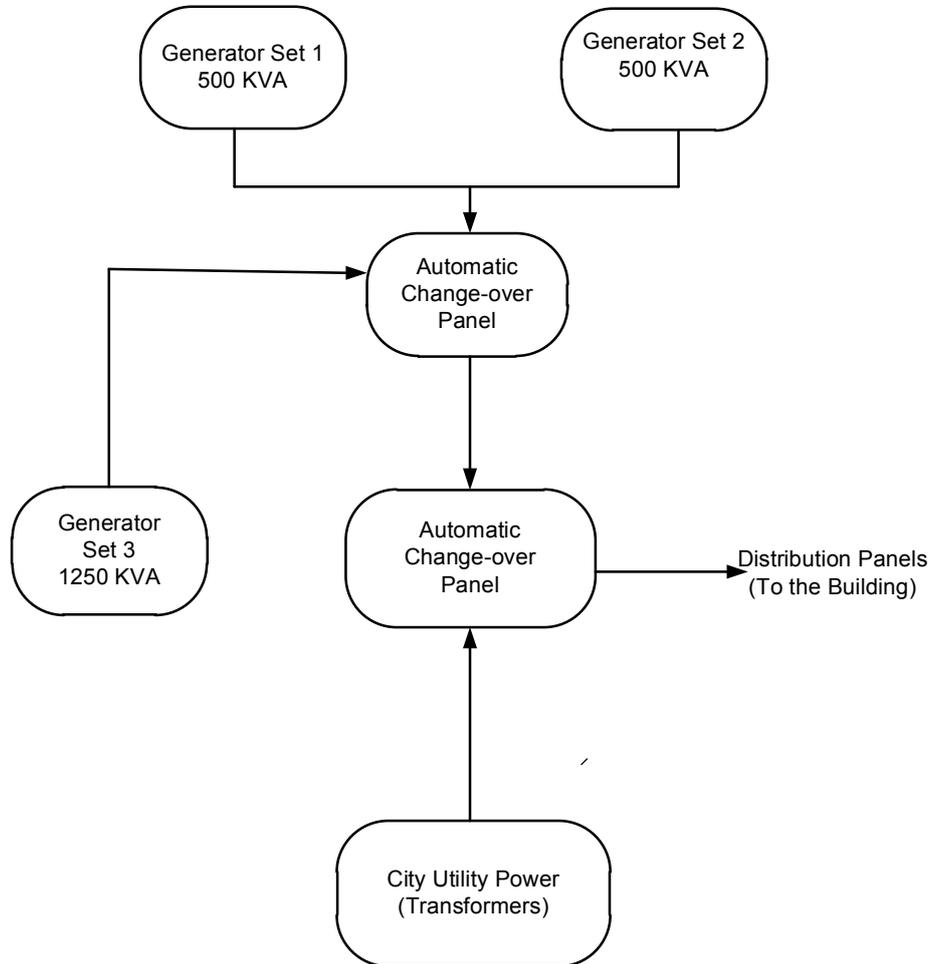
The Bank has two 500kva generator sets which work simultaneously to supply 1000kva power capacity to the building and also has a spare generator set of 1250kva for emergency. The generator sets are connected such that when the city utility power fails, the two 500kva generator sets kick in to supply power to the building.

In the event that the demand becomes more than 1000kva, the spare generator kicks in to knock off the two generators sets. Or, in the event that one of the 500kva generator-sets fail to start the 1250kva generator set kicks in to supply power to the building.

#### Results of Test carried out on the Utility Power Voltage

L1 – N = 229.5 Vac  
L2 – N = 231.0 Vac  
L3 – N = 230.0 Vac  
L1 – E = 228.8 Vac  
L2 – E = 232.1 Vac  
L3 – E = 231.5 Vac  
L1 – L3 = 400 Vac  
L1 – L2 = 400 Vac  
L2 – L3 = 401 Vac  
N – E = 2.3 Vac

Below is the diagram of the inter-connection of generator sets and city utility power supply to the building.



The power supply then goes to the UPS that support the computers, servers, routers, switches other peripheral.

### 3.3. Banking Applications

The bank does not have a banking application; however, Loan Portfolio Management is done by using Microsoft Excel. We have made a recommendation for an enterprise class banking application. Full details can be found on our recommendations section of this report

#### 3.3.1 Other Applications

The bank has three main applications for its day to day operations. These are...

##### **SUNSYSTEMS**

Used for accounting, Procurement management, stock management and asset management.

##### **GHR**

Used for salary payment.

##### **SWIFT**

Used for financial transfer

#### 4. SUMMARY AND OVERALL IMPRESSION OF CURRENT SYSTEM

##### 4.1 IT Infrastructure

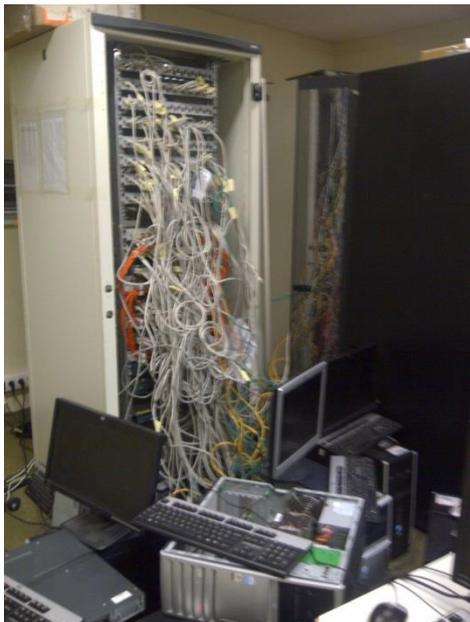
###### Cabling Infrastructure

Key to any IT infrastructure build is the Cabling Infrastructure. The current EBID Cabling Infrastructure was significantly substandard and not fit for purpose. No amount of investment in technology will deliver the desired results if built on the current cabling infrastructure.

Cat 6 UTP and fibre cables are not properly arranged and managed; infrastructure cables are lying around making a mess of the rooms. Servers and Network racks were not closed and / or could not be locked due to the chaotic manner in which the cabling infrastructure had been done. This lack of structured cabling was jeopardizing the physical security of the devices and was making trouble shooting by any engineer other than Mr. Assih (the IT Manager); an impossibility.

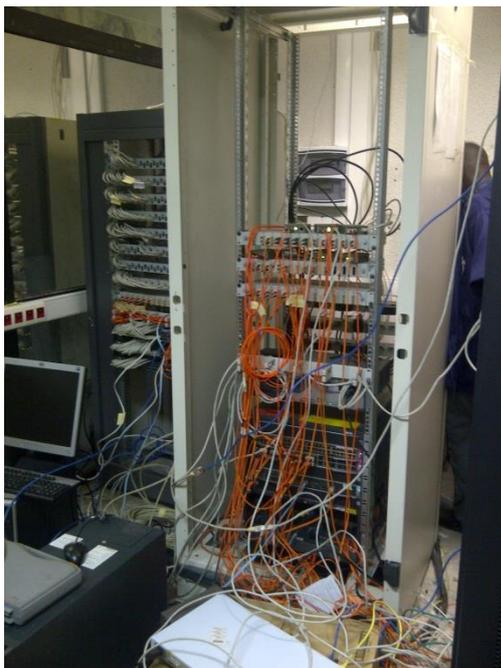
However, it must be noted that, the current situation was brought about largely because of the lack of reliable Electrical Power to the IT Server Room. The IT manager has been forced into regular temporary 'patch-up' of the network as equipment are frequently damaged by power surges.

###### *Pictures of the server room on the ground floor*





Pictures of the ground floor server room



### The Technology

The Bank adopted a technology plan in 2009. The implementation of this plan has however been significantly delayed. The technical (the technology) infrastructure (devices) had been refreshed over the years. However, there are significant challenges with providing adequate support and maintenance as a result of EBID only having one full-time IT staff.

#### 4.1.1 Communication System and Storage

##### Messaging system

The bank's messaging infrastructure is built on the Microsoft Exchange environment. Users exchange mails via outlook. Mails are the main communication medium of the bank. This is however disrupted frequently by the regular power damage to IT equipment.

##### Voice Communication

The bank has deployed an ASTRA NORTEL PABX for voice exchanges. This system handles both internal and external calls. The bank is using network attached storage for its data storage needs.

##### Storage

The bank uses network attached storage for its data storage needs. Unified storage solution is highly recommended.

The **EMC VNX 5300** unified storage system delivers industry-leading innovation and enterprise capabilities for file, block, and object storage in a scalable, easy-to-use solution. This next-generation storage platform combines powerful and flexible hardware with advanced efficiency, management, and protection software to meet the demanding needs of today's enterprises.

## 4.2. Power

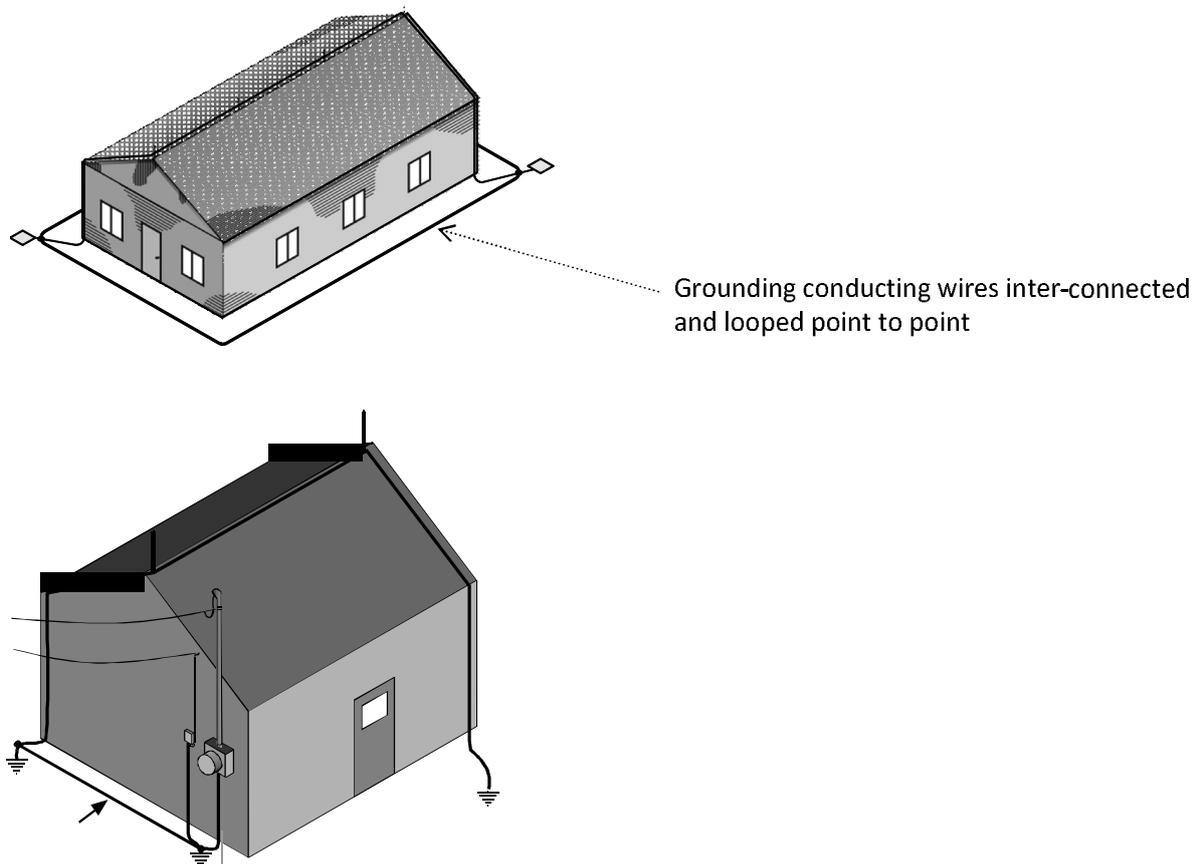
### Grounding

The grounding has been totally covered with concrete leaving no room for maintenance services. The copper tapes connecting the Lightning Arrestors on top of the building to ground have been broken at two points thus, unable to connect to ground.

This defect would decrease the conductivity of lightning spikes to ground and could cause damage to electrical devices when severe lightning strikes.

There are some abnormalities with regards to the voltages measured between the grounding and neutral in the socket outlets in the Ground Floor Server Room where the voltage between the grounding and neutral varies between 1.9 Vac and 92.5 Vac.

Below is a diagram of a typical example of Lightning Arrester and Gounder-connections.



**UPS DISTRIBUTIONS IN THE BUILDING**

The UPS distributions are as follows:

- a. There are two Eaton 11kva UPS in the two Server rooms. One in each Server room.
- b. There are two MGE 15kva UPS in the UPS Room. One supports the right wing of the building and the other supports the left wing of the building. The load percentages were 20% and 40% respectively and the output voltages measured were as below:

## 15KVA UPS 1

L1 – N = 231 Vac

L2 – N = 230 Vac

L3 – N = 230 Vac

N – E = 1.0 Vac

## 15KVA UPS 2

L1 – N = 231 Vac

L2 – N = 230 Vac

L3 – N = 231 Vac

N – E = 1.0 Vac

Socket outlets for the two 11kva UPS have been provided in both Server rooms such that the supply of each UPS can be accessed in each of the rooms. That is, the supply of the 6<sup>th</sup> floor Server room UPS can be accessed in the Ground floor Server room through socket outlets provided on the wall and vice-versa. But the user has to manually unplug the plugs and transfer them to the other socket outlets in the event malfunction of one the UPSs. The load on the two 11kva UPS were 3.5kva for the 6<sup>th</sup> Floor and 2.6kva for the Ground Floor. The output voltages measured were as follows:

Eaton 11KVA UPS (6<sup>TH</sup> FLOOR)

L – N = 229.2 Vac

L – E = 227.5 Vac

N – E = 1.9 Vac

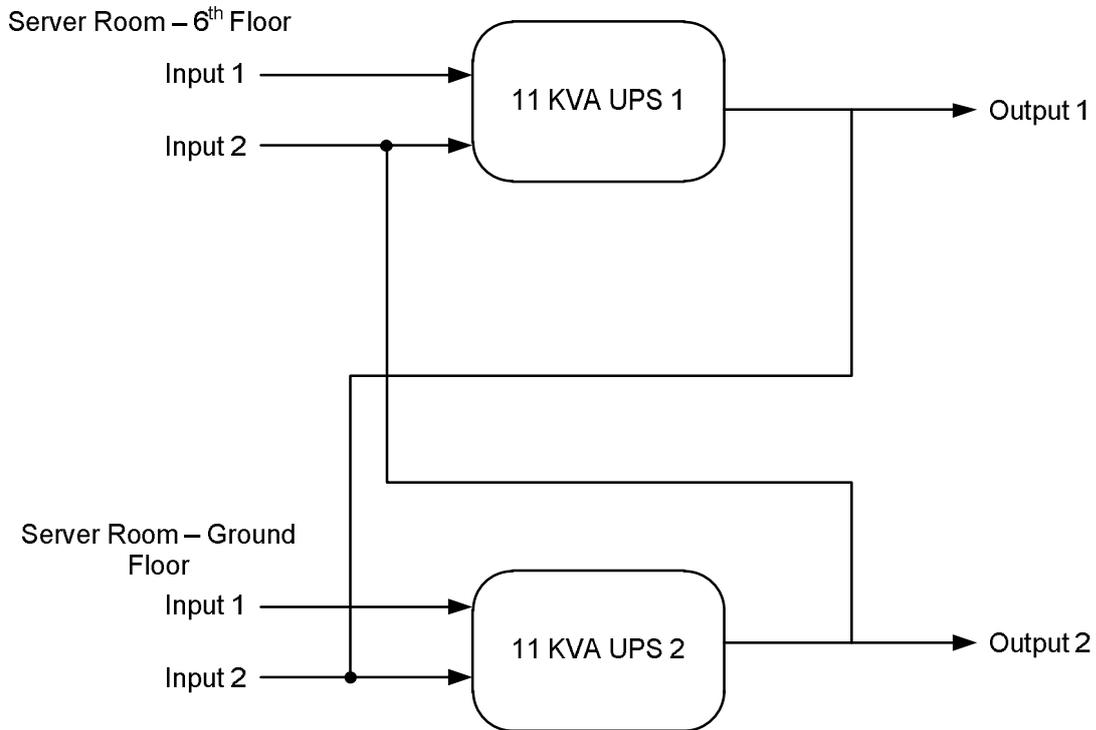
## Eaton 11KVA UPS (GROUND FLOOR)

L – N = 229.1 Vac

L – E = 227.2 Vac

N – E = 1.54 Vac

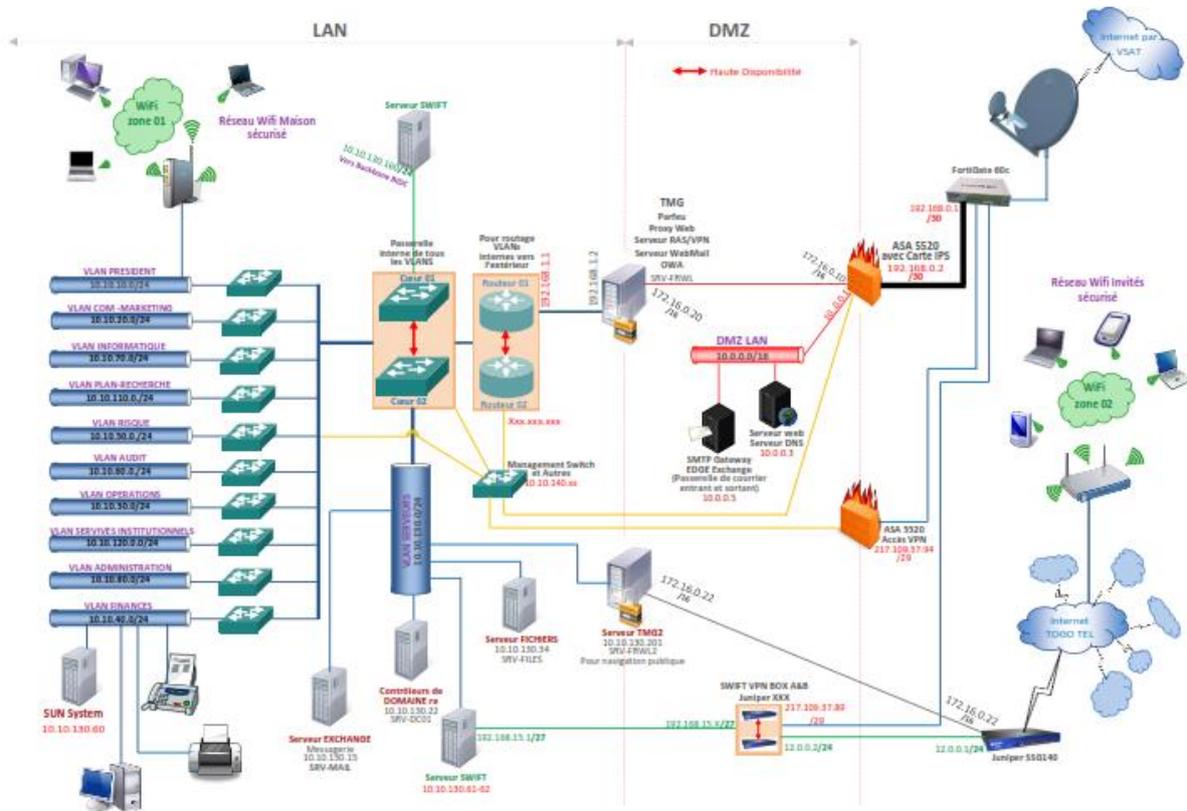
*Below is the server rooms UPS connection diagram*



**Solar Panel**

There are also two Xtender 7kva hybrid Inverters which are connected to a solar panel and mains power to support the two Server rooms. The solar panel was the primary power for the server rooms and secondary power was supplied by the electricity company through the UPS. Due to the fact that, the two 7kva hybrid Inverters have broken down and the batteries have depleted beyond revival. The battery-bank was made up of 24 pieces with a nominal voltage of 288 Vdc but now measures 4 Vdc. Average battery voltages is about 0.14 Vdc, the power from the UPS has been made primary power source for the server rooms.

EXISTING IT NETWORK DIAGRAM



### 4.3. BANKING APPLICATIONS

EBID did not have an enterprise level Banking Application for fund management and general banking operations.

## 5. RECOMMENDATIONS

### 5.1. IT Infrastructure

- **Raised floor:** We recommend that a raised floor (false floor) should be built in order to achieve better cable management.
- **CCTV:** This is important to provide security for the IT systems. Closed Circuit Television is a closed video system where viewing of the video is restricted to a specific group of individuals. It is mostly used for security, safety purposes. The visual images created by a CCTV system may be viewed while an event is happening or recorded for 'after-the-fact' review either on-site or off-site. CCTV is a visual surveillance technology designed for monitoring a variety of environments and activities all at the same time. CCTV systems typically involve a dedicated communications link between cameras in the field and monitors at one or more control centers. CCTV systems may provide real-time, time-lapse, event, or digitally recorded surveillance information to help in detecting, responding to, investigating and providing evidence for security, safety and related incidents.
- **Biometric access control:** - Biometric access control refers to a specific example of access control, which is the business of authorizing personnel to enter a closed quarters or gain access to a restricted object. Biometric access control is the science and technology of the business as it relates to analyzing biological data as a means to control access. Biometric access control features can measure various human characteristics like a person's fingerprint their eye retinas and irises, their vocal patterns, facial shapes and hand measurements.

Biometric access control is very effective at promoting security within professional companies, as it would be anywhere from extremely difficult to impossible to fake a biological imprint.

We highly recommend that a biometric access control system should be considered to upgrade the current access cards.

- **Fire Suppression System:** - The purpose of a fire suppression system is to either put out a fire or stop it from propagating. These systems are often used together with fire alarms and smoke or heat detectors to safeguard people and physical structures. The three main fire suppression system categories use water, inert gases, or various chemical agents to suppress a fire. These systems can also be automatic or manual, depending on whether they require outside intervention to activate. Some fire suppression systems can be hazardous to anyone in the general vicinity, including the danger of asphyxiation associated with pumping inert gases into an area to starve a fire of oxygen.

Data room's fire suppression involves filling an area with inert gas. Since fires require oxygen to burn, this can have a smothering effect. These fire suppression systems are commonly used in sensitive areas where water could potentially damage items such as computer equipment or documents. Computer server rooms are one area where inert gas, such as argon, is often used to suppress fires.

Inert gas can suppress a fire without damaging electronics or other equipment, but it can also pose other health and safety hazards. In some cases, an inert gas fire suppression system can lead to asphyxiation. Most of these systems come equipped with alarms to warn personnel to leave the area before the gas is released.

We therefore recommend a fire suppression system for the server rooms.

**For the DR site in Nigeria:** We recommend two links; one primary via IPLC (international private leased circuit), and the second via Vsat. IPLC is a point-to-point private fiber line used by an organization to communicate between offices that are geographically dispersed throughout the world.

- **Virtualization:** More servers will need to be purchased in order to avoid the mess of equipment lying on the floor in the equipment rooms.

A good virtual infrastructure will enable sharing of the bank's physical resources by multiple machines across the entire infrastructure. A virtual machine for instance will allow EBID IT System users to share the resources of a single physical computer across multiple virtual machines for maximum efficiency. This technology also enables significant saving of power and space. Resource optimization drives greater flexibility in the organization and results in lower capital and operational costs. Virtual infrastructure gives the network administrator the advantage of managing pooled resources across the enterprise, allowing him to be more responsive to dynamic organizational needs and to better leverage infrastructure investments.

- **Messaging system:** We recommend that outlook web access should be implemented to enable users to access their mails remotely.
- **Backup Solution:** The current backup solution needs to be improved. The bank should look into deploying EMC storage and tape backup system.
- **Microsoft:** The existing Microsoft environment must be migrated from 2008 to 2012.

#### 5.1.1 Disaster Recovery Site (DR)

EBID did not have a Disaster Recovery site located outside the bank. However, there is a secondary infrastructure located within the building. We were informed that EBID has plans to setup a disaster recovery site in Nigeria. We will highly recommend the implementation of the Disaster Recovery site.

DR is a plan for business continuity in the event of a disaster that destroys part or all of a business's resources, including IT equipment, data records and the physical space of an organization.

## 5.2 Power

- We recommend that an inspection/maintenance pit (The location where the earth rod is buried in the ground) be created for servicing of the grounding and testing.
- The grounding conductivity conductor should be looped and connected such that they are linked to one another from point to point.
- All the grounding conducting wires should be inter-connected and looped to one another to ensure even neutral to grounding, potential at all points.
- As a first step towards revamping the Inverters, the batteries should be replaced to enable diagnostics carried out.
- Due to voltage fluctuation which occasionally causes the UPS to go to battery-mode operation and consequently causing the batteries to discharge, we propose two 20KVA Automatic Voltage Regulators be installed to stabilize the input voltage to the two 15kva UPS.  
We also propose two 15KVA Automatic Voltage Regulators to be installed to support the two 11kva UPS.
- The two 11kva UPS can be connected such that the output of the 11kva UPS 1 will become the second input of 11kva UPS 2 and the 11kva UPS 2 output will become the second input of 11kva UPS 1. The advantage of this integral connection will enhance performance and efficiency and also there would no human intervention since the systems will transfer power to one another automatically in the event of one failing.

### 5.3 Banking Applications

The current situation of no installed banking application is not sustainable for an institution as important as EBID. The bank will require a robust banking application with ‘Bank to Bank’ and ‘Bank to Customer’ fund management capabilities.

Oracle FLEXCUBE is the preferred core banking information system for most of the major banks worldwide. It is the preferred platform and has been deployed by more than 800 customers in more than 130 countries. FLEXCUBE is comprehensive, integrated, and modular, which allows for scaling and deployment of specific required components; e.g. The Fund Management Component.

FLEXCUBE is built on SOA principles and allows ease of integration with existing systems using flexible Java platform. Its robust technical architecture allows banks to meet rigorous scalability and availability demands while seamlessly integrating multiple channels and ancillary programs to create an end-to-end process framework.

FLEXCUBE architecture allows banks to speed up the launch of new products. It reduces the need to devote resources to deployment and support by bringing in functionalities for multiple countries, entities, branches, currencies or time zones, along with ability to deliver a high degree of straight through processing with end-to-end support for the payments lifecycle.

## Oracle FLEXCUBE Delivers **Value** Across the Bank

Customer	Banker	Operation Staff	IT Staff
<ul style="list-style-type: none"> <li>• SUPERIOR WEB EXPERIENCE</li> <li>• PERSONALIZED SUPPORT &amp; SERVICE</li> <li>• POWER TO BANK ON YOUR OWN</li> <li>• ONLINE ASSISTANCE WHEN NEEDED</li> <li>• ANYTIME, ANYWHERE ACCESS</li> </ul>	<ul style="list-style-type: none"> <li>• IMPROVED KNOWLEDGE WORKER PRODUCTIVITY</li> <li>• INCREASED CROSS-SELL &amp; UP-SELL</li> <li>• CREATES CUSTOMER CENTRICITY</li> <li>• SINGLE VERSION OF TRUTH ACROSS THE BANK</li> <li>• ONE-STOP-SOLUTION FOR ALL BANKING NEEDS</li> </ul>	<ul style="list-style-type: none"> <li>• ON-TRACK PERFORMANCE</li> <li>• ENHANCED RISK MANAGEMENT</li> <li>• COMPLIANT PROCESSES &amp; SYSTEMS</li> <li>• TIGHTER OPERATIONAL CONTROLS</li> <li>• COMPREHENSIVE REPORTING &amp; REGULATION</li> </ul>	<ul style="list-style-type: none"> <li>• EASY TO CHANGE</li> <li>• EASY TO TEST</li> <li>• EASY TO DEPLOY</li> <li>• FASTER TIME TO MARKET</li> <li>• HIGHLY SCALABLE</li> <li>• SUPERIOR PERFORMANCE</li> <li>• SECURE BANKING</li> </ul>

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## In-Built Intelligence Drives the Knowledge Worker and helps improve productivity

**Intelligent & Proactive Dashboards**  
Integrate Key Data that Empower Knowledge Worker for Alerts & Reminders

**Maturing loans**

**Business Opportunities**

**Top Pending Items**

**Bulletin Board**

**Oracle**

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## Alerts & Reminders Improve Productivity

**Alerts on:**

- Changes
- Alerts Enabled
- Watch List
- Reminder
- Priority
- Complete
- And many

**Alerts on:**

Customer Id	Account No	Account Class	Maturity Date	Currency
029004227	0290000000013	TDA2	2012-11-01	GBP
029004227	0290000000014	TDA2	2012-11-01	GBP
029004227	0290000000015	TDA2	2012-11-01	GBP
029004227	0290000000016	TDA2	2012-11-01	GBP
029004227	0290000000017	TDA2	2012-11-01	GBP

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## Customer 360° Dashboards Give a Holistic Insight into the Retail and Corporate Customer Portfolio

The dashboard provides a comprehensive view of customer data, including appointments, portfolio deviations, pending tasks, and alerts. Key features highlighted include:

- View appointments**: A table listing customer appointments with columns for Name, Date, Time, and Description.
- View customers due for profile review**: A table showing the next review date and the review date for various customers.
- Quick link buttons for reports**: A set of buttons for accessing different reports.
- View Inactive Customers**: A table listing inactive customers with their last transaction date.
- Track portfolio deviations**: A table comparing recommended vs. actual portfolio allocations across different asset types.
- Access research recommendations**: A section for viewing research recommendations for different risk scores.
- Manage Customer Service Requests**: A table of pending tasks with details on the request and the date it was made.
- Get Notifications**: A section for alerts, including system and portfolio alerts.

Name	Date	Time	Description
David Smith	12/01	10:30am	Review Meeting
Buddy Black	12/01	11:45am	Funds to Invest
Joe Blogg	13/01	01:00pm	Ref from David
David Brown	13/01	10:30am	Fidelity Global

Name	Review Date
David Smith	30/01/2010
Buddy Black	30/01/2010
Simon Hanks	30/01/2010
David Brown	30/01/2010
David Jones	31/01/2010
Steve Wauzsh	31/01/2010
Mark Lee	31/01/2010

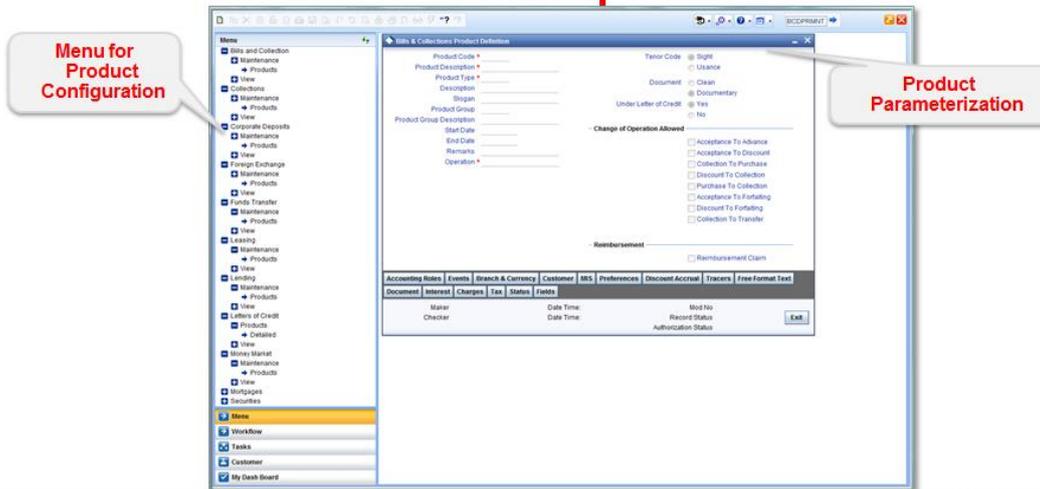
Customer Name	Type	Deviations Recommended	Actual	% Difference
David Smith	Equity	50.00%	73.72%	▲ 23.72%
Buddy Black	Debt	30.00%	40.00%	▲ 10.00%
Simon Hanks	Cash	20.00%	22.00%	▲ 02.00%
David Brown	Real Estate	50.00%	45.00%	▼ -05.00%
David Jones	Equity	80.00%	50.00%	▼ -30.00%

Customer Name	Interaction ID	Task Details	Date	Made
David Smith	123334	Has not received the latest statement	10/01/2010	Phone
Buddy Black	123335	Requested for latest MF recommendations	10/01/2010	Phone
Simon Hanks	123336	Review of Portfolio requested	10/01/2010	Fax
David Smith	123337	Wants a new review done as he is not happy with...	14/01/2010	Phone

Risk Score	Instrument Name
Conservative	Reliance Equity Advantage Fund
	MFDC Top 200 Fund
Aggressive	Reliance Growth Fund
	MFDC MidCap

Customer Name	Alerts
David Smith	Phone call will be made on 7th January
George Mathew	Cash balance is low has exceeded by...
Robert Redford	Birthday on 20th January 2010

## Centralized Product Processing & Configuration Enables Banks to Centralize Operations



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## Comprehensive Functionalities Provide End-to-end Servicing Capabilities to the Banks

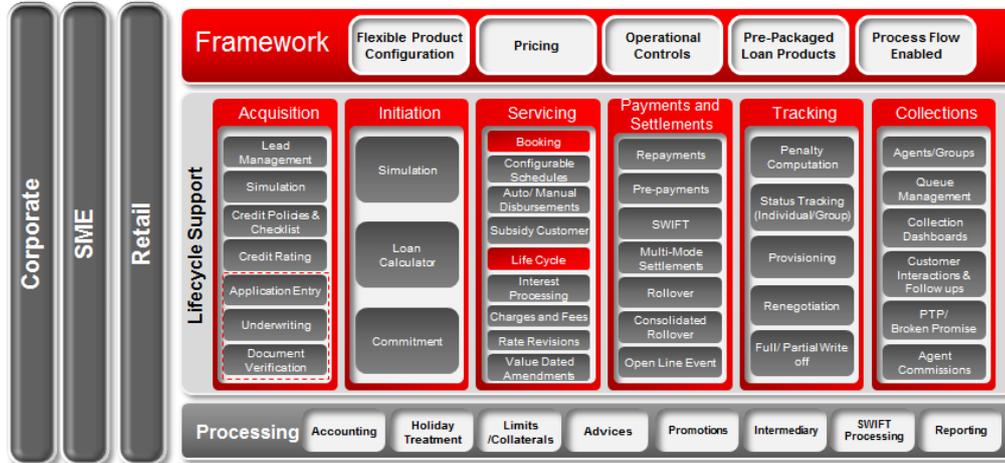


- End-to-end servicing capabilities across all business functions
- Provides customers a one-stop-solution for their conventional, as well as complex products/ services requirements, which helps in improving revenue-per-customer

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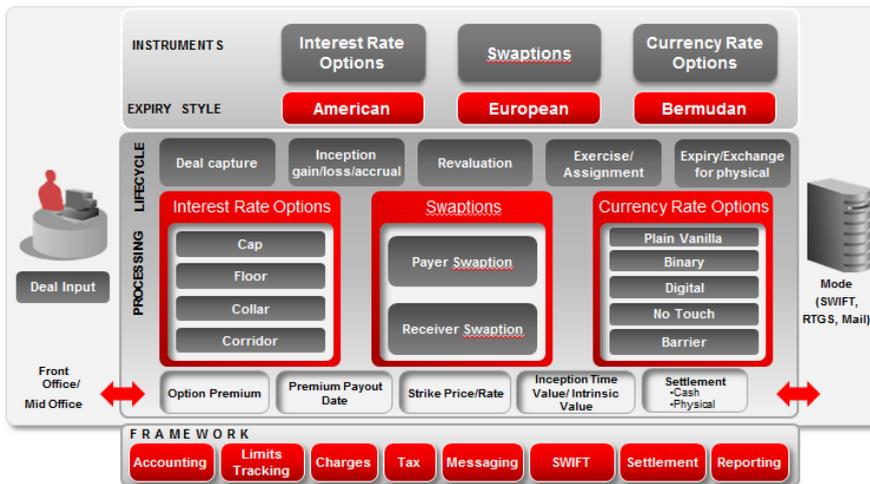
# Lending

Complete Support for the entire life cycle



# Treasury

OTC - Options

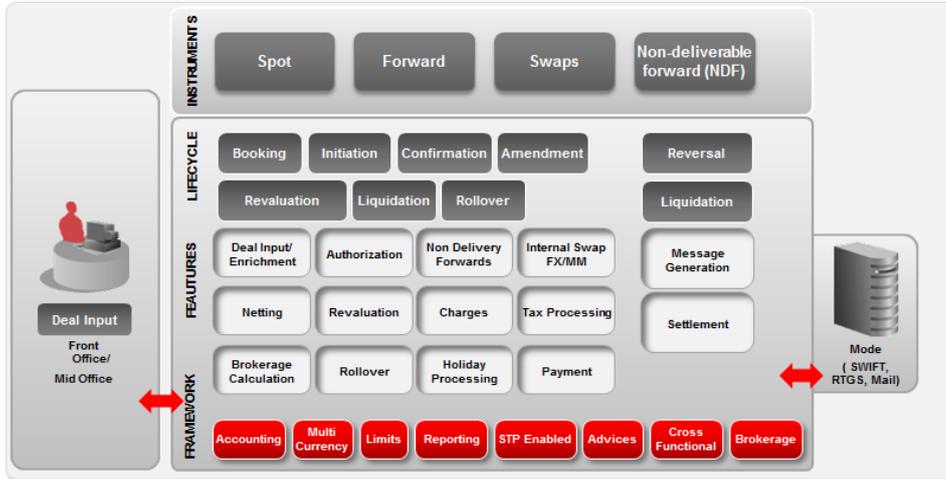


# Treasury

## Foreign Exchange

Product Processor: Lending, Deposits, Treasury, Trade Finance, Payments

Product Configurator

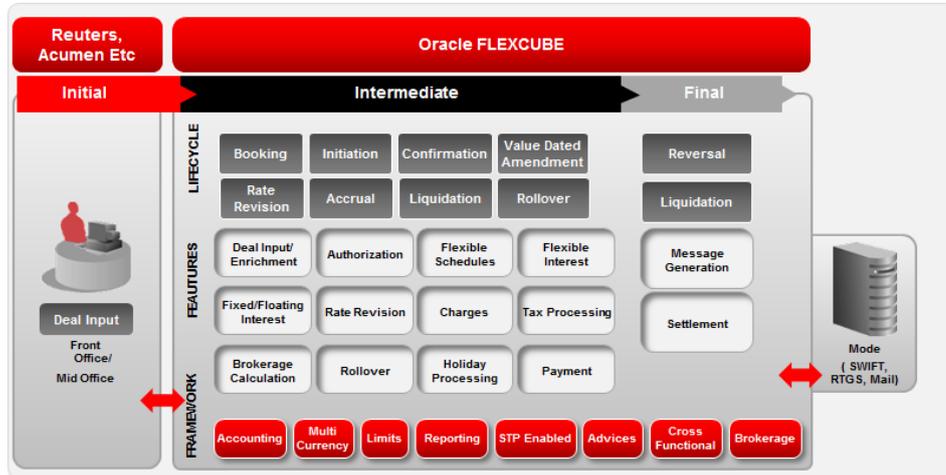


# Treasury

## Money Markets

Product Processor: Lending, Deposits, Treasury, Trade Finance, Payments

Product Configurator



Treasury

## Securities

Product Processor
Lending
Deposits
Treasury
Trade Finance
Payments

Product Configurator
Lending
Deposits
Treasury
Trade Finance
Payments

The dashboard is divided into several functional areas:

- Deal processing:** A flow from Book to Settlement, including Confirm, Amend, Reverse, Extend, Reassign, Cancel, Release, and Settlement.
- Portfolio Processing:** A central table with columns for Bank, Customer, and Issuer. Each column lists various processing steps like Position/Holding, Revaluation, Costing, Accrual Processing, Accounting, and Deal.
- Corporate actions:** Includes Coupon Processing, Dividend Processing, Rights, Warrants, and Redemption.
- Framework:** Includes Limits Tracking, Accounting, Messaging, SWIFT, Settlement, Reporting, and Brokerage/Charges.
- Deal flow:** Includes Stock Exchange, Deal flow, Deal Input, Front Office, and Mid Office.
- Clearing & Settlement:** Includes Mode (SWIFT, RTGS, Mail).

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Trade Finance

## Trade Finance

Product Processor
Lending
Deposits
Treasury
Trade Finance
Payments

Product Configurator
Lending
Deposits
Treasury
Trade Finance
Payments

Instruments Types

- Import / Export
- Revolving / Non Revolving
- Clean
- Open Ended
- Back to Back
- Standby

A central black signpost with four white directional signs: 'Letters Of Credit' (top-left), 'Bills & Collections' (top-right), 'Financing & Hedging' (bottom-left), and 'Guarantee & Shipping Guarantee' (bottom-right).

Instruments Types

- Incoming/ Outgoing
- Usance / Sight
- Documentary
- Clean
- Under LC
- Not under LC

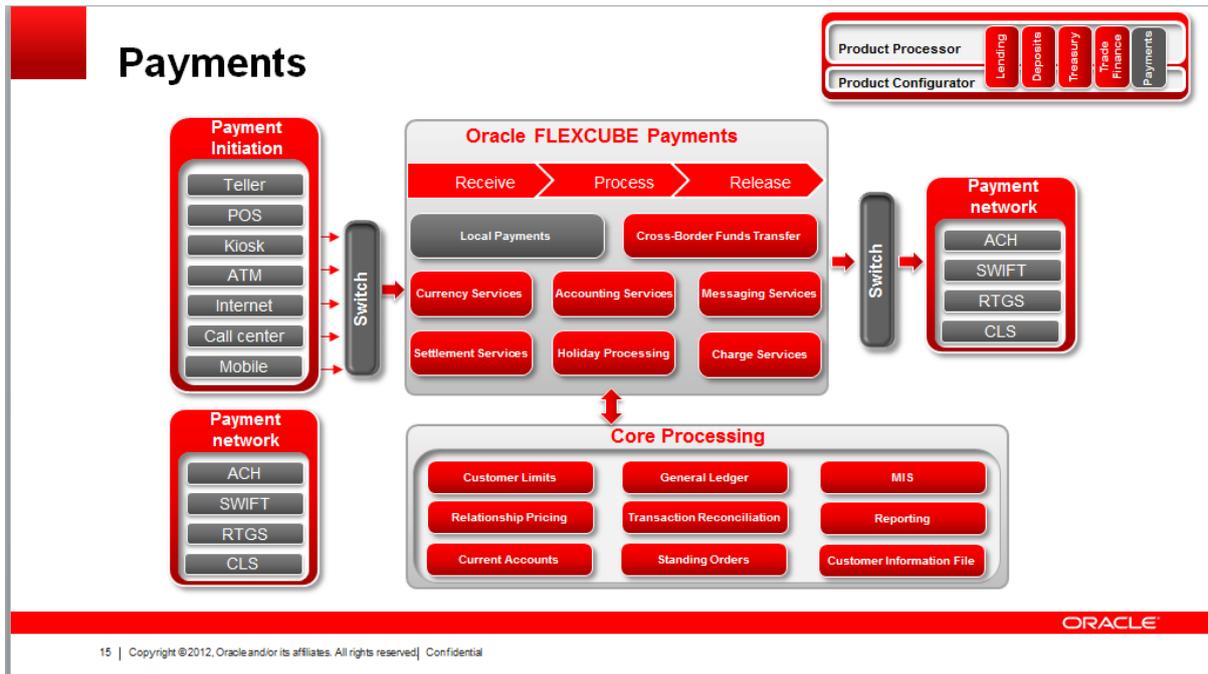
Financing & Hedging Services

- Pre Shipment
- Post Shipment
- Buyers credit
- Trust Receipts
- Adhoc finance
- Hedging - Bill Linkage to FX Deal

Guarantee

- Facility to issue
- Shipping Guarantee with linkage to LC and Bills

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## Superior **Operational Controls** for Enhanced Productivity, Control and Insight

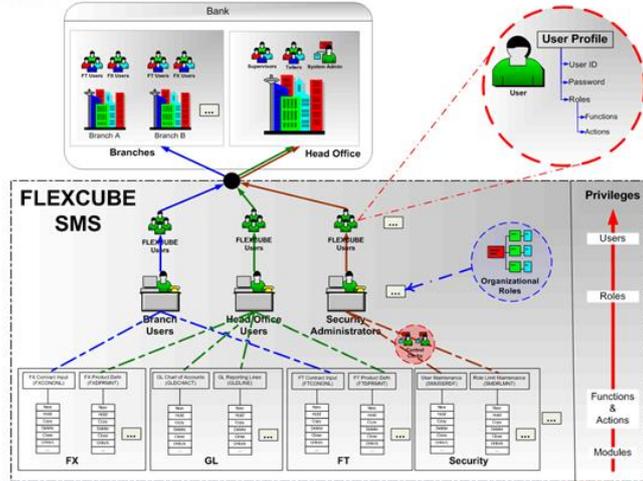
- Identity and Access Rights
- Multi-level Maker and Checker - for effective controls
- Transactional Limits by Channel, by Branch and by User defined for Online and Offline processing
- Rule base Decision Making
- Centralized Limits & Collateral Management
- Inventory Management
- Enhanced loan servicing
- Enhanced deposit servicing
- Customized hot keys and short cuts
- Enhanced retail enquiry

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## Comprehensive Security Capability for Managing User Access and Operations

### Key Benefits

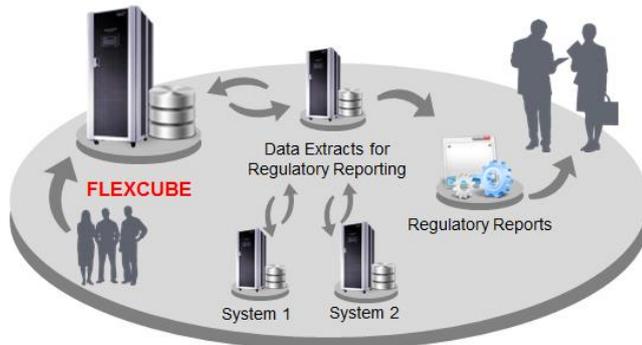
- Context sensitive application menu based on user profile and role definition, e.g.:
  - Module Access
  - Function Access
  - Actions within a Function (Example – New, Copy, Delete etc)
- Centralized user administration enhances control and IT efficiency
- Enhanced security by virtue of Password Restrictions, user expiry and user disablement
- Enhanced operational control by virtue of Product Restrictions, transaction limits, branch access and menu access

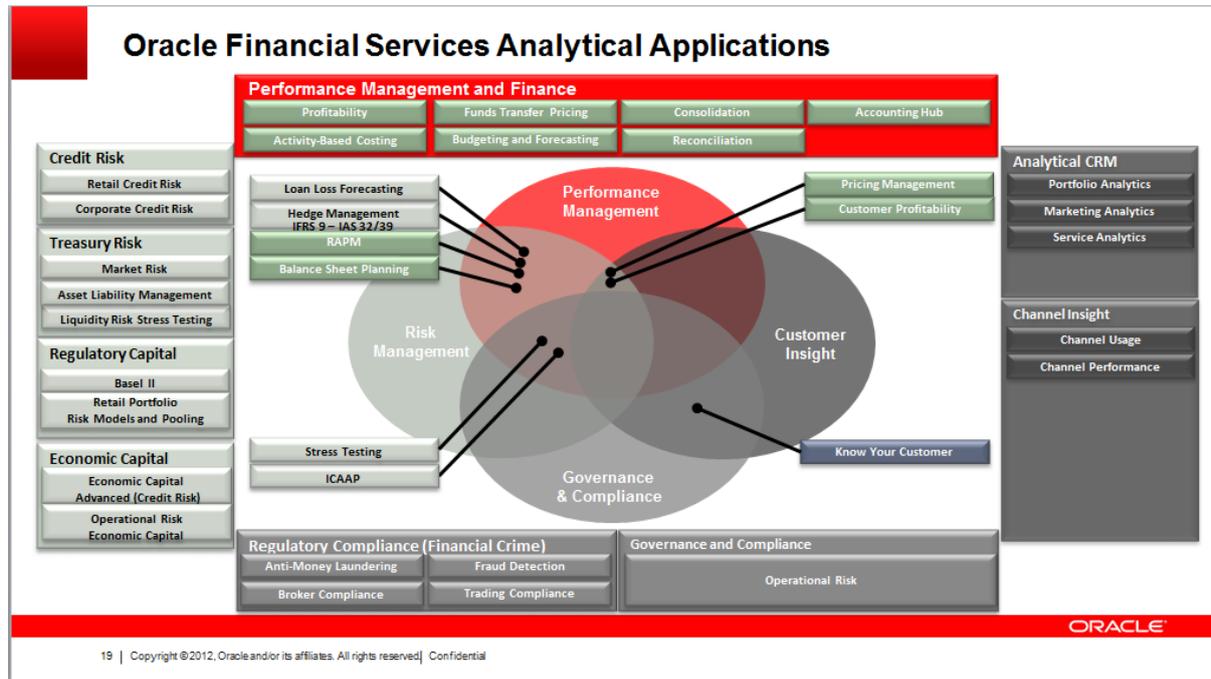


## Addresses Multi-Regulatory Reporting Requirements

### Key Benefits

- Comprehensive capture of standard data fields & regulatory specific information
- Data extracts to third party regulatory reporting systems, Proprietary Data warehouse Systems





## Addresses All Major Aspects of IT Security

- Address all aspects of security, both at the transmission and application levels
- Application security and control features, including comprehensive auditing
- Selective transaction blackout in mobile channel
- Audit log to trace transaction flow
- Customer access control
- Authentication using existing Internet Banking application credentials

**Out of the Box Integration with**  
Oracle Adaptive Access Manager

Integration Experience With 3<sup>rd</sup> Party Solutions







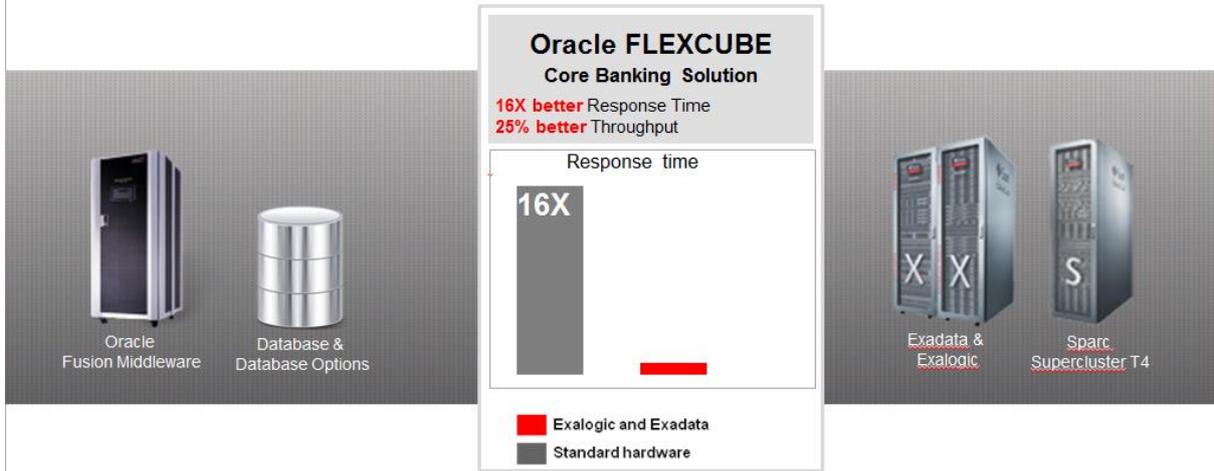
The Security Division of EMC



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## Infrastructure for Superior Performance

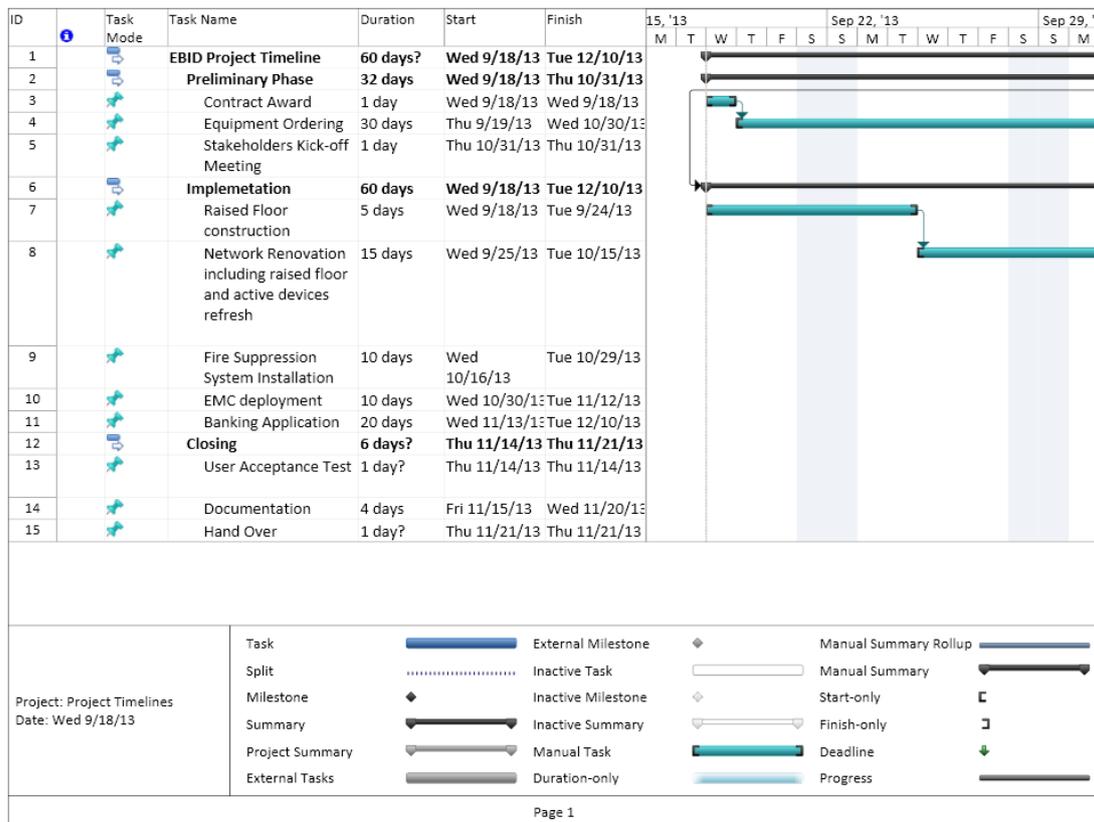


**6. COMMENTS**

The recommendations made in this report are to improve and enhance the quality and stability of IT Infrastructure and Electrical Power to achieve for maximum effectiveness and security of EBID’s operations. The OSTEC team’s primary aim is to work closely with the EBID IT Staff to put in place a well-structured IT and electrical environment.

**6.1.1 Estimated Cost and Project Plan**

Description	Amount (USD)
<b>Banking Application</b>	
Hardware	1,700,000.00
Oracle Software	1,170,000.00
<b>EMC Storage</b>	370,000.00
<b>Network Renovation including raised floor and active devices refresh</b>	300,000.00
<b>Power including Solar panel, batteries and Invertors</b>	180,000.00
<b>IPLC link to DR site</b>	20,000.00
<b>Vsat Link to DR site</b>	16,000.00
<b>Fire Suppression system</b>	200,000.00
<b>Installation and setup</b>	250,000.00
<b>Transportation and Logistic</b>	50,000.00
<b>SubTotal \$</b>	4,256,000.00
VAT 15%	638,400.00
<b>Total \$</b>	4,894,400.00



**Document Distribution**

Name	Organization	Role
Carla Denizard	Lead Africa	Lead Africa Project Manager

## 7. ACRONYMS

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<b>EBID</b>	Ecowas Bank for Investment and Development
<b>OS</b>	Operating System
<b>DC</b>	Domain Controller
<b>DNS</b>	Domain Name System
<b>TMG</b>	Threat Management Gateway
<b>SAN</b>	Storage Area network
<b>EIGPR</b>	Enhanced Interior Gateway Routing Protocol
<b>DUAL</b>	Diffusing Update Algorithm
<b>DR</b>	Disaster Recovery
<b>UPS</b>	Uninterruptable Power Supply
<b>VSAT</b>	Very Small Aperture Terminal
<b>ADSL</b>	Asymmetric Digital Subscriber Line
<b>IPLC</b>	International Private Leased Circuit
<b>ITIL</b>	IT Information Library

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