



Matadi fixes network issues with both **CACHEBOX** and **DNSBOX**

Challenge

- Matadi relied on two separate ISPs to provide a modest bandwidth capacity
- Large software updates congested the network, causing slow internet access
- High latency made DNS lookup times 10 – 14 times slower than average

Solution

- **CACHEBOX110** deployed to serve software updates at LAN speeds and free up the company's bandwidth capacity
- **DNSBOX020** also deployed to speed up critical DNS service

Benefit

- Eighty-three percent of Windows operating software updates now served from **CACHEBOX**
- **CACHEBOX** now serves, on average, over 65% of all online content locally, freeing up bandwidth capacity
- **DNSBOX** has slashed load times by 95% making the network considerably more responsive

About Matadi Gateway Terminal

Matadi Gateway Terminal (MGT) is a container and general cargo terminal in Mbengu Matadi in the Democratic Republic of the Congo (DRC). It is operated by the International Container Terminal Services, Inc. (ICTSI) and is a state-of-the-art facility designed to handle containerised cargo. Strategically located on the Congo River, it provides direct access to the Atlantic Ocean, making it an important gateway for international trade in the Democratic Republic of the Congo and neighbouring countries.

Initially set up in June 2016, the addition of a second 175-metre berth added later in the same year brought the site's overall capacity to 700,000 tonnes or 350,000 TEU (twenty-foot equivalent unit), putting it in the top 20 cargo port terminals in the entire African continent based on throughput volume.

Low internet capacity negatively impacting business activities

When Charles Nfuni, an experienced IT infrastructure specialist, took over the role of IT Manager at the port, he quickly realised that the facility's inadequate internet was negatively impacting the ability of the site's staff to access critical online resources and connect with relevant stakeholders. Webpages either loaded painfully slowly or failed to load at all and communication applications such as Skype or Zoom were often unusable, which left staff with email as the only reliable way of contacting off-site partners.

Neither of the port's two internet connections were sufficient to meet its users' needs and this multi-link approach made troubleshooting simple connectivity issues complex and time consuming. Alongside this, the network's modest bandwidth was routinely congested with Windows, Apple and Google operating software updates, needed to keep the site's cutting-edge computer system up and running.

Although a bandwidth upgrade would help resolve these issues, Mr Nfuni knew that this solution could be incredibly expensive. Hoping to avoid spending a huge sum of money, he turned to a solution that he had already used in his previous job as Head of Business Support at another ISP called Millicom – **CACHEBOX**.

Easy-to-deploy solutions that immediately improve internet speeds

Having already used **CACHEBOX**, Mr Nfuni knew that this on-site, appliance solution could quickly and easily relieve pressure on the business's struggling bandwidth connection. A cache stores copies of requested webpages and files the first time they are downloaded and serves any subsequent requests directly from the cache's storage at LAN speeds. This immediately reduces the amount of data being sent via the internet connection and frees up valuable capacity for important business-related activities – all without spending money on a bandwidth upgrade.



I'm very happy with the products as they have saved bandwidth and improved internet speeds.



Charles Nfuni
IT Infrastructure Specialist

CACHEBOX has more than doubled available internet capacity

With **CACHEBOX** deployed on the network, Matadi Gateway Terminal has seen a massive reduction in overall bandwidth usage. On average, its cache device reliably serves between 60 – 70% of all traffic that was previously sent via the internet connection. This has vastly improved its connectivity and has saved the company the expense of a bandwidth upgrade. With more available internet capacity, MGT's staff have a dependable connection that can handle even the most intensive business activities, such as online group meetings, attending online training courses and updating application software. The solution has proven itself to be easy to deploy, cost effective and has dramatically improved load times - transforming the overall user experience.

High DNS latency made the network even slower

Unfortunately, Matadi Gateway Terminal's computer-networking issues did not stop there. The entire system was suffering from high DNS latency, meaning staff and guests had to wait a long time for data packets sent from and requested by the network to be properly processed; this often led to a painfully slow network that was having a direct impact of the ability of staff to carry out routine tasks.

That is why a year after deploying **CACHEBOX**, Mr Nfuni inquired about another ApplianSys product during a routine network overview with the ApplianSys Support Team: **DNSBOX**.

The ApplianSys Support Team investigated the company's DNS statistics to find that DNS requests were taking 10 – 14 times longer to resolve than the average resolve time of 0.5 seconds. This meant MGT staff had to wait between 5 – 7 seconds every time they wanted to load a new webpage.

DNSBOX is a recursive resolver (DNS cache); it is responsible for resolving domain names into IP addresses. When MGT's staff search for a webpage, **DNSBOX** stores the webpage's IP address meaning that all subsequent internet searches for the same site can be resolved at LAN speed. As well as supporting forward zones, it also offers global forwarding, the process of forwarding network traffic between different networks or subnets across the internet.

Alongside caching, **DNSBOX** is also working to speed up Matadi's internet load times. Now, instead of users having to wait up to seven seconds to carry out a simple Google search, they are seeing requests resolved between 0.2 – 0.4 seconds. The device's dedicated resolvers and specialist DNS-caching equipment has brought down the wait times by an average of 95%.

This, coupled with the devices solid-state storage and high availability options for recursive DNS has made MGT's network more responsive and reliable, helping to ensure the uptime of its critical internet infrastructure.

A faster, more reliable and more responsive internet connection for MGT

CACHEBOX has solved the problem of bandwidth-intensive operating software updates overnight. Data-heavy files such as operating software updates are ideal for **CACHEBOX** because not only can they be served to every individual network user without using the internet connection, **CACHEBOX** allows network administrators to schedule downloads at convenient, off-peak times when the network is not being used. This allows MGT to organise their network activity in advance and means critical, online meetings can be reliably conducted with off-site stakeholders on bandwidth-intensive applications, such as Skype.

Listed below are the bandwidth-saving statistics for **CACHEBOX** taken in February and March 2023:

CACHEBOX March 2023 - Overall 155 GB of 241 GB = 64%

Domain	Byte Volume	Byte Hit	Byte-Hit Ratio
Msfncsi.com	13.0 MB	12.8 MB	99%
Vidfree.com	20.3 MB	20.1 MB	99%
Clientservices.googleapis.com	96.4 MB	86.9 MB	90%
Microsoft.com	200 GB	175 GB	87%
Windowsupdate.com	13.1 GB	9.28 GB	71%

CACHEBOX February 2023 - Overall 192 GB of 286 GB = 67%

Domain	Byte Volume	Byte Hit	Byte-Hit Ratio
Cdn-apple.com	37.9 MB	37.9 MB	100%
Msfncsi.com	16.2 MB	16.2 MB	100%
Microsoft.com	186 GB	163 GB	88%
Gvt1.com	17.8 GB	11.1 GB	67%
Windowsupdate.com	13.0 MB	8.75 GB	62%

"I'm very happy with the products as they have saved bandwidth and improved internet speeds", explains Mr Nfuni, "since deploying **CACHEBOX** and **DNSBOX**, we no longer receive complaints about internet latency. We've had no issues and the devices run very well."