

Etisalat DNS


Internet Core Services

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Manager/ Internet Core Services

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Outline

1. Introduction
 2. DNS setup (1996 - 2015)
 3. Challenges
 4. DNS Modernization Plan (2015 – 2017)
 5. Performance Indicators
 6. Future Plan
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Introduction

About Etisalat

- Etisalat is the Middle East's leading telecommunications operator and one of the largest corporations in the six Arab countries of the Gulf Cooperation Council (GCC). We're a multinational, blue-chip organization, operating in 19 countries in the Middle East, Africa and Asia.
- For 40 years, we've helped the UAE sustain a position as the region's main hub for business, trade and foreign investment by providing exceptional and reliable services to our customers.
- From 1976 we have built a world class telecom infrastructure and established ourselves as a technology leader, continuing to expand our reach not only through innovative services for our UAE customer base but through our ever growing international markets.



Consumer and Business Services

- E-Life Home Entertainment
- Mobile (Post Paid, Prepaid, visitor)
- IPTV
- Fixed voice
- Business solutions (Cloud solutions, Messaging, Managed services, Hosting).
- Mobile devices
- More



DNS setup (1996-2015)

Year 1996

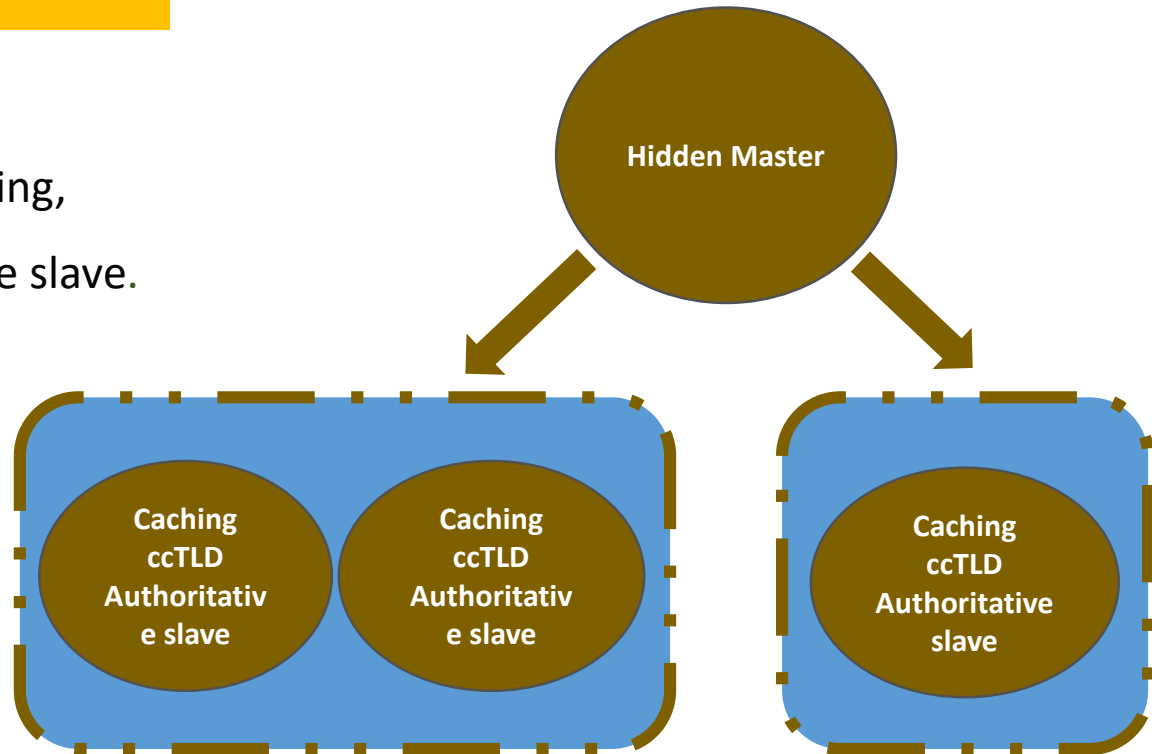
- 1 server
- .ae CCTLD zone
- Customer Zones
- Recursion/Caching Enabled



Caching
ccTLD
Authoritative
slave

Year 1999

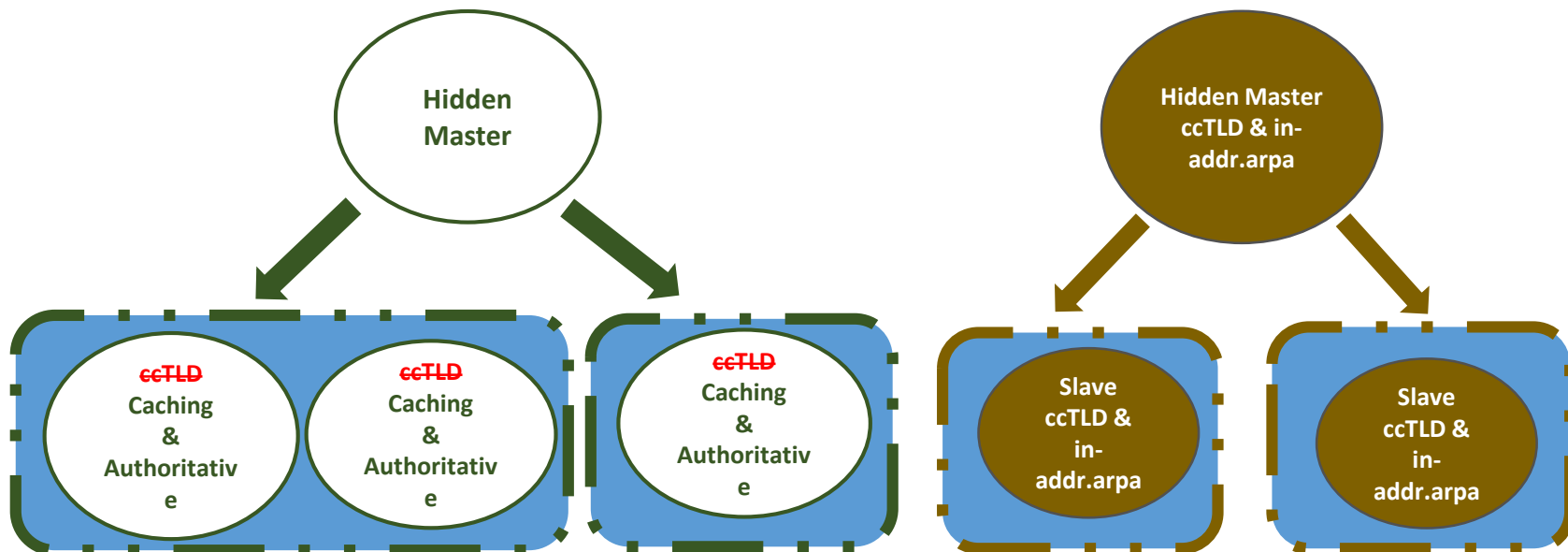
- 1 hidden master
- 2 DXB , 1 AUH for Caching, ccTLD and Authoritative slave.



DNS setup (1996-2015)

Year 2001

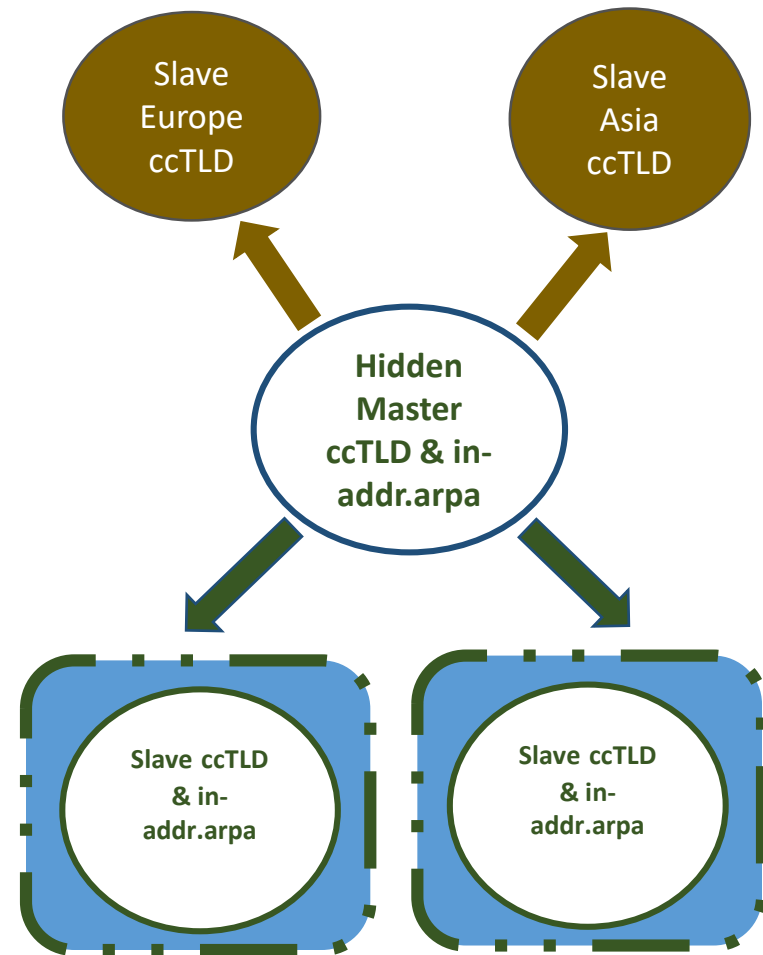
- Separated ccTLD .ae from Caching & Authoritative to new setup.
- Master + 2 slaves for .AE
- Reverse zones from RIPE in new setup.



DNS setup (1996-2015)

Year 2002

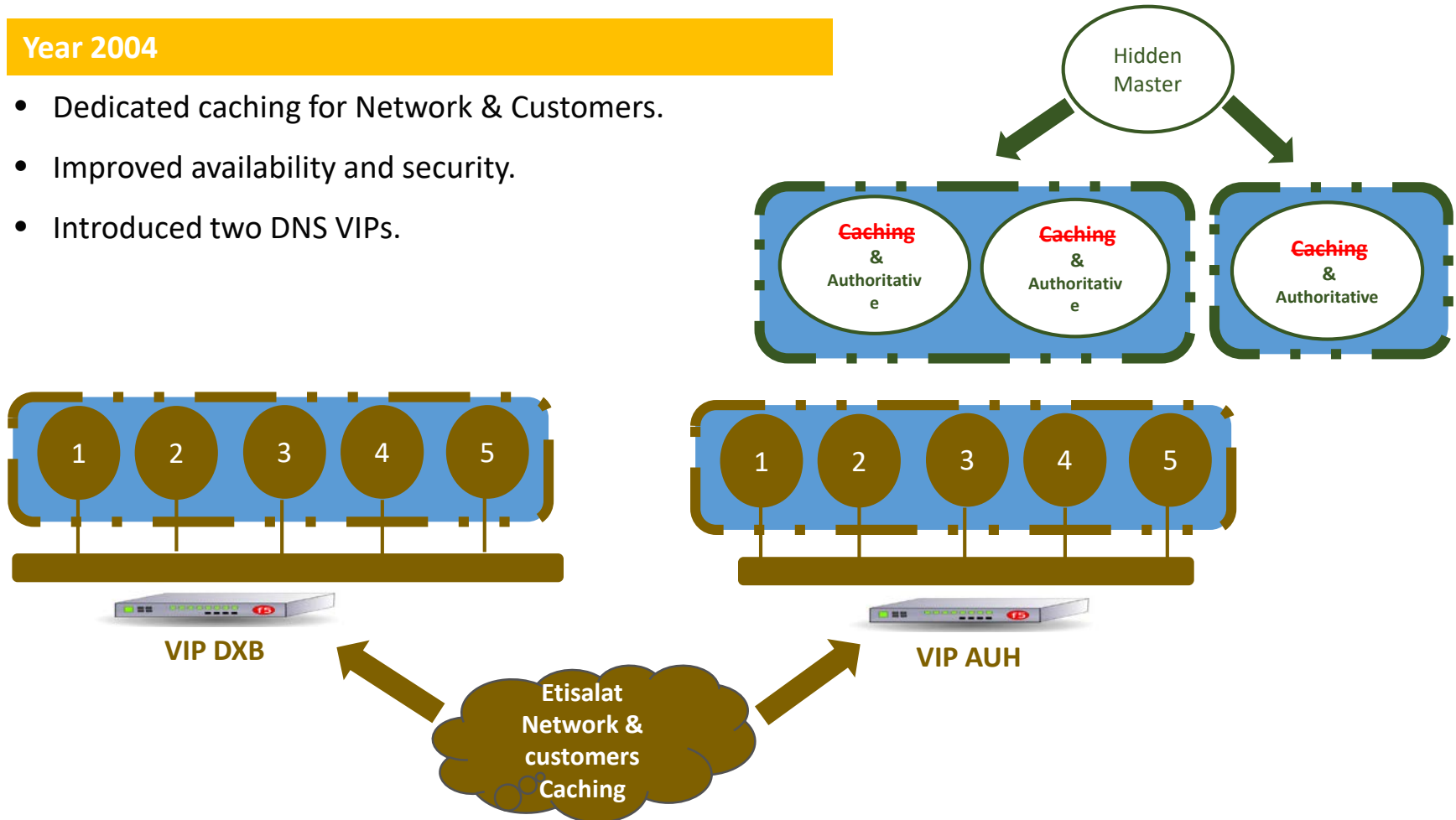
- Secondary agreement with ISC, RIPE, APNIC for ccTLD .ae
- Geographical distribution (1 Europe & 1 Asia pacific).
- Anycasted .ae ccTLD Service.



DNS setup (1996-2015)

Year 2004

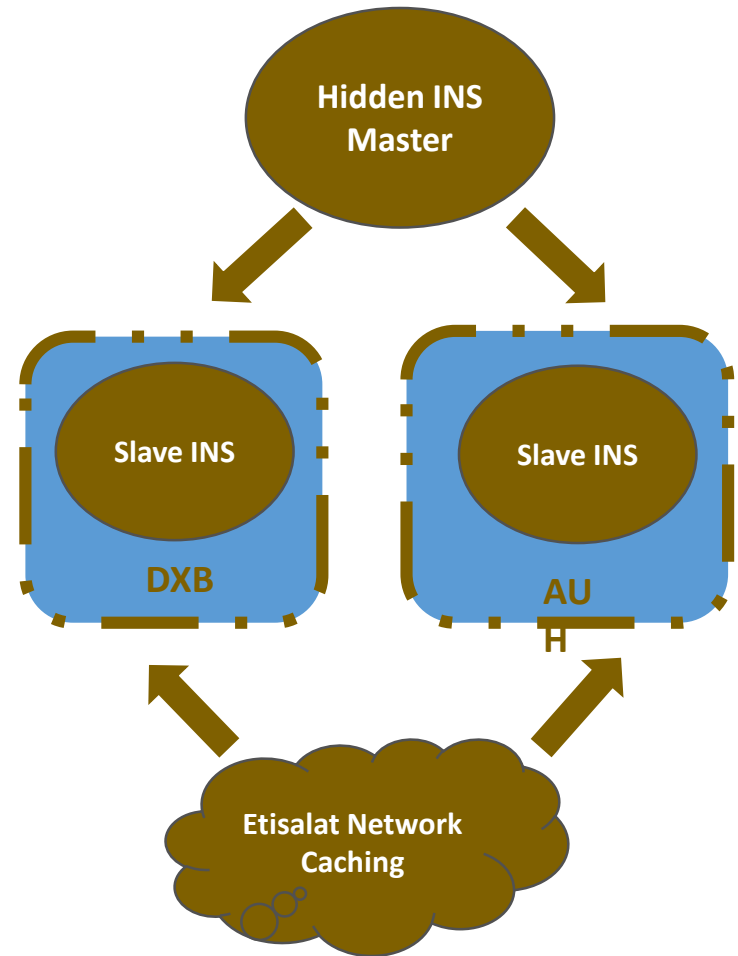
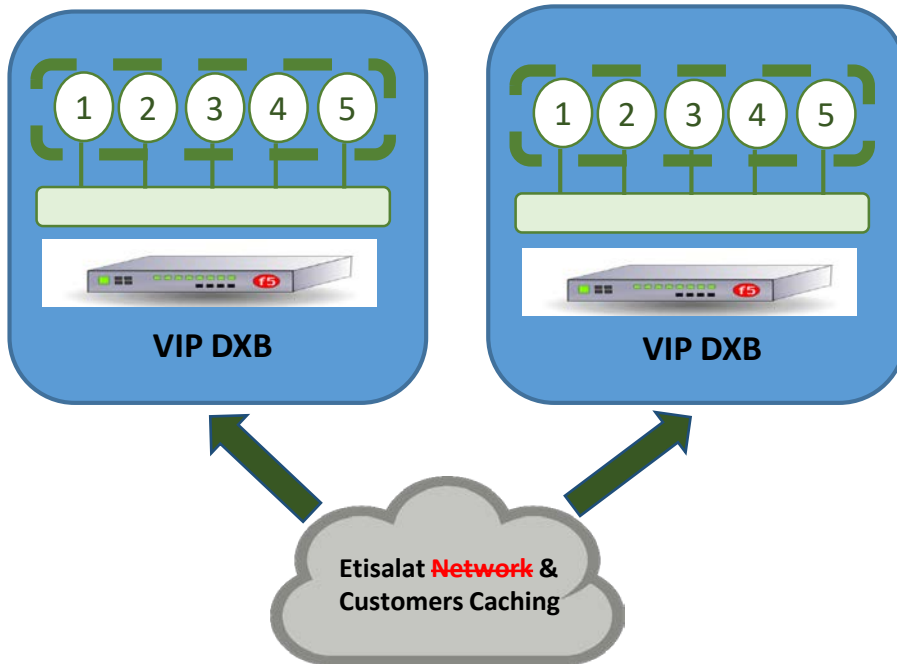
- Dedicated caching for Network & Customers.
- Improved availability and security.
- Introduced two DNS VIPs.



DNS setup (1996-2015)

Year 2005

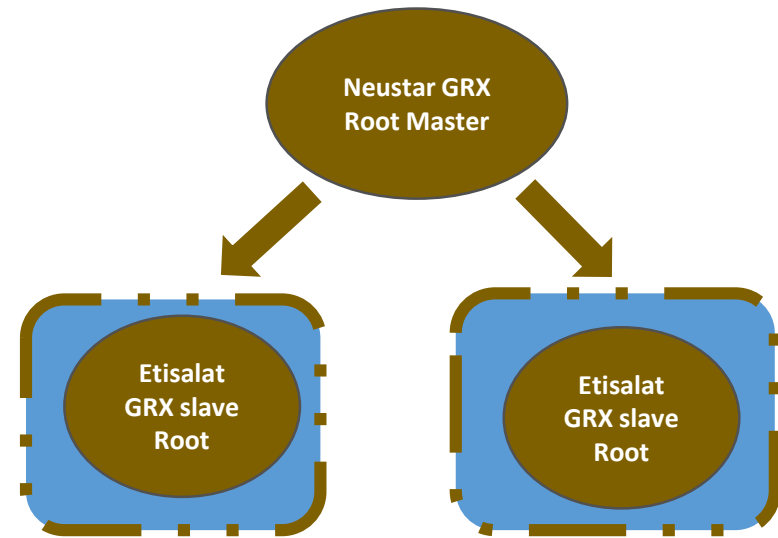
- Dedicated setup for Etisalat Network Caching.
- Network services (Mail, Proxy, Hosting, others)
- Protect from public threats



DNS setup (1996-2015)

Year 2006-2008

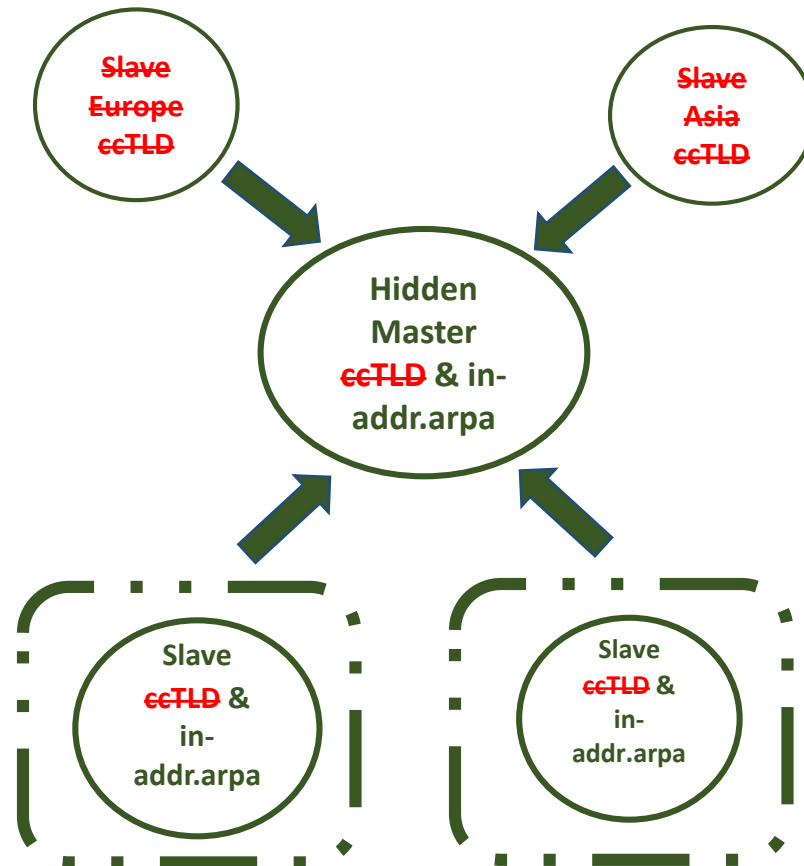
1. New eGRX - Emirates GPRS Exchange
 - a) Used for Mobile Roaming service activation.
 - b) Neustar Root Master
 - c) Two Slave Root Servers.
2. Move to Intel/Linux architecture
 - a) Mix of Sun SPARC/ INTEL/ REDHAT
 - b) Improved performance / increased Cache Hit Ratio
3. Upgrade from Critical DNS vulnerability (Kaminsky upgrade)
 - a) Impacted performance and resources.



DNS setup (1996-2015)

Year 2009

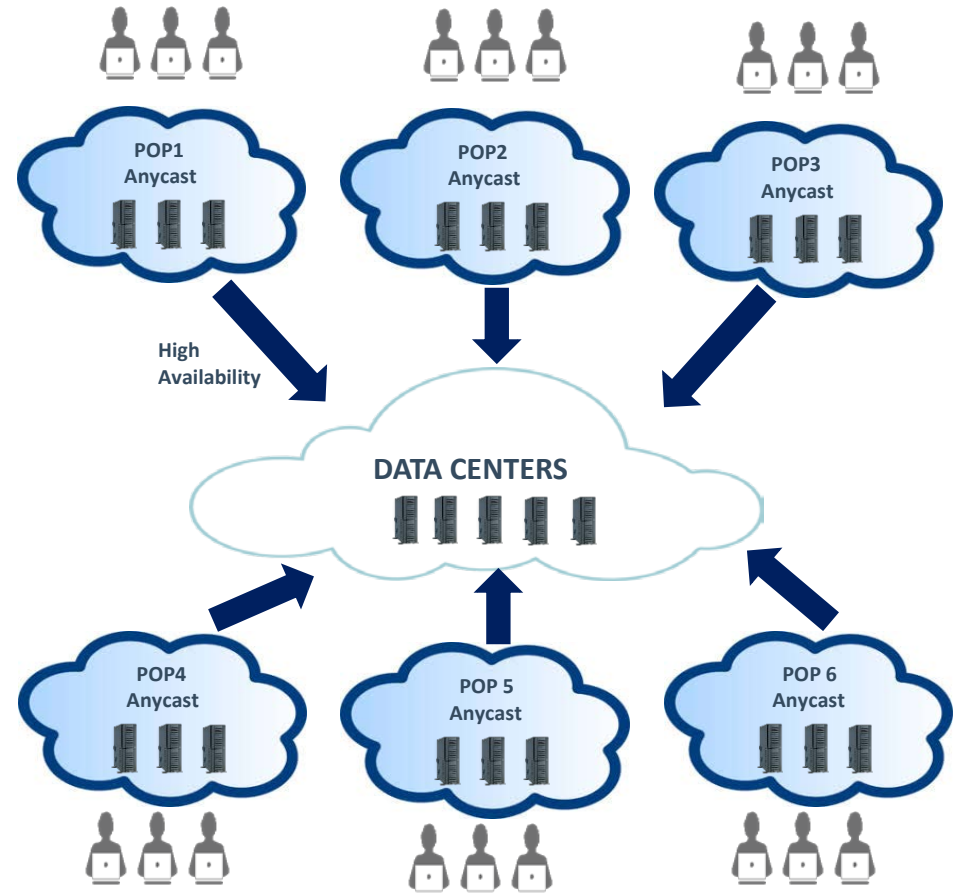
- Transferred .ae ccTLD authority to UAE Telecommunications Regulatory Authority (TRA)



DNS setup (1996-2015)

Year 2011-2015

1. Distributed caching DNS servers in the POPs to be near to the end users
2. Decrease network latency and enhance performance.
3. Support local and Geo-redundancy.
4. Supports more QPS.
5. NO single point of failure.



Challenges

1. Increase in DNS traffic

- By new customers, applications and services.
- DNSSEC enable will be more difficult.

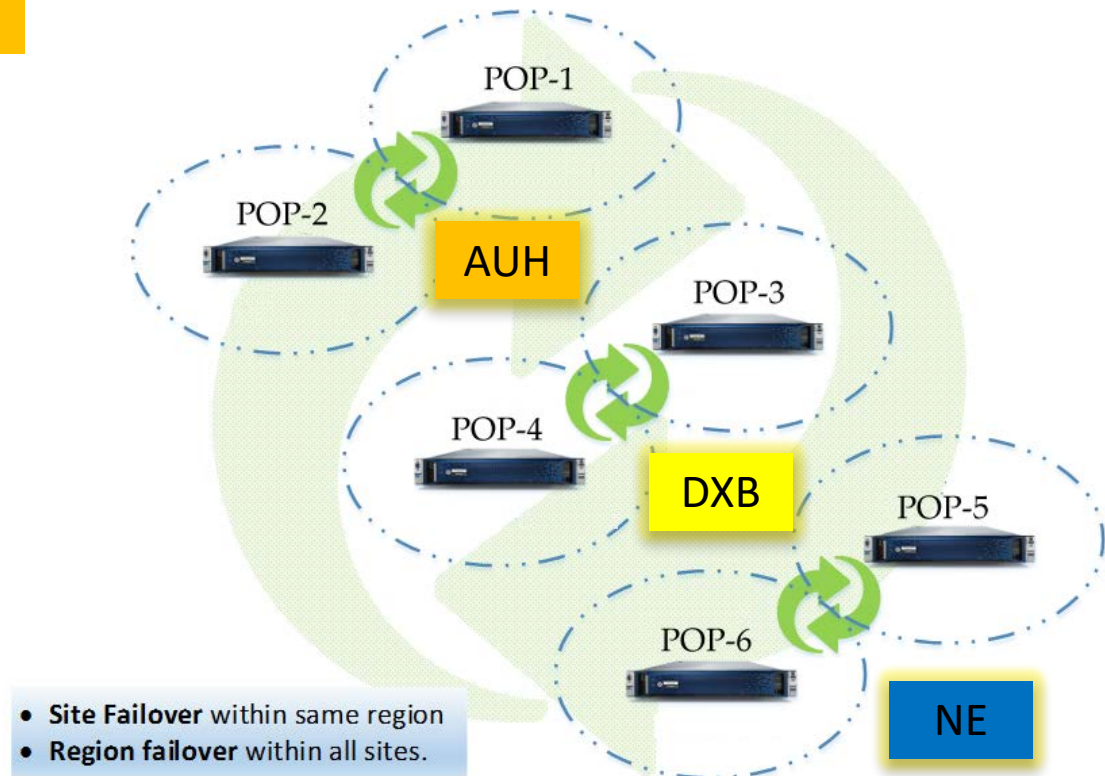
2. Mitigation against DNS attacks

- Difficult to mitigate against attacks such as amplification attacks and pseudo random domain.

DNS Modernization Plan (2015- 2018)

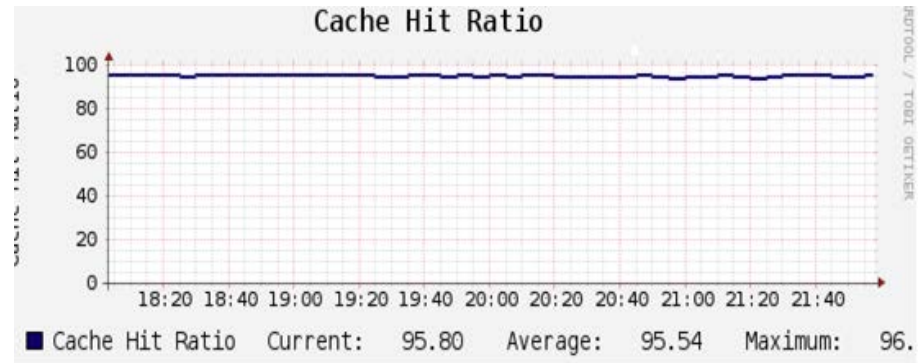
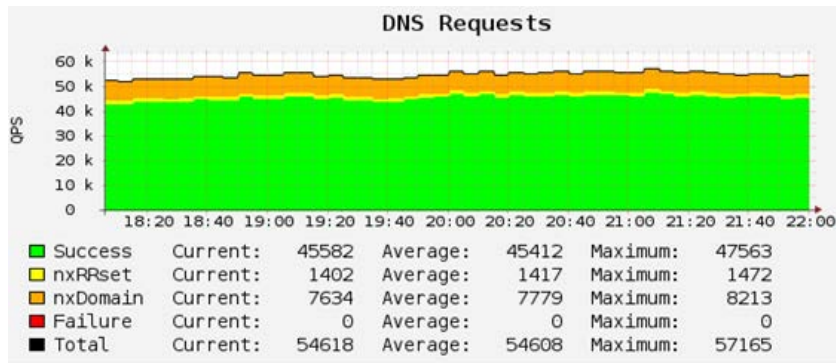
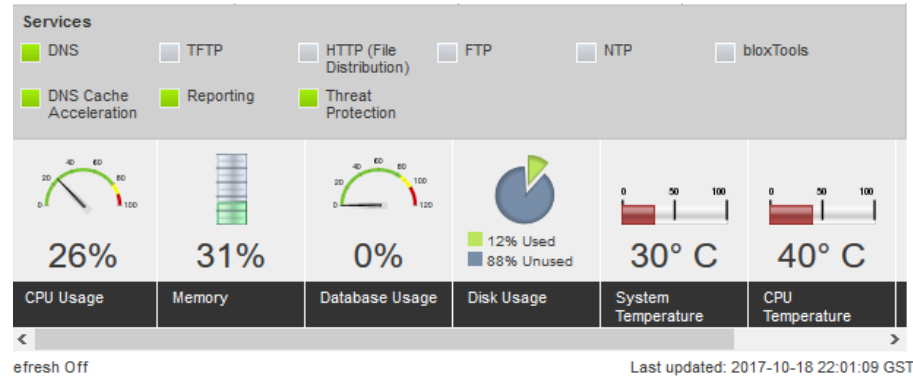
Modernization of Public Caching DNS

- Deployed New Public Cache DNS at POPs around UAE with high availability.
- Overcome performance, capacity and security challenges with:
 - a) Built-in DPI to protect against known DNS attacks.
 - a) Improved response time with customized caching solution.
 - a) DNSSEC feature is available.



Performance Indicators

- CPU & Memory Utilization
- Number of Requests
- Recursive Queue
- Traffic trends
- Cache Hit Ratio



Future Plan

1. Enable IPV6 .
2. Enable DNSSEC on Caching.
3. Enable DNSSEC feature for authoritative domains.
4. Replacement following systems with higher end solutions:
 - a) Authoritative DNS.
 - b) eGRX Name Services.
 - c) Internal Cache DNS (for internal Etisalat nodes).

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THANK YOU