DNS Infrastructure changes: The good, the bad and the ugly

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Agenda

- Introduction

- Impact of failures in changes

- Case of NIC-Internet Costa Rica

- Lessons learned

- Conclusions

Introduction

- DNS Stability is like maneuvering through mud or snow, you can't do changes suddenly.

- But, improvements and constantly changes are required to keep updated the system.

Impact of failures

- A failure in small part of the system, affects the stability of whole system.

- Many failures can't be anticipated, because the nature of the DNS system, it is global, and its depend of the other (external) parts.

- A typo error can affect the system heavily.

Impact of failures

- A single failure can affect thousands of users (clients) simultaneously.

- It could happen, big and small DNS managers, the difference is for big ones it would be a world news, for small ones is in-house issue.

Case of NIC-Costa Rica

- Changes to implement:

  - From 1 zone file .cr to 8 zones files.

  - Automate domain transactions using Fred

  - New hardware servers.

Case of NIC-Costa Rica

- Preparation:

  - Test everything in a controlled environment.

  - Verified consistency between existing domains and domain generated.

  - Notify the customers about improvements in the infrastructure.

Case of NIC-Costa Rica

- Problems:
  - The splitting of the zone was not taken in count in the delegation of slaves servers.

  - 2 slave servers take too long to refresh the new zones changes.

  - Some slaves has been operational for more than 10 years without changes or failures, and it was too difficult to find people in charge.

Case of NIC-Costa Rica

- Actions taken:

  - Rollback the changes. (on mud wet!)

  - Investigate the cause of the problems and try to improve the procedures.

- More problems:

  - Some slave servers doesn't refresh the rollback changes.

Case of NIC-Costa Rica

- Some findings:

  - A network latency stops the zone transfer for some slave servers, but at the same time has enough bandwidth, BUT it didn't affect other slave servers.

  - The contact information for some slave servers was outdated. It takes a week to try to find the problem with the zone transfer.

Case NIC-Costa Rica

- Other Findings:

  - We focus in the integrity of customer data during transition, but left behind some small details in the DNS system.

  - Underestimate the impact of the rollback when doing changes in ccTLD zone delegation.

Lessons learned

- Need to improve the planning processes.

- Very few people working on the changes, need to include more eyes.

- Don't left this changes in exclusive hands of technical people, we are a little lost sometimes.

Conclusions

- The Good:

  - Lessons learned.

- The Bad:

  - In a global distributed system with many variables off site, it is impossible to anticipate all possible problems.

- The Ugly:

  - Even, rollback changes takes hugh time to be effective in the DNS system.

¿Preguntas?