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.
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- Changes to implement:
  - From 1 zone file .cr to 8 zones files.
  - Automate domain transactions using Fred
  - New hardware servers.
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- Preparation:
  - Test everything in a controlled environment.
  - Verified consistency between existing domains and domain generated.
  - Notify the customers about improvements in the infrastructure.
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• 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.
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• 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.
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- 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  - The contact information for some slave servers was outdated.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.
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• 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 huge time to be effective in the DNS system.
¿Preguntas?