

.BD
বাংলা



.bd DNS Outage

Presented by: Mostofa-AL Mahmud

B. Sc. Engineer EEE, A Member of Bangladesh Civil service and Deputy General
Manager, Bangladesh Telecommunication Company LTD (BTCL)



Overview



Affected Domain:

- .bd

Issue:

- Root nameservers network reachability problem to the .bd primary DNS.

Impact

- bd server couldn't process DNS requests for 15 hours

Effected Domains :

- 41000

Community Impact:



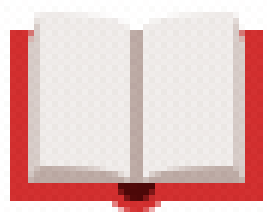
Internet Connectivity

Website Access
Email
E-commerce



Government Services

Online Services
Communication



Education

Online Learning
Administrative Tasks



Business Operations

Productivity
Communication



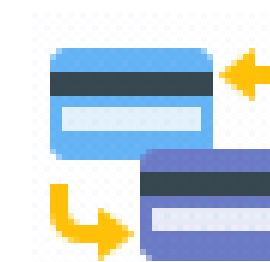
Social Media Impact

Social Media
Online Communities



Financial Sector

Online Banking platform like Nagad,
Bkash
Online transection



Dig down the root Cause

Step-1: Network Reachability

- Dig: Root server could not reach to the primary server. Error message was "IP reachability issue"
- Ping: Successful. Both servers were getting alive.

Step-2: DNSSEC Failure

- We found that DNSSEC Key was Expired and new signature was not generated.
- Due to IP reachability issue manually generated signature could not synchronize with root.

3. BIND Service Failure:

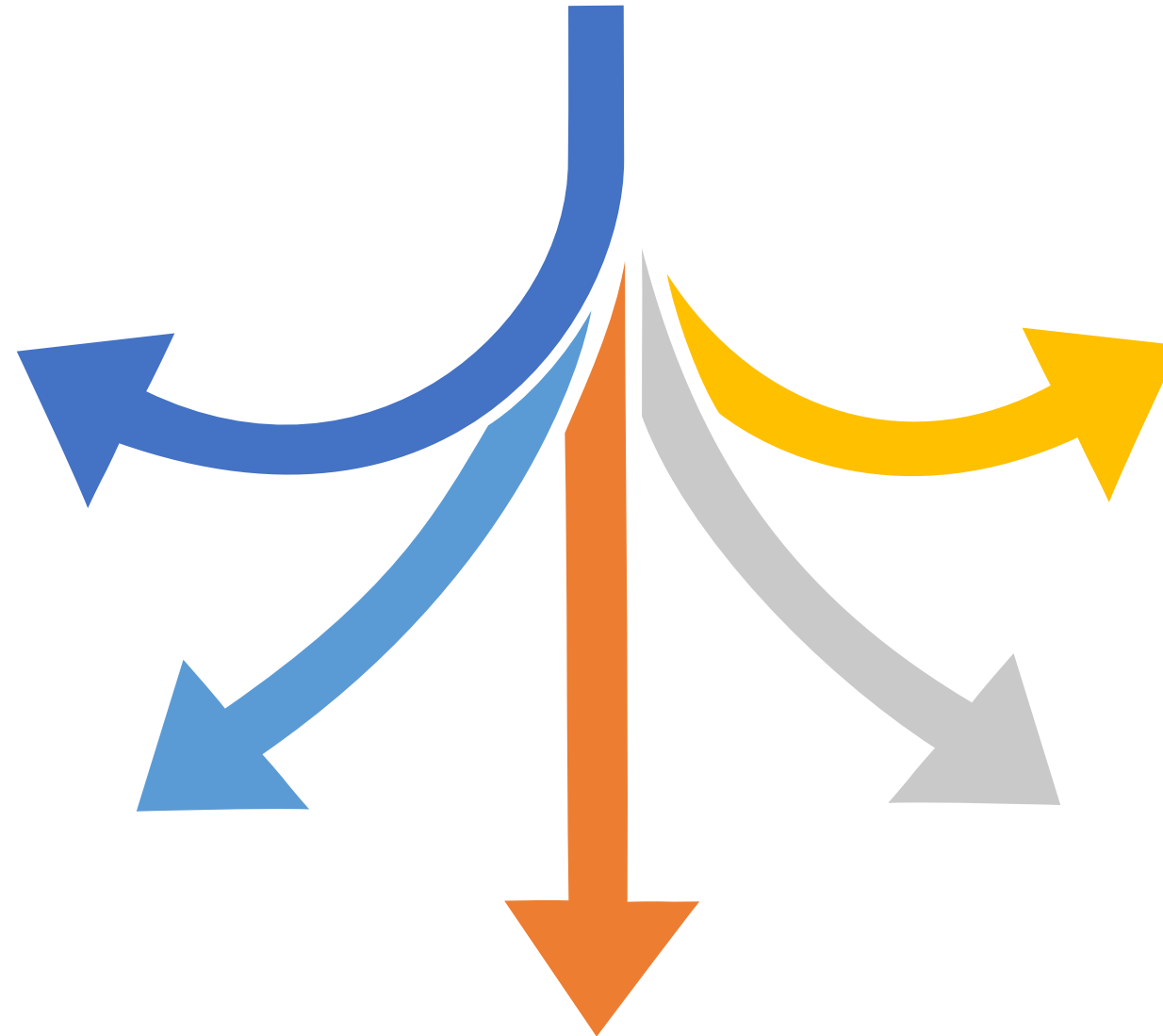
- AS BIND service is mainly responsible for DNS, it was focused
- This service wasn't responding locally, meaning it couldn't process DNS requests. So the BIND service was restarted. But not resolved.

5. Outdated Software:

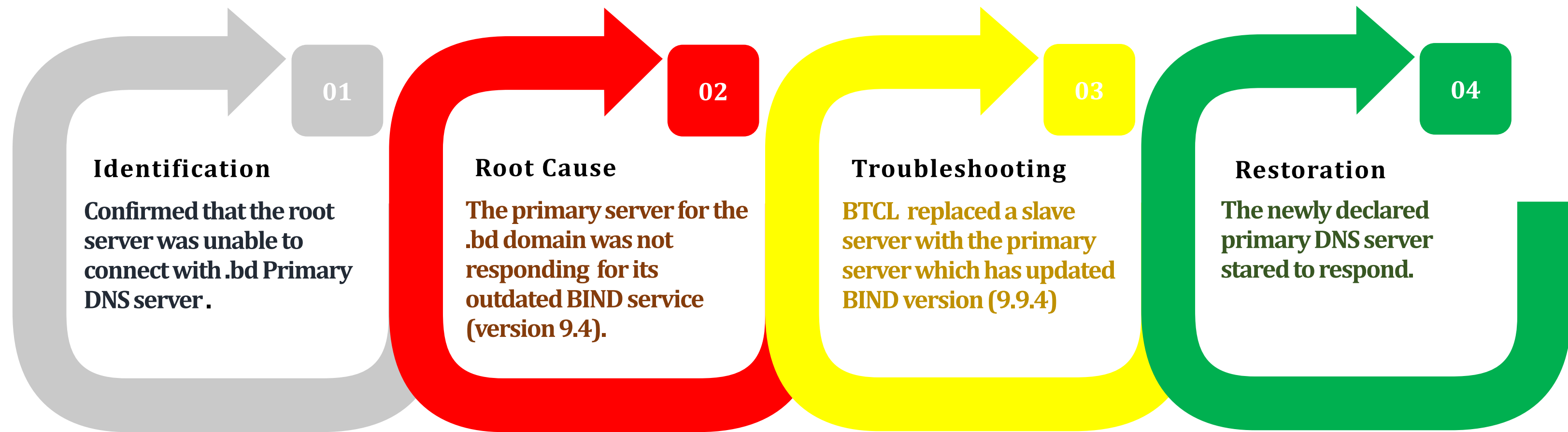
- BTCL noticed that the used BIND version (9.4) was outdated in primary DNS.
- This version had some known bugs and vulnerabilities.
- That might contribute to the failure.

4. Security check :

- Tech team analyzed log to find any change in configuration file.
- No cyber attack like DDOS or SQL injection was detected.
- We replaced backup data in DNS servers but caused SOA mismatched and secondary DNS got outdated.



Recovery Process



External Assistance

ICANN

Chompika Wijayatunga from ICANN identified the DNSSEC related issue and provided guidance to BTCL.

Shumon Huque identified BTCL needed to contact PCH Domain and introduced to Kabindra Shrestha



(PCH)

Kabindra Shrestha & Tamás Csillag

provided technical assistance to BTCL identified the SOA record was backdated .



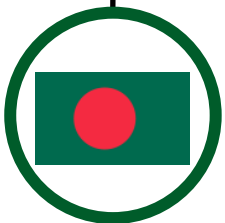
IANA Support

We contact with IANA. They immediately support us to ensuring that root could not communicate with our Primary server



APTLD

General Manager Leonid Offered initial support and identified BTCL needed to contact Chompika Wijayatunga and introduced to him



Bangladeshi Community

Some experts from Bangladesh willing helped to troubleshoot and restore the system in our premises.

Recommendation



Regularly update and maintain DNS software to benefit from bug fixes and security improvements.



Monitor the health of DNS services to identify and address potential issues.



Develop a disaster recovery plan for your DNS infrastructure to ensure quick recovery in case of outages.



Consider using a highly available configuration for critical DNS servers to minimize downtime during failures.



Collaboration with global experts to resolve and prevent future issues.

Thank You

