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In this project, we present a survey on DNS Configurations, Interdependencies, Resilience and Security. The survey focuses on the *.ke Domains. The main intention was to establish whether the DNS configurations for the *.ke domains really consider basic setup aspects, configurations, security issues, resilience and interdependencies which determine efficiency, availability and redundancy of the DNS service.

The initial design of Domain Name System (DNS) did not incorporate a security infrastructure since it was meant to avail public information to the public. The DNS, also has major resilience issues which demands of its setup to have at least two name servers which are geographically dispersed to ensure availability in case one fails the DNS application which runs on name servers should also be properly updated to ensure the domains are secure and available. Interdependencies among name servers usually created unintentionally make it difficult to secure and ensure integrity of information en-route the DNS system. The survey sought to establish to what extent these issues have been implemented on the *.ke DNS configuration.

About 15,000 *.ke domains were used on the survey and were collected from varied sources, and were interrogated using the dig utility available freely on the Internet and nslookup utility available on windows operating systems and the results collected and summarised on spreadsheets. The findings indicated a very low compliance to the standard DNS configuration requirements making *.ke domains non-resilient to failure and overly insecure. Results indicate that over 60% of the *.ke domain are vulnerable. The survey further evaluated three of the main DNS application and developed web-based step by step ‘DNS Configuration Advisor’ tool. This is a highly technical guide that DNS administrator can use to check if their DNS server(s) are properly set up to take care configurations, resilience and interdependencies issues that may render the domain insecure and unavailable.

Conclusively we recommend awareness to be done focusing on DNS administrators to ensure they are conversant with the issues of DNS and the risk they expose their organisations by running ill-configured DNS systems. Creating a knowledge sharing forum for the DNS administrators where they would share information on DNS configuration would also go a long way in educating them and bringing the issues into the fore.

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Links:
In this project, we present a survey on DNS Configurations, Interdependencies, Resilience and Security. A Case Study of *.ke Domains.