The University of the South Pacific
Domain Registry & DNS Security

PACNOG 26 - Online

Welcome

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IT Services

Agenda

- History - FJ Domain
- Challenges
- PKI
- DNS Security
- Platform Upgrade
- Opportunities
- Future

General Overview

The Journey

About USP

- FJ Domain
  - IANA delegated FJ to USP in 1990.
  - Registration of clients started in 1991.
- Delegation
  - school.fj   TFL
  - gov.fj   ITC
  - govnet.fj   ITC
- Initial Platform
  - Red Hat Linux
  - Perl & PHP
  - Development In-House

Challenges

- Updating Linux OS
  - Application Patching
  - Knowledge Transfer
  - Documentation
- Global Partners
  - Replication

- Networking
  - TLD Standards
  - Policies
  - Technology Trends
  - Service Offering
- Training
  - Technical Training

PKI – Public Key Infrastructure

- Planning
  - Windows 2012 AD Upgrade 2017
  - Windows 2016 PKI   2020
  - Windows 2019 AD Upgrade 2020

- PKI Features
  - Website Certificates
  - AD User & Computer Certificates
  - End to End Encryption
  - Document Singing

- DNS Security
  - Prelude was PKI
  - Deploy DNS Sec Internally
  - As we sign internally, we also need to sign FJ.

Technical Project

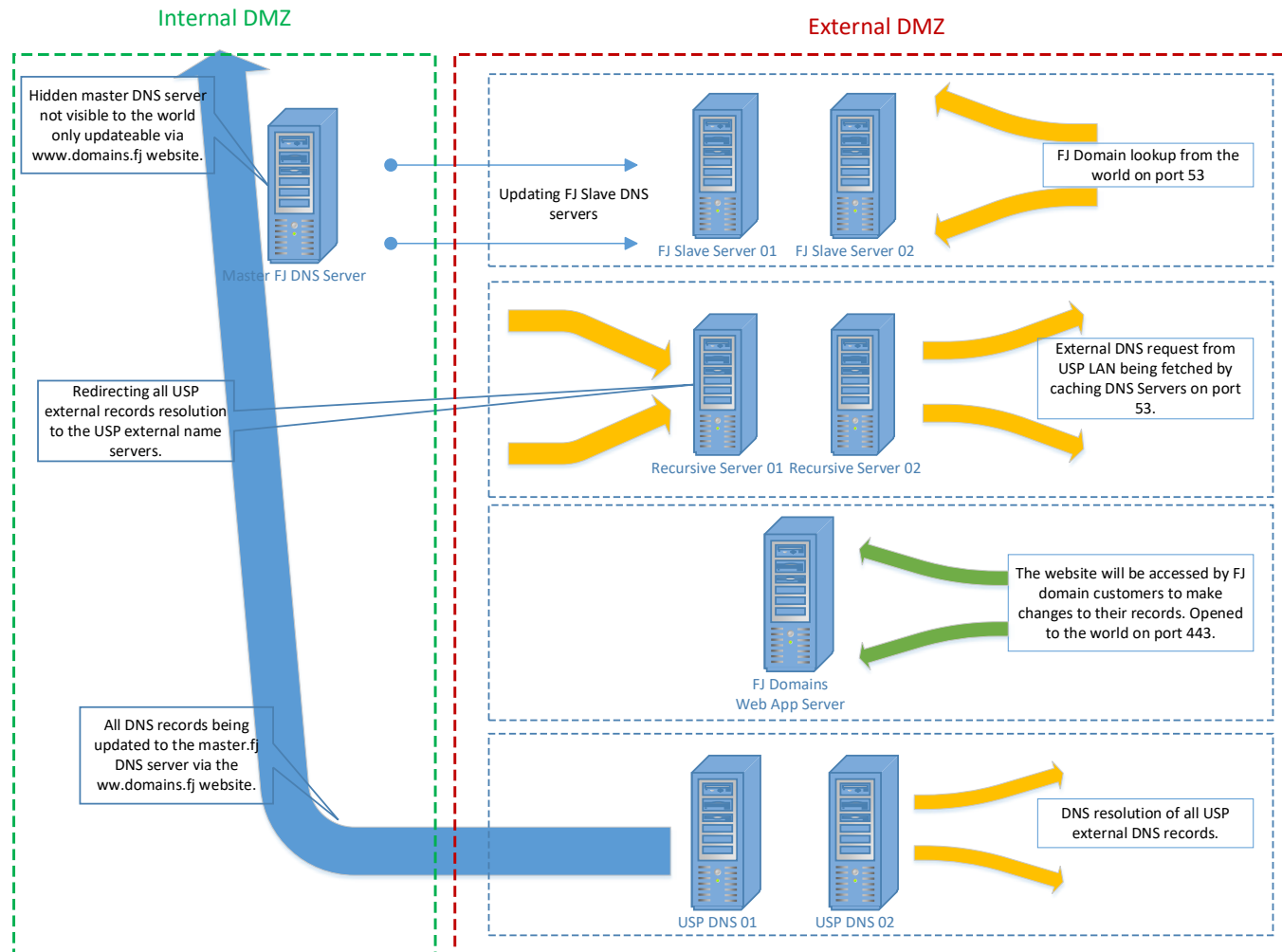## The Grind

Application Layer Security and Features

- Safeguard the FJ domain Platform
- Ability to integrate DNS Security into the system
- Multiple role-based user types to manage user privileges.
- Encryption of credentials using best practices (Hash, Salt and Stretch)
- Web Portal access secured by IP address, captcha and two-factor authentication.
- Ability to force a periodic password reset.
- Password validity period based on the complexity of password and age, not simply age.
- Browser fingerprinting to capture suspicious activity.
- Full log of all user activity.
- Automated billing and better analytics.
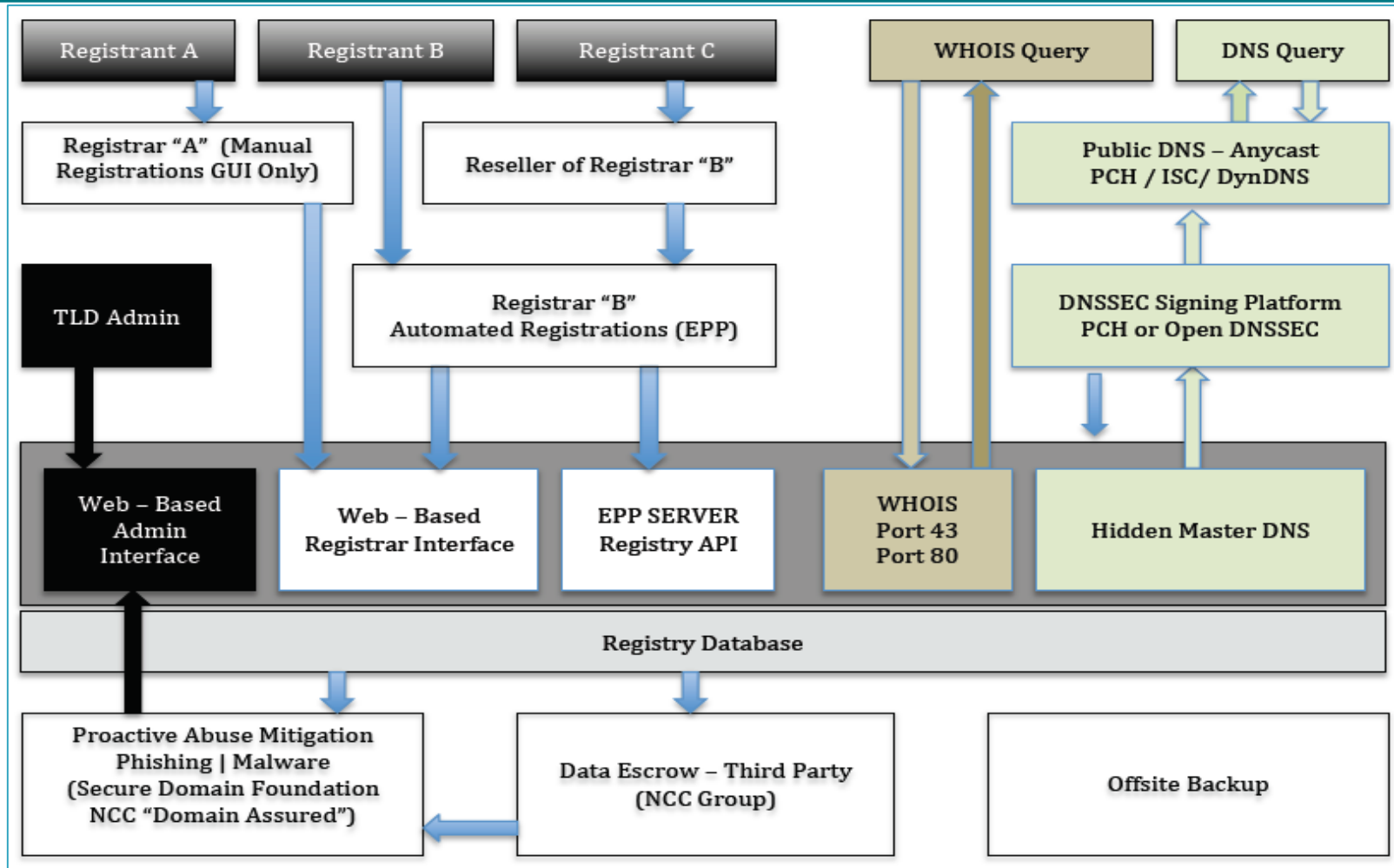- Read Only law enforcement access.

continued

- Global Standards
  - EPP Compliant (RFCs 5910, 5730, 5731, 5732, 5733 and 5734.)
  - IDN Compliant (RFCs 5890, 5891, 5892 and 5893.)
  - WHOIS Compliant (RFC 3912)
  - DNS – Compliance.
  - DNSSEC – Compliance.
  - IPV6 – Compliance.
  - Escrow – Compliance.

- Proactive Abuse Mitigation
  - Integration with Secure Domain Foundation "Luminus" (a reputation and validation API which allows users to quickly identify potential abuse). https://securedomain.org/

FJ Domain & DNS Sec Design

Internal DMZ

External DMZ

Hidden master DNS server not visible to the world only updateable via www.domains.fj website.

Master FJ DNS Server

Updating FJ Slave DNS servers

FJ Slave Server 01   FJ Slave Server 02

FJ Domain lookup from the world on port 53

Redirecting all USP external records resolution to the USP external name servers.

Recursive Server 01 Recursive Server 02

External DNS request from USP LAN being fetched by caching DNS Servers on port 53.

FJ Domains
Web App Server

The website will be accessed by FJ domain customers to make changes to their records. Opened to the world on port 443.

All DNS records being updated to the master.fj DNS server via the ww.domains.fj website.

USP DNS 01   USP DNS 02

DNS resolution of all USP external DNS records.

Work Flow

The Future

Solutions

Solution Benefits

- Business Continuity
  - With the new platform in place and updated documentation for application developers.
  - We can ensure the continued sustainability of the solution progressing into the future.

- Additional Features
  - With the added API integration, we can now leverage customer portal access as well as delegation of registry services to other affiliations

Solution Benefits

- ## Security Enhancements
  - The new platform will support many security features such as DNS-Sec which will ensure our domain services are not breached.

- ## IANA & ICAAN Alignment
  - Alignment of FJ Registry to current protocols required by IANA and ICAAN for global registries.

Thank You & Questions

We do things right, our people stay connected!

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