Fellowship Report: Masterclass 3 - KINDNS: DNS & DNSSEC Operational Best Practices at APRICOT 2025

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1. Executive Summary

My experience as a fellow at APRICOT 2025 in Petaling Jaya, Malaysia was memorable and life-changing. This report describes my experience in Masterclass 3 - KINDNS: DNS & DNSSEC Operational Best Practices to Improve the DNS Ecosystem, a three-day workshop held from Thursday to Saturday. Arriving on Day 2 from immigration, I jumped straight into sessions, learning how to unlock DNS security practically, network with experts from all over the world, and discover an aspect of leadership I personally found in soft skills training — and response to change. Navigating challenges such as travel disruptions and technical obstacles contributed to my resilience, preparing me to enhance BTCL's DNS framework and forge enduring professional bonds.

2. Introduction

Background of the Fellowship Program
The APRICOT Fellowship Program offers professionals from various backgrounds a unique opportunity to learn from global experts on internet technologies, security & operations. The third in the series, Masterclass 3 in particular, focused on giving participants a deeper understanding of DNS operations, DNSSEC deployment, and KINDNS best practices, and how they can work together to create a more secure and resilient DNS ecosystem.

Objectives of Participation
My goals were simple but ambitious:

- To practice my DNSSEC and zone management skills.
- Best practices for securing BTCL's DNS infrastructure.
- To gain insights from industry experts and network with peers.
- That is to develop as a leader by training soft skills.

Selection and Motivation

It was an honour to be selected for APRICOT 2025, where I learned from experts such as Champika Wijayatunga, Nyamkhand Buluukhuu, and Philip Paeps. Joining BTCL's team in DNS Security, I was motivated by a desire to bring BTCL's operations in line with international DNS security standards and further my career in telecommunications.

3. Fellowship Activities & Experience
Workshops and training
I joined on Day 2 after missing Thursday's sessions due to immigration issues but reviewed them offline. Here's what I experienced:

- **Thursday (Missed, Reviewed Offline)**
  - *Introductions & Logistics*: Program overview.
  - *KINDNS Best Practices*: Learned core guidelines for secure DNS operations.
  - *DNS Refresher*: Explored DNS structure and zone files.
  - *Revision Control*: Discovered using Git for DNS management.
  - *Labs: Setup & Revision Control*: Initial hands-on practice.

- **Friday (Day 2)**
  - *Recap Thursday*: Helped me catch up on Day 1.
  - *Authoritative Servers Best Practices*: Focused on DNSSEC signing and server separation.
  - *DNS Zone Files*: Mastered zone syntax and settings.
  - *Lab: Configuring Servers*: Set up BIND servers for DNS operations.
  - *DNSSEC Refresher*: Reviewed security tools and concepts.
  - *Lab: DNSSEC Zone Signing*: Signed zones and tested security.

- **Saturday (Day 3)**
  - *Authenticated Denial of Existence*: Compared NSEC and NSEC3 methods.
  - *Lab: NSEC -> NSEC3*: Implemented secure denial techniques.
  - *DNSSEC Key Rollover*: Learned key management strategies.
  - *Labs: Key Rollover*: Practiced updating DNSSEC keys.
  - *Free-Form Labs*: Troubleshoot DNS configurations.
  - *KINDNS / APRICOT Survey*: Shared feedback.
  - *Closing & Certificates*: Received my certification.

Personal Experience

I joined the Day 2 sessions, from when I missed my flight because I was held up at immigration because my BTCL order for my office was reportedly deleted accidentally online, so it took a while for me to go through clearance. I worked with BTCL to restore it, and joined Friday's sessions, eager to catch up. I read, did labs, and met with others and came away with a full experience.

4. Challenges & How I Overcame Them (What I Did and Experienced)

Key Challenges Faced

- **Travel Delay**: Missed Day 1 due to immigration issues.

- **Technical Hurdles**:

  o Had issues signing DNSSEC; resolved by installing some tools and permissions updates, guided by instructors.
  o Experiencing NSEC3 verification failures and then solved with help of Nyamkhand Buluukhuu and log review.
  o Explained key rollover methods with hands-on experimentation.

Solutions

  o Coordinated BTCL to expedite travel concerns.
  o Seek some troubleshooting tools and guidance of my peers and instructor to overcome my technical issues.
  o Pre-read materials, delegated BTCL tasks, studied evenings to catch up.

5. What I Learned
Skills Acquired

- **Technical Skills**:
  o Gained expertise in securing DNS with DNSSEC, managing zones, and using tools like key generation and zone signing from the fellowship materials.

  o Learned to apply KINDNS best practices for resilient, secure servers.

Soft Skills Workshop Experience:
The Soft Skills Workshop at APRICOT 2025, Public speaking, leadership, team work, cross-cultural collaboration, is something that I had to complete, and I do need to work on public speaking confidence, so I have to take some training and practice.

- Key takeaways included:
  o *Self-Determination Theory*: Boosted my motivation by focusing on purpose and autonomy.

  o *SMART Goals*: Helped me set clear DNS security goals for BTCL.

  o *Leadership & Psychological Safety*: Inspired me to lead inclusively, feeling supported to ask questions after joining late.

- *VUCA & Cynefin*: Taught me to navigate complex challenges, like an Internet outage from a loose power cord, which I resolved using teamwork and calm communication.

- *Ikigai*: Helped me align my passion for DNS security with BTCL's needs, finding purpose in my work.

What I Shared

I shared BTCL's DNS challenges during labs and discussions, contributing ideas to the KINDNS survey for more troubleshooting time. My engagements enhanced our mutual growth, and I look forward to exchanging ideas at BTCL.

My Reactions to the Soft Skills Workshop

The workshop was inspiring and hands-on. Ikigai opened my eyes to my career purpose and Psychological Safety, made me feel safe to ask for help. I enjoyed strategic tools like VUCA and Cynefin, but I'm on a mission to practice and get better as a public speaker.

Professional Growth

- Gained practical DNS skills for BTCL's infrastructure.
- Built a network with experts like Champika Wijayatunga, Nyamkhand Buluukhuu, and Philip Paeps, plus fellows from across Asia-Pacific, enhancing my cross-cultural collaboration.
- Discovered opportunities to lead DNS security at BTCL, guided by soft and technical skills.

6. Future Plans & Recommendations

Application of Knowledge

- I'll try to troubleshoot DNSSEC issues at BTCL.
- I'll lead workshops to share DNSSEC and KINDNS practices with colleagues.
- I will suggest policies to bring BTCL in line with the world.

Feedback About the Fellowship Program
APRICOT 2025 was great, but late arrivals need to be given recordings of Day 1 sessions, DNSSEC lab time to be lengthened, and post-fellowship forums to be added. More case studies based on real-life examples of soft skills will further the learning. Thank you, John, and the APRICOT team, for this opportunity!

7. Conclusion

APRICOT 2025 Fellowship was an eye-opening experience that was crucial to my professional and technical growth. Whether gaining knowledge about sophisticated DNSSEC techniques or making lasting connections with peers, this experience has been irreplaceable.

Despite the travel delay, I was fully engaged in the learning process and look forward to applying the new knowledge to further DNS security within BTCL. Thanks to John Rattray, the organizers of the APRICOT conference, and other participants for making this learning worthwhile.

In the future, I will expand my knowledge further, mentor other individuals, and encourage a resilient and safe DNS ecosystem.

I miss you all—here's to our shared journey!