



## Situation Overview

APNIC services a very diverse region and prides itself on being a cutting-edge Internet technology organization, so ensuring its systems are accessible to everyone in the Asia Pacific community is a top priority. As a first step in 2015, they focused on conducting a widespread audit of APNIC systems to determine areas that support Universal Acceptance (UA) and those that need to be updated. This included testing whether systems could handle International Domain Names (IDNs) and E-mail Address Internationalization (EAI), and a recommended set of projects to close the gap between current and desired functionality. The next phase will focus on updating systems that are not yet UA ready.

## Universal Acceptance Approach

As part of the auditing process, APNIC broke its major systems down into internal and external facing categories. Major internal systems included the organization's registry management system and database servers. External systems included e-mail service, WHOIS, MyAPNIC and public websites. While the process was manual and took about a month total to complete, APNIC implemented an e-mail ticketing system to test each system and determine UA readiness. This helped the organization easily track the status of various systems and streamline the process. APNIC also filtered its systems by who is responsible for each (i.e. internal, partners or vendors), which helped them prioritize low-hanging fruit updates that could be easily handled internally.

From a technical perspective, domain names and e-mail addresses play a variety of roles within APNIC systems and services. In some instances, they are values provided to APNIC by its members and service users, which must be received, stored, and presented correctly. In other instances, they are identifiers for information retrieval or delivery, which must be handled correctly. APNIC identified systems which collect and present domains and e-mail addresses, along with those that identify a host by name or process e-mails and tested each with IDNs and EAI. Gaps in behavior for each were then noted accordingly.

APNIC has also tested various software packages to deliver EAI support, including running a test e-mail service able to receive EAI mail, though a suitable software to read and respond to the mail has not been determined. Some character set must be chosen to store URLs and e-mail addresses, as well as other textual content.

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## Universal Acceptance Case Study:

### Asia Pacific Network Information Center (APNIC)

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**Industry:** Internet domain registration services

**Location:** Brisbane, Australia

#### UA-Ready Systems:

- \* A majority of APNIC applications (estimated 85%) have no particular UA requirements – document management, website content management, internal calendaring, development services, etc.
- \* Almost all applications are vendor products, so APNIC is working to ensure these systems become UA-ready

#### Benefits Identified:

- \* Discovery of systems that are not UA-ready
- \* Increased ability to support Asia Pacific users

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— Byron Ellacott  
Senior Software Architect, APNIC



## Why Unicode?

Since APNIC has 56 diverse economies in its customer base, the only character set that could cover a sufficient set of languages and scripts was Unicode. As the bulk of APNIC system text is still from the US-ASCII limited set, UTF8 was a no-overhead Unicode encoding for its data. Specifically to UA, both IDNs and EAI addresses are transmitted and used in UTF8, so there's also incentive to avoid repeated character set translations.

## What did it take?

To conduct the UA-readiness survey, skills in system operations were required, in order to locate and test configurations of systems software. For internal applications, no particular skills are required to perform "black box" external testing – opening up a web browser and walking through the application's service pages is something that can potentially be scripted for a junior staffer to perform to conserve technical resources. Resolving the issues requires a combination of vendor management, system operation skills, and internal application software development.

## What's next?

Coming out of the analysis phase, APNIC is focused on achieving IDN support in MyAPNIC, ARMS, WHOIS and public websites, along with EAI support in web and e-mail systems.

APNIC's biggest key learnings and tips for other organizations as they begin the analysis process:

- \* Start now. The process is not as complicated as people may perceive it to be.
- \* Parallel path. During the analysis process, organizations should begin talking to vendors so they can make timely system updates to those systems that are not UA ready.
- \* Prioritize internal systems. If organizations have owned software or manage certain code in-house, they should start there so they can efficiently make updates. Third-party systems will require added partner and vendor coordination.

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About:

## Asia Pacific Network Information Center

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APNIC is an open, membership-based, not-for-profit organization providing Internet addressing services to the Asia Pacific region. APNIC provides number (IP & AS) resource allocation and registration services that support the global operation of the Internet.