「NCTU Beta Site vs. CISCO Alpha Network」研討會
邀請函

主辦單位：交大網路測試中心 (NBL)

時間：2011/12/20 (星期二)

地點：國立交通大學電子資訊研究大樓 1F 國際會議廳

報名方式：請填寫報名表並 e-mail 報名資料至 NBL 紀小姐收。

(洽詢電話：03-5736727 ext. 217，報名專用 E-mail：signup@nbl.org.tw）

報名截止日期： 2011/12/15

真實網路環境下產生的網路應用越來越多，驅使網通設備將許多功能加入到相關產品中，但是軟體複雜度越高反倒讓產品在客戶端發生不穩定的機率增加，因此透過真實網路流量測試網通產品穩定性越趨重要，NCTU 與 Cisco 都建置了專門進行網通產品真實流量測試的環境，本次研討會邀請曾參與 Cisco Alpha Network 測試的專家前來分享 Cisco 如何利用其真實網路測試環境提升產品穩定性，同時也提供與會者 NCTU Beta Site 的發展規劃與相關經驗分享。NBL 誠摯邀請您的參與！(講師與講題簡介資料位於下一頁)

議　　程

時　　間	講　　題	主　講　人	
9:00-9:45	Registration		
9:45-10:00	Opening Speech	交大電資中心 交大資訊中心 交大資工系	林寶樹主任 蔡錫鈞主任 林盈達教授
10:00-10:50	Session 1: The Need for an Alpha Network – a Network Within a Network(Part I)	Independent Networking Consultant	Dr. Chao-Li Tarng
10:50-11:00	Break		
11:00-11:50	Session 2: The Need for an Alpha Network – a Network Within a Network(Part II)	Independent Networking Consultant	Dr. Chao-Li Tarng
11:50-13:00	Lunch		
13:00-13:50	Session 3: NCTU Beta Site for Field Trials	NBL	許郡泓 經理
13:50-14:00	Break		
14:00-14:50	Session 4:PCAP Library for Real Traffic Validation & Bug Reproduction	NBL	呂俊男 工程師
14:50-15:00	Break		
15:00-15:50	Session 5:WLAN Traffic & Environment Replay Technologies	NBL	古佳育 經理
15:50-16:50	Panel Discussion 1. Cisco 全球客戶眾多，為何需要建置 Alpha Network? 2. Cisco Alpha Network 效益如何? 如何評估其測試的效益? (E.g. 每一個 bug 的價值?) 3. 設計 Cisco Alpha Network 時有哪些重點要注意? 可用來測試哪些產品? 4. Cisco Alpha Network 的發展過程與未來規劃。 *交大網路測試中心保留更改議程及講師之權利，若有更改將不另行通知。 (講師與講題簡介資料位於下一頁)	主持人-NBL Independent Networking Consultant 智邦科技 威播科技 易通達 威創科技 鴻海精密 NBL	陳一瑋執行主任 Dr. Chao-Li Tarng 邱正茂 協理 陳鴻彬 顧問 江文星 經理 林義能 經理 胡志錠 專理 講師群

講師與講題簡介資料

Session 1: The Need for an Alpha Network – a Network Within a Network(Part I)

Session 2: The Need for an Alpha Network – a Network Within a Network(Part II)

Speaker: 唐兆立 博士(Dr. Chao-Li Tarng)

Independent Networking Consultant

Background introduction:

Chao-Li Tarng retired from Cisco Systems in 2011, after 15 years of career with the company. Previously, he has helped Cisco in building the Unified Communications business from zero to the number 1 position of the industry. He is now an independent networking consultant and entrepreneur, specializing in Unified Communications, Network Management, Video, Mobility and Could Computing. While working at Cisco, he served several roles, including Director of Engineering and Principal Engineer. He was responsible for managing a large software development team developing Integrated Service Router (ISR) platforms and Unified Communications features on Cisco IOS. His team has produced many VoIP products, including Voice Gateway, CUCME (Cisco Unified Communications Manager Express), CUBE (Cisco Unified Border Element), video bridges, etc., all based on the flagship ISR and ISR-G2 platforms and was responsible for close to $1 Billion revenue for Cisco. His team has won several prestigious awards in Cisco, including the Pioneering Award and Quality Award. Chao-Li received his B.S. in Electronics Engineering from National Chiao-Tung University in HsinChu, Taiwan, M.S. in Electrical and Computer Engineering from Oklahoma State University, Stillwater, and Ph.D. in Electrical and Computer Engineering from the University of Washington, Seattle.

Abstract:

Distinguished from the alpha testing phase in a software release cycle, an Alpha Network is a special production-level network that is used for testing and validating product behavior in a safe environment. Although formal testing methods can, and do, isolate many problems, no amount of testing can compare to seeing device and software behavior in a large-scale working network. However, companies are not willing to put these alpha products on its production network; they need a special network that has live traffic yet safely separated from the production network. The challenge is to create a network that could serve to test products in a real-world situation but without slowing down business operations should network products fail during testing and debugging. We will look into a case study on problems associated with test networks and how Cisco resolves them and the business benefit derived from the alpha product testing.

Session 3: NCTU Beta Site for Field Trials

Speaker: 許郡泓 經理

Abstract:

從使用者端到雲端，從原本在家上網到現在任何地方都可以行動上網，原本單純的網際網路行為已經變得越來越複雜，不論是通訊協定推陳出新，或是連接網際網路型態的改變，「變」就是網際網路的正常型態，因此在各項網路相關產品中(End-user product、Ethernet Switch/Router、Wireless Product and Firewall 等)，都必須要因應這些變化進行修正，然而在實驗室中的測試項目並無法隨著這些變化立即做出反應，也因此讓產品在客戶端容易因為這些新興應用與服務造成產品不穩定的現象，因此真實環境下的測試方式相形重要。NCTU BetaSite 正是此類型的測試方法，將各項產品建置於使用者環境之中，以真實的流量與服務對產品進行測試，而且對於網路世界的變化也隨著各項協定與產品更新增加更多測試項目與方法，舉凡 Cloud Computing、IPv6、Malware/Botnet 與 Thin AP/WLAN Controller 等相關議題皆為 BetaSite 有興趣且投入資源研究的方向，期望在此真實環境之下提升產品的穩定性。

Session 4: PCAP Library for Real Traffic Validation & Bug Reproduction

Speaker: 呂俊男 工程師

Abstract:

隨著真實網路寬頻普及與光纖佈建、P2P 應用盛行、網路應用程式流量內容及行為複雜度增加，加上網通設備本身的功能設計也愈趨繁雜，所以網通設備若僅個別使用實驗室測試(Lab Test)或是實地測試(Field Test)進行測試是不夠的；Lab Test 難以製造出足夠的 test cases 去測試程式碼中各種 statement、branches 及 paths 的單獨或是交互執行結果；而 Field Test 在快速地重製問題及針對待測物能力分級測試上力有未逮，所以 NBL 結合了 Lab Test 及 Field Test 各自的優點發展了真實網路流量測試(RealFlow Test)—利用 NCTU Beta Site 上收集來的使用者使用的網路應用程式行為及流量內容，以可控制的方式，重播網路流量至待測物上進行測試；這些真實網路流量同時也被分門別類、根據不同特性加以儲存彙整，成為流量資料庫—『PCAP Library』，並開發出兩項應用—SOHO Router 連網服務的穩定性及資安產品流量辨識或惡意程式偵測能力等測試。期望能利用交通大學宿網龐大且複雜之真實網路流量對網通及資安產品性能及效能做最後把關，並降低顧客端問題(Customer Found Defect)出現的機率。

Session 5: WLAN Traffic & Environment Replay Technologies

Speaker: 古佳育 經理

Abstract:

Real traffic replay is one of the solutions used to test network devices over complicated scenarios. Packet traces captured in a real environment hold more details than any mathematical models. However, the lack of packet-replay control and environment emulation might highly affect traffic behaviors, especially in wireless networks. Real traffic replay in wireless networks requires packet-replay control to manage the interactions with the device under test (DUT), and coordinately reproduces environment effects, such as fading, noise, and interference. Therefore, we designed a tool called WlanReplay to transform the captured packet trace into a sequence of events, and synchronize the environment effects, such as fading in a real environment, with the packets in traffic replay. We propose a quantitative metric, called the event reproduction ratio (ERR), to evaluate the effectiveness of traffic replay. Our software implementation on the Linux-based system demonstrates that EAR achieves the ERR of 95.9% and 92.45% over the DUT-dependent traffic and fading environments, respectively. Under the same condition, the straight-forward replay can only produce the ERR of 20.6% and 0%, respectively.