

ISC Evolution:

Software Quality Services



Agenda

- ISC Evolution: Introducing Kannan Ayyar
- BIND 9 and DHCP 4 Roadmaps
- Looking forward: BIND 10
- Engineering Software Quality Initiative
- Services Updates
- Q&A



ISC Evolution

Kannan Ayyar
CEO, ISC



Introducing Kannan

- 25 years experience in managing Enterprise software development
- Named ISC President in June 2012
- Significant experience with large scale projects for Fortune 500 clients
- Expert at successfully guiding companies through sea changes and significant growth



ISC History

	1994	1996	1997-2000	2004	2006	2008	2009 - 2010	2011	2012
Enterprise Software									Monitoring, Enterprise edition...etc
Technical Services							SIE	SNS	DNSDB
Technical Support				Technical Support		Training and Consulting		Cert	
Network Operation		1 F-Root	Anycast Root				Comm F-Root	55 F-Roots	
Open Source Software	BIND 4	DHCP	BIND 8 & 9		DHCP 4 with IPv6		NMSG	OpenCPE	



ISC Product Progress

Open Source Projects	Lead to Enterprise Products
BIND	Enterprise BIND Solutions
DHCP	Enterprise DHCP Solutions
Security Information Exchange (SIE)	DNS-DB – Passive DNS Data Consulting Services
Open Source Routing	
OpenCPE	



Upcoming BIND and DHCP Features and Releases

Larissa Shapiro
BIND and DHCP Product Manager



BIND 9.9

- Released February 2012
 - Current version 9.9.1
 - Security update today
 - 9.9.2 in September (stabilizing update)
 - 9.9.3 performance improvements
 - 9.9.4 (Q1 2013) designated ESV
 - For current status of all versions see <http://www.isc.org/software/bind/versions>



Looking forward in BIND 9

BIND 9.10, summer 2013:

- EDNS0 handling
- Performance and benchmarking
- Potential other features
 - Whole answer cache
 - More key management tools
 - MultiMaster(?)
 - Response Rate Limiting



DHCP Status and Roadmap

- Security update today
- Next release, 4.2.5, comes out in Q4, contains bug fixes and other maintenance work



DHCP 4.3

- DHCP 4.3 will be released in 2013
 - Configurable items at runtime (leases)
 - Performance
 - Infiniband on Linux support
 - Code Quality / tests
- Eventually (4.4):
 - IPv6 functional parity with the IPv4 implementation.



DHCP Versions and EoL

- EoL: 3.1-ESV March 1, 2012
- 4.1-ESV is current version
- 4.2 is the active development version
- 4.3 is the next ESV (Extended Support Version)

For current status of all versions please see
<http://www.isc.org/software/dhcp/versions>



Streamlining Feature Support

- For BIND and DHCP, a review of older code and operating system support is under way.
- Customer insight on operating systems used, features used, ancillary code (like libbind) used, is very helpful.
- Any feature or version support which is considered for EoL will be given a 60 day customer comment period.



BIND 10 DNS and DHCP Update



Why BIND 10?

- BIND 9 is more than 10 years old
- The computing world has changed
 - Multi-core machines, massive RAM, ...
- The networking world has changed
 - Fiber everywhere, mobile devices, ...
- DNS software “marketplace” has evolved
 - Special-purpose servers, new ideas
- An architecture for the next 10+ years



What Makes BIND 10 Special

- Customizable
 - Both “out of the box” and bespoke
 - Full run-time control (no restarts)
- Scalable
- Reliable
 - Well-tested
 - Resilient to failures and software errors
- Re-usable
 - Well-defined APIs and libraries



Cool BIND 10 Technologies?

- Cooperating processes
 - Helps customization, scaling, ...
- Generic data sources
 - SQLite and in-memory now, more later
- Full run-time configuration
 - New modules can use easily
 - RESTful HTTP/SSL interface
- Best logging system around



Current Status 1/2

- Working DNS server
 - In-production AS112 server
 - Several small production users
- Current focus: Usability
- **Expect beta release by end of 2012**
 - Production for authoritative
 - Alpha September 27th
 - Please look, test in labs and prepare for beta!



Current Status 2/2

- Resolver work resuming this winter
 - Performance
 - Query traceability
 - Performance
 - DNSSEC validation
 - Performance



BIND 9 – 10 Co-existence

- Period of multiple options
- Two substantially different architectures
- Transitional tools planned
- No official BIND 9 EoL date yet
- Modular development model may allow innovation in BIND10 modules to be shared with BIND9 deployment for a time



BIND 10 and DHCP

- DHCP is being re-implemented using BIND 10's architectural platform
- Modular dhcp server client and relay
- First class IPv6 support
- high performance
- "hooks" mechanism built in from the beginning
- Additional goal of embedded-friendly dhcp versions



DHCP Schedule

- First year of work completed with skeleton server
- Aggressive 2012 schedule to try to get a production ready server within a year
- *Code will be ready for general use and a public beta in summer 2013.*
- Project details, code, tickets and more at:
bind10.isc.org



ISC Engineering

Scott Mann

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Quality

- What does it mean to have quality software?
 - Better than before?
 - Good?
 - Five 9's?



BIND 10

- TDD
- Very high percentage of unit test coverage
- Lettuce infrastructure
- Continuous integration



BIND 9

- Low unit test coverage
- Moderate system/integration test coverage
- Home grown testing framework
- No continuous integration



What are the results?

- BIND 10
 - Still unknown
- BIND 9
 - Most defects are found by users/customers
 - Many defects are DOS vulnerabilities
 - No remote exploits, due to architecture
 - Perhaps remarkably few defects over its current lifespan



What can we improve?

It would be nice if we found most of the defects

It would nice if we had fewer security patches



What do we need to do?

- Protocol testing
 - Use open source tools
- Feature conformance testing
 - Non-protocol features
- Load and stress testing
 - Find the corner cases
- Performance testing
 - Comparative: are we as fast as we once were?
- Fuzz testing
 - All sorts of malformed packets



Internal Focus: Improve Quality

- Produce a QA implementation plan
- Bring up release engineering
- Engineering best practices
- Controlled beta releases and programs
- Measure improvements



Services Updates

Sue Graves
Client Services Manager



Professional Services Offerings

- Professional Support for BIND and DHCP
- Expert Training in BIND, DNSSEC, DHCP, IPv6
- Onsite and remote consulting on DNS, DHCP, Security, IPv6 and more
- New services coming soon
 - Monitoring!
 - DNSDB
 - New offerings in consulting/audit...
 - New website look in progress!



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Who you gonna call?



Cathy Brian Sue Michael and Eddy at your Service!

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Current Consulting Offerings

- Migration/Upgrade Package
- DNSSEC Configuration Review, Planning, and Implementation Packages
- IPv6 Readiness Package



DNS Security Audit

- Response to recent security events and customer needs
 - WikiLeaks DDoS
 - GoDaddy Outage
- Harness the credentials of ISC to help you ensure your nameservices are secure
- Onsite evaluation by ISC experts followed by documented, customized recommendations



DNS Architectural Audit

- ISC experts interview your staff, review your topology and produce guidelines on:
 - Adherence to best practices
 - High availability and resilience
 - DNSSEC for identity security
 - IPv4 and v6 compliance and coexistence
 - Anycast for resilience and capacity
 - DHCP failover capability
 - Design for scalability
 - Future planning: product, service, and training recommendations



Upcoming Trainings

- Intro and Advanced BIND Training:
 - October 1-5, Singapore
 - October 15-19, Redwood City
 - November 5-9, Dallas
 - December 17-24, Sydney
- DNSSEC Implementation and Deployment, October 24-26, London
- IPv6 Fundamentals Workshop, November 12-14, Amsterdam



Special Offer

For attendees of today's session, 20% off any training course booked by the 15th of October, 2012*.

*Coupon code will be supplied via email after the session.



Questions



Thank you for your time.

