

# DNS / DNSSEC Workshop

## IPv6 and DNS

Hong Kong  
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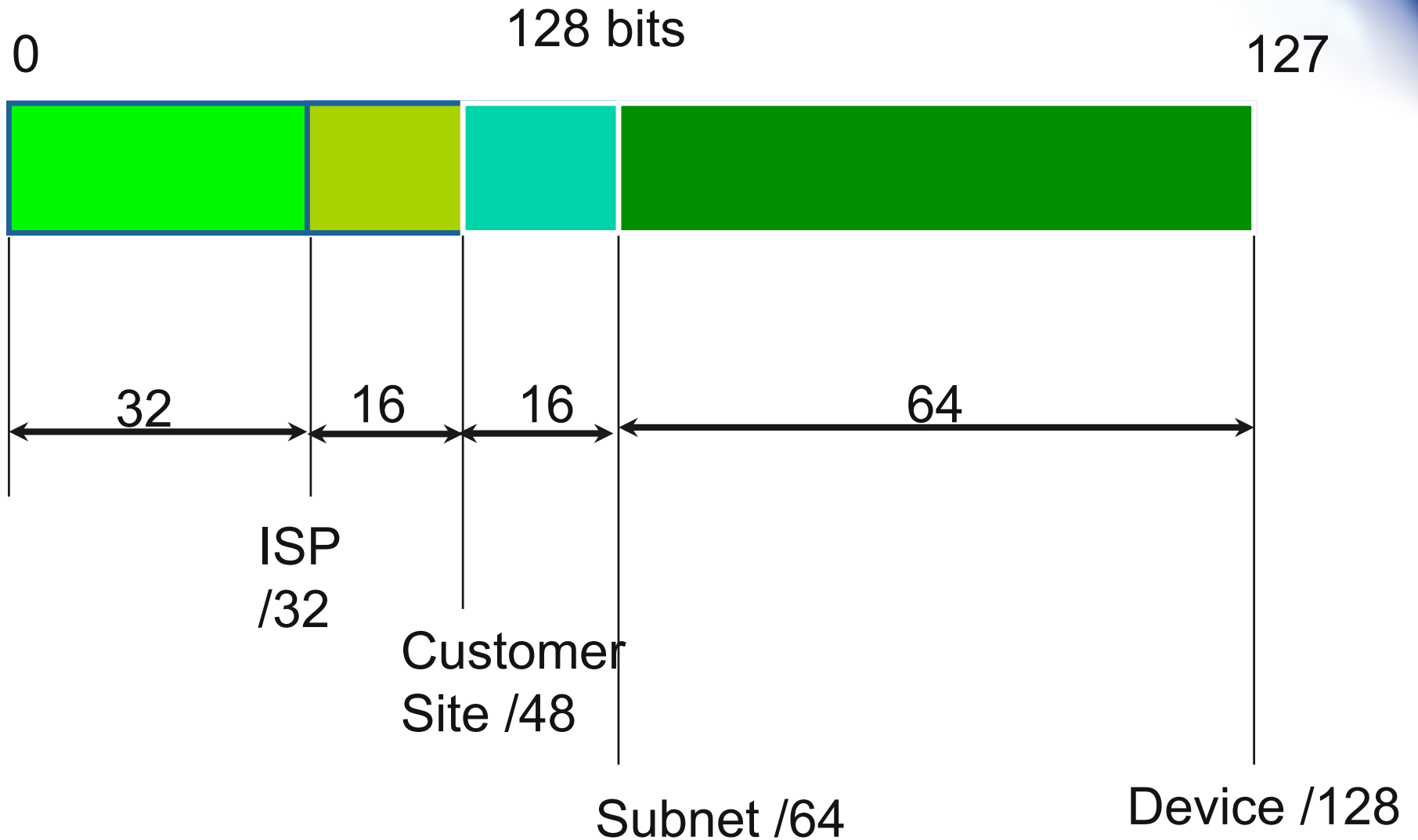
in conjunction with

**APRICOT 2011**

# IPv6 addressing

- 128 bits of address space
- Hexadecimal values of eight 16 bit fields
  - X:X:X:X:X:X:X:X (X=16 bit number, ex: A2FE)
  - 16 bit number is converted to a 4 digit hexadecimal number
- Example:
  - FE38:DCE3:124C:C1A2:BA03:6735:EF1C:683D
  - Abbreviated form of address
    - 4EED:0023:0000:0000:0000:036E:1250:2B00
    - →4EED:23:0:0:0:36E:1250:2B00
    - →4EED:23::36E:1250:2B00
    - (Null value can be used only once)

# IPv6 addressing structure



# IPv6 representation in the DNS

- Forward lookup support: Multiple RR records for name to number
  - AAAA (Similar to A RR for IPv4 )
- Reverse lookup support:
  - Reverse nibble format for zone ip6.arpa

# IPv6 forward lookups

- Multiple addresses possible for any given name
  - Ex: in a multi-homed situation
- Can assign A records and AAAA records to a given name/domain
- Can also assign separate domains for IPv6 and IPv4

# Sample forward lookup file

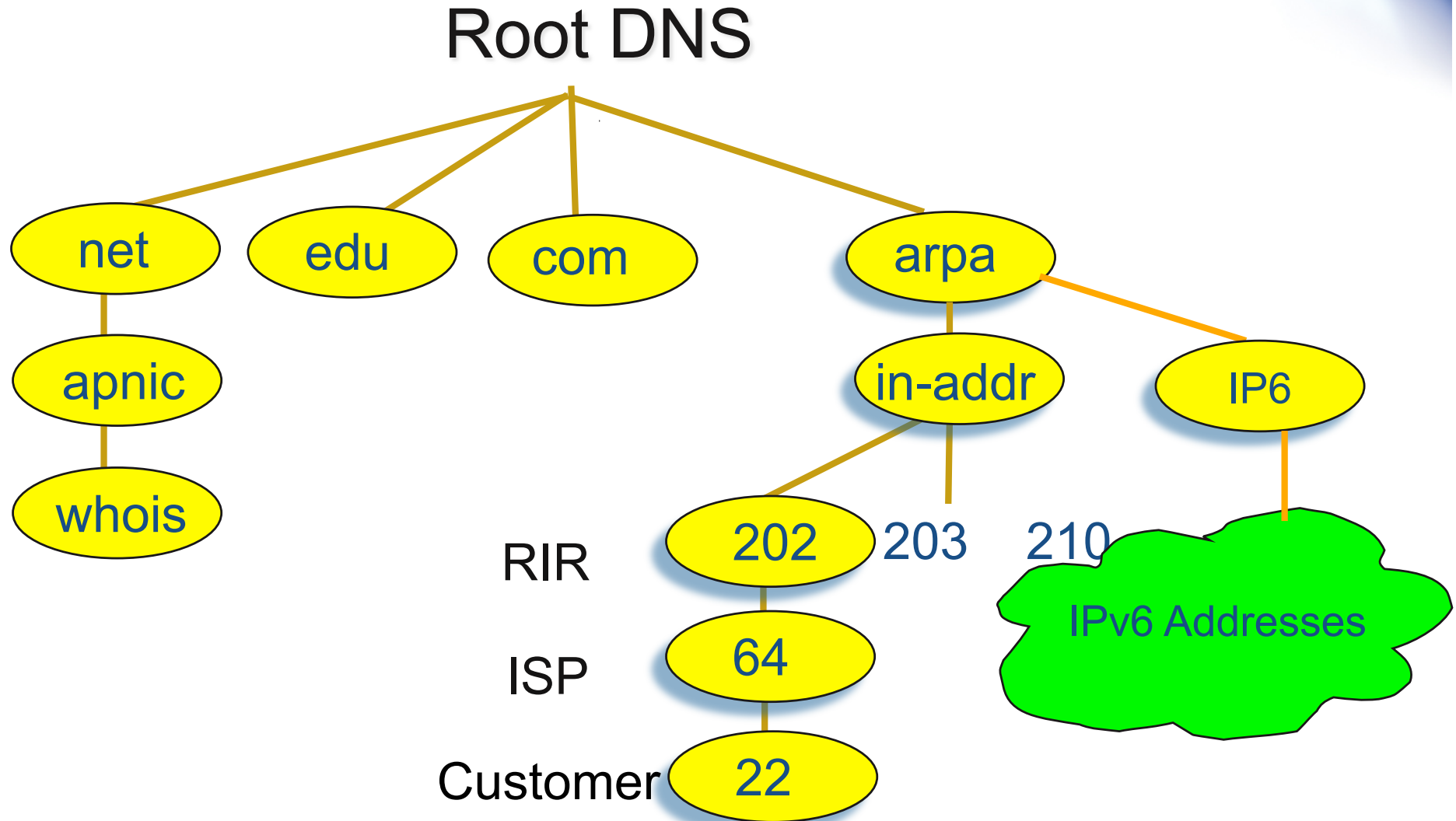
```
;; domain.edu
$TTL          86400
@           IN      SOA      ns1.domain.edu. root.domain.edu. (
                2002093000    ; serial - YYYYMMDDXX
                21600         ; refresh - 6 hours
                1200         ; retry - 20 minutes
                3600000       ; expire - long time
                86400)       ; minimum TTL - 24 hours

;; Nameservers
                IN      NS      ns1.domain.edu.
                IN      NS      ns2.domain.edu.

;; Hosts with just A records
host1        IN      A        1.0.0.1

;; Hosts with both A and AAAA records
host2        IN      A        1.0.0.2
                IN      AAAA    2001:468:100::2
```

# The reverse DNS tree – with IPv6











# Questions?

