

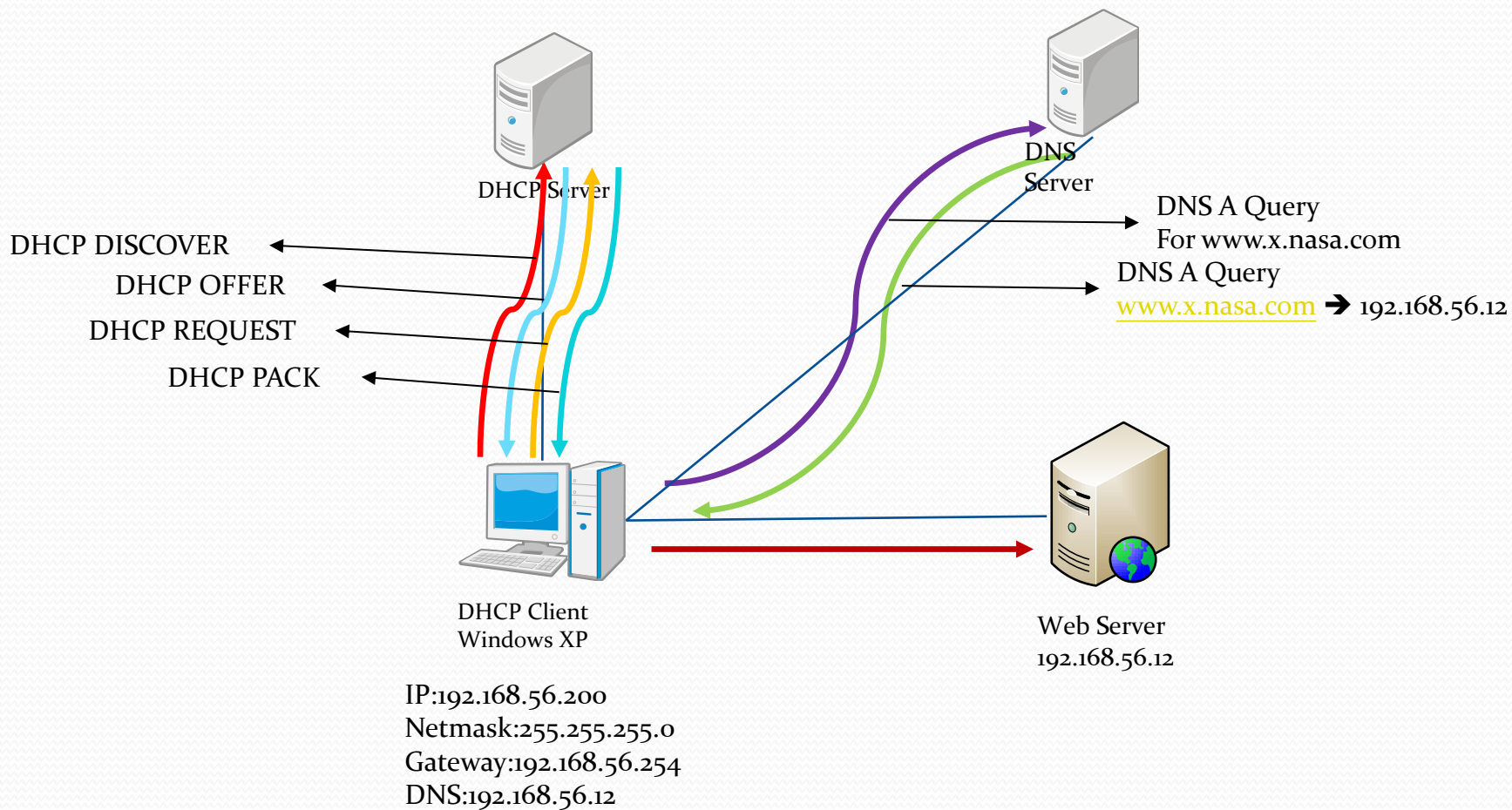
DHCP & DNS

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大綱

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架構



DHCP-Dynamic Host Configuration Protocol

- DHCP DISCOVER
- DHCP OFFER
- DHCP REQUEST
- DHCP PACK

DHCP-Dynamic Host Configuration Protocol

- /etc/dhcp/dhcpd.conf
 - DHCP Service的主要設定檔
 - option domain-name “ ”; => 主機網域名稱
 - option domain-name-servers 192.168.56.201; =>DNS Server IP
 - default-lease-time 600; =>預設的IP租用期限
 - max-lease-time 7200; => 最大IP租用期限
 - subnet 192.168.56.0 netmask 255.255.255.0 { =>DHCP發送資訊(必須與發送DHCP資訊的網卡同一網段)
 - range 192.168.56.101 192.168.56.150; =>IP發送範圍
 - option routers 192.168.56.254; =>Gateway
 - option subnet-mask 255.255.255.0; =>Subnet Mask
 - host HostInfo { =>指定特定主機固定的IP資訊
 - hardware ethernet “MacAddress”;
 - Fixed-address “FixedIP”;
 - }
 - }

DHCP configuration

```
# DHCP Server Configuration file.
#   see /usr/share/doc/dhcp*/dhcpd.conf.sample
#   see 'man 5 dhcpd.conf'
#
option domain-name "nasa.com";
option domain-name-servers 192.168.56.201;
default-lease-time 600;
max-lease-time 7200;
subnet 192.168.56.0 netmask 255.255.255.0 {
    range 192.168.56.100 192.168.56.150;
    option routers 192.168.56.254;
    option subnet-mask 255.255.255.0;
    #       host NasaClient {
    #           hardware ethernet ;
    #           fixed-address;
    #       }
}
~
~
~
~
~
```

DNS-Domain Name System

- `x.nasa.com` → 建立個人DNS Server(x請輸入您的學號)
- `/var/named/chroot/etc/named.conf`
 - DNS主設定檔，DNS Service各項參數設定
 - `listen-on port 53 {192.168.56.201};` => DNS服務所使用的Port以及在本機的哪個介面啟用
 - `directory "/var/named";` => DNS Zone File所存放的位置
 - `allow-query {0.0.0.0/0};` => DNS服務允許那些主機查詢
 - `forwarders {140.112.30.21};` => 當查詢非本DNS主機的Zone時將該查詢轉送到外部的DNS主機
 - `zone "x.nasa.com" IN` =>本機DNS Zone的名稱
 - `type master/slave;`
 - `file "參照的Zone File";`

DNS-Domain Name System

- `/var/named/chroot/var/named.x.nasa.com`
 - DNS Zone File設定檔，由named.conf中指定的Zone存放的位置，DNS每個Zone的資訊
 - TTL：每筆解析紀錄cache的時間，每筆RR紀錄可訂cache時間，當沒有自訂時則使用TTL時間
 - SOA:該DNS Server網域名稱的管理資訊
 - Domain Name
 - DNS Server
 - 管理員E-mail
 - Serial : zone file的版本，由管理員在每次變更zone file時修改版本序號
 - Refresh：Slave DNS Server每經過多少時間會檢查與Master DNS Server的Serial是否相符，當不同時則會與Master要求更新
 - Retry：當Slave DNS Server無法與Master DNS Server連線時，經過多少時間會重新嘗試
 - Expire：當超過expire時間Slave DNS Server還是無法與Master DNS Server連線，則刪除Slave中的zone file
 - Minium：無效紀錄的cache時間

DNS-Domain Name System

- RR(Resource Record)
 - A：IPv4的網域名稱對應
 - AAAA：IPv6的網域名稱對應
 - PTR：反向對應，IP對應網域名稱
 - CNMAE：別名
 - MX：網域中郵件伺服器的主機
 - NS:網域中名稱伺服器主機

- NS dns
- dns A 192.168.56.12
- www A 192.168.56.12
- nasa.com MX mail.nasa.com

DNS Configuration – /etc/named.conf

```
//
// named.conf
//
// Provided by Red Hat bind package to configure the ISC BIND named(8) DNS
// server as a caching only nameserver (as a localhost DNS resolver only).
//
// See /usr/share/doc/bind*/sample/ for example named configuration files.
//
options {
    listen-on port 53 { 192.168.56.201; };
    listen-on-v6 port 53 { ::1; };
    directory "/var/named";
    dump-file "/var/named/data/cache_dump.db";
    statistics-file "/var/named/data/named_stats.txt";
    memstatistics-file "/var/named/data/named_mem_stats.txt";
    allow-query { 0.0.0.0/0; };
    forwarders {140.112.30.21; };
    recursion yes;

    #dnssec-enable yes;
    #dnssec-validation yes;
    #dnssec-lookaside auto;

    /* Path to ISC DLV key */
    bindkeys-file "/etc/named.iscdlv.key";

    managed-keys-directory "/var/named/dynamic";
};

logging {
    channel default_debug {
        file "data/named.run";
        severity dynamic;
    };
};

zone "." IN {
    type hint;
    file "named.ca";
};

include "/etc/named.rfc1912.zones";
include "/etc/named.root.key";
~
```


DNS Configuration - /var/named/named.x.nasa.com

```
$TTL 1D
@      IN SOA  dns.mars.nasa.com. rname.invalid. (
                                2013051301      ; serial
                                1D              ; refresh
                                1H              ; retry
                                1W              ; expire
                                3H )            ; minimum

;NS    @
;A     127.0.0.1
;AAAA  ::1
      NS   dns
dns    A   192.168.56.201
www    A   192.168.56.201
~
~
~
~
~
```

DNS Configuration

- service named start

```
[root@nasaserver named]# service named start
Starting named: [ OK ]
[root@nasaserver named]#
```