Part I

Appendix
10.4 RDF schema for application layer discovery

We now illustrate sample RDF schema that can be used for information discovery. For the sake of brevity we have provided only a subset of the schema. We have selected to show examples that include combination of basic and extended sets of classes and their associated properties. For example a network class will have properties of type L2 and L3. An L2 class will have properties such as network-id, operator, location and neighbor information.

Schema primitives

We present sample primitives in ASN.1 format that can be transported as part of RDF schema.
Network class has two properties, namely L2 for layer-2 information and L3 for higher-layer information. Any property can be added to this class in an extended schema.

L2 class has properties that are specific to link-layer. The properties include network-id, operator, location and neighbor-information properties. Any property can be added to this class in an extended schema.

Figure 10.1: Sample RDF Schema for Information Service
Network ::= ENUMERATED(L2info, L3info, Location)
L2info ::= ENUMERATED{802.11, 802.16, GSM, GPRS, W-CDMA, cdma2000}
L3info ::= ENUMERATED{IPv4, IPv6}
Location ::= SEQUENCE{
    Geo-location ::= String
    Civic-address ::= String
}
802.11 ::= SEQUENCE{
    Standards ::= BITMAP(802.11a, 802.11b, 802.11g)
    SSID_Network_Name ::= String(SIZE(1..255))
    BSSID ::= NumericString(SIZE(6))
    Channel ::= TMTFGR
    Phy ::= ENUMERATED(CCK, DSSS, OFDM)
    Data_rates ::= INTEGERS
    Network_Service_Provider_Name ::= String
    Network_Service_Provider_Tariff ::= String
    Cipher_Suites ::= BITMAP{WEP, TKIP, AES-CCMP}
    Authenticated_Key_Management_Suites ::= BITMAP{WEP, PSK, 802.1x}
    Quality_of_Service ::= ENUMERATED{802.11e}
    Cost ::= INTEGERS
    Roaming_List ::= String
    Mobility ::= ENUMERATED{802.11r, 802.11u, 802.21, PreAuth}
}
IPv4 ::= SEQUENCE{
    Router_Address ::= String
    DHCP_Server_Address ::= String
    DomainName ::= String
    Subnet ::= String
    SIP_Server_Address ::= String
    KeyManagementProtocol ::= ENUMERATED{IKEv1, IKEv2}
    Authentication ::= ENUMERATED{PANA, RADIUS}
    PacketCiphering ::= ENUMERATED{IPsec}
    Internet_Service_Provider_Name ::= String
    Internet_Service_Provider_Tariff ::= String
    Mobility ::= ENUMERATED{IPv4, CT, CARD, Preauth}
    Quality_of_Service ::= ENUMERATED{...}
    VPN_Gateway_Address ::= String
    NAT_Address ::= String
}
MIPv4 ::= SEQUENCE{
    HomeAgent_Address ::= String
    ForeignAgent_Address ::= String
}
PANA ::= SEQUENCE{
    PAA_Address ::= String
    EP_Address ::= String
}

Figure 10.2: RDF Schema of ASN.1 primitives