

DICOM Correction Item

Correction Number	CP-633
Log Summary: Define DNS Service Type and parameters for DICOM	
Type of Modification	Name of Standard
Correction	PS 3.15 2006
<p>Rationale for Correction</p> <p>In the absence of suitably configured LDAP servers, configuration management remains problematic. The establishment of small ad hoc networks of DICOM devices by inexperienced personal is difficult, yet widely deployed solutions for other protocols exist to solve these problems.</p> <p>DNS contains a mechanism for not only providing information a mapping of domain names to IP addresses, but also of returning additional information in response to queries. The DNS SRV record exists for this purpose, but there is no standard "Service Type" for DICOM to include in the SRV record. The form of the SRV record is described in RFC 2782 "A DNS RR for specifying the location of services (DNS SRV)".</p> <p>In addition, there exists two useful proposals, already widely implemented together in free and commercial products (including Apple's Bonjour (formerly Rendezvous) and almost all networked printers on the market), DNS-SD and mDNS. Several independent freely available source toolkits for multiple platforms implement both protocols.</p> <p>DNS Service Discovery (DNS-SD) defines a convention for the use of the local domain room,, an additional level of indirection such that specific instances of a named service may be located, and a means of defining parameters for that service with TXT records.</p> <p>Multicast DNS (mDNS) describes a mechanism for devices to announce their presence, make queries and provide answers by multicasting DNS records on the local sub-net.</p> <p>Together DNS-SD and mDNS allow self-announcement and self-discovery of services on the local subnet, or in conjunction with DNS Dynamic Updates (RFC 2136), self-discovery across DNS servers on a larger scale.</p> <p>Hence the use of a standard DICOM DNS Service Type for SRV and TXT records may be used for two purposes, either with conventional queries to and response from a DNS server, or in the absence of a suitably configured DNS server, using multicast DNS queries to which devices themselves respond.</p> <p>Two independent experimental implementations of DICOM devices using different underlying implementations of mDNS have demonstrated the interoperability and utility of the use of a DICOM Service Type. Multiple nodes with no a priori knowledge of each other were able to detect each other's presence, be made available to the user, and C-FIND, C-MOVE and C-STOREs successfully performed.</p>	
Sections of documents affected	
PS 3.15 Annex H	
Correction Wording:	

Add section F.1.1.6

F.1.1.6 Support for Service Discovery

The DNS server may provide additional optional information in support of configuration management. See section H.2 for the specification of this information and additional RFC's to be supported.

Add section H.2

H.2 DNS SERVICE DISCOVERY

H.2.1 Scope

Service discovery mechanisms provide a means for devices to announce their presence and seek information about the existence of other services on the network. Many of these mechanisms are DNS-based.

The exact use of such protocols as DNS Service Discovery (DNS-SD), Multi-cast DNS (mDNS) and DNS Dynamic Updates is defined in RFC's referenced by DICOM. This section standardizes the name to be used in DNS SRV records for such purposes, and the DNS TXT records that encode accompanying parameters.

Security issues associated with self discovery are out of scope. See section F.1.1.4 for the informative discussion on DNS Security issues.

H.2.2 Use Case Roles

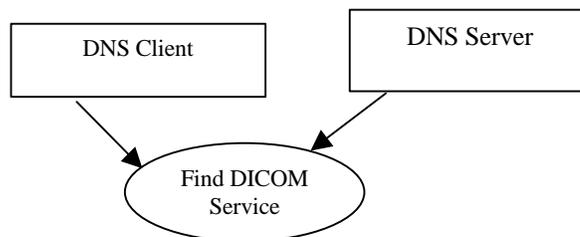


Figure H.2-1 Find DICOM Service

- | | |
|-------------------|--|
| DNS Server | Provides list of DICOM Association Acceptors |
| DNS Client | Requests list of DICOM Association Acceptors |

H.2.3 Referenced Standards

- RFC-2181 Clarifications to the DNS Specification
- RFC-2219 Use of DNS Aliases for Network Services

RFC-2782 A DNS RR for specifying the location of services (DNS SRV)
RFC 2136 DNS Dynamic Updates <<http://www.rfc-editor.org/rfc/rfc2136.txt>>
RFC 2782 A DNS RR for specifying the location of services (DNS SRV) <<http://www.rfc-editor.org/rfc/rfc2136.txt>>
DNS SRV (RFC 2782) Service Types <<http://www.dns-sd.org/ServiceTypes.html>>
DNS-Based Service Discovery <<http://files.dns-sd.org/draft-cheshire-dnsext-dns-sd.txt>>
DNS Self-Discovery <<http://www.dns-sd.org/>>
Multicast DNS <<http://files.multicastdns.org/draft-cheshire-dnsext-multicastdns.txt>>
Multicast DNS <<http://www.multicastdns.org/>>

The name to be used in the DNS SRV to advertise DICOM Association Acceptors, regardless of the SOP Class(es) supported, shall be "dicom".

Note: This choice is consistent with one of the names registered with IANA to define the mapping of IP ports to services, which is conventional for this usage. The choice "dicom" is used rather than the "acr-nema" alternative for clarity. There is no implied port choice by the usage in the DNS SRV Service Type, since the port is explicitly conveyed.

The DNS TXT record may contain the following parameters:

- AET=<*application entity title*>, where the value <*application entity title*> is to be used as the Called Application Entity Title when initiating Associations to the device
- PrimaryDeviceType=<*primary device type*>, where the value <*primary device type*> is as defined Table H.1-2 Attributes of Device Object

In the absence of a DNS TXT record, or the AET parameter of the DNS TXT record, then the Instance Name preceding the Service Type in the DNS SRV record used for DICOM service discovery shall be the AET.

Note: Further parameters are not specified, for example to indicate the SOP Classes supported or other information, since the size of DNS records encoded as UDP datagrams is strictly limited, and furthermore, the envisaged multicast usage encourages the exchange of the minimal information necessary. The existing DICOM association negotiation mechanism can be used to explore the SOP Classes offered once the IP address, port number and AET are known. The primary device type is supplied because it is useful to indicate to users the type of device, which is not conveyed during association establishment.