

Document filename: ITK Spine Mini Service – CP-IS Provider Requirements

Directorate / Programme	HSCIC - Architecture	Project	CP-IS
Project Manager	N/A	Status	Release
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ITK Spine Mini Service – CP-IS Provider Requirements

Document Management

Revision History

Version	Date	Summary of Changes
0.1	02/06/2014	Initial draft
0.2	10/06/2014	Issued for internal review (limited audience)
0.3	17/06/2014	Updates to the table structures after first internal review
0.4	26/06/2014	Update to some of the wording to clarify where TMS and ITK side interactions are being referred to.
0.5	02/07/2014	Updates to error codes and correction of error in request message definition
1.0	15/07/2014	Versioned 1.0 for general distribution to suppliers
1.1	09/12/2014	<ol style="list-style-type: none"> 1) Updated response code table to resolve ambiguity in usage of SMSP error code response when a TMS acknowledgement message is received from Spine. 2) Added requirement to validate the request payload assignedAuthor attributes against SDS if the client making the request is Spine RBAC enabled.

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Reference Documents

Ref	Description
01	CP-IS NHS System Specification Baseline v1.0
02	ITK Spine Mini Service - Common Provider Requirements
03	TMS Message definition: Child Protection Domain Message Specification (v1.0 RC3 at 03/07/14) <i>NB. The TMS CPIS Message specification is published on TRUD</i> <i>(https://isd.hscic.gov.uk/trud3)</i>
04	CPIS ITK message definitions These can be downloaded from: https://isd.hscic.gov.uk/trud3/user/guest/group/41/pack/22

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1 Introduction

Spine Mini Services are a specification to enable suppliers of third party software to provide solutions that provide a greatly simplified interface for accessing a subset of Spine services. The intent is to thus lower the “barrier to entry” to the Spine.

This document forms part of the overall document set for the Interoperability Toolkit (ITK).

1.1 Purpose of Document

This document is a specification for the implementation of services that are expected to be provided by a Spine Mini Service Provider (SMSP). There are also requirements in here for the design and assurance process. The implementation specification provides some requirements for some non-functional behaviour of the SMSP as well as some guidance for implementation decisions.

Some of the requirements in this document will be assured using the Common Assurance Process and some will be assured using the ITK Accreditation process.

1.2 ITK Documentation Set

The position of this document in relation to the document set is shown below.

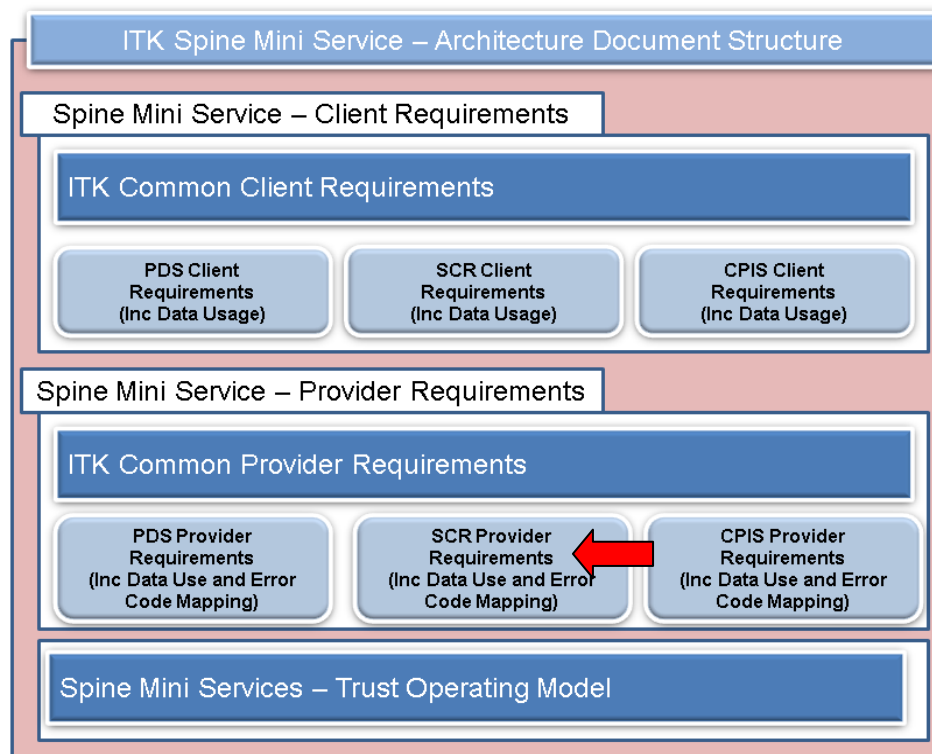


Figure 1 – The ITK Spine Mini Services Architecture Document Set.

1.3 Audience

The primary audience for this document are the developers (analysts, architects, developers) working on the ITK Component of the Spine Mini Service being developed. Within a Trust, the Project Manager and technical team will find the entire document set relevant.

These requirements are common/generic to all CP-IS ITK Spine Mini Service Provider implementations.

2 High Level Overview

2.1 Level 0 view

A SMSP is an application which handles the complexity of dealing with the Spine TMS boundary yet provides a simplified interface to its clients. The complexity saving can be expressed both in terms of relaxed requirements for certain system calls and or syntactically and semantically more concise messaging.

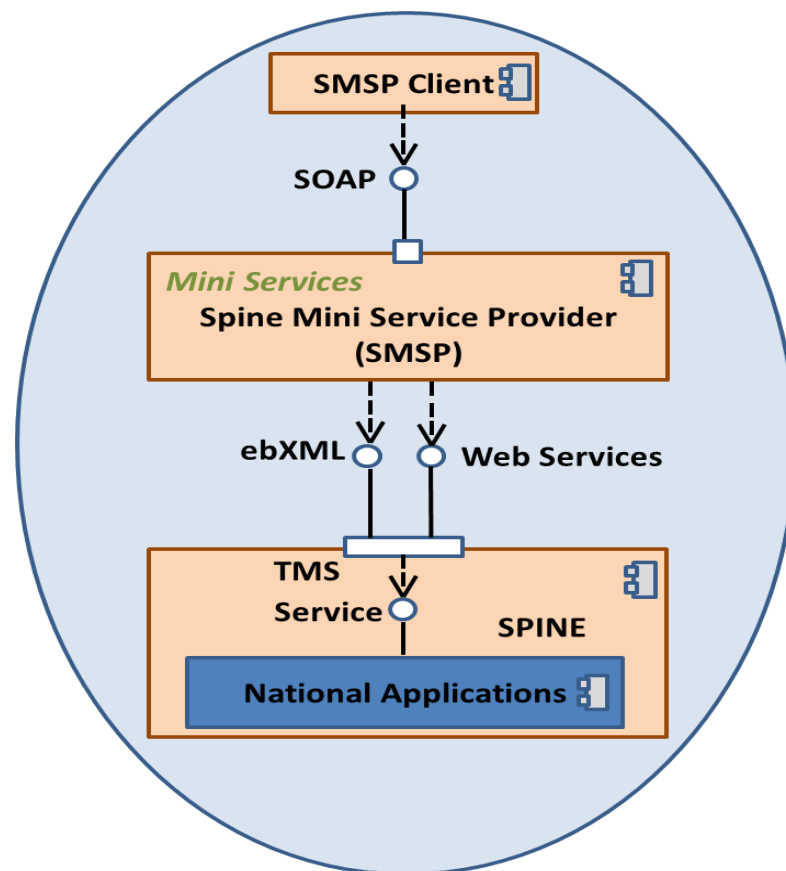


Figure 2: High Level view of an ITK Spine Mini Service

Note: The ebXML asynchronous model is NOT supported by the CP-IS service.

This document specifically focuses on the CP-IS (Child Protection Information service) that will provide Health services with information regarding the status of patients who have Care plans held for them at Local authorities.

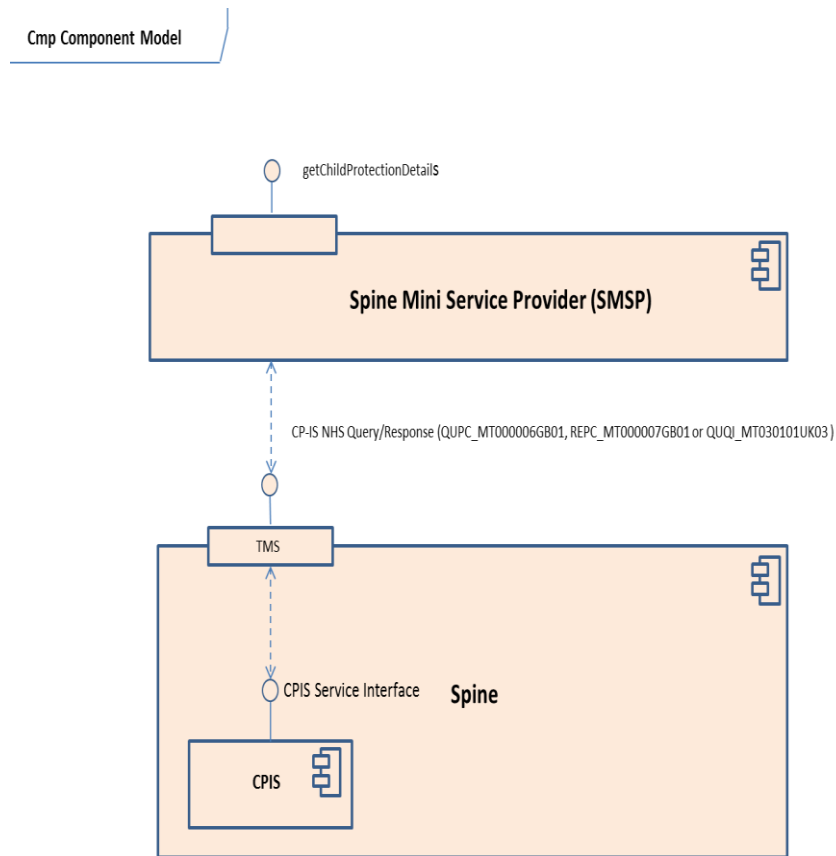


Figure 3: CP-IS Services in scope of this document

A SMSP MAY (and indeed, in some cases MUST) provide internal business logic above and beyond simple adaptor logic (e.g. filtering, protocol translation etc.). The following sections in the document are logical groupings of related principles of the architecture of an SMSP that must be considered and have some additional requirements. Some areas may overlap areas that are covered in other related documents from the Mini Services pack; notably the Interface specification and the Vocabulary specification.

3 CP-IS Implementation Principles

3.1 CP-IS Data Elements and Messaging

SMSP-CPIS-001: Cardinality of elements in the Spine CP-IS service response messages MUST be honoured in the SMSP ITK response message

The Spine CP-IS service may return elements with explicitly blank values or it may decline to return an element at all. Both of these have different meanings with regards to the client application's expected behaviour. Thus, elements that are omitted from a Spine CP-IS response message MUST be omitted from the SMSP ITK response message.

SMSP-CPIS-002: Date fields returned by the Spine CP-IS service that are of a higher resolution than the maximum resolution specified in the interface specification MUST be truncated to the correct resolution

The Spine CP-IS service may return dates to a greater resolution than specified in the ITK SMSP Interface Specification. In cases where this occurs, it is a requirement of the SMSP to truncate the field to the resolution specified in the SMSP ITK response message.

E.g. if the Spine returns a date in format that includes hours, minutes & seconds but the ITK specification only allows for yyyyymmdd then the hours minute & seconds should be omitted from the response.

SMSP-CPIS-003: Date fields returned by the Spine CP-IS Spine service that are of a lower resolution than the maximum resolution specified in the SMSP ITK interface specification MUST be zero padded to the correct resolution

The Spine CP-IS service may return dates to a lower resolution than specified in the ITK SMSP Interface Specification. In cases where this occurs, it is a requirement of the SMSP to zero pad the field to the resolution specified in the SMSP ITK response message.

E.g. if the Spine returns a date in format yyyyymmdd but the ITK message specification specifies a date to a resolution which includes the hours minute & seconds then these should be zero filled.

SMSP-CPIS-004: Data served through the SMSP ITK interface MUST be sourced solely from the Spine CP-IS service

Data served through the SMSP ITK Interface MUST be provided from the national service – i.e. the SMSP ITK Interface MUST NOT serve information derived from another source.

SMSP-CPIS-005: The assignedAuthor attributes in the payload of CP-IS requests originating from a Spine authenticated Smartcard user MUST be validated against SDS.

If a CP-IS client request is associated with a Spine RBAC enabled user (i.e. user has a Spine "smartcard identity"), the SMSP MUST check the assignedAuthor attributes in the payload using SDS and reject the request using error code SMSP-0005 if this check fails

3.2 Mini Service to Spine Service mapping

SMSP-MESSAGES-001: Appropriate usage of National Application services MUST be elaborated in documentation

The SMSP MUST provide documentation that elaborates the message mapping from the SMSP ITK interface to the MIM messaging used to access National Applications in order for DHID to assure suitability. This must also take into account how these messages interact in the context of any caching that may be implemented.

The following table lists the ITK SMSP to Spine CP-IS service mappings indicating which Spine services (some whose responses may be cached) MUST be used to fulfil the required Mini Service. It is the supplier’s responsibility to demonstrate accurate and performant usage of CP-IS.

NB At present only one Spine service is provided for CP-IS. Should additional services be provided in future this table will be updated and a new version of this document issued.

Mini Service	Spine Service
getchildProtectionDetails	CP-IS NHS Query

3.3 Spine Service to Mini Service – Error Code mapping

TMS Errors

The query acknowledgement response message type QUQI_MT030101UK03 is used for the TMS error responses. Low level system errors will be returned as a SOAP error. These errors will be mapped by the SMSP to appropriate client side ITK responses (these are held in the response code/display text attributes of the SMSP ITK client response message).

Business & Middleware error responses

While it is not an error as such CP-IS will return a code of NRF if the NHS number in the request message is not present in the CP-IS data repository. This should be mapped to CPIS-0001 and returned in the SMSP ITK response message.

Errors may also be generate by the SMS middleware e.g. where the middleware cannot parse a client ITK request message or Spine services are not available. These errors should be mapped to SMSP-XXXX code.

Some of the possible error responses returned by the Spine or SMSP middleware and the client side SMSP mappings are listed below:

Spine Response code (sent from spine to SMSP)	SMSP Mapping (code sent to client)	Description
N/A	SMSP-0000	In the case of successful query a NHS query response (message type REPC_MT000007GB01) will be sent to the middleware by the Spine Service. The ITK response message will indicate this with an SMSP-0000 in the response code attribute.
NRF	CPIS-0001	<p>No Match</p> <p>The queried NHS number was not found in the CP-IS database.</p> <p>In this case (and for the following error responses):</p> <ul style="list-style-type: none"> • A Query Acknowledgement Response message (QUQI_MT030101UK03) will be sent to the middleware by the Spine Service. • The payload body of the ITK response message will not include any entities associated with the access audit or protection/care plans (apart from access/plan counts which will be zero).
N/A	SMSP-0001	<p>Input message validation error</p> <p>The input parameters provided to the SMSP were not valid (e.g. schema violation).</p>

N/A	SMSP-0002	<p>Response message validation error</p> <p>The call to CP-IS returned data which is not valid according to the Mini Services interface specification. SMSP-0002 is an error code, indicating that the data returned from CP-IS was unusable, and therefore no data is returned from the SMSP.</p>
N/A	SMSP-0003	<p>Data returned from local store, Spine unavailable.</p> <p>Spine was unavailable, but data was returned from a local cache in the SMSP. (It may therefore be potentially somewhat stale)</p>
	SMSP-0004	Could not connect to spine
	SMSP-0005	Author Credentials Error
N/A	SMSP-9999	Generic Spine mini service provider software failure
N/A	CPIS-9999	<p>Generic CP-IS Spine Service Error</p> <p>This should be used for low level technical errors originating from the Spine service these may be sent by the Spine as SOAP faults, HTTP errors or via a Query Acknowledgement Response message (QUQI_MT030101UK03) - excluding the NRF response which is mapped to CPIS-0001.</p> <p>Examples of the latter include:</p> <pre> 501: hl7:{interactionId}/hl7:id/@root is missing, empty or invalid 502: hl7:{interactionId}/hl7:creationTime/@value is missing, empty or invalid 503: hl7:{interactionId}/hl7:versionCode/@code is missing, empty or invalid 504: hl7:{interactionId}/hl7:ControlAct is missing, empty or invalid 506: hl7:{interactionId}/hl7:communicationFunctionRcv/hl7:device/hl7:id/@extension is missing, empty or invalid 507: hl7:{interactionId}/hl7:communicationFunctionSnd/hl7:device/hl7:id/@extension is missing, empty or invalid 515: hl7:{interactionId} is not [1..1], or is inconsistent with the SOAP:Header, or is inconsistent with the HL7 wrapper element name 400: 35506-Invalid input message. Mandatory field {0} missing or incorrect. PSIS-35160: [PSIS-35160] - Invalid input message. Mandatory field {0} is missing or incorrect </pre>

4 CP-IS ITK Service Definitions

The ITK service will be SOAP based and messaging request/responses will be synchronous. A given response object is deterministic for any given request object to a given endpoint. The following diagram shows an overall view of the request and response message pairs in scope of this document.

Note: Only the higher level entities in the messages have been shown in this diagram – refer to the tabular message definitions in this document and the ITK message specification documentation (references 3 and 4) for more detailed information on the message structures.

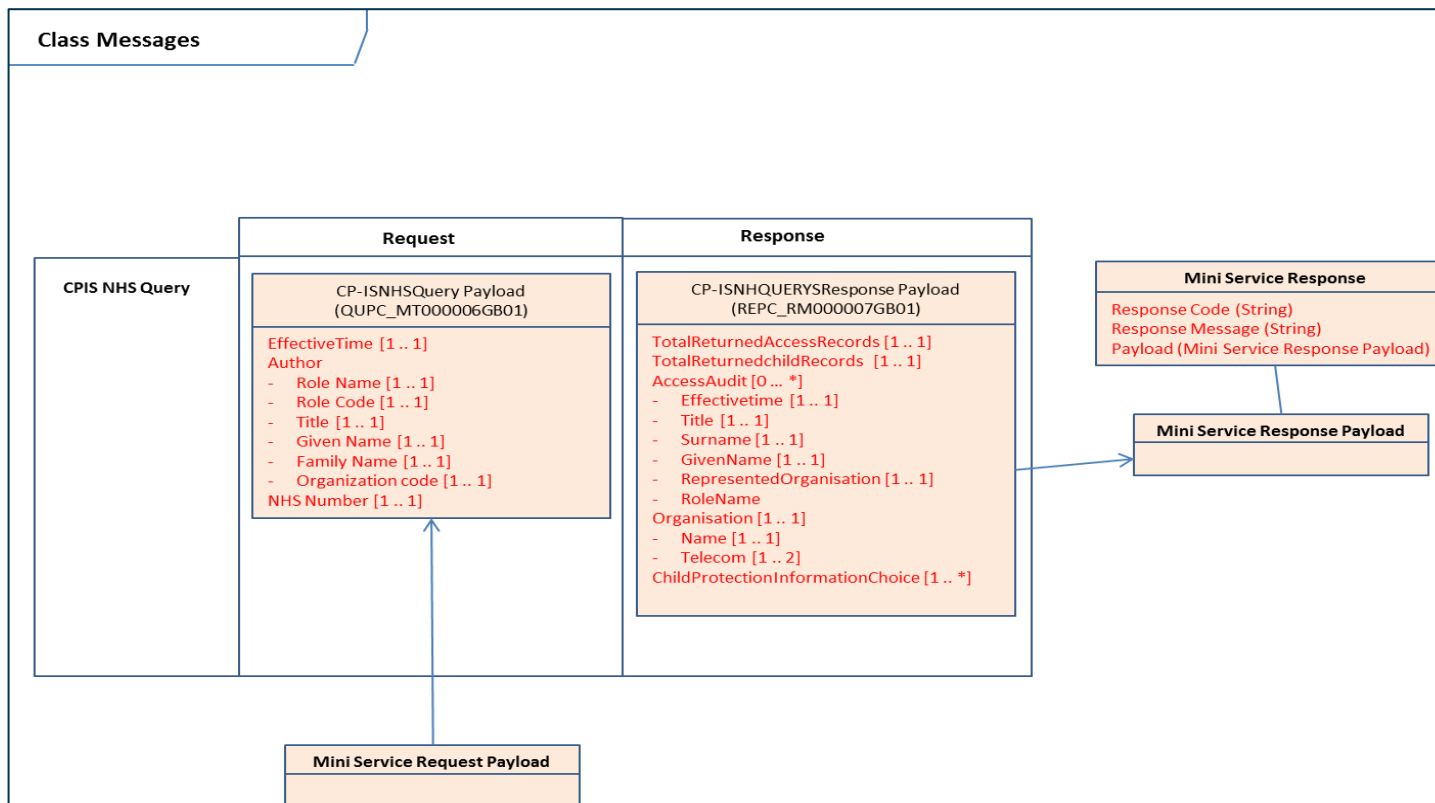


Figure 4: CP-IS Spine Mini Service Messages

SMSP ITK Child Protection Messages

The SMSP ITK CP-IS request and response messages provide client systems with a standard interface to request a child's protection status based upon a NHS Number.

Key Points:

1. Wildcards are not permitted.
2. Field validation will be performed for mandatory fields (NHS Number) and field formatting. (E.g. Modulus 11 check on NHS Number).
3. The NHS Number provided in the request will be verified by the client as a precondition to verifying the child protection status.
4. The response will return whether the child protection information exists on the child protection system and if it exists then return:
 - A count of audit access records
 - A count of Organisation plan records
 - Audit access records (list of previous NHS queries against this NHS number).
 - Local authority plan records (plans may be present for by more than one local authority).

Note that the tables below provide a logical view of the key attributes in the ITK request and response messages. Developers should refer to the schema's provided in the ITK TRUD distribution for the full specification of these messages (e.g. the message envelope and additional HL7 artefacts that are not modelled here).

ITK NHS Query Request Message

Parameter	Attributes	Description	Cardinality
effectiveTime		The time the query is submitted by the user	1..1
author		Role details for query author. Note that the identity details here may be those of the actual author or, in the case of automated workflow or non RBAC enable system a nominated person e.g. child safeguarding lead. Details of the attributes for each of these are provided in the following tables	1.1
queryByParameter	NHSNumber	NHS Number that is being queried on CP-IS [Max 10 Numerical Characters only]	1..1

The author element (entity in the query request message above)

The details assigned to the author entity depend on whether a query is generated directly by a user via a client that is Spine smartcard/RBAC enabled or is generated by a system service as part of a workflow or for a non-smartcard enabled user.

- 1) Author Attributes where the query is associated with a Spine RBAC enabled user (i.e. user has a Spine “smartcard identity”):

Parameter	Attributes	Description	Cardinality	
assignedAuthor		SDS details of query author	1..1	
	displayName	Holds the description associated with the person's RBAC code	1..1	
	code	RBAC role code of person who authored the query	1..1	
	Id(1)	Smartcard User Id (1.2.826.0.1285.0.2.0.65)	1..1	
	Id(2)	Smartcard role profile: (1.2.826.0.1285.0.2.0.67)	1..1	
	assignedAuthorPerson	Name details for query author	1..1	
		Attributes	Description	Cardinality
		prefix	Title of the person who authored the query	1..1
		given	Given Name of the person who authored the query	1..1
		family	Surname of the person who authored the query	1..1
	representedOrganisation	Organisation details for query author	1..1	
		Attributes	Description	Cardinality
		id	Code of the Organization the query author represents	1..1
		name	Name of the Organization the query author represents	1..1

2) Author Attributes where the query is associated with a system request and a nominated person is assigned as the query author

N.B To simplify the nesting in the table below it actually shows child elements of “author.System”

Parameter	Attributes	Description	Cardinality	
Id		ASID for SDS accredited sending system (held in the extension attribute (OID 1.2.826.0.1285.0.2.0.107)	1..1	
indirectAuthority.superiorAs signedEntity		Details of nominated query author	1..1	
	displayName	Display text for job role of person assigned as author of the query (e.g. Children's Safeguarding Lead)	1..1	
	code	local role code of assigned person/system who authored the query (e.g. NR9020)	1..1	
	AssignedPerson.name	Name details for assigned query author		1..1
		Attributes	Description	
		prefix	Title of the person who is assigned as the query author	1..1
		given	Given Name of the person who is assigned as the query author	1..1
		family	Surname of the person who authored the query	1..1
maintainingOrganisation		Organisation details of the query originator	1..1	
	id	ODS organisation code (site code should be used if available)	1..1	
	name	Name of the Organization the nominated query author represents	1..1	

ITK NHS Query Response Message

Parameter	Attributes	Description	Cardinality
CPIS_NHSQueryResponse		Response payload consisting of an audit of previous access requests against this NHS number and the plans associated with a Child (and possibly mother). Note that the record will only be populated if a match is found in the CP-IS data repository.	
	effectiveTime	Time query response was generated by CP-IS	1..1
	id	UUID of this message	1..1
	response Code	A response code indicating the success or failure of the query.. A response of SMSP-0000 will indicate a successful response where the person is on the register. SMSP-0001 will be returned if no match to the queried NHS number is found See section 3.3 of this document for error code mappings. <i>N.B. the OID associated with this attribute is 2.16.840.1.113883.2.1.3.2.4.17.499</i>	1..1
	responseDisplay Name	The display name, containing the explanation of the response or the error.	1..1
	TotalReturnedAccess Records	Number of access records returned by this query – these contain details of previous queries made against the NHS number.	1..1
	TotalReturnedChildRecords	No of child records returned by this query (N.B. the query may return multiple records associated with different local authorities).	1..1
	CP-ISNHSQuery	This entity holds audit records of previous queries against this NHS number. The layout is not reproduced here as it is the same as the query message structure detailed above. N.B This element will be omitted if If no match is found in the CP-Is database for the queried NHS number	0..*

	Record	The response message will contain one or more CP-IS Records that contain the details of care plans for a child held by one or more local authorities. N.B This element will be omitted If no match is found in the CP-Is database for the queried NHS number		0..*	
		Parameter	Attributes	Description	Cardinality
		Organisation		Details of Local authority responsible for plans within this record	1..1
			id	Local Authority ODS Organisation code	
			name	Local Authority organisation name	1..1
telecom	Up two contact numbers for the local authority		1.2		
	CP-ISRecord		Details of the care plan(s) held by a Local Authority for a child. See details in table below	1..3	

Record (Entity of table above)

The response message will contain one or more CP-IS Records that contain the details of care plans for a child held by one or more local authorities. Up to three plan types could be held by each local authority,

Parameter	Attributes	Description	Cardinality
ChildProtectionInformationChoice		Start and end dates for plan(s) there can be up to three sets of these. Prefixes to the attribute names are given in brackets. Unborn child plan [UCP] Looked after child plan [LAC] Child protection plan [CPP]	1..3
	xxxStartDate	Date plan started	1..1
	xxxEndDate	Date plan ends (only mandatory for unborn child)	1..1

	xxxDeleteDate	Date plan will be deleted off system (only mandatory for unborn child)	1..1		
SubjectChoice		Details of Plan(s) held by local authority for a child. As with the dates above these relate to the three plan types but are only described by two types (the Child entity is used for both Child protection plans and care orders).	1.. 2		
	Child	Details of a child who has plan/care order. N.B. this may be a mother with a protection order and/or care plan who has an unborn child who is also subject to a plan. Note one instance here could be associated with both the CPP and LAC dates above (as the child details will be the same for both).		0..1	
		Parameter	Attribute	Description	Cardinality
		Id(1)		Childs NHS number	1..1
		Id(2)		Local authorities identifier The XML attribute assigningAuthorityName shall contain the assigning organisation in the format of ODSCode:ODSName,	0..1
		birthTime		Date of birth of the child	1..1
		name		Name of child	1..1
			given	Forename of child	1..1
			family	Family name of child	1..1
	UnbornChild	Details of unborn child who has a plan that is linked to the Mothers NHS number until the child is born. This is the same format as the Child entity but birth time is estimated and the name details are those of the mother.		0..1	
		Parameter	Attribute	Description	Cardinality
		Id(1)		Mothers NHS number	1..1
		Id(2)		Local authorities identifier The XML attribute assigningAuthorityName shall contain the assigning organisation in the format of ODSCode:ODSName,	0..1
		birthTime		Date of birth of the unborn child (estimated)	1..1
		name		Name of mother of unborn child	1..1
		given	Forename of mother	1..1	
	family	Family name of mother	1..1		

N.B In the TMS message schema three plan types ‘parented’ by the subjectChoice entity are defined for the CP-IS Record :

- COCT_TP146103GB01: Looked after child information
- COCT_TP146104GB01: Unborn child protection order information
- COCT_TP146105GB01: Child protection plan information

It is possible for a combination of these plan types to be present (e.g. a child may have a care order, a protection plan and also have an unborn child protection plan associated with her NHS number. Though the formats for all three are the same, in the case of a child, details of the date of birth and name of the child are provided. In the case of an unborn child an estimated date of birth is provided together with the mothers' name.

5 Glossary

Term	Description
CP-IS	Child Protection Information service. A national application providing information about children in the care of Local Authorities in England
PDS	Personal Demographics Service. A National Application providing demographics update and retrieval services.
NASP	National Application Service Provider. E.g. Atos, BT.
DHID	Department of Health Informatics Directorate.
RBAC	Role Based Access Control. Used across NHS systems to control access to systems for authenticated system users
SSO	Single Sign On. Mechanism by which a system user authenticates once and can subsequently use various disparate applications without being required to authenticate again.
IG	Information Governance
SMSP	Spine Mini Service Provider. Middleware that provides access to lightweight, filtered services on National Applications
ITK	Interoperability Toolkit. Initiative by DHID Tech Office to create lightweight messaging standards to accelerate connectivity between deployed solutions.
ITK Distribution Envelope	Standard ITK term referencing a part of the message wrapper. See standard ITK documentation for further elaboration
MIM	Message Implementation Manual
EIS	External Interface Specification
CPP	Child Protection Plan
LAC	Local authority care order
UCP	Unborn Child protection plan