ISI-DK

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Danish Pilot X.500 Directory Schema

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(15 pages)

1. Introduction

Establishing a Directory in a country has several steps: the technical details of hardware platform and Directory software have to be settled; organization details have to be defined, including the DSA topology; the Directory Information Tree (DIT), Directory Schema and rules for naming have to be specified; and procedures for loading and maintaining the actual contents have to be specified.

This document is concerned with the specification of the Schema. It is based on the X.500/ISO 9594 documents (X.520 and X.521, ISO 9594-6 and -7) defining object classes and attributes, and on the Internet RFC 1274: The COSINE and Internet X.500 Schema (November 1991).

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2. Directory Information Tree

The Directory Information Tree (DIT) is specified in another ISI-DK document (ISI-DK 94-02: The DIT Structure in the Danish ISI-DK Pilot); the following is a brief overview to make the specification of the Directory Schema more easy to read.

The pilot DIT has as root *country* DK. Below country are found four classes of entry: *Organization, Locality, Residential Person,* and *Organizational Role.* In the pilot only a small number of entries of the latter two types are imagined; they are included to allow entries e.g. for the national E-mail postmaster, and to allow experiments.

A Locality has three subordinate object types: Organization, Residential Person and Organizational Role.

Organizations have four types of objects: Organizational Person, Organizational Role, *Application Process* and *Organizational Unit.*

Organizational Unit may be found in two levels; it has the same subordinates as Organization.

An Application Process may have the subordinate level: *Application Entity,* and a specialized Application Entity DSA.

In this DIT, the following are examples of Distinguished Names (all examples have the component CountryName=DK, which is omitted to make the names shorter):

OrganizationName=DIKU
LocalityName=Herlev;OrganizationName=Kiosken
OrganizationName=danNet;CommonName=DirVax;CommonName=OSIDIR;CommonName=Phlox
CommonName=Postmaster
OrganizationName=UNI-C;CommonName=Direktør

3. Object Classes

The following prefixes are used:

(none)	The prefixes used are all descendents of (joint-iso-ccitt ds(5)), and are found in ISO 9594-2, Annex B.
id-oc	(joint-iso-ccitt mhs-motis(6) arch(5) 1)
pilotObjectClass	(ccitt data(9) pss(2342) ucl(19200300) 100 4)
id-at	(joint-iso-ccitt mhs-motis(6) arch(5) 2)
pilotAttributeType	(ccitt data(9) pss(2342) ucl(19200300) 100 1)

Additional QUIPU-oriented object identifiers are found in the QUIPU document (ISODE User's Manual Vol. 5: QUIPU), Appendix C and D.

Object Classes (OIDs (ds(5) objectClass(6)))				
OID	Name	Key Attribute	Recommended Attributes	Note
2	country	countryName	description	1,8,9
			friendlyCountryName	
3	locality	localityName	description	2
4	organization	organizationName		3,7
5	organizationalUnit	organizationalUnitName		7
6	person	commonName		4,10
7	organizationalPerson	commonName,		10
		organizationalUnitName		4,5,6
8	organizationalRole	commonName		4,5
10	residentialPerson	commonName,		10
		streetAddress		4,5,6
11	applicationProcess	commonName	presentationAddress	
12	applicationEntity	commonName		
			supportedApplicationContext	
13	dSA			
id-oc 0	mhs-distribution-list	commonName		
id-oc 2	mhs-message-transfer-agent			
id-oc 3	mhs-user			
id-oc 4	mhs-user-agent			
pilotObjectClass 18	friendlyCountry			

Notes:

1 only value is "DK"
2 valid locality names are found in Annex A (police districts)
3 organization names must be unique in Denmark or within given locality
4 must have attribute set 0
5 must have attribute set 1
6 must have attribute set 2
7 must have attribute set 3
8 recommendation: use of attribute description
9 recommendation: use of attribute friendlyCountryName
10 persons may not be unique, not even when further qualified by organizationalUnitName, respectively streetAddress. This problem may be solved by introducing another attribute value in the key, as uniqueIdentifier. This is for further study.

Attribute Sets (OIDs (ds(5) attributeSet (7)))		
number(OID)	name	recommended attributes
0	telecommunicationAttributeSet	(all)
1	postalAttributeSet	(all)
2	localeAttributeSet	(all)
3	organizationalAttributeSet	(all)

4. Attributes

Attributes may be classified in a number of categories:

1) Mandatory, i.e. key attribute which must be present. This covers the attributes forming the RDN's of the DIT..

2) Recommended, i.e. essential attribute, which should be present whenever possible

3) Experimental/optional

4) Internal, i.e. present in certain implementations (e.g. QUIPU) for internal management.

5) Prohibited, i.e. not allowed in the Danish pilot (no examples in this document, but may be necessary in the future to avoid conflicts with e.g. Danish laws).

Attributes (all OIDs are in (ds(5) attributeType(4)))			
Number(OID)	Name	Category	Notes
3	commonName	1	
6	countryName	1	
7	localityName	1	1
10	organizationName	1	
4	surname	2	
9	streetAddress	2	
11	organizationalUnitName	2	
13	description	2	
16	postalAddress	2	
17	postalCode	2	
20	telephoneNumber	2	
23	facsimiletelephoneNumber	2	
29	presentationsAddress	2	
30	supportedApplicationContext	2	
id-at 6	mhs-or-addresses	2	4
pilotAttribute 3	rfc822Mailbox	2	3
pilotAttribute 43	friendlyCountryName	2	3
12	title	3	
15	businessCategory	3	
18	postOfficeBox	3	
19	physicalDeliveryOfficename	3	
24	x121Address	3	
25	internationalISDNNumber	3	
26	registeredAddress	3	
28	preferredDeliveryMethod	3	
34	seeAlso	3	
35	userPassword	3	
id-at 3	mhs-dl-members	3	4
pilotAttribute 7	photo	3	2,3
pilotAttribute 40	personalTitle	3	3
pilotAttribute 44	uniqueIdentifier	3	3
pilotAttribute 45	organizationalStatus	3	3

Notes:

1 When used as attribute in Person or Organization, it is multivalued, values being taken from the tables in Annexes B, C and D, as well as from Annex A.

2 G3Fax format

3 see RFC 1274: The COSINE and Internet X.500 Schema

4 from X.402(88), p.136

Some restrictions apply for attribute syntaxes:

a) caseExactStringSyntax, caseIgnoreStringSyntax: only T.61string is used.

Annex A: Administrative regions - Police districts

Politikredse (Police districts)			
Number	Name	County	Municipalities
1	København	013	101
2	Frederiksberg	014	147
3	Gentofte	015	157
4	Lyngby	015	173,181
5	Gladsaxe	015	151,159,163,171,189
6	Hvidovre	015	167,175
7	Glostrup	015	1153,161,165,169,183,187
8	Tårnby	015	155,185
9	Helsingør	020	205,208,217,223,227
10	Hillerød	020	201,207,213,215,219,231,233
11	Frederikssund	020	209,211,221,225,229,235,237
12	Roskilde	025	251-257,261-265,269
13	Køge	025	259,267,271
		035	351,385,389
14	Holbæk	030	305,315,321,327,339,341-345
15	Kalundborg	030	301,317,323
16	Ringsted	030	303,313,329,335,337
17	Slagelse	030	307-311,319,325,331,333
18	Næstved	035	353,357,373,393
19	Vordingborg	035	361,365,377,397
20	Nykøbing F	035	369,371,375,387,391,395
21	Nakskov	035	355,359,363,367,379,381,383
22	Bornholm	040	401-409
23	Odense	042	423,441,447,461,471,483,485,491,497
24	Svendborg	042	427,435,443,473-481,487,493
25	Nyborg	042	439,449,489,495
26	Assens	042	421,425,431,433,437,499
27	Middelfart	042	429,445,451
28	Sønderborg	050	501,507,523,533-537
29	Gråsten	050	503,513,519,529,545
30	Tønder	050	505,517,521,531,539,541
31	Haderslev	050	509,511,515,525,527,543
32	Ribe	055	557,559,569,571,575
33	Esbjerg	055	561,563
34	Varde	055	551-555,565,567,573,577
35	Fredericia	060	603,607
36	Kolding	060	621,623,629
37	Vejle	060	605,611,617,631
38	Horsens	060	601,609,613,615,619,625,627
39	Herning	065	651,653,657,663,677,685

Politikredse (Police districts) (cont'd)			
Number	Name	County	Municipalities
40	Ringkøbing	065	655,659,667,669,681
41	Holstebro	065	661,665,671-675,679,683
42	Århus	070	703,713,733,739,751
43	Odder	070	715,727,737,741,745
44	Silkeborg	070	705,711,743,749
45	Randers	070	709,717,719,723,729,731,735,747
46	Grenå	070	701,707,721,725
47	Viborg	076	761,763,767-771,775,789,791
48	Skive	076	777-783
49	Thisted	076	765,773,785,787
50	Løgstør	080	803,809,811,827,831,861
51	Ålborg	080	817,837,845,849,851
52	Hobro	076	793
		080	801,815,823,833,843
53	Frederikshavn	080	807,813,825,841,847
54	Hjørring	080	805,819,821,829,835,839

Annex B: Administrative Regions - Counties

Amter (Counties)			
Number	Name	Police districts	Municipalities
013	København	1	101
014	Frederiksberg	2	147
015	Københavns Amt	3-8	151-189
020	Frederiksborg Amt	9-11	201-237
025	Roskilde Amt	12,13	251-271
030	Vestsjællands Amt	14-17	301-345
035	Storstrøms Amt	13-21	351-397
040	Bornholms Amt	22	401-409
042	Fyens Amt	23-27	421-499
050	Sønderjyllands Amt	28-31	501-545
055	Ribe Amt	32-34	551-577
060	Vejle Amt	35-38	601-631
065	Ringkøbing Amt	39-41	651-685
070	Århus Amt	42-46	701-751
076	Viborg Amt	47-49,52	761-793
080	Nordjyllands Amt	50-54	801-861

Annex C: Administrative regions - Municipalities

Kommuner (Municipalities)			
Number	Name	County	Police district(s)
101	København	013	1
147	Frederiksberg	014	2
151	Ballerup	015	5
153	Brøndby	015	7
155	Dragør	015	8
157	Gentofte	015	3
159	Gladsaxe	015	5
161	Glostrup	015	7
163	Herlev	015	5
165	Albertslund	015	7
167	Hvidovre	015	6
169	Høje Tåstrup	015	7
171	Ledøje-Smørum	015	5
173	Lyngby-Tårbæk	015	4
175	Rødovre	015	6
181	Søllerød	015	4
183	Ishøj	015	7
185	Tårnby	015	8
187	Vallensbæk	015	7
189	Værløse	015	5
201	Allerød	020	10
205	Birkerød	020	9
207	Farum	020	10
208	Fredensborg-Humlebæk	020	9
209	Frederikssund	020	11
211	Frederiksværk	020	11
213	Græsted-Gilleleje	020	10
215	Helsinge	020	10
217	Helsingør	020	9
219	Hillerød	020	10
221	Hundested	020	11
223	Hørsholm	020	9
225	Jægerspris	020	11
227	Karlebo	020	9
229	Skibby	020	11
231	Skævinge	020	10
233	Slangerup	020	10
235	Stenløse	020	11
237	Ølstykke	020	11
251	Bramsnæs	025	12
253	Greve	025	12
255	Gundsø	025	12
257	Hvalsø	025	12
259	Køge	025	13

Kommuner (Municipalities) (cont'd)			
Number	Name	County	Police district(s)
261	Lejre	025	12
263	Ramsø	025	12
265	Roskilde	025	12
267	Skovbo	025	13
269	Solrød	025	12
271	Vallø	025	13
301	Bjergsted	030	15
303	Dianalund	030	16
305	Dragsholm	030	14
307	Fuglebjerg	030	17
309	Gørlev	030	17
311	Hashøj	030	17
313	Haslev	030	16
315	Holbæk	030	14
317	Hvidebæk	030	15
319	Høng	030	17
321	Jernløse	030	14
323	Kalundborg	030	15
325	Korsør	030	17
327	Nykøbing-Rørvig	030	14
329	Ringsted	030	16
331	Skælskør	030	17
333	Slagelse	030	17
335	Sorø	030	16
337	Stenlille	030	16
339	Svinninge	030	14
341	Tornved	030	14
343	Trundholm	030	14
345	Tølløse	030	14
351	Fakse	035	13
353	Fladså	035	18
355	Holeby	035	21
357	Holmegård	035	18
359	Højreby	035	21
361	Langebæk	035	19
363	Maribo	035	21
365	Møn	035	19
367	Nakskov	035	21
369	Nykøbing F	035	20
371	Nysted	035	20
373	Næstved	035	18
375	Nørre Alslev	035	20
377	Præstø	035	19
379	Ravnsborg	035	21

Kommuner (Municipalities) (cont'd)			
Number	Name	County	Police district(s)
381	Rudbjerg	035	21
383	Rødby	035	21
385	Rønnede	035	13
387	Sakskøbing	035	20
389	Stevns	035	13
391	Stubbekøbing	035	20
393	Suså	035	18
395	Sydfalster	035	20
397	Vordingborg	035	19
401	Allinge-Gudhjem	040	22
403	Hasle	040	22
405	Neksø	040	22
407	Rønne	040	22
409	Åkirkeby	040	22
421	Assens	042	26
423	Bogense	042	23
425	Broby	042	26
427	Egebjerg	042	24
429	Ejby	042	27
431	Fåborg	042	26
433	Glamsbjerg	042	26
435	Gudme	042	24
437	Hårby	042	26
439	Kerteminde	042	25
441	Langeskov	042	23
443	Marstal	042	24
445	Middelfart	042	27
447	Munkebo	042	23
449	Nyborg	042	25
451	Nørre Åby	042	27
461	Odense	042	23
471	Otterup	042	23
473	Ringe	042	24
475	Rudkøbing	042	24
477	Ryslinge	042	24
479	Svendborg	042	24
481	Sydlangeland	042	24
483	Søndersø	042	23
485	Tommerup	042	23
487	Tranekær	042	24
489	Ullerslev	042	25
491	Vissenbjerg	042	23
493	Ærøskøbing	042	24
495	Ørbæk	042	25
497	Årslev	042	23
499	Årup	042	26

Kommuner (Municipalities) (cont'd)			
Number	Name	County	Police district(s)
501	Augustenborg	050	28
503	Bov	050	29
505	Bredebo	050	30
507	Broager	050	28
509	Christiansfeld	050	31
511	Gram	050	31
513	Gråsten	050	29
515	Haderslev	050	31
517	Højer	050	30
519	Lundtoft	050	29
521	Løgumkloster	050	30
523	Nordborg	050	28
525	Nørre Rangstrup	050	31
527	Rødding	050	31
529	Rødekro	050	29
531	Skærbæk	050	30
533	Sundeved	050	28
535	Sydals	050	28
537	Sønderborg	050	28
539	Tinglev	050	30
541	Tønder	050	30
543	Vojens	050	31
545	Åbenrå	050	29
551	Billund	055	34
553	Blåbjerg	055	34
555	Blåvandshuk	055	34
557	Bramming	055	32
559	Brørup	055	32
561	Esbjerg	055	33
563	Fanø	055	33
565	Grindsted	055	34
567	Helle	055	34
569	Holsted	055	32
571	Ribe	055	32
573	Varde	055	34
575	Vejen	055	32
577	Ølgod	055	34
601	Brædstrup	060	38
603	Børkop	060	35
605	Egtved	060	37
607	Fredericia	060	35
609	Gedved	060	38
611	Give	060	37
613	Hedensted	060	38
615	Horsens	060	38
617	Jelling	060	37
619	Juelsminde	060	38

Kommuner (Municipalities) (cont'd)			
Number	Name	County	Police district(s)
621	Kolding	060	36
623	Lunderskov	060	36
625	Nørre Snede	060	38
627	Tørring-Uldum	060	38
629	Vamdrup	060	36
631	Vejle	060	37
651	Avlum-Haderup	065	39
653	Brande	065	39
655	Egvad	065	40
657	Herning	065	39
659	Holmsland	065	40
661	Holstebro	065	41
663	Ikast	065	39
665	Lemvig	065	41
667	Ringkøbing	065	40
669	Skjern	065	40
671	Struer	065	41
673	Thyborøn-Harboør	065	41
675	Thyholm	065	41
677	Trehøje	065	39
679	Ulfborg-Vemb	065	41
681	Videbæk	065	40
683	Vinderup	065	41
685	Åskov	065	39
701	Ebeltoft	070	46
703	Galten	070	42
705	Gjern	070	44
707	Grenå	070	46
709	Hadsten	070	45
711	Hammel	070	44
713	Hinnerup	070	42
715	Hørning	070	43
717	Langå	070	45
719	Mariager	070	45
721	Midtdjurs	070	46
723	Nørhald	070	45
725	Nørre Djurs	070	46
727	Odder	070	43
729	Purhus	070	45
731	Randers	070	45
733	Rosenholm	070	42
735	Rougsø	070	45
737	Ry	070	43
739	Rønde	070	42
741	Samsø	070	43
743	Silkeborg	070	44
745	Skanderborg	070	43
747	Sønderhald	070	45
749	Them	070	44

Kommuner (Municipalities) (cont'd)			
Number	Name	County	Police district(s)
751	Århus	070	42
761	Bjerringbro	076	47
763	Fjends	076	47
765	Hanstholm	076	49
767	Hvorslev	076	47
769	Karup	076	47
771	Kjellerup	076	47
773	Morsø	076	49
775	Møldrup	076	47
777	Sallingsund	076	48
779	Skive	076	48
781	Spøttrup	076	48
783	Sundsøre	076	48
785	Sydthy	076	49
787	Thisted	076	49
789	Tjele	076	47
791	Viborg	076	47
793	Ålestrup	076	52
801	Arden	080	52
803	Brovst	080	50
805	Brønderslev	080	54
807	Dronninglund	080	53
809	Farsø	080	50
811	Fjerritslev	080	50
813	Frederikshavn	080	53
815	Hadsund	080	52
817	Hals	080	51
819	Hirtshals	080	54
821	Hjørring	080	54
823	Hobro	080	52
825	Læsø	080	53
827	Løgstør	080	50
829	Løkken-Vrå	080	54
831	Nibe	080	50
833	Nørager	080	52
835	Pandrup	080	54
837	Sejlflod	080	51
839	Sindal	080	54
841	Skagen	080	53
843	Skørping	080	52
845	Støvring	080	51
847	Sæby	080	53
849	Åbybro	080	51
851	Ålborg	080	51
861	Års	080	50

Annex D: Geographical regions

Larger regions		
Name	English alternative	Police district(s)
Jylland	Jutland	28-54
Øerne	The Islands	1-27
Bornholm		22
Fyn	Fuenen	23-27
Nordjylland		47-54
Midtjylland		35-48
Sydjylland		28-34,36,40
Østjylland		35-38,42-46
Vestjylland		32-34,39-41,49
Sønderjylland		28-32
Lolland-Falster		20,21
Sjælland		1-19

Medium and smaller areas		
Name	English alternative	Police district(s)
Storkøbenhavn	Greater Copenhagen	1-8
Nordsjælland		1-5,9-12,14
Sydsjælland		13,16,18,19
Vestsjælland		14,15,17
Nordvestsjælland		14,15
Odsherred		14
Stevns		12,16
Falster		20
Lolland		20,21
Møn		19
Fynske Øhav		24,26
Sydhavsøerne		24,26
Nordfyn		23,25,27
Sydfyn		24,26
Østfyn		23-25
Vestfyn		23,26,27
Langeland		24
Thy		49
Vendsyssel		51,53,54
Himmerland		50,51
Mors		49
Limfjordsområdet		47-51
Salling		48
Djursland		42,45,46
Harsyssel		39-41
Søhøjlandet		38,43,44

Medium and smaller areas (cont'd)		
Name	English alternative	Police district(s)
Als		28
Samsø		43
Læsø		53
Mols		46
Ærø		24
Amager		1,8
Anholt		46
Sejerø		15
Fanø		33
Fur		48
Thurø		24
Tåsinge		24
Nykøbing M		49
Aalborg		51
Aarhus		42
Aars		47,50