

# TEST KEY VALUES BY NETWORK

## American Express

Test key values

### *Timetable for Update or Removal (Production & Test)*

CAP Key Length	Expiry Date	Required Removal Date
1152	31 December 2017	30 June 2018
1408	31 December 2022	30 June 2023
1984	31 December 2022	30 June 2023

Key File Name	CAPK Index	CAPK Length	Comments
1152 PUBLIC KEY – C8.txt	C8	'90' = 144 bytes = 1152 Bits	
1408 PUBLIC KEY – C9.txt	C9	'B0' = 176 bytes = 1408 Bits	
1984 PUBLIC KEY – CA.txt	CA	'F8' = 248 bytes = 1984 Bits	

### Index C8

Header	'20'
Service Identifier	'00 00 00 00'
Length of CAPK Modulus	'90'

CAPK Algorithm Indicator	'01'
Length of CAPK Exponent	'01'
RID	'A0 00 00 00 25'
CAPK Index	C8
CAPK Modulus	BF0CFCEd708FB6B048E3014336EA24AA007D7967B8AA4E613D26D015C4FE78 05D9DB131CED0D2A8ED504C3B5CCD48C33199E5A5BF644DA043B54DBF6027 6F05B1750FAB39098C7511D04BABC649482DDCF7CC42C8C435BAB8DD0EB1A 620C31111D1AAAF9AF6571EEBD4CF5A08496D57E7ABDBB5180E0A42DA869A B95FB620EFF2641C3702AF3BE0B0C138EAEF202E21D
CAPK Exponent	'03'
Hash Value	33BD7A059FAB094939B90A8F35845C9DC779BD50

Index C9

Header	'20'
Service Identifier	'00 00 00 00'
Length of CAPK Modulus	'B0'
CAPK Algorithm Indicator	'01'
Length of CAPK Exponent	'01'

RID	'A0 00 00 00 25'
CAPK Index	C9
CAPK Modulus	B362DB5733C15B8797B8ECEE55CB1A371F760E0BEDD3715BB270424FD4EA26 062C38C3F4AAA3732A83D36EA8E9602F6683EECC6BAFF63DD2D49014BDE4D 6D603CD744206B05B4BAD0C64C63AB3976B5C8CAAF8539549F5921C0B700D5 B0F83C4E7E946068BAAAB5463544DB18C63801118F2182EFCC8A1E85E53C2A 7AE839A5C6A3CABE73762B70D170AB64AFC6CA482944902611FB0061E09A67 ACB77E493D998A0CCF93D81A4F6C0DC6B7DF22E62DB
CAPK Exponent	'03'
Hash Value	8E8DFF443D78CD91DE88821D70C98F0638E51E49

### Index CA

Header	'20'
Service Identifier	'00 00 00 00'
Length of CAPK Modulus	'F8'
CAPK Algorithm Indicator	'01'
Length of CAPK Exponent	'01'
RID	'A0 00 00 00 25'
CAPK Index	CA

CAPK Modulus	C23ECBD7119F479C2EE546C123A585D697A7D10B55C2D28BEF0D299C01DC6 5420A03FE5227ECDECB8025FBC86EBC1935298C1753AB84993674971959175 8C315FA150400789BB14FADD6EAE2AD617DA38163199D1BAD5D3F8F6A7A20A EF420ADFE2404D30B219359C6A4952565CCCA6F11EC5BE564B49B0EA5BF5B3 DC8C5C6401208D0029C3957A8C5922CBDE39D3A564C6DEBB6BD2AEF91FC27 BB3D3892BEB9646DCE2E1EF8581EFA712158AAEC541C0BBB4B3E279D7DA5 4E45A0ACC3570E712C9F7CDF985CFAFD382AE13A3B214A9E8E1E71AB1EA70 7895112ABC3A97D0FCB0AE2EE5C85492B6CFD54885CDD6337E895CC70FB32 55E3
CAPK Exponent	'03'
Hash Value	6BDA32B1AA171444C7E8F88075A74FBFE845765F

## Visa

Test key values – Visa CA Test Public Keys for VSDC

These test keys need to be loaded into the terminal to support the tests associated with Static and Dynamic Data Authentication.

**NOTE:** Prior to deployment, these keys must be removed from the terminal and replaced with the Visa CA production keys.

### 1152 Bit VSDC TEST Key

This key is the Visa CA Public 1152 bit TEST key

Component	Value
Registered Application Provider Identifier (RID)	A0 00 00 00 03
Index	95
Modulus	BE 9E 1F A5 E9 A8 03 85 29 99 C4 AB 43 2D B2 86 00 DC D9 DA B7 6D FA AA 47 35 5A 0F E3 7B 15 08 AC 6B F3 88 60 D3 C6 C2 E5 B1 2A 3C AA F2 A7 00 5A 72 41 EB AA 77 71 11 2C 74 CF 9A 06 34 65 2F BC A0 E5 98 0C 54 A6 47 61 EA 10 1A 11 4E 0F 0B 55 72 AD D5 7D 01 0B 7C 9C 88 7E 10 4C A4 EE 12 72 DA 66 D9 97 B9 A9 0B 5A 6D 62 4A B6 C5 7E 73 C8 F9 19 00 0E B5 F6 84 89 8E F8 C3 DB EF B3 30 C6 26 60 BE D8 8E A7 8E 90 9A FF 05 F6 DA 62 7B
Exponent	03
Secure Hash Algorithm-1 Hash	EE 15 11 CE C7 10 20 A9 B9 04 43 B3 7B 1D 5F 6E 70 30 30 F6

Comments:	The production version of Visa's 1152-bit CA public key is currently set to expire on December 31, 2017.
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## 1408 Bit VSDC TEST Key

This key is the Visa CA Public 1408 bit TEST key:

Component	Value
Registered Application Provider Identifier (RID)	A0 00 00 00 03
Index	92
Modulus	99 6A F5 6F 56 91 87 D0 92 93 C1 48 10 45 0E D8 EE 33 57 39 7B 18 A2 45 8E FA A9 2D A3 B6 DF 65 14 EC 06 01 95 31 8F D4 3B E9 B8 F0 CC 66 9E 3F 84 40 57 CB DD F8 BD A1 91 BB 64 47 3B C8 DC 9A 73 0D B8 F6 B4 ED E3 92 41 86 FF D9 B8 C7 73 57 89 C2 3A 36 BA 0B 8A F6 53 72 EB 57 EA 5D 89 E7 D1 4E 9C 7B 6B 55 74 60 F1 08 85 DA 16 AC 92 3F 15 AF 37 58 F0 F0 3E BD 3C 5C 2C 94 9C BA 30 6D B4 4E 6A 2C 07 6C 5F 67 E2 81 D7 EF 56 78 5D C4 D7 59 45 E4 91 F0 19 18 80 0A 9E 2D C6 6F 60 08 05 66 CE 0D AF 8D 17 EA D4 6A D8 E3 0A 24 7C 9F
Exponent	03
Secure Hash Algorithm-1 Hash	42 9C 95 4A 38 59 CE F9 12 95 F6 63 C9 63 E5 82 ED 6E B2 53
Comments:	The production version of Visa's 1152-bit CA public key is currently set to expire on December 31, 2024.

## 1984 Bit VSDC TEST Key

This key is the Visa CA Public 1984 bit TEST key, exponent 3

Component	Value
Registered Application Provider Identifier (RID)	A0 00 00 00 03
Index	94

Modulus	AC D2 B1 23 02 EE 64 4F 3F 83 5A BD 1F C7 A6 F6 2C CE 48 FF EC 62 2A A8 EF 06 2B EF 6F B8 BA 8B C6 8B BF 6A B5 87 0E ED 57 9B C3 97 3E 12 13 03 D3 48 41 A7 96 D6 DC BC 41 DB F9 E5 2C 46 09 79 5C 0C CF 7E E8 6F A1 D5 CB 04 10 71 ED 2C 51 D2 20 2F 63 F1 15 6C 58 A9 2D 38 BC 60 BD F4 24 E1 77 6E 2B C9 64 80 78 A0 3B 36 FB 55 43 75 FC 53 D5 7C 73 F5 16 0E A5 9F 3A FC 53 98 EC 7B 67 75 8D 65 C9 BF F7 82 8B 6B 82 D4 BE 12 4A 41 6A B7 30 19 14 31 1E A4 62 C1 9F 77 1F 31 B3 B5 73 36 00 0D FF 73 2D 3B 83 DE 07 05 2D 73 03 54 D2 97 BE C7 28 71 DC CF 0E 19 3F 17 1A BA 27 EE 46 4C
	6A 97 69 09 43 D5 9B DA BB 2A 27 EB 71 CE EB DA FA 11 76 04 64 78 FD 62 FE C4 52 D5 CA 39 32 96 53 0A A3 F4 19 27 AD FE 43 4A 2D F2 AE 30 54 F8 84 06 57 A2 6E 0F C6 17
Exponent	03
Secure Hash Algorithm-1 Hash	C4 A3 C4 3C CF 87 32 7D 13 6B 80 41 60 E4 7D 43 B6 0E 6E 0F
Comments:	This key length is currently considered to have an anticipated lifetime to at least December 31, 2025

## Discover

Discover test key values

DFS CA Test Payment System Public Key

1. Key length – 1024 Bits – PKI 90 – Test

Field Name	Length	Description	Value
RID	5b	Identifies the payment system to which the CA public key is associated	A0 00 00 01 52
CA Public Key Index	1b	Identifies the CA Public Key in conjunction with the RID	5A
CA Hash Algorithm Indicator	1b	Indicates the hash algorithm used to produce the Hash Result in the digital signature scheme	01
CA Public Key Algorithm Indicator	1b	Indicates the algorithm to be used with the CA Public Key.	01

CA Public Key Modulus	128b	Value of the modulus part of the CA Public Key	ED D8 25 24 68 A7 05 61 4B 4D 07 DE 32 11 B3 00 31 AE DB 6D 33 A4 31 5F 2C FF 7C 97 DB 91 89 93 C2 DC 02 E7 9E 2F F8 A2 68 3D 5B BD 0F 61 4B C9 AB 36 0A 44 82 83 EF 8B 9C F6 73 1D 71 D6 BE 93 9B 7C 5D 0B 04 52 D6 60 CF 24 C2 1C 47 CA C8 E2 69 48 C8 EE D8 E3 D0 0C 01 68 28 D6 42 81 6E 65 8D C2 CF C6 1E 7E 7D 77 40 63 3B EF E3 41 07 C1 FB 55 DE A7 FA AE A2 B2 5E 85 BE D9 48 89 3D 07
CA Public Key Exponent	1b	CA Public Key Exponent equal to 3	03
CA Public Key	20b	A check value calculated on	CC 95 85 E8 E6 37 19 1C 10 FC EC B3
Check Sum		the concatenation of all parts of the CA Public key (RID, CA Public Key Index, CA Public Key Modulus, CA Public key Exponent) using SHA-1	2B 5A E1 B9 D4 10 B5 2D

## 2. Key length – 1152 Bits – PKI 91 Test

Field Name	Length	Description	Value
RID	5b	Identifies the payment system to which the CA public key is associated	A0 00 00 01 52
CA Public Key Index	1b	Identifies the CA Public Key in conjunction with the RID	5B
CA Hash Algorithm Indicator	1b	Indicates the hash algorithm used to produce the Hash Result in the digital signature scheme	01
CA Public Key Algorithm Indicator	1b	Indicates the algorithm to be used with the CA Public Key.	01

CA Public Key Modulus	144b	Value of the modulus part of the CA Public Key	D3 F4 5D 06 5D 4D 90 0F 68 B2 12 9A FA 38 F5 49 AB 9A E4 61 9E 55 45 81 4E 46 8F 38 20 49 A0 B9 77 66 20 DA 60 D6 25 37 F0 70 5A 2C 92 6D BE AD 4C A7 CB 43 F0 F0 DD 80 95 84 E9 F7 EF BD A3 77 87 47 BC 9E 25 C5 60 65 26 FA B5 E4 91 64 6D 4D D2 82 78 69 1C 25 95 6C 8F ED 5E 45 2F 24 42 E2 5E DC 6B 0C 1A A4 B2 E9 EC 4A D9 B2 5A 1B 83 62 95 B8 23 ED DC 5E B6 E1 E0 A3 F4 1B 28 DB 8C 3B 7E 3E 9B 59 79 CD 7E 07 9E F0 24 09 5A 1D 19 DD
CA Public Key Exponent	1b	CA Public Key Exponent equal to 3	03
CA Public Key Check Sum	20b	A check value calculated on the concatenation of all parts of the CA Public key (RID, CA Public Key Index, CA Public Key Modulus, CA	4D C5 C6 CA B6 AE 96 97 4D 9D C8 B2 43 5E 21 F5 26 BC 7A 60
		Public key Exponent) using SHA-1	

### 3. Key length – 1408 Bits – PKI 92 Test

Field Name	Length	Description	Value
RID	5	Identifies the payment system to which the CA public key is associated	A0 00 00 01 52
CA Public Key Index	1	Identifies the CA Public Key in conjunction with the RID	5C
CA Hash Algorithm Indicator	1	Indicates the hash algorithm used to produce the Hash Result in the digital signature scheme	01
CA Public Key Algorithm Indicator	1	Indicates the algorithm to be used with the CA Public Key.	



CA Public Key Modulus	176	Value of the modulus part of the CA Public Key	83 3F 27 5F CF 5C A4 CB 6F 1B F8 80 E5 4D CF EB 72 1A 31 66 92 CA FE B2 8B 69 8C AE CA FA 2B 2D 2A D8 51 7B 1E FB 59 DD EF C3 9F 9C 3B 33 DD EE 40 E7 A6 3C 03 E9 0A 4D D2 61 BC 0F 28 B4 2E A6 E7 A1 F3 07 17 8E 2D 63 FA 16 49 15 5C 3A 5F 92 6B 4C 7D 7C 25 8B CA 98 EF 90 C7 F4 11 7C 20 5E 8E 32 C4 5D 10 E3 D4 94 05 9D 2F 29 33 89 1B 97 9C E4 A8 31 B3 01 B0 55 0C DA E9 B6 70 64 B3 1D 8B 48 1B 85 A5 B0 46 BE 8F FA 7B DB 58 DC 0D 70 32 52 52 97 F2 6F F6 19 AF 7F 15 BC EC 0C 92 BC DC BC 4F B2 07 D1 15 AA 65 CD 04 C1 CF 98 21 91
CA Public Key Exponent	1b	CA Public Key Exponent equal to 3	03
CA Public Key Check Sum	20	A check value calculated on the concatenation of all parts of the CA Public key (RID, CA Public Key Index, CA Public Key Modulus, CA Public key Exponent) using SHA-1	60 15 40 98 CB BA 35 0F 5F 48 6C A3 10 83 D1 FC 47 4E 31 F8

#### 4. Key length – 1984 Bits - PKI 93 Test

Field Name	Length	Description	Value
RID	5b	Identifies the payment system to which the CA public key is associated	A0 00 00 01 52
CA Public Key Index	1b	Identifies the CA Public Key in conjunction with the RID	5D
CA Hash Algorithm Indicator	1b	Indicates the hash algorithm used to produce the Hash Result in the digital signature scheme	01
CA Public Key Algorithm Indicator	1b	Indicates the algorithm to be used with the CA Public Key.	01

CA Public Key Modulus	248b	Value of the modulus part of the CA Public Key	AD938EA9888E5155F8CD272749172B 3A8C504C17460EFA0BED7CBC5FD3 2C4A80FD810312281B5A35562800CD C325358A9639C501A537B7AE43DF26 3E6D232B811ACDB6DDE979D55D6C 911173483993A423A0A5B1E1A70237 885A241B8EEBB5571E2D32B41F9CC 5514DF83F0D69270E109AF1422F985 A52CCE04F3DF269B795155A68AD2D 6B660DDCD759F0A5DA7B64104D22C 2771ECE7A5FFD40C774E441379D11 32FAF04CDF55B9504C6DCE9F61776 D81C7C45F19B9EFB3749AC7D486A5 AD2E781FA9D082FB2677665B99FA5 F1553135A1FD2A2A9FBF625CA84A7 D736521431178F13100A2516F9A43C E095B032B886C7A6AB126E203BE7
CA Public Key Exponent	1b	CA Public Key Exponent equal to 3	03
CA Public Key Check Sum	20b	A check value calculated on the concatenation of all parts of the CA Public key (RID, CA Public Key Index, CA Public Key Modulus, CA Public key Exponent) using SHA-1	B5 1E C5 F7 DE 9B B6 D8 BC E8 FB 5F 69 BA 57 A0 42 21 F3 9B

## JCB

CA Public Key	CAPK Index (Hex)	Length (bit)	Exp. (Hex)	Modulus	Hash Value
	08	1,024	03	B74670DAD1DC8983652000E5A7 F2F8B35DFD083EE593E5BA895C 95729F2BADE9C8ABF3DD9CE240 C451C6CEFFC768D83CBAC76ABB 8FEA58F013C647007CFF7617BAC 2AE3981816F25CC7E5238EF34C4 F02D0B01C24F80C2C65E7E7743 A4FA8E23206A23ECE290C26EA5 6DB085C5C5EAE26292451FC829 2F9957BE8FF20FAD53E5	DD36D589622 8C8C4900742F 107E2F91FE50 BC7EE
	0F	1,152	03	9EFBADDE4071D4EF98C969EB32 AF854864602E515D6501FDE576	2A1B82DE00F 5F0C401760A

				B310964A4F7C2CE842ABEFAFC5 DC9E26A619BCF2614FE07375B9 249BEFA09CFEE70232E75FFD647 571280C76FFCA87511AD255B98 A6B577591AF01D003BD6BF7E1F CE4DFD20D0D0297ED5ECA25DE2 61F37EFE9E175FB5F12D2503D8C FB060A63138511FE0E125CF3A64 3AFD7D66DCF9682BD246DDEA1	DF528228D3E DE0F403
	11	1,408	03	A2583AA40746E3A63C22478F57 6D1EFC5FB046135A6FC739E82B5 5035F71B09BEB566EDB9968DD6 49B94B6DEDC033899884E908C2 7BE1CD291E5436F762553297763 DAA3B890D778C0F01E3344CECD FB3BA70D7E055B8C760D0179A4 03D6B55F2B3B083912B183ADB7 927441BED3395A199EEFE0DEBD 1F5FC3264033DA856F4A8B9391 6885BD42F9C1F456AAB8CFA83A C574833EB5E87BB9D4C006A4B5 346BD9E17E139AB6552D9C58BC 041195336485	D9FD62C9DD4 E6DE7741E9A 17FB1FF2C5D B948BCB
	13	1,984	03	A3270868367E6E29349FC2743EE 545AC53BD30297824889976501 08524FD051E3B6EACA6A9A6C14 41D28889A5F46413C8F62F3645A AEB30A1521EEF41FD4F3445BFA 1AB29F9AC1A74D9A16B9329329 6CB09162B149BAC22F88AD8F32 2D684D6B49A12413FC1B6AC70E DEDB18EC1585519A89B50B3D03 E14063C2CA58B7C2BA7FB22799 A33BCDE6AFCEBEB4A7D64911D08 D18C47F9BD14A9FAD8805A15DE 5A38945A97919B7AB88EFA11A8 8C0CD92C6EE7DC352AB0746ABF 13585913C8A4E04464B77909C6 BD94341A8976C4769EA6C0D30A 60F4EE8FA19E767B170DF4FA803 12DBA61DB645D5D1560873E267 4E1F620083F30180BD96CA589	54CFAE61715 0DFA09D3F90 1C912352452 3EBEDF3

Issuer Master Key (Application Master Key)	Index	Data Value
	01	3D19850DD385318A7F54FB9D370867BA

## UnionPay

CA Public Key (A000000333)			
Index	Length	Exponent	Modules
0x0a	1024	03	B2AB1B6E9AC55A75ADFD5BBC34490E53C4C3381F34E60E7FAC21CC2B26DD34462B64A6FAE2495ED1DD383B8138BEA100FF9B7A111817E7B9869A9742B19E5C9DAC56F8B8827F11B05A08ECCF9E8D5E85B0F7CFA644EFF3E9B796688F38E006DEB21E101C01028903A06023AC5AAB8635F8E307A53AC742BDCE6A283F585F48EF
Hash Value for CAPK index '0a'			C88BE6B2417C4F941C9371EA35A377158767E4E3
0x08	1152	03	B61645EDFD5498FB246444037A0FA18C0F101EBD8EFA54573CE6E6A7FBF63ED21D66340852B0211CF5EEF6A1CD989F66AF21A8EB19DBD8DBC3706D135363A0D683D046304F5A836BC1BC632821AFE7A2F75DA3C50AC74C545A754562204137169663CFC0B06E67E2109EBA41BC67FF20CC8AC80D7B6EE1A95465B3B2657533EA56D92D539E5064360EA4850FED2D1BF
Hash Value for CAPK index '08'			EE23B616C95C02652AD18860E48787C079E8E85A
0x09	1408	03	EB374DFC5A96B71D2863875EDA2EAFB96B1B439D3ECE0B1826A2672EEFFA7990286776F8BD989A15141A75C384DFC14FEF9243AAB32707659BE9E4797A247C2F0B6D99372F384AF62FE23BC54BCDC57A9ACD1D5585C303F201EF4E8B806AFB809DB1A3DB1CD112AC884F164A67B99C7D6E5A8A6DF1D3CAE6D7ED3D5BE725B2DE4ADE23FA679BF4EB15A93D8A6E29C7FFA1A70DE2E54F593D908A3BF9EBBD760BBFDC8DB8B54497E6C5BE0E4A4DAC29E5
Hash Value for CAPK index '09'			A075306EAB0045BAF72CDD33B3B678779DE1F527
0x0b	1984	03	CF9FDF46B356378E9AF311B0F981B21A1F22F250FB11F55C958709E3C7241918293483289EAE688A094C02C344E2999F315A72841F489E24B1BA0056CFAB3B479D0E826452375DCDBB67E97EC2AA66F4601D774FEAEF775ACCC621BFEB65FB0053FC5F392AA5E1D4C41A4DE9FFDFDF1327C4BB874F1F63A599EE3902FE95E729FD78D4234DC7E6CF1ABABAA3F6DB29B7F05D1D901D2E76A606A8CBFFFECBD918FA2D278BDB43B0434F5D45134BE1C2781D157D501FF43E5F1C470967CD57CE53B64D82974C8275937C5D8502A1252A8A5D6088A259B694F98648D9AF2CB0EFD9D943C69F896D49FA39702162ACB5AF29B90BADE005BC157
Hash Value for CAPK index '0b'			BD331F9996A490B33C13441066A09AD3FEB5F66C

## MasterCard

### Keys

The Public Keys and modulus to be loaded into the terminal for offline CAM Verification are given hereafter. The hash value is calculated on the concatenation of all parts using SHA-1.

RID	A0 00 00 00 04
Certification Authority Public Key Index	FE
CA Public Key Modulus (1024 bits / 128 bytes)	A6 53 EA C1 C0 F7 86 C8 72 4F 73 7F 17 29 97 D6 3D 1C 32 51 C4 44 02 04 9B 86 5B AE 87 7D 0F 39 8C BF BE 8A 60 35 E2 4A FA 08 6B EF DE 93 51 E5 4B 95 70 8E E6 72 F0 96 8B CD 50 DC E4 0F 78 33 22 B2 AB A0 4E F1 37 EF 18 AB F0 3C 7D BC 58 13 AE AE F3 AA 77 97 BA 15 DF 7D 5B A1 CB AF 7F D5 20 B5 A4 82 D8 D3 FE E1 05 07 78 71 11 3E 23 A4 9A F3 92 65 54 A7 0F E1 0E D7 28 CF 79 3B 62 A1
Public Key Exponent	03
Hash (20 bytes using SHA-1)	9A 29 5B 05 FB 39 0E F7 92 3F 57 61 8A 9F DA 29 41 FC 34 E0

RID	A0 00 00 00 04
Certification Authority Public Key Index	F3
CA Public Key Modulus (1152 bits / 144 bytes)	98 F0 C7 70 F2 38 64 C2 E7 66 DF 02 D1 E8 33 DF F4 FF E9 2D 69 6E 16 42 F0 A8 8C 56 94 C6 47 9D 16 DB 15 37 BF E2 9E 4F DC 6E 6E 8A FD 1B 0E B7 EA 01 24 72 3C 33 31 79 BF 19 E9 3F 10 65 8B 2F 77 6E 82 9E 87 DA ED A9 C9 4A 8B 33 82 19 9A 35 0C 07 79 77 C9 7A FF 08 FD 11 31 0A C9 50 A7 2C 3C A5 00 2E F5 13 FC CC 28 6E 64 6E 3C 53 87 53 5D 50 95 14 B3 B3 26 E1 23 4F 9C B4 8C 36 DD D4 4B 41 6D 23 65 40 34 A6 6F 40 3B A5 11 C5 EF A3
Public Key Exponent	03
Hash (20 bytes using SHA-1)	A6 9A C7 60 3D AF 56 6E 97 2D ED C2 CB 43 3E 07 E8 B0 1A 9A

RID	A0 00 00 00 04
Certification Authority Public Key Index	F8
CA Public Key Modulus (1024 bits / 128 bytes)	A1 F5 E1 C9 BD 86 50 BD 43 AB 6E E5 6B 89 1E F7 45 9C 0A 24 FA 84 F9 12 7D 1A 6C 79 D4 93 0F 6D B1 85 2E 25 10 F1 8B 61 CD 35 4D B8 3A 35 6B D1 90 B8 8A B8 DF 04 28 4D 02 A4 20 4A 7B 6C B7 C5 55 19 77 A9 B3 63 79 CA 3D E1 A0 8E 69 F3 01 C9 5C C1 C2 05 06 95 92 75 F4 17 23 DD 5D 29 25 29 05 79 E5 A9 5B 0D F6 32 3F C8 E9 27 3D 6F 84 91 98 C4 99 62 09 16 6D 9B FC 97 3C 36 1C C8 26 E1
Public Key Exponent:	03
Hash (20 bytes using SHA-1):	F0 6E CC 6D 2A AE BF 25 9B 7E 75 5A 38 D9 A9 B2 4E 2F F3 DD

RID	A0 00 00 00 04
Certification Authority Public Key Index	FA

CA Public Key Modulus (1152 bits / 144 bytes)	A9 0F CD 55 AA 2D 5D 99 63 E3 5E D0 F4 40 17 76 99 83 2F 49 C6 BA B1 5C DA E5 79 4B E9 3F 93 4D 44 62 D5 D1 27 62 E4 8C 38 BA 83 D8 44 5D EA A7 41 95 A3 01 A1 02 B2 F1 14 EA DA 0D 18 0E E5 E7 A5 C7 3E 0C 4E 11 F6 7A 43 DD AB 5D 55 68 3B 14 74 CC 06 27 F4 4B 8D 30 88 A4 92 FF AA DA D4 F4 24 22 D0 E7 01 35 36 C3 C4 9A D3 D0 FA E9 64 59 B0 F6 B1 B6 05 65 38 A3 D6 D4 46 40 F9 44 67 B1 08 86 7D EC 40 FA AE CD 74 0C 00 E2 B7 A8 85 2D
Public Key Exponent	03
Hash (20 bytes using SHA-1)	5B ED 40 68 D9 6E A1 6D 2D 77 E0 3D 60 36 FC 7A 16 0E A9 9C

RID	A0 00 00 00 04
Certification Authority Public Key Index	EF
CA Public Key Modulus (1984 bits / 248 bytes)	A1 91 CB 87 47 3F 29 34 9B 5D 60 A8 8B 3E AE E0 97 3A A6 F1 A0 82 F3 58 D8 49 FD DF F9 C0 91 F8 99 ED A9 79 2C AF 09 EF 28 F5 D2 24 04 B8 8A 22 93 EE BB C1 94 9C 43 BE A4 D6 0C FD 87 9A 15 39 54 4E 09 E0 F0 9F 60 F0 65 B2 BF 2A 13 EC C7 05 F3 D4 68 B9 D3 3A E7 7A D9 D3 F1 9C A4 0F 23 DC F5 EB 7C 04 DC 8F 69 EB A5 65 B1 EB CB 46 86 CD 27 47 85 53 0F F6 F6 E9 EE 43 AA 43 FD B0 2C E0 0D AE C1 5C 7B 8F D6 A9 B3 94 BA BA 41 9D 3F 6D C8 5E 16 56 9B E8 E7 69 89 68 8E FE A2 DF 22 FF 7D 35 C0 43 33 8D EA A9 82 A0 2B 86 6D E5 32 85 19 EB BC D6 F0 3C DD 68 66 73 84 7F 84 DB 65 1A B8 6C 28 CF 14 62 56 2C 57 7B 85 35 64 A2 90 C8 55 6D 81 85 31 26 8D 25 CC 98 A4 CC 6A 0B DF FF DA 2D CC A3 A9 4C 99 85 59 E3 07 FD DF 91 50 06 D9 A9 87 B0 7D DA EB 3B
Public Key Exponent	03
Hash (20 bytes using SHA-1)	21 76 6E BB 0E E1 22 AF B6 5D 78 45 B7 3D B4 6B AB 65 42 7A

RID	A0 00 00 00 04
Certification Authority Public Key Index	F1
CA Public Key Modulus (1408 bits / 176 bytes)	A0 DC F4 BD E1 9C 35 46 B4 B6 F0 41 4D 17 4D DE 29 4A AB BB 82 8C 5A 83 4D 73 AA E2 7C 99 B0 B0 53 A9 02 78 00 72 39 B6 45 9F F0 BB CD 7B 4B 9C 6C 50 AC 02 CE 91 36 8D A1 BD 21 AA EA DB C6 53 47 33 7D 89 B6 8F 5C 99 A0 9D 05 BE 02 DD 1F 8C 5B A2 0E 2F 13 FB 2A 27 C4 1D 3F 85 CA D5 CF 66 68 E7 58 51 EC 66 ED BF 98 85 1F D4 E4 2C 44 C1 D5 9F 59 84 70 3B 27 D5 B9 F2 1B 8F A0 D9 32 79 FB BF 69 E0 90 64 29 09 C9 EA 27 F8 98 95 95 41 AA 67 57 F5 F6 24 10 4F 6E 1D 3A 95 32 F2 A6 E5 15 15 AE AD 1B 43 B3 D7 83 50 88 A2 FA FA 7B E7
Public Key Exponent	03
Hash (20 bytes using SHA-1)	D8 E6 8D A1 67 AB 5A 85 D8 C3 D5 5E CB 9B 05 17 A1 A5 B4 BB