Algorithm Profiles

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Traditional Approach

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Plat du jour

+

A-la-carte

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MUST implement

Becomes obsolete

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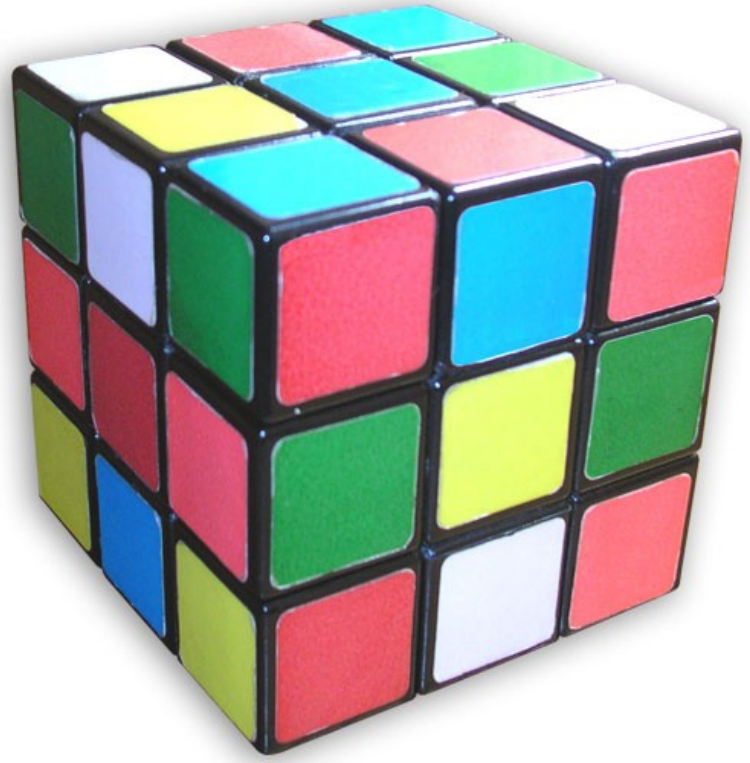
A-la-carte



Combinatorial explosion

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Hidden Constraints

Box says ‘supports SHA-1, SHA-256, RSA, DSA’

BUT

DSA implementation does not support SHA-256

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Result

Many variations to test

Many configurations for security analysis

Real ‘must implement’ deviates from specification

Hidden constraints are not exposed

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Objectives

Constrain number of variations

Allow for specialty (vanity) crypto

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Proposal

Quantum Profiles

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Each Profile defines

One encryption, one digest, one MAC, one key exchange, one signature, &ct.

Has unique URI

[Parameters, Modes]

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Finite Field Profile

RSA
SHA2
HMAC-SHA2
AES
One C18N

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ECC Profile

NIST Suite B

One C18N

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SHA3 Profile

To be released 2009/2010

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Non-Standard Profile

NIST Suite A

Private definition

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Parameters / Modes

Limited, discrete options

Master profile specifies set of sub profiles

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Finite Field Profile

Level1: RSA2048, SHA256, AES128

Level1a: RSA4096, SHA256, AES128

Level2: RSA3072, SHA386, AES192

Level3: RSA4096, SHA512, AES256

Level3x = Level1 + Level1a + Level2 + Level3

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Finite Field Profile v2007

Level1: RSA2048, SHA256, AES128

Level2: RSA4096, SHA256, AES128

Level3: RSA4096, SHA512, AES256

Level3x = Level1 + Level2 + Level3

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Finite Field Profile v2009

Level1: RSA2048-RND-PSS, SHA256, AES128

Level2: RSA4096-RND-PSS, SHA256, AES128

Level3: RSA4096-RND-PSS, SHA512, AES256

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URIs

e.g. http://w3.org/2008/xmlsec/profile-ff-level1

[Intentionally opaque]

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Question

Specify Crypto and XML issues in same profile

Specify separate profiles for crypto and XML

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