CLAIMS

1. A method for a first device (110) to communicate efficiently and securely with a second device (120), comprising:

generating (330), by the first device (110), a first message(115) using a first algorithm associated with a first scheme and transmitting the first message to the second device (120), such that the second device (120) responds by handling the first message by applying a first complementary algorithm associated with the first scheme to the received first message (115), and based on the handled first message, transmitting a second message (125) generated using a second algorithm associated with a second scheme;

receiving (342), by the first device (110), the second message (125) from the second device (120); and

handling (345), by the first device (110), the received second message (125) by applying a second complementary algorithm associated with the second scheme to the received second message, wherein the first algorithm and the second complementary algorithm fulfils performance criteria for the first device (110), and whereby the first scheme is different from the second scheme, wherein before generating the first message (115) using the first algorithm associated with the first scheme, the method comprises:

obtaining (305), by the first device (110), performance data for a plurality of types of schemes, wherein each scheme comprises an algorithm and a complementary algorithm; and

identifying (315) from the obtained performance data a scheme having an algorithm that fulfils performance criteria for the first device (110) and setting the identified scheme as the first scheme, further comprising:

identifying, by the first device (110), from the obtained performance data another scheme having a complementary algorithm that fulfils performance criteria for the first device (110) and setting the identified scheme as the second scheme, wherein the first device (110) and the second device (120) each comprise an Internet of Things, IoT, enabled device, and wherein the first scheme comprises an RSA cryptographic scheme and the second scheme comprises a vDGHV cryptographic scheme.

2. A method for a first device (110) to communicate efficiently and securely with a second device (120), comprising:

generating (330), by the first device (110), a first message(115) using a first

algorithm associated with a first scheme and transmitting the first message to the second device (120), such that the second device (120) responds by handling the first message by applying a first complementary algorithm associated with the first scheme to the received first message (115), and based on the handled first message, transmitting a second message (125) generated using a second algorithm associated with a second scheme;

receiving (342), by the first device (110), the second message (125) from the second device (120); and

handling (345), by the first device (110), the received second message (125) by applying a second complementary algorithm associated with the second scheme to the received second message, wherein the first algorithm and the second complementary algorithm fulfils performance criteria for the first device (110), and whereby the first scheme is different from the second scheme, wherein before generating the first message using the first algorithm associated with the first scheme, the method comprises:

obtaining, by the first device, performance data for a plurality of types of schemes, wherein each scheme comprises an algorithm and a complementary algorithm;

identifying from the obtained performance data a scheme having an algorithm that fulfils performance criteria for the first device and a complementary algorithm that fulfils performance criteria for the second device and setting the identified scheme as the first scheme, the method further comprises:

identifying from the obtained performance data another scheme having an algorithm that fulfils performance criteria for the second device and a complementary algorithm that fulfils performance criteria for the first device and setting the identified another scheme as the second scheme, wherein the first device (110) and the second device (120) each comprise an Internet of Things, loT, enabled device, and wherein the first scheme comprises an RSA cryptographic scheme and the second scheme comprises a vDGHV cryptographic scheme.

3. A first device (110) for communicating efficiently and securely with a second device (120), the first device comprising:

a processor (205); and

a non-transitory media (220) readable by the processor (205), the media (220) storing instructions that when executed by the processor (205), cause the processor (205) to:

generate (330) a first message (115) using a first algorithm associated with a first scheme and transmitting the first message (115) to the second device (120), such that the second device (120) responds by handling the first message (115) by applying a first complementary algorithm associated with the first scheme to the received first message (115), and based on the handled first message, transmitting a second message (125) generated using a second algorithm associated with a second scheme;

receive (342) the second message (125) from the second device (120); and

handle (345) the received second message (125) by applying a second complementary algorithm associated with the second scheme to the received second message, wherein the first algorithm and the second complementary algorithm fulfils performance criteria for the first device (110), and whereby the first scheme is different from the second scheme, wherein before instructions to generate the first message (115) using the first algorithm associated with the first scheme, the instructions comprises:

instructions for directing the processor (205) to:

obtain (305) performance data for a plurality of types of schemes, wherein each scheme comprises an algorithm and a complementary algorithm; and

identify (315) from the obtained performance data a scheme having an algorithm that fulfils performance criteria for the first device (110) and setting the identified scheme as the first scheme, further comprising:

instructions for directing the processor (305) to:

identify from the obtained performance data another scheme having a complementary algorithm that fulfils performance criteria for the first device (110) and setting the identified scheme as the second scheme, wherein the first device (110) and the second device (120) each comprise an Internet of Things, IoT, enabled device, and wherein the first scheme comprises an RSA cryptographic scheme and the second scheme comprises a vDGHV cryptographic scheme.

4. A first device (110) for communicating efficiently and securely with a second device (120), the first device comprising:

a processor (205); and

a non-transitory media (220) readable by the processor (205), the media (220) storing instructions that when executed by the processor (205), cause the processor (205) to:

generate (330) a first message (115) using a first algorithm associated with a first scheme and transmitting the first message (115) to the second device (120), such that

the second device (120) responds by handling the first message (115) by applying a first complementary algorithm associated with the first scheme to the received first message (115), and based on the handled first message, transmitting a second message (125) generated using a second algorithm associated with a second scheme;

receive (342) the second message (125) from the second device (120); and

handle (345) the received second message (125) by applying a second complementary algorithm associated with the second scheme to the received second message, wherein the first algorithm and the second complementary algorithm fulfils performance criteria for the first device (110), and whereby the first scheme is different from the second scheme, wherein before instructions to generate the first message using the first algorithm associated with the first scheme, the instructions comprises:

instructions for directing the processor to:

obtain performance data for a plurality of types of schemes, wherein each scheme comprises an algorithm and a complementary algorithm;

identify from the obtained performance data a scheme having an algorithm that fulfils performance criteria for the first device and a complementary algorithm that fulfils performance criteria for the second device and setting the identified scheme as the first scheme, wherein before instructions to generate the first message using the first algorithm associated with the first scheme, the instructions comprises:

instructions for directing the processor to:

identify from the obtained performance data another scheme having an algorithm that fulfils performance criteria for the second device and a complementary algorithm that fulfils performance criteria for the first device and setting the identified another scheme as the second scheme, wherein the first device (110) and the second device (120) each comprise an Internet of Things, loT, enabled device, and wherein the first scheme comprises an RSA cryptographic scheme and the second scheme comprises a vDGHV cryptographic scheme.

5. A method for a first device to communicate efficiently and securely with a second device, comprising:

receiving from the first device, by the second device, a first message generated using a first algorithm associated with a first scheme;

handling the first message by applying a first complementary algorithm associated with the first scheme to the received first message; and

based on the handled first message, transmitting a second message generated using a second algorithm associated with a second scheme to the first device, such

that the first device responds by handling the received second message by applying a second complementary algorithm associated with the second scheme to the received second message, wherein the first algorithm and the second complementary algorithm fulfils performance criteria for the first device, and whereby the first scheme is different from the second scheme, wherein before the handling the first message by applying the first complementary algorithm associated with the first scheme to the received first message, the method comprises:

obtaining, by the second device, performance data for a plurality of types of schemes, wherein each scheme comprises an algorithm and a complementary algorithm; and

identifying from the obtained performance data a scheme having an algorithm that fulfils performance criteria for the first device and setting the identified scheme as the first scheme, further comprising:

identifying, by the second device, from the obtained performance data another scheme having a complementary algorithm that fulfils performance criteria for the first device and setting the identified scheme as the second scheme, wherein the first device (110) and the second device (120) each comprise an Internet of Things, IoT, enabled device, and wherein the first scheme comprises an RSA cryptographic scheme and the second scheme comprises a vDGHV cryptographic scheme.

6. A second device (120) for communicating efficiently and securely with a first device (110), the second device (120) comprising:

a processor (205); and

a non-transitory media (220) readable by the processor (205), the media (220) storing instructions that when executed by the processor (205), cause the processor (205) to:

receive from the first device (110) a first message (115) generated by using a first algorithm associated with a first scheme;

handle the first message (115) by applying a first complementary algorithm associated with the first scheme to the received first message (115); and

based on the handled first message, transmit a second message (125) generated using a second algorithm associated with a second scheme to the first device (110), such that the first device (110) responds by handling the received second message (125) by applying a second complementary algorithm associated with the second scheme to the received second message, wherein the first algorithm and the second complementary algorithm fulfils performance criteria for the first device (110),

and whereby the first scheme is different from the second scheme, wherein before the instructions to handle the first message (115) by applying the first complementary algorithm associated with the first scheme to the received first message (115), the instructions further comprises:

instructions for directing the processor (205) to:

obtain (305) performance data for a plurality of types of schemes, wherein each scheme comprises an algorithm and a complementary algorithm; and

identify from the obtained performance data a scheme having an algorithm that fulfils performance criteria for the first device (110) and setting the identified scheme as the first scheme, wherein the instructions further comprise instructions for directing the processor (205) to:

identify from the obtained performance data another scheme having a complementary algorithm that fulfils performance criteria for the first device (110) and setting the identified scheme as the second scheme, wherein the first device (110) and the second device (120) each comprise an Internet of Things, IoT, enabled device, and wherein the first scheme comprises an RSA cryptographic scheme and the second scheme comprises a vDGHV cryptographic scheme.