WHAT IS CLAIMED IS:

1. A method comprising:

transmitting, by a resource provider computer to a certificate authority computer, certificate request values;

receiving, by the resource provider computer from the certificate authority computer, a resource provider certificate;

creating, by the resource provider computer, an access device certificate; and

transmitting, by the resource provider computer to an access device, the access device certificate and the resource provider certificate.

2. The method of claim 1 further comprising:

determining, by the resource provider computer, a resource provider public key and a resource provider private key using at least the resource provider certificate.

3. The method of claim 1, wherein the certificate request values comprise a first elliptic curve cryptography point and a resource provider identifier, wherein the certificate authority computer:

generates the resource provider certificate using at least the certificate request values.

4. The method of claim 1, wherein the resource provider computer creates more than one access device certificate for more than one access device.

5. The method of claim 1, wherein prior to the resource provider computer transmitting the certificate request values, the certificate authority computer generates a certificate authority key pair comprising a certificate authority public key and a certificate authority private key.

6. The method of claim 1, further comprising:

determining, by the resource provider computer, a resource provider public key and a resource provider private key, the resource provider private key determined using a hash of the resource provider certificate and a random value.

7. The method of claim 6, wherein the resource provider public key is determined using the resource provider certificate, the random value, and a private key derivation value.

8. The method of claim 7, wherein the access device is a POS terminal.

9. The method of claim 7, wherein the resource provider computer is a merchant computer operated by a merchant.

10. The method of claim 1, wherein the access device is a POS terminal and the resource provider computer is a merchant computer operated by a merchant.

11. A resource provider computer comprising:

a processor;

a memory device; and

a computer-readable medium coupled to the processor, the computer-readable medium comprising code executable by the processor for implementing a method comprising:

transmitting, to a certificate authority computer, certificate request values;

receiving, from the certificate authority computer, a resource provider certificate;

creating an access device certificate; and

transmitting, to an access device, the access device certificate and the resource provider certificate.

12. The resource provider computer of claim 11, wherein the method further comprises:

determining a resource provider public key and a resource provider private key using at least the resource provider certificate.

13. The resource provider computer of claim 11, wherein the certificate request values comprise a first elliptic curve cryptography point and a resource provider identifier, wherein the certificate authority computer:

generates the resource provider certificate using at least the certificate request values.

14. The resource provider computer of claim 11, wherein the resource provider computer creates more than one access device certificate for more than one access device.

15. A method comprising:

receiving, by a certificate authority computer from a resource provider computer, certificate request values;

generating, by the certificate authority computer, a resource provider certificate using the certificate request values; and

transmitting, by the certificate authority computer to the resource provider computer, a resource provider certificate, wherein the resource provider computer thereafter creates an access device certificate and transmits the access device certificate and the resource provider certificate to an access device.

16. The method of claim 15, wherein the certificate request values comprise a first elliptic curve cryptography point and a resource provider identifier.

17. The method of claim 15, further comprising:

generating, by the certificate authority computer, a certificate authority key pair comprising a certificate authority public key and a certificate authority private key;

generating by the certificate authority computer, a private key derivation value based on the certificate authority private key;

transmitting, by the certificate authority computer to the resource provider computer, the private key derivation value, which is used by the resource provider computer to determine a resource provider private key.

18. The method of claim 15, wherein after receiving the resource provider certificate, the resource provider computer determines a resource provider public key and a resource provider private key using at least the resource provider certificate.

19. The method of claim 15, wherein the resource provider computer is a merchant computer and the access device is a POS terminal.

20. A certificate authority computer comprising:

a processor; and

a computer readable medium comprising code, executable by the processor, for performing a method comprising:

receiving, from a resource provider computer, certificate request values;

generating a resource provider certificate using the certificate request values; and

transmitting, to the resource provider computer, a resource provider certificate, wherein the resource provider computer thereafter creates an access device certificate and transmits the access device certificate and the resource provider certificate to an access device.