

WHAT IS CLAIMED IS:

1. A method comprising:

receiving, by a token service computer, a token request message, the token request message being originated from a token requestor computer;

determining, by the token service computer, two or more access tokens based upon a single credential including a first access token and a second access token that is independent of the first access token, the first access token and the second access token being associated with the single credential, and token type indicators for the two or more access tokens wherein destinations of the two or more access tokens are determined by the token type indicators; and

transmitting, by the token service computer, the two or more access tokens and the token type indicators to the token requestor computer in a token response message, wherein the two or more access tokens comprise a cloud token and a device specific token for a mobile communication device that is associated with the token requestor computer.

2. A method comprising:

receiving, by a token service computer, a token request message, the token request message being originated from a token requestor computer;

determining, by the token service computer, two or more access tokens based upon a single credential including a first access token and a second access token that is independent of the first access token, the first access token and the second access token being associated with the single credential, and token type indicators for the two or more access tokens wherein destinations of the two or more access tokens are determined by the token type indicators; and

transmitting, by the token service computer, the two or more access tokens and the token type indicators to the token requestor computer in a token response message wherein the token requestor computer comprises a routing table that stores relationships between a communication device operated by a user, and a cloud storage location on a cloud server computer.

1 3. The method of claim 2, ~~wherein the two or more access tokens~~
2 ~~comprise a first token and a second token,~~ wherein the routing table also stores the
3 token type indicators associated with a ~~the~~ first token to be stored in the communication
4 device, and a second token to be stored in the cloud storage location on the cloud
5 server computer.

1 4. A token service computer comprising:
2 a processor; and

3 a non-transitory computer readable medium, the non-transitory computer
4 readable medium comprising code, executable by the processor to implement a method
5 comprising:

6 receiving a token request message, the token request message being
7 originated from a token requestor computer;

8 determining two or more access tokens based upon a single credential
9 including a first access token and a second access token that is independent of the first
10 access token, the first access token and the second access token being associated with
11 the single credential, and token type indicators for the two or more access tokens
12 wherein destinations of the two or more access tokens are determined by the token type
13 indicators; and

14 transmitting the two or more access tokens to the token requestor
15 computer in a token response message,

16 wherein the two or more access tokens are each assigned a token type
17 indicator upon generation.

1 5. A method comprising:

2 receiving, by a token requestor computer from a communication device, a
3 single credential;

4 transmitting, by the token requestor computer, a token request message
5 comprising the single credential to a token service computer;

6 receiving, by the token requestor computer from the token service
7 computer, a token response message comprising two or more access tokens including
8 a first access token and a second access token that is independent of the first access
9 token, the first access token and the second access token being associated with the
10 single credential, and token type indicators for the two or more access tokens wherein
11 destinations of the two or more access tokens are determined by the token type
12 indicators;

13 transmitting, by the token requestor computer, the first access token to the
14 communication device based on the token type indicator for the first access token; and

15 transmitting, by the token requestor computer, the second access token to
16 a cloud server computer based on the token type indicator for the second access token.

1 6. The method of claim 5, wherein the single credential is a real
2 credential.

1 7. The method of claim 5, wherein the first access token can include
2 one or more access tokens.

1 8. The method of claim 5, further comprising:

2 encrypting, by the token requestor computer, the first access token using
3 a public key in an RSA encryption scheme before transmitting the first access token to
4 the communication device, the first access token being in encrypted form when the first
5 access token is transmitted to the communication device, the communication device
6 storing a private key corresponding to the public key.

1 9. The method of claim 5, wherein the token requestor computer
2 comprises a routing table that stores relationships between a communication device
3 operated by a user, and a cloud storage location on a cloud server computer.

1 10. The method of claim 9, wherein the token requestor computer uses
2 the routing table to retrieve a cloud token.

1 11. The method of claim 5, wherein the token request message also
2 comprises a token requestor computer identifier.

1 ~~12. The method of claim 5, wherein destinations of the two or more~~
2 ~~access tokens are determined by token type indicators.~~

1 ~~12~~¹³. The method of claim ~~5~~¹², wherein the token type indicators include
2 at least a type for device bound tokens and a type for cloud tokens.

1 ~~13~~¹⁴. The method of claim 5, wherein the two or more access tokens are
2 used to access secure data residing on remote computers.

1 ~~14~~¹⁵. A token requestor computer comprising:
2 a processor; and
3 a non-transitory computer readable medium, the non-transitory computer
4 readable medium comprising code, executable by the processor, for implementing a
5 method comprising:
6 receiving, from a communication device, a single credential;
7 transmitting a token request message comprising the single credential to a
8 token service computer;

9 receiving, from the token service computer, a token response message
10 comprising two or more access tokens including a first access token and a second
11 access token that is independent of the first access token, the first access token and the
12 second access token being associated with the single credential, and token type
13 indicators for the two or more access tokens wherein destinations of the two or more
14 access tokens are determined by the token type indicators;
15 transmitting the first access token to the communication device based on
16 the token type indicator for the first access token; and
17 transmitting the second access token to a cloud server computer based on
18 the token type indicator for the second access token.

1 1516. The token requestor computer ~~method~~ of claim 1415, wherein the
2 single credential is sixteen digits long.

1 1617. The token requestor computer of claim 1415, wherein the first
2 access token is used by the communication device to access a secure location.

1 1718. The token requestor computer of claim 1415, wherein the non-
2 transitory computer readable medium comprises a token determining module and a
3 credential transmitting module.

1 1819. The token requestor computer of claim 1415, comprising a routing
2 table that stores relationships between a communication device operated by a user, and
3 a cloud storage location on a cloud server computer.

1 1920. The token requestor computer of claim 1819, wherein the routing
2 table can be used to retrieve a cloud token.

1 2021. The token requestor computer of claim 1819, wherein the routing
2 table also stores the token type indicators associated with a first token to be stored in
3 the communication device, and a second token to be stored in the cloud storage
4 location on the cloud server computer.

1 ~~22. The token requestor computer of claim 15, wherein destinations of~~
2 ~~the two or more access tokens are determined by token type indicators.~~

1 21~~23~~. The token requestor computer of claim 14~~22~~, wherein the token
2 type indicators may include at least a type for device bound tokens and a type for cloud
3 tokens.

1 2224. The token requestor computer of claim 1415, wherein the token
2 request message comprises a token requestor computer identifier.