WHAT IS CLAIMED IS:

1. A method comprising:

receiving, by a server computer, a request message from a token requestor computer on behalf of a user device, the request message comprising a first current token tracking value and a first function index value;

determining, by the server computer, a second function index value;

comparing, by the server computer, the first function index value to the second function index value;

if the first function index value and the second function index value match, retrieving, by the server computer, a stored control token tracking value from a token service computer, and determining, by the server computer, a function based on the first function index value and a stored function table associated with the user device;

determining, by the server computer, a second current token tracking value based on the function;

comparing, by the server computer, the first current token tracking value to the second current token tracking value; and

generating, by the server computer, a response message in response to the comparing.

2. The method of claim 1, wherein the request message further comprises a first control token tracking value, wherein the stored control token tracking value is a second control token tracking value, and wherein the method further comprises:

if the first current token tracking value matches the second current token tracking value, comparing, by the server computer, the first control token tracking value to the second control token tracking value.

3. The method of claim 2 further comprising:

if the first control token tracking value and the second control token tracking value match, storing, by the server computer, the first current token tracking

value as a subsequent stored control token tracking value in the token service computer.

4. The method of claim 3, wherein the subsequent stored control token tracking value is utilized during a subsequent request message.

5. The method of claim 2 further comprising:

if the first control token tracking value and the second control token tracking value do not match, determining, by the server computer, that the first current token tracking value is out of sequence; and

transmitting, by the server computer, a token tracking value request message to the token requestor computer, the token tracking value request message including a request for a new current token tracking value.

6. The method of claim 2 further comprising:

comparing, by the server computer, the first current token tracking value and the second control token tracking value;

if the first current token tracking value and the second control token tracking value match, then determining, by the server computer, that the user device is a malicious user device;

generating, by the server computer, a replacement control token tracking value;

storing, by the server computer, the replacement control token tracking value in the token service computer; and

generating, by the server computer, a replay attack alert message comprising at least the replacement control token tracking value.

7. The method of claim 6, wherein the request message is received during an interaction between a user of the user device and a resource provider, and wherein after determining that the user device is the malicious user device performing the replay attack, the method further comprises:

generating, by the server computer, an authorization response message comprising an indication that the interaction is not authorized.

8. The method of claim 1, wherein determining the second function index value further comprises:

determining, by the server computer, the second function index value based on a digit of a current time.

9. The method of claim 1, wherein the request message is an authorization request message received during an interaction between a user of the user device and a resource provider, and the response message is a modified authorization request message, wherein the method further comprises:

transmitting, by the server computer, the modified authorization request message to an authorizing entity computer, wherein the authorizing entity computer determines whether or not to authorize the interaction.

10. A server computer comprising:

a processor; and

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

receiving a request message from a token requestor computer on behalf of a user device, the request message comprising a first current token tracking value and a first function index value;

determining a second function index value;

comparing the first function index value to the second function index value;

if the first function index value and the second function index value match, retrieving a second control token tracking value from a token service computer, and determining a function based on the first function index value and a stored function table associated with the user device;

determining a second current token tracking value based on the function;

comparing the first current token tracking value to the second current token tracking value; and

generating a response message in response to the comparing.

11. The server computer of claim 10, wherein the computer-readable medium further comprises:

a function table module;

a function index value module; and

a token tracking value module.

12. The server computer of claim 10, wherein the server computer is a network processing computer.

13. The server computer of claim 10, wherein the request message is an authorization request message received during an interaction between a user of the user device and a resource provider, and the response message is a modified authorization request message, wherein the method further comprises:

transmitting the modified authorization request message to an authorizing entity computer, wherein the authorizing entity computer determines whether or not to authorize the interaction; and

receiving an authorization response message from the authorizing entity computer, wherein the authorization response message comprises at least an indication of whether or not the interaction is authorized.

14. The server computer of claim 13, wherein the method further comprises:

transmitting the authorization response message to the token requestor computer via a transport computer and a resource provider computer associated with the resource provider.

15. The server computer of claim 14, wherein the authorization request message further comprises a first control token tracking value and a token associated with the user.

16. The server computer of claim 10, wherein the method further comprises:

providing the token to the token service computer; and

receiving user credentials associated with the token from the token service computer.

17. The server computer of claim 16, wherein the modified authorization request comprises the user credentials.

18. The server computer of claim 10, wherein determining the second function index value further comprises:

determining the second function index value based on a hundredths digit of a current time.