ASP.NET Identity
Security Fundamentals

Authentication, Authorization, Roles, Claims and Tokens

What is a Role?

What is a Role?

A role is something which defines what you are authorized to do.

An example of such a role is : Administrator or Employee

Each role is associated with a set of users.

The Administrator might for example be authorized to create and remove users from a web application. While an Employee might only be authorized to read from the web application.

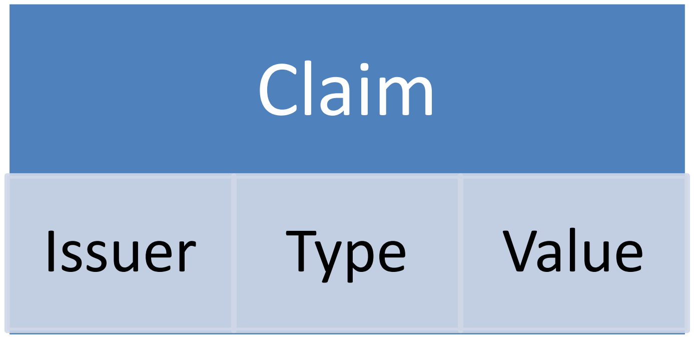
What is a Claim?

What is a Claim?

A Claim is a statement about a subject, for example your name, age or address.

Each claim has a **type**, a **value** and an **issuer**.

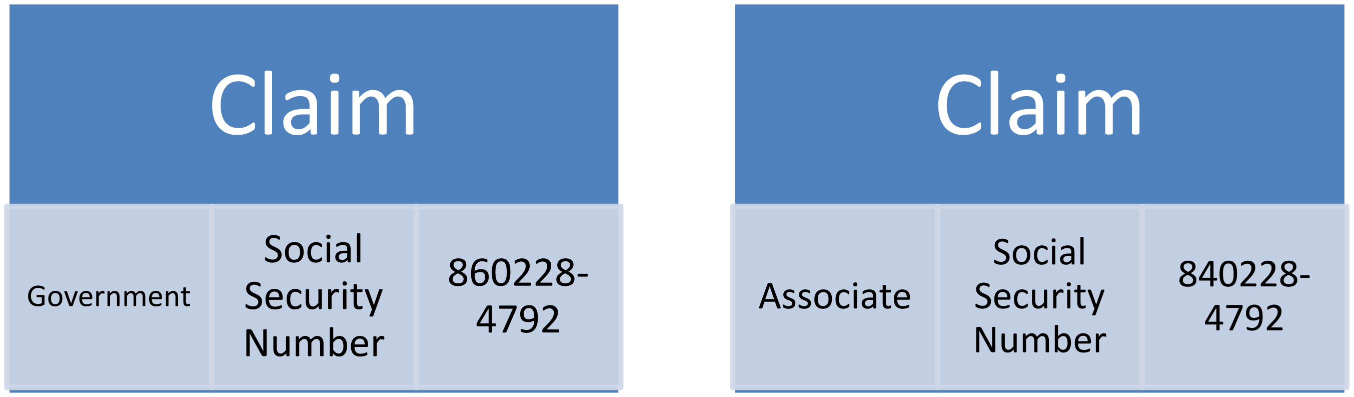
- A type is for example “name” or “address”
- A value is for example “Billy” or “Example street 11”
- An issuer (provider) is an entity who made the claim.



What is a Claim?

Since you’re not always the sole provider of a claim, it is up to you to decide if you trust the claim or not (depending on the issuer).

For example you might trust a claim which has been issued by the government, while a claim from another source might not always be seen as a trusted issuer.



Why Claims?

Why Claims?

Benefits of claims

- Reduces the load on the server since the user often provides the claims.
- Authorization can be decided based on claims, making it more dynamic and flexible than roles-based authorization.
- The user brings the claims wherever the user goes, making them easy to access.
- The claims are encapsulated in an encrypted cookie, often called authentication cookie.

Claims-based Authorization VS Roles-based Authorization

Role-based authorization vs Claims-based authorization

- Claims based authorization grants more flexibility than role based authorization.
  - Easier to customize your authorization to suit your needs

- Role based authorization has premade attributes which are easy to apply

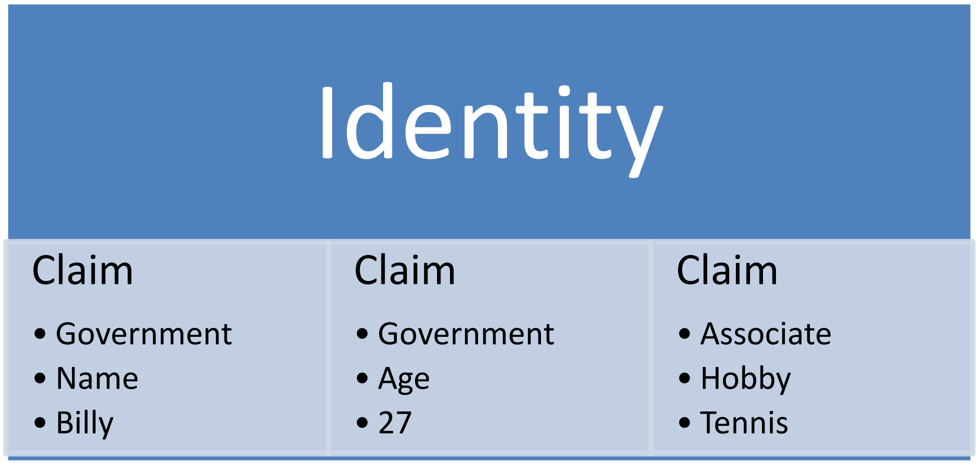
```
[Authorize(Roles = "Administrator")]
```

What is an Identity?

What is an Identity?

An Identity is something which defines who an entity is.

An Identity can contain several claims.



Security Token &
Security Token Services

EDUMENT
Development and Mentorship

What is a Security Token?

What is a Security Token?

A Security token is a token which is used to authenticate users.

The security token contains an **Id, security key** as well as the time from which it is valid & for how long.

What is a STS?

What is a STS (Security Token Service)?

A STS is a service which provides users with security tokens (which is a set of claims).

This token is then used to authenticate the user on the web-application.

What is a STS?

A good example of where a STS is used is when you try to login to your online bank.

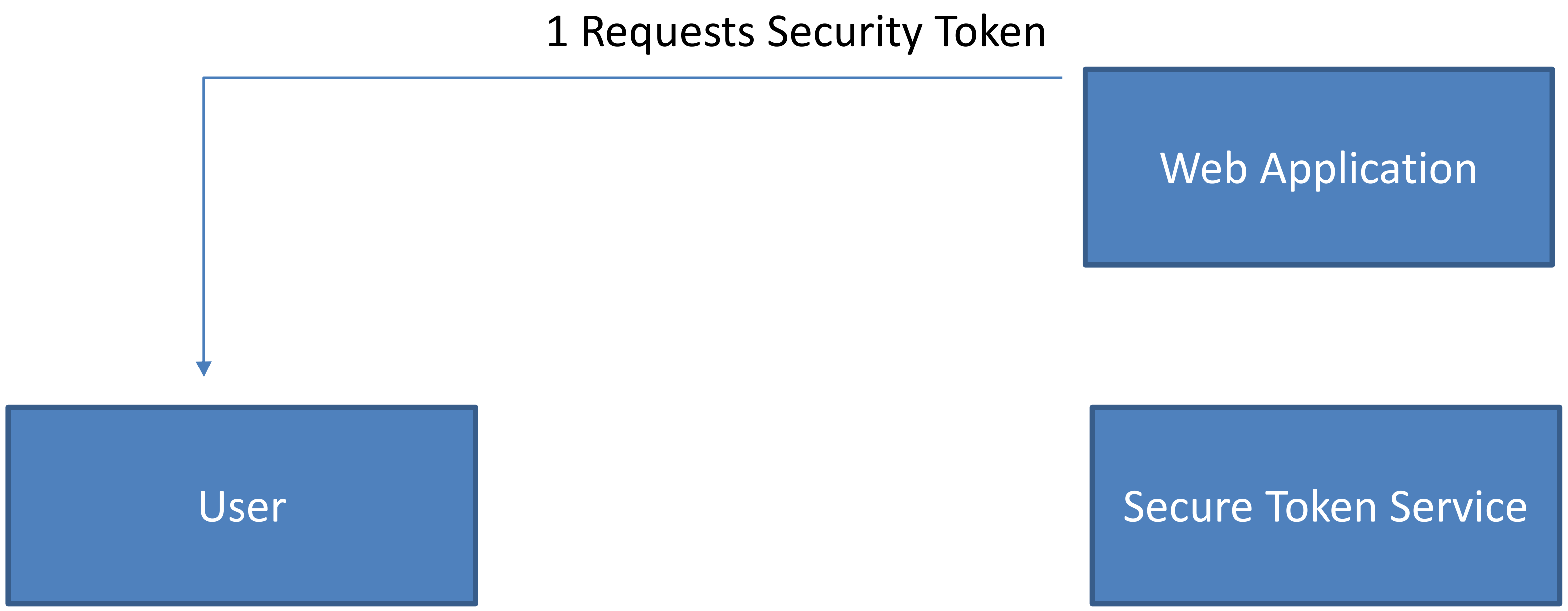
The bank requests a code (a security token) from you, which you get by entering your credentials to your authentication device (STS) which will return a code (a security token).

You would then proceed to use this code to login.

STS Flow

STS Flow illustration

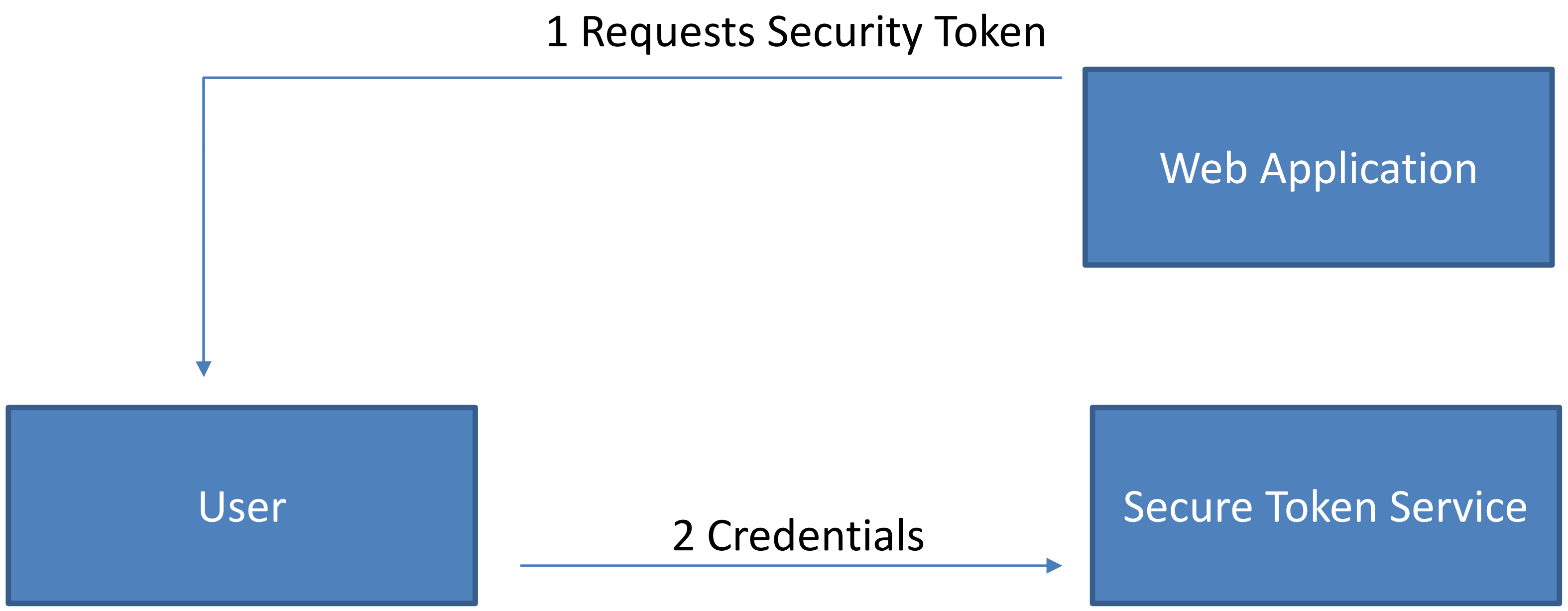
When the user tries to login to the web application, the application requests a security token.



STS Flow

STS Flow illustration

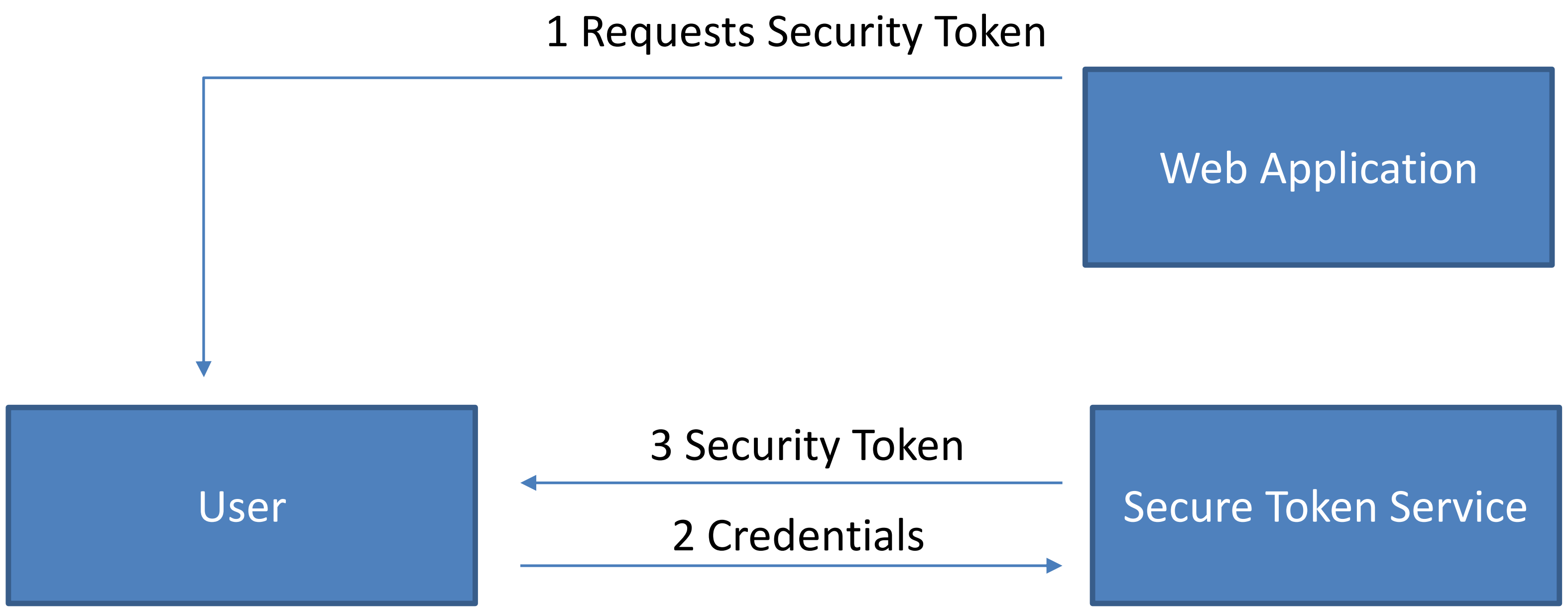
The user provides the STS with his credentials



STS Flow

STS Flow illustration

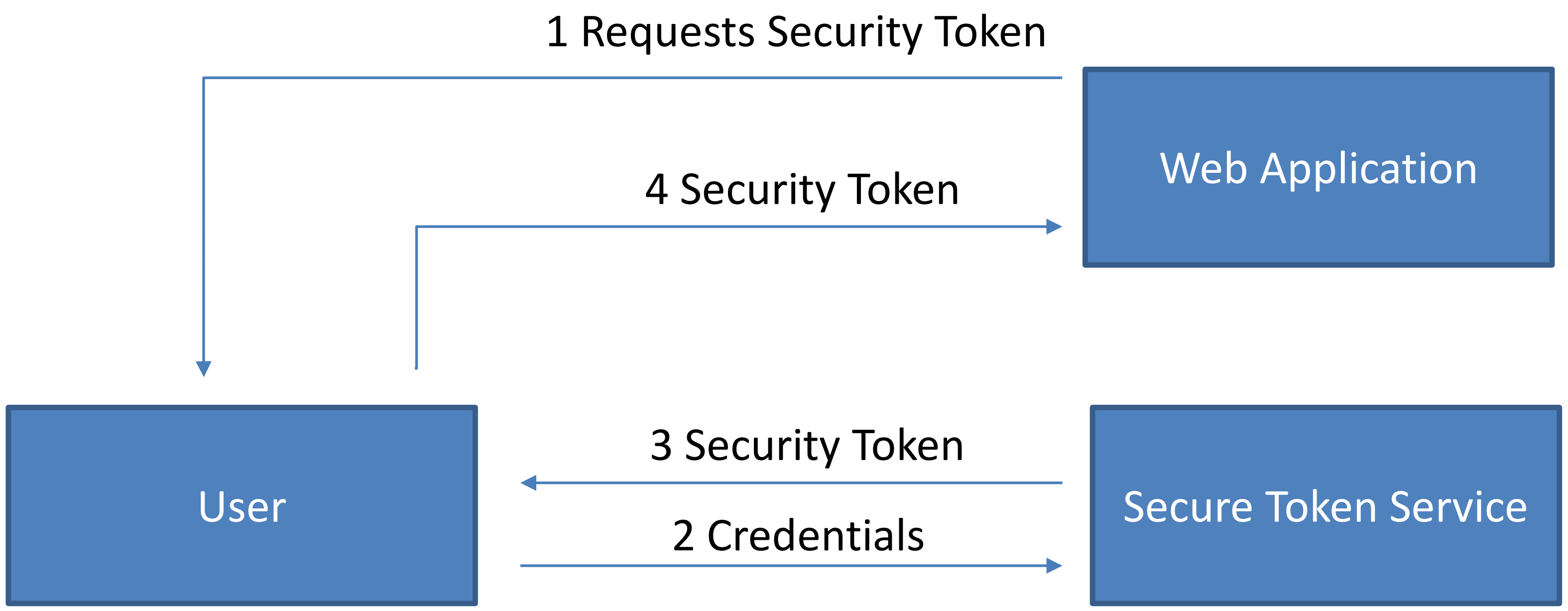
If the credentials are valid, the STS will return a Security token



STS Flow

STS Flow illustration

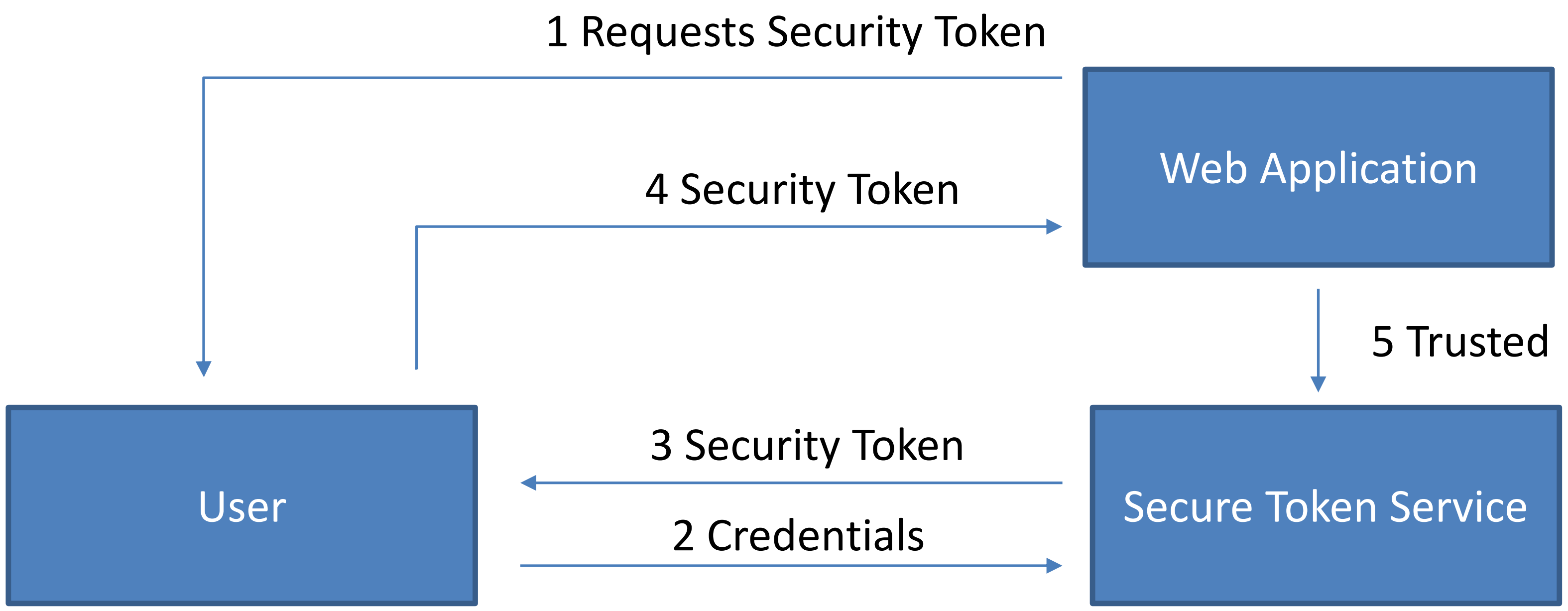
The user provides the web application with the Security Token received from the STS.



STS Flow

STS Flow illustration

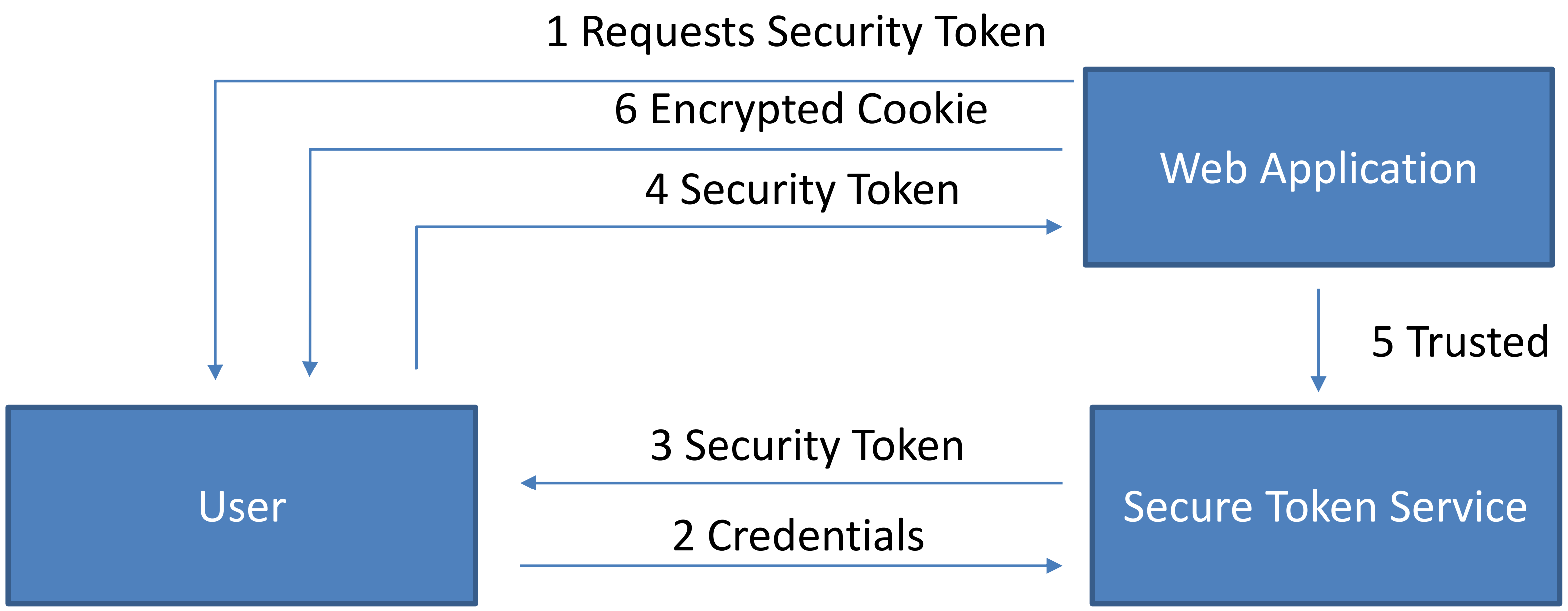
The web application checks if the STS is a trusted issuer



STS Flow

STS Flow illustration

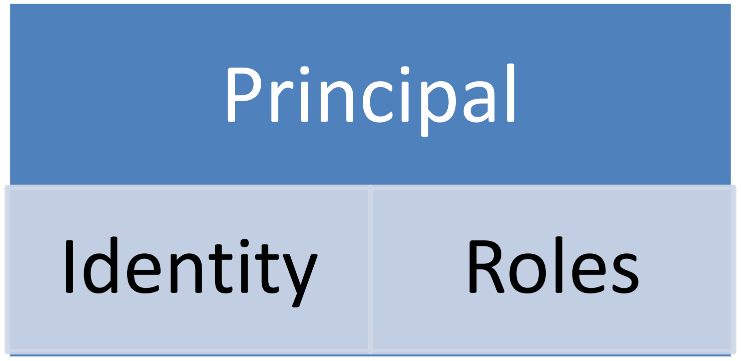
If the STS is trusted the web application returns an encrypted cookie to the user for authentication and authorization purposes



What is a Principal?

What is a Principal?

A principal object is an identity object including the roles associated with the identity



What is a Principal?

An example of what a principal object can contain.

Here we have a user with the username Billy@Example.com who is in three different roles (Administrator, IT and Employee).

Principal	
Billy@Example.com	Administrator, IT, Employee