

Taking Security Further with True Multi-Factor Authentication



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Overview



Multi-Step Verification is better than one

Multi-Factor Authentication is the way forward



Multi Factor Authentication (MFA)



One Step Verification
(1SV)



Two Step Verification
(2SV)



Two Factor
Authentication
(2FA)

<https://paul.reviews/the-difference-between-two-factor-and-two-step-authentication/>



```
Task<string> GenerateAsync(  
    string purpose, UserManager<TUser> manager, TUser user);  
  
Task<bool> ValidateAsync(  
    string purpose, string token, UserManager<TUser> manager, TUser user);  
  
Task<bool> CanGenerateTwoFactorTokenAsync(  
    UserManager<TUser> manager, TUser user);
```

IUserTwoFactorTokenProvider<TUser>

CanGenerateTwoFactorTokenAsync returns true



2SV Token Providers



EmailTokenProvider

if (Email != null
&& EmailConfirmed)



PhoneNumberTokenProvider

if (PhoneNumber != null
&& PhoneNumberConfirmed)

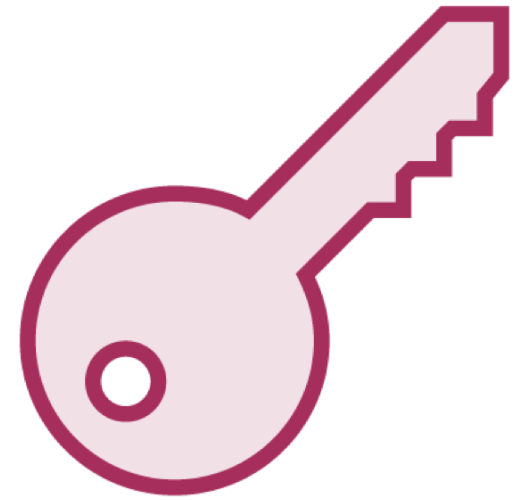
TotpSecurityStampBasedTokenProvider



3 Minute Lifespan



Email Address or
Phone Number



Security Stamp

UserManager & Multi-Factor Authentication

```
Task<IList<string>> GetValidTwoFactorProvidersAsync(  
    TUser user)
```

```
Task<string> GenerateTwoFactorTokenAsync(  
    TUser user, string tokenProvider)
```

```
Task<bool> VerifyTwoFactorTokenAsync(  
    TUser user, string tokenProvider, string token)
```



Demo



Implementing Two-Step Verification via email



Multi-Factor Authentication



When to use 2FA



Login



Reset & Confirmation



You can make compromises
(ish)



Demo



Implementing Two-Factor Authentication
using an authenticator app



Two-Factor Remember Me



Remember my device for 30 days



Account Recovery



```
Task<IEnumerable<string>> GenerateNewTwoFactorRecoveryCodesAsync(  
    TUser user, int number)
```

```
Task<IdentityResult> RedeemTwoFactorRecoveryCodeAsync(  
    TUser user, string code)
```

Two-Factor Recovery Codes

Bypasses two-factor authentication

One time usage

Defaults to: `Guid.NewGuid().ToString().Substring(0, 8)`

- Overridable using `CreateTwoFactorRecoveryCode`



Summary



Multi-Step Verification is better than one
Multi-Factor Authentication is the way forward

