ECC is the next generation of public-key cryptography which provides a more secure foundation than other cryptography systems like RSA.ECC works on the concept of Trapdoor function which is easy to do but hard to undo.
An elliptic curve is the set of points that satisfy a specific mathematical equation. It provides equal security with a smaller key size as compared to RSA.
In an elliptic curve when a line is drawn along the X-axis it passes through three points. Let's take those points as A, B, C. A dot something will yield a certain value. let's consider A dot B -> C, then we can drop this point C down or up because of the symmetric property of the curve and get another two points D and E which intersect the curve, then this can be bought up or down again. This keeps on going N number of times. N is also the private key here. Let's take the ending point as Z.The max value on the X-axis is the key size. Even if the function of an elliptic curve, starting point A, ending point Z is given, it is extremely difficult to find N which is a number of times the points dotted.
While RSA with a large key size that comes with a cost of slower cryptographic performance. ECC appears to be a better alternative with high security with short keys.