



# Near Field Communication



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## WHAT IS NFC?

NFC or Near Field Communication is a short range high frequency wireless communication technology. A radio communication is established by touching the two phones or keeping them in a proximity of a few centimeters. NFC is mainly aimed for mobile or handheld devices. NFC is an extension of Radio frequency identification or RFID technology. RFID is mainly used for tracking and identification by sending radio waves.

## OPERATION OF NFC:-

- Near field communication is based on inductive-coupling.
- NFC works using magnetic induction between two loop antennas located within each other's 'near field'.
- Operating frequency 13.56 x MHz. data rate 106 kbit/s to 424 kbit/s.
- NFC use an initiator and a target; the initiator actively generates an RF field that can power a passive target.

## MODES OF OPERATION:-

- In Active mode, both devices with NFC chip generate an electromagnetic field and exchange data.
- In Passive mode, there is only one active device and the other uses that field to exchange information.

## APPLICATION OF NFC:-

NFC applications can be split into the following three basic categories:

- Touch and Go
- Touch and Confirm
- Touch and Connect

## COMPARISON WITH EXISTING TECHNOLOGY

	NFC	RFID	IrDa	Bluetooth
Set-up time	<0.1ms	<0.1ms	~0.5s	~6 sec
Range	Up to 10cm	Up to 3m	Up to 5m	Up to 30m
Usability	Human centric Easy, intuitive, fast	Item centric Easy	Data centric Easy	Data centric Medium
Selectivity	High, given, security	Partly given	Line of sight	Who are you?

Use cases	Pay, get access, share, initiate service, easy set up	Item tracking	Control & exchange data	Network for data exchange, headset
Consumer experience	Touch, wave, simply connect	Get information	Easy	Configuration needed

Source :

## ADVANTAGES OF NFC:-

- High convenience to the user, because the data exchange is done by bringing two mobiles together.
- Reduces cost of electronic issuance.
- Secure communication.
- No special software.
- No manual configuration and settings.
- No search and pair procedure.

## DISADVANTAGES OF NFC:-

- The system has the limitation that it can be operated only with devices under a short range i.e. around 10cm.
- The data transfer rate is very less at about 106 kbps, 212 kbps and 424 kbps.

## FUTURE OF NFC:-

- New generations of iPhone, iPod and iPad products would reportedly be equipped with NFC capability which would enable small-scale monetary transactions.
- On May 2, 2011, RIM announced the Blackberry Bold 9900, a new device that will use NFC technology.
- Recently, Microsoft announced that all Windows Phone

## 8 devices will make use of the NFC technology.

For brand owners in the retail sector, NFC is an ideal investment because it combines physical products with a secure digital application, and thereby creates an enhanced, better protected brand experience.

And now, NFC just got another big boost. Apple recently announced that iOS 11 will support NFC tag reading on phones. That's a game-changer for NFC, since all iPhone 7s and newer models will be able to read NFC tags just like Android devices. It means that most of the two billion people worldwide who own smart phones will also have an NFC reader to interact with NFC tags. As a result, NFC will enable many more consumer and brand-owner benefits.

**Apparel and footwear** – a global market expected to reach USD 2 trillion within the next year – presents a unique set of challenges to brand owners.

- **Engaging with the consumer:-** The combination of “omni-channel” retailing, with its combination of physical and virtual store fronts, and mobile-first, always-on consumers, is changing how brands deliver the consumer experience. Other retail purchases, even those beyond fashion and lifestyle, compete for share of wallet, and consumers are increasingly influenced by online interactions. Be it product discovery, peer influence, or special offers, digital interactions, which are largely driven by mobile, are said to influence three out of four purchases. NFC gives mobile consumers a convenient way to engage with pre-sale information, like product details, reviews, and so on, but NFC also extends beyond the purchase, becoming part of the wearer’s experience with the item itself, throughout its life cycle.

- **Protecting the brand:-** Counterfeit products, and the associated damage they do to sales and reputations, represent a serious threat to brand owners. The industry analyst Vandagraf Research estimates that 20% of sportswear, 10% of luxury apparel, and 10% of mass-market leather goods are fake. Since NFC supports digital authentication, the technology makes it harder for counterfeiters to present knock-offs as the real thing, and gives consumers an easy way to verify authenticity. Some analysts are forecasting that, by 2021, 20% of all apparel in the developed world will be connected to the cloud. Vandagraf’s estimates are more conservative, but still quite bullish: they estimate that, by 2021, there will be 1.1 billion IoT-connected apparel items that can interact with mobile readers.

**Multiple Benefits:-** As mentioned above, NFC does more for brand owners than link consumers to websites. It protects brands with digital authentication, increases consumer engagement with a high degree of interaction, and uses location awareness to provide more useful information. And it does all this with just a simple NFC tag, embedded or attached to the clothing at the point of manufacture. The tag uses its unique digital profile to connect the physical item to the cloud, and leverages its online dataset to extend actions.

- **Brand protection:** Delivers stronger product protection to help tackle counterfeit sales, as well as loss prevention related to fraudulent returns. Consumers and business inspectors can use an NFC phone to digitally verify a product is genuine, anywhere and at any time. Tags,

assigned to specific locations or distributors, can also be used for channel authentication to identify sales outside authorized markets (grey markets).

- **Consumer engagement / Mobile Marketing:** Enhances brand value and builds loyalty, with NFC tags letting the product itself deliver brand content, helpful services, and personalized experiences. Consumers can quickly access important details about fabric and design, re-order products they like, receive personalized recommendations – including styling suggestions or health and fitness content – or benefit from loyalty rewards, such as exclusive digital content or VIP offers.

- **Location awareness:** With the help of connected readers and the cloud, NFC tags can provide data on product location, to help check traceability along the distribution chain or identify clusters of counterfeits. Location awareness also contextualizes consumer messages, based on where the product is sold or used, and can be used to deliver dynamic marketing data in real time, based on the product at hand.

#### **Real-World Examples in Fashion & Accessories:-**

Brand owners in the fashion & accessories segment have been quick to adopt NFC as a way to engage with consumers and protect their reputations. The list below, presented alphabetically by company name, gives an idea of how brands are putting NFC to work.

- **Dyne Menswear** – the future of technical clothing. This forward-thinking menswear designer creates sportswear that embodies innovative fabrics, fit, and function, and considers the NFC technology detail in each garment’s DNA an essential component of the DYNE brand.

- **Khongboon Activewear** – real-time interactions and personalization

As part of its swimwear line and new line of activewear, this global brand uses NFC to deliver mobile engagements with its customers. Khongboon transforms clothing into smartwear, allowing consumers to directly engage with the brand through their connected apparel, at each point in the garment’s life. Interacting with the Khongboon website, consumers can access product information, a collection lookbook, real-time social-media feeds, and a countdown to the next content update.