

LTE carrier aggregation roll-out needs to prioritise marketing benefits within capex constraints

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Operators are using LTE carrier aggregation (CA) to boost headline speeds, but operators may find they are investing in the network before the demand is there. This article explains the benefits of CA and outlines the analytical approach that operators should take before deploying it.

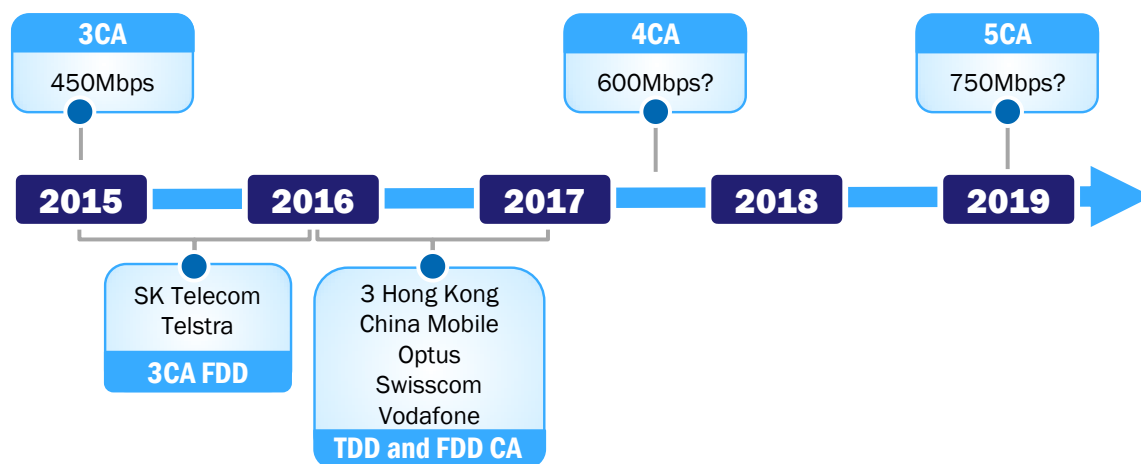
Operators are using carrier aggregation headline speeds as a marketing differentiator and to improve user experience

LTE deployments worldwide are gathering momentum and many subscribers are migrating from 3G to 4G services. Operators are using LTE CA to provide higher headline speeds for 4G in order to differentiate themselves in the market (see Figure 1).

LTE CA enables operators to combine multiple spectrum blocks to provide higher headline speeds for customers. The technology already allows operators to support up to three carriers (3CA) and device capability is improving.

2CA is widely available worldwide. SK Telecom and Telstra are already marketing 3CA services. Traditional 3CA configurations use FDD frequency, but TDD and FDD CA are also becoming more widely available.

Figure 1: Evolution of carrier aggregation headline speeds, 2015–2019



Source: Analysys Mason

Anecdotal evidence suggests that operators have used CA technology to increase market share

Operators that market increasingly higher headline speeds can create the perception that their customers will enjoy an improved network experience. Anecdotal evidence in selected markets seems to indicate that operators with slower headline speeds seem to be losing market share.

We cannot entirely attribute the loss of market share to headline speed, but it does seem to play a role. Primary research on headline speed demonstrates that it would be a significant factor for choosing a network for a small number of subscribers (4 % of subscriber base), but these subscribers are typically high value and high ARPU (9% higher ARPU than average).

The perception of headline speed promoted by marketing messages is reinforced by social media (speed comparison sites) and, in some cases, by the regulator undertaking speed tests and publishing results (for example, in Taiwan).

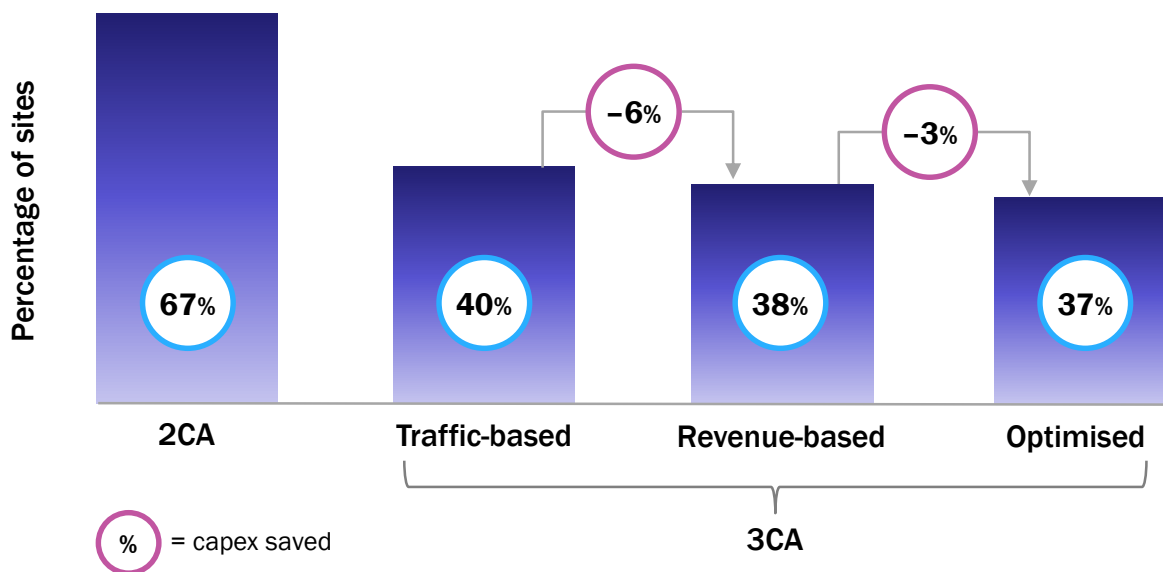
CA can increase headline speeds but it can lead operators to invest in the network before the demand is there

A key financial challenge in deploying CA is the optimisation of capex. The primary objective of CA is to improve headline speed. This is a change from the network planning approach in the 3G world, where investment was prioritised based on capacity requirements (after coverage was fulfilled). Therefore, when network resources are deployed based on CA headline speed requirements, network utilisation can be expected to be lower than in a purely traffic-driven network deployment approach.

Typically, operators deploy CA at sites that are perceived to be high value (for example, central business districts (CBDs), high-end residential areas, etc). These sites are reasonably accurate based on an operator’s experience, but could result in excess capex by 6–9% (see Figure 2) due to two factors.

- The sites may have a limited need for CA due to low usage by customers (for example, high-end residential users primarily use home broadband and their use of cellular services is low in their homes).
- The availability of devices supporting CA may be limited – if an operator rolls out 3CA in an area where compatible devices are not widely available, the deployment would be restricted in its usefulness from a network perspective.

Figure 2: Percentage of LTE sites with carrier aggregation



Therefore, operators need to take an analytical and data-driven approach to arrive at a list of the best sites for 3CA. The key steps are as follows.

- **Establish rules for prioritisation of CA.** A joint task force of marketing and network staff must first establish the objectives for CA and the type of customer for which it should be made available. When the objectives are identified, the task force should agree the algorithm for identifying the sites. As a fundamental approach, revenue or margin must be a key decision-making parameter to justify financial investments. Revenue or margin metrics can be either related to total revenue a site generates or the type of customer that generates revenue at different types of sites (focusing on high-ARPU customers).
- **Have a strategic roll-out plan.** Before executing the algorithm, operators need to ensure that they have created the appropriate data sets for analysis. The main challenge is to attribute revenue from a subscriber to multiple sites.
- **Optimise roll-out.** Once the initial roll-out has been determined, an optimisation review would need to ensure contiguity of sites (for a uniform user experience) and availability of the appropriate CA devices.

Analysys Mason has extensive experience working with operators in developing their LTE business strategy – including technology strategy, pricing data bundles, network sharing and network roll-out optimisation.