Meeting broadband targets

Operators and policymakers are interested in promoting the deployment of high-speed fixed broadband. For its provisioning, you have three flavors – copper, coax, and fiber.

Fiber to the home (FTTH) is of course the most capacious and future-proof solution available, but it’s laborious and expensive. Brownfield operators will typically choose to reuse infrastructure whenever they can. Fortunately, coax and copper (with a few upgrades) are fully capable of keeping up with bandwidth demands over the last mile, at least for the foreseeable future. A pivotal technology here is fiber to the distribution point (FTTdp), where fiber runs from the central office to some point near the customer’s premises, and the remainder is served by legacy media, with a possible upgrade to fiber later.

Certain operators see a G.fast upgrade for copper as a feasible solution for FTTdp scenarios, and various operators, governmental and regulatory bodies, and analysts are interested in knowing the cost implications of the deployment of FTTdp with G.fast. This article examines the deployment costs of FTTdp with G.fast in certain scenarios.

Possibilities for G.fast

The necessary permissions for indoor fiber deployment can lead to long launch times for broadband service. A municipality or a residential association might give the initial permission to run fiber to the building, but more permissions might be needed to reach the individual dwellings themselves. With FTTdp, that second step could be eliminated.

The distribution point in question with FTTdp will vary with the legacy hardware and the topography on site, leading to a variety of scenarios under this rubric. They include fiber to the street (FTTS), fiber to the building/basement (FTTB), fiber to the door (FTTD) and fiber to the floor (FTTF). For the latter, the distribution point is located on a floor/level of a multistory building with copper running to each individual unit.

G.fast is a high-speed technology for copper that theoretically enables a combined transmission rate of 1Gbps in the downlink and uplink channels, spanning over 100 meters. Currently, its standardization process is being finalized by the International Telecommunications Union (ITU) Study Group 15 (SG15) and commercial availability is expected by late-2015 or 2016.

The joint usage of FTTdp with G.fast can provide a high-speed downstream transmission capacity alternative to FTTH for difficult areas. An operator could, for example, deploy a heterogeneous network, where the feeder and distribution segments are shared by FTTH and FTTdp networks, with either technology employed over the last meters.

Cost of FTTdp rollout

This article compares the capital expenditures (CAPEX) and operational expenditures (OPEX) for two FTTdp scenarios (FTTdp-building and FTTdp-street with G.fast) with that for FTTH in select European countries, including all the passive and active infrastructure located between the central office.
On average, the cost of FTTdp-street was 12.4% lower than the cost of FTTH, with the cost of FTTdp-building on average 3.5% lower than that for FTTH. In other words, the farther the fiber is from the user, the less costly it is to deploy.