EE Update

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everything everywhere

Update agenda

- How EE came about
- Integration, tactical and strategic
  - Core sites
  - Base station sites
  - Backhaul
- Synchronisation Strategies
  - Core
  - Backhaul
- Infrastructure synchronisation support

About Everything Everywhere

Everything Everywhere – one company running two of Britain's most famous brands, Orange and T-Mobile.

In September 2009 it was announced that France Telecom and Deutsche Telekom had agreed to merge T-Mobile UK and Orange UK into a 50:50 joint venture to create the UK's leading mobile operator. After dotting the i's and crossing the t's, the company was officially formed on April 1 2010.

We have more than 30 million customers and more than 700 stores across our two brands.

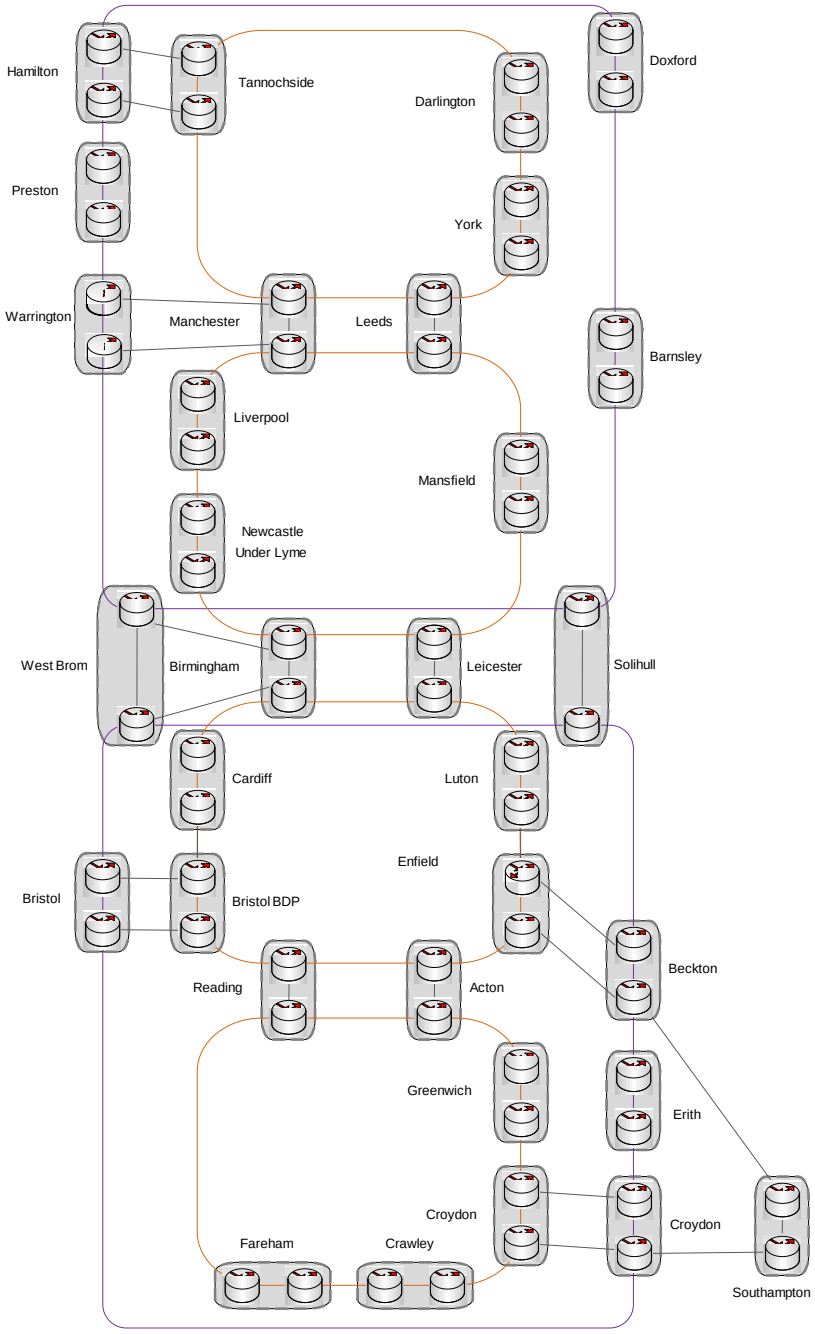
Integration
Core transport

T- Mobile and Orange each had existing core transmission and transport connecting sites across the UK.

EE Tactical integration: Interconnect existing core transport networks. Quick, but result is not optimal (!)

EE Strategic integration – an opportunity to build best of breed core transport for current and next generation mobile services.

- Small number of “super-core” sites with service platforms and connectivity to internet peering
- Connectivity sites for regional backhaul to land and to host RAN controllers and gateways
- Fibre, Optical transmission, and packet transport to link them



Integration – RAN

T- Mobile was a partner with H3G in the RAN shared Radio Access Network of MBNL (formed from integration of T-Mobile and H3G RANs).

Orange had its own Radio Access Network.

EE Tactical “integration” – Allow T-Mobile users to roam onto Orange and vice-versa. Users gain access to around double the number of sites giving coverage enhancement. Quick, but again result is not optimal

EE Strategic integration – an opportunity to build best of breed Radio Access Network for current and next generation mobile services.

- Enhance the MBNL footprint with a subset of the Orange sites, usually in addition but sometimes replacing the MBNL sites.
- Combine the spectrum resources of T-Mobile and Orange
- Re- plan and re-optimise the air interface.

The result will be enhanced coverage and capacity compared to either of the original networks using just 2/3 the combined number of sites.

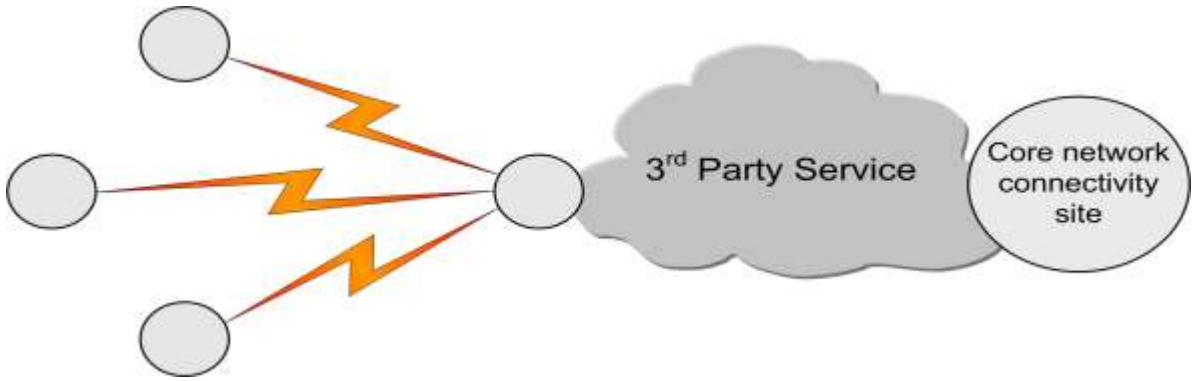
Integration – Backhaul

T- Mobile was a partner with H3G in the RAN shared Radio Access Network of MBNL. Backhaul in the MBNL network uses a combination of 3rd party services (BT MEAS) into a subset of base station sites (“hubs”). Further sites subtended on microwave radio.

Orange had its own backhaul network based on distributed aggregation sites and microwave radio.

EE Strategic integration – an opportunity to build the best of breed backhaul Network for current and next generation mobile services. Building on the MBNL backhaul,

- Introduce another service provider
- Increase capacity (services and microwave radio)
- Enhance capabilities (services and microwave radio)
- Increase number of hubs, reduce number of subtendees per hub



Synchronisation strategies

Core:

For frequency, keep PRCs at a couple of core site locations (probably super-sites in the new core). Use transport infrastructure to distribute to all core sites.

For phase and time, tbd.

Backhaul:

For frequency use physical layer (i.e. synchronous Ethernet). PTP may be used in the interim where infrastructure gaps need to be bridged.

For phase use PTP assisted by physical layer. While this is a future requirement, it is important to ensure that we are deploying the infrastructure that will meet this requirement as best we can predict simply because of the numbers.

Key question is whether the infrastructure is available to implement our transport strategies will have the functionality to support these synchronisation strategies.

Synchronisation support

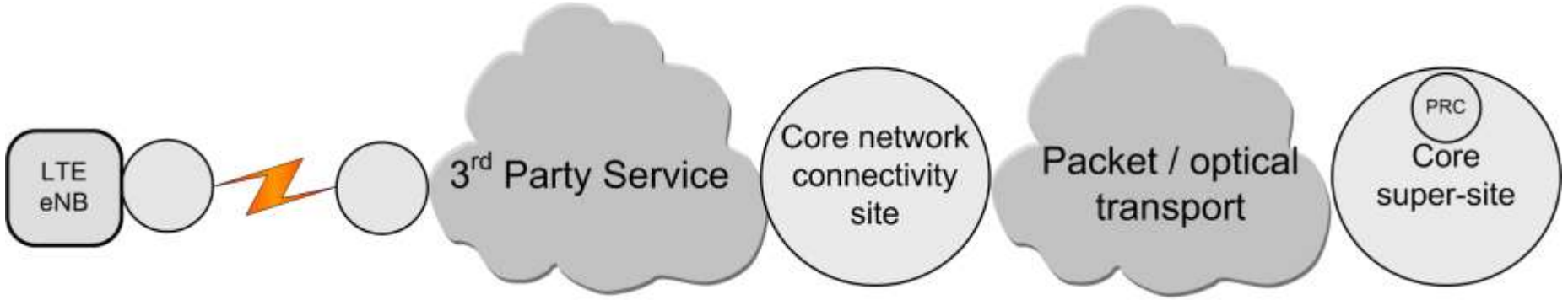
Synchronous Ethernet from core to edge?

Core infrastructure:

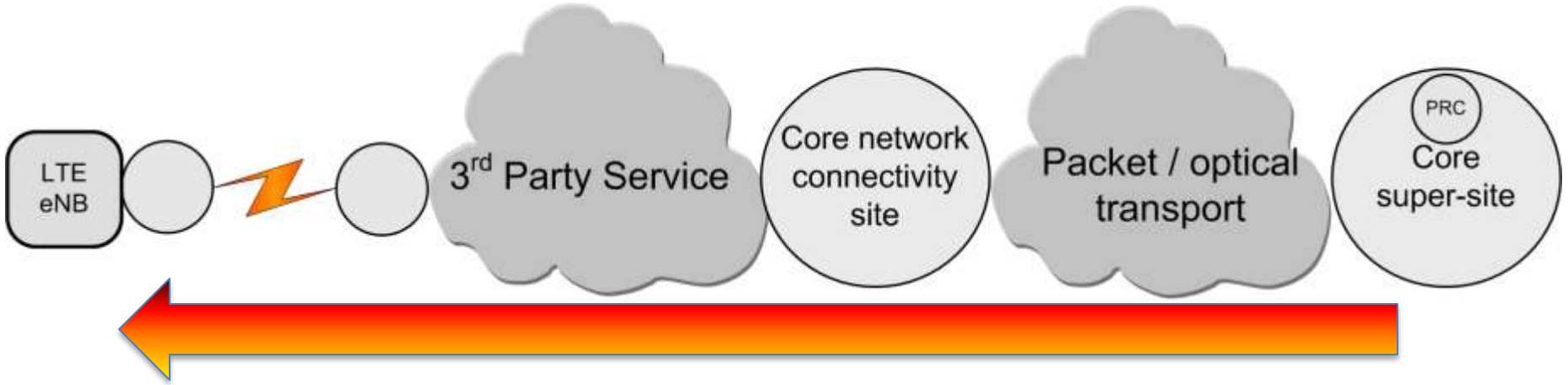
IP/MPLS platforms	Yes, Supported even on currently deployed products
Optical transmission	Yes, Supported in all candidate products
Fibre (!)	Yes, (obviously!)

Backhaul:

3rd party service A	Yes, 3rd party sync at point of delivery
3rd party service B	Yes, end to end
Microwave radio	Yes, Supported in new products
Base stations	Yes, including currently deployed products



Nearly there!



Thanks

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