

Mobile Network Sharing

Telecommunications Regulatory Affairs Advisory Committee
21 January 2016

Background

- In HK, certain forms of mobile network sharing have been implemented by MNOs including site sharing, radio equipment sharing, capacity leasing etc.
- Recently, OFCA received enquiries from MNOs on some new forms of mobile network sharing
- This paper gives an overview on some typical forms of mobile network sharing, the relevant regulatory regimes in Hong Kong, and the need for MNOs to consult OFCA when they are contemplating any novel form of mobile network sharing.

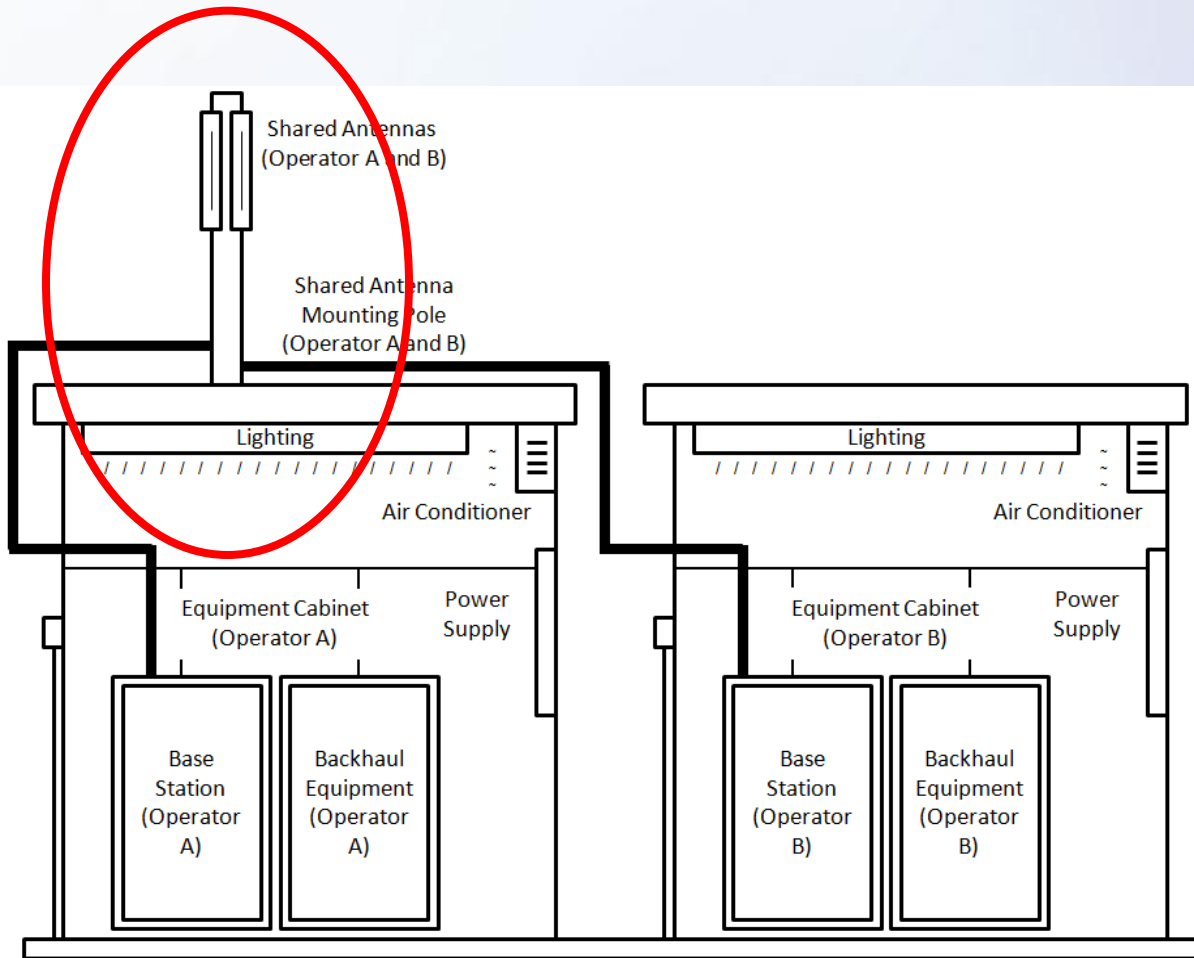
Overseas Experience on Mobile Network Sharing

- Mobile network sharing has been generally permitted and facilitated by regulators in European Union, Germany, United Kingdom, United States, Australia, etc. to:
 - reduce capital investment and/or operational expenses
 - expedite network rollout
 - achieve efficient use of space
 - reduce over-construction of base stations

Various Forms of Mobile Network Sharing

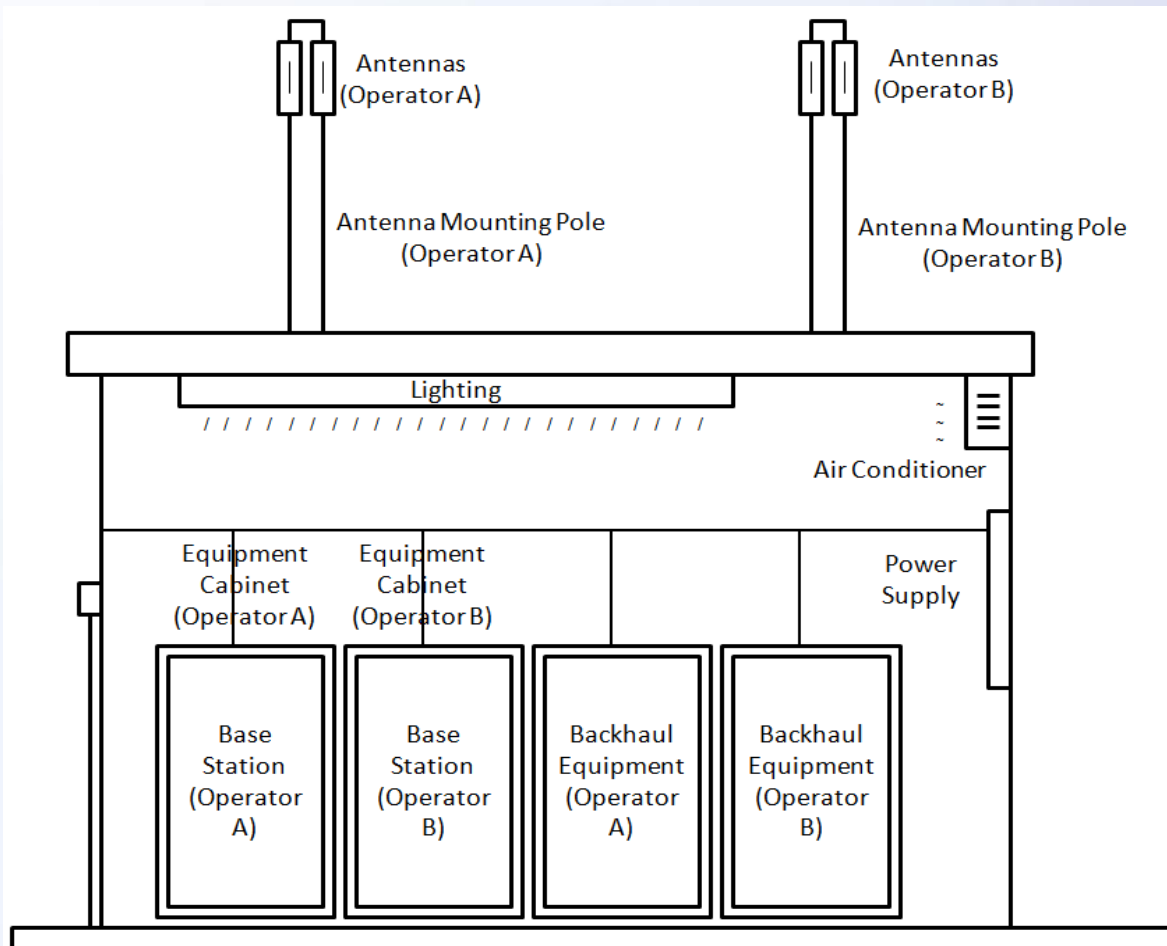
- Based on the overseas experience and local practices, some common forms of mobile network sharing are:
 - a) Antenna sharing
 - b) Site sharing
 - c) Radio access network (RAN) sharing
 - d) Domestic network roaming
 - e) Capacity leasing

(a) Antenna Sharing



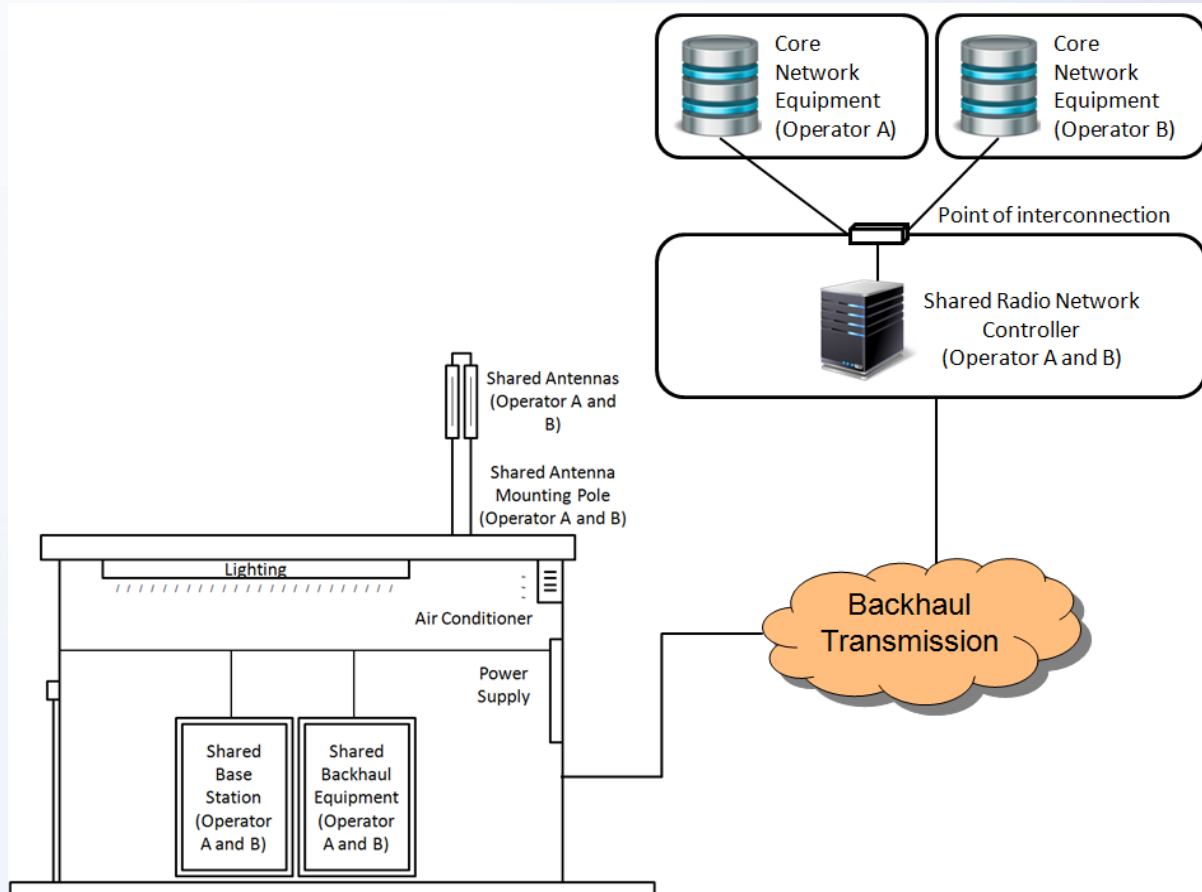
- Sharing antennas and other peripheral supporting equipment such as combiners, couplers, amplifiers, feeder cables, mounting poles, etc.
- Examples in HK:
Integrated Radio System (“IRS”) in railway premises, shopping mall, etc.

(b) Site Sharing



- Co-location of sites
- Sharing physical compound
- Sharing building services facilities
- Examples in HK: rooftop site, common equipment room

(c) RAN Sharing



- Sharing all or part of the RAN equipment or facilities
- **Each MNO maintains its own separate logical RAN using its own assigned spectrum**
- **No spectrum pooling is allowed in HK**
- Operation and maintenance (“O&M”) agreements may be made among MNOs or third party O&M service providers

(d) Domestic Network Roaming

- Agreement among MNOs such that users of one MNO are permitted to roam into the network of another MNO when the former's network is not available at a particular geographical location
- To our knowledge, no domestic roaming is being implemented in Hong Kong

(e) Capacity Leasing

- Capacity leasing agreement between MNOs for expansion of service coverage or enhancement of network capacity
- Example in HK:
 - Capacity leasing agreements between MNOs or between MNOs and mobile virtual network operators (“MVNOs”) and resellers
- Carrier Aggregation: An MNO may lease another MNO’s radio access capacity and aggregate that capacity with its own to enable the provision of higher speed mobile data services to its subscribers, provided that each MNO will continue to operate its own separate RAN using its assigned spectrum

Regulatory Regimes in HK

- MNOs may negotiate and agree among themselves on mobile network sharing arrangements, as long as they are not in breach of the restrictions and obligations imposed by the law and their licences
- No restriction for an MNO to outsource the O&M of its networks including core network and RAN to other MNOs or third party O&M service providers
- OFCA will draw guidance from
 - a) Relevant provisions under the TO and other statutes
 - b) Obligations under licence conditions
 - c) Restrictions on spectrum assignments

(a) Relevant Provisions under the TO and Other Statues

- The CA has the power under the Telecommunications Ordinance (TO) to direct the sharing of facility between MNOs:
 - a) The CA has the power under sections 36AA and 36B to direct a licensee to cooperate with another licensee in the public interest to use any facility owned or used by it
 - b) The CA has a legal duty to take into account relevant matters listed under section 36AA when considering whether a direction should be issued to a licensee to share a facility
- Permission of mobile network sharing does not generally prejudice the CA's power to investigate anti-competitive behaviour, which will be dealt with under the Competition Ordinance or the competition provisions of the TO

(b) Obligations under Licence Conditions

- General Condition (“GC”) 2, 7, 8, 9, 11, 12 and 13 of the unified carrier licence (“UCL”) and Special Condition 6 may be relevant. They impose general requirements for the following purposes:
 - a) Prevention of unauthorized transfer of rights and benefits from one licensee to another
 - b) Prevention of harmful radio interference
 - c) Effective enforcement of the licensee’s obligations for meeting the general objectives of the TO (e.g. protection of customer information) to make better provision of telecommunications service to the public
 - d) Provision of the relevant information to the CA

“No Sharing” for 3G Spectrum

- UCLs of those MNOs assigned with spectrum in the 1.9 – 2.2 GHz (“3G spectrum”) since 2001 restrict network sharing for use of 3G spectrum
 - a) Shall not share the use of the network or any part of it with any other MNO unless prior written consent has been given by the CA or such network sharing is in conformity with guidelines issued by the CA
 - b) Such a condition will not be carried forward to the next term of spectrum assignment in the band when the existing assignments expire in October 2016

(c) Restrictions on Spectrum Assignments

- MNOs shall only transmit using their own assigned spectrum as specified in their respective licences
- The radio signal should be identifiable to be transmitted by a single responsible licensee within its spectrum holdings
- Spectrum pooling is prohibited
- MNOs shall continue to keep separate logical RAN using its own assigned spectrum despite any sharing of RAN equipment
- Mobile network sharing should not result in *de facto* sharing, swapping, transfer, leasing or trading of spectrum which has not been approved by the CA or is not permitted under the existing legal and regulatory regime

Way Forward

- MNOs may explore new forms of mobile network sharing so as to deliver services in more cost effective manner for the benefit of consumers
- MNOs have the duty to ensure their compliance with the relevant regulatory requirements
- if MNOs have any proposals to adopt potentially new forms of mobile network sharing (other than those prevailing in the market), MNOs should furnish relevant technical and operational information on network implementation and operation to OFCA for advice of whether the proposals are fully compliant with the relevant regulatory requirements
- MNOs should also provide in their submission the measurement methodology based on which their compliance with relevant regulatory requirements can be verified

Thank you