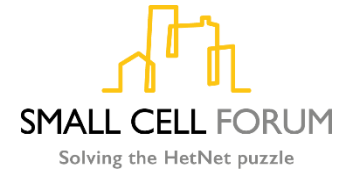


Overview of Small Cell Forum's “Making your building small cell ready”



Downloadable from
www.scf.io/doc/214

To Building Owners and Landlords



As building owners, you'll know that tenants are increasingly insisting on good indoor mobile coverage, however, it's perhaps not obvious what you can do if it's not already there.

A growing number of building owners and users are now using small cells to provide excellent mobile indoor coverage and capacity, as well as carrier grade features like PBX integration, content caching and precise indoor location. See our [case studies](#).

To get small cells installed, contact your mobile operator or neutral host provider.

If you are currently developing new property or refurbishing existing buildings, it's an ideal time to make sure that you factor in the design requirements for a small cell system. A small effort here will save time and money when the time comes to deploy a system.

Here we provide design guidelines will inform architects and designers what a typical small cell deployment needs in terms of spaces, ducting and cabling to make the building 'small cell ready'.

We have checked with all major manufacturers and operators to make sure these guidelines fit with their solutions.

Share the design guidelines with your architects or refurbishment contractors to ensure your properties are 'small cell ready'

Downloadable from
www.scf.io/doc/214

The guidelines focus on the 1-5 storey building



SMALL CELL FORUM

Solving the HetNet puzzle



Small office / single floor

Low 10s users

1-3 small cells

connect directly to internet

Low cost to retrofit



2-5 storey building

Low 100s users

Enterprise small cell network

Small cells + controller(s)

+ LAN cabling & routing/cabling



Larger buildings

High 100s users

Enterprise small cell network

Small cells + multiple controllers

+ LAN cabling & routing/cabling

Consideration of small cells earlier in the development of buildings

Building Lifecycle



Options for in-building small cells:

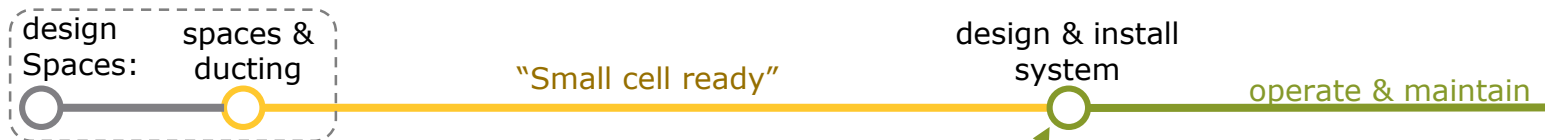
1) Built-in

Lowest cost



2) Small Cell Ready

Lower cost



Product & feature selection and design of the small cell system itself is covered elsewhere [[SCF010](#) [SCF079](#)]

The guidelines aim to support the design of buildings to be 'small cell ready' with a typical system's requirements equipment spaces and cable ducts

Equipment (1)



• Small cells

- Small cells are physically similar to Wi-Fi APs, and come in a range of shapes and sizes which can be unobtrusively mounted on ceilings or walls
- The actual coverage area of each small cell varies with product power, building materials, strength of existing mobile signal, traffic requirements and many other factors. The actual site locations should be determined by a radio planning exercise to ensure adequate coverage & capacity, and may need to be verified by the mobile operator.
- Each small cell needs a power supply and a data connection. Some products use techniques like Power over Ethernet to combine these onto one cable. Others may require dedicated power supply and associated cabling.
- Most current APs support one mobile operator, so multiple are needed for multi-operator systems



Equipment (2)



• Main equipment room (AKA MDF)

- Although small cell solution architectures vary in where different network functions are physically hosted, most need equipment in the main equipment room to aggregate LAN traffic onto a WAN connection. This equipment may additionally control and/or manage the small cells, or such functions may be hosted elsewhere, including in the cloud
- Space in the main equipment room should be reserved for small cell equipment and their power supplies.
- Cable terminations towards the small cells should ideally be terminated in a patch bay
- The room should have adequate power, cooling, security, etc, as specified by structured cabling standards [[ANSI/TIA-568-D](#)]

• Remote equipment rooms (AKA IDF)

- In larger multi-floor deployments, additional equipment is required to combine data traffic for all small cells on a floor on to a single riser cable.
- Some small cell solutions are compatible with standard ethernet switches or routers whilst others require proprietary units.

• WAN Backhaul

- The enterprise small cell network needs to connect to the mobile operator's core network over the public Internet for backhaul. Small cells can share a building's existing Internet connection, provided there is sufficient spare capacity.
- A dedicated backhaul connection is preferred for larger or higher performance systems, and may be managed by the small cell service provider.
- Further detail on backhaul can be found in [[SCF078](#)] "Backhaul for enterprise small cells". Further detail on the LAN can be found in [[SCF068](#)] "Enterprise Small Cells and IT networks"

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Equipment descriptions help understand implications for construction

Summary and recommendations

- Factoring in design requirements for a small cell system during construction will save time and money when the time comes to deploy
- Although small cells are well suited to retrofitting onto existing LAN infrastructure, best performance/cost is achieved by designing-in the small cell system during construction. The solution provider will provide system requirements to optimise the design.
- If the details of small cell systems are not available at construction, a generic 'ghost design' can be performed to provision wall space, cable ducts and reserved electrical infrastructure. The resulting building will be 'small cell ready', saving time and cost when the time comes to install the system.

Please download the latest guidelines from:

- *"Making Buildings Small Cell Ready"* Small Cell Forum, Feb 18, www.scf.io/doc/214