Cabling - 5G Networks

In 5G Networks its crucial to use experts.

1. Fiber Optic Cables (Primary Backbone)

Used for high-speed backhaul and fronthaul connections between:

- Radio Units (RUs) and Baseband Units (BBUs)
- Radio Access Network (RAN) and 5G Core
- Edge servers, data centers, and cloud interfaces

Typical Types:

- Single-mode fiber (SMF) – Long-distance, low-loss (most common in 5G)
- Multi-mode fiber (MMF) – Shorter distance, used in data centers

Fiber connectors:

- LC, SC, or MPO connectors depending on the device/interface

2. Ethernet Cables (Cat6/Cat6a/Cat7/Cat8)

Used for:

- Connecting small cells, routers, switches, or local edge servers
- PoE (Power over Ethernet) delivery to indoor 5G small cells
- In-building cabling for local control and management

Recommendations:

- Cat6a for 10 Gbps over 100 meters (most common in 5G private networks)
- Cat7 or Cat8 for data centers or ultra-high bandwidth scenarios

3. Coaxial Cables

Used in:

- **Distributed Antenna Systems (DAS)**
- **Indoor signal distribution** (especially in legacy 4G/5G hybrid deployments)
- **Connecting remote radio heads (RRHs)** to antennas in some configurations

Common types:

- **1/2" or 7/8" coaxial cables**
- RG-6, RG-11 for smaller runs

Note: Fiber is replacing coax in many modern 5G setups due to better bandwidth and lower loss.

4. Power Cables

Used for:

- Powering radios, antennas, servers, and switches

Considerations:

- Voltage and current requirements vary (e.g., -48V DC for telecom gear)
- Use **shielded power cables** in noisy environments

5. Grounding & Bonding Cables

Important for:

- **Surge protection**, **lightning arresting**, and **EMI shielding**
- Required by telco and safety standards for all outdoor equipment

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