Analysis and Troubleshooting

1) Analysis and Troubleshooting Discussion

SSID and BSSID: The connected Wi-Fi network is "Savonia" with BSSID f8:6b:d9:96:ee:8f, identifying the specific access point in use.

Security Type: The network uses Enterprise-grade security, likely WPA2-Enterprise or WPA3-Enterprise, which ensures strong encryption and centralized authentication.

IP Configuration:

- Internal IP: 10.211.21.19
- Subnet Mask: 255.255.240.0 — indicates a large subnet, possibly spanning multiple floors or departments.
- Gateway IP: 10.211.31.254
- DNS Servers: 10.212.26.102 and 10.212.26.104
- External IP: 193.167.77.2
- IPv6: Only local-link IPv6 (fe80::...) is active; no external IPv6 connectivity is available.
- LAN Scan Results: Multiple devices are active on the network, including named hosts like MIC-DSGH005198.ky.local and JOHANNES, with most responding to ping (status "P") and some offering web services (status "W").

2) Identified Gaps and Potential Issues:

- Missing Channel and Nearby Network Data: The screenshots do not show operating channel or neighboring Wi-Fi networks, which are essential for diagnosing interference or congestion.
- No Speed or Latency Metrics: Without speed test or latency data, it's difficult to assess performance bottlenecks or routing delays.
- IPv6 Limitations: Lack of external IPv6 connectivity may restrict access to modern services or reduce efficiency in dual-stack environments.
- Signal Strength Unknown: No signal strength data is shown. If users experience slow speeds or dropouts, poor coverage or suboptimal access point placement could be contributing factors.

3) Final Recommendations and Conclusions

- Collect Missing Data:
    - ✓ Run speed and latency tests using the NET Analyzer app.
    - ✓ Scan for nearby Wi-Fi networks and document their channel usage to detect interference.
    - ✓ Measure signal strength in different building locations to identify weak coverage zones.
- Optimize Network Setup:
    - ✓ If channel overlap is detected, switch to a less congested channel (e.g., 1, 6, or 11 for 2.4 GHz).
    - ✓ Reposition access points to central, elevated locations to improve signal distribution.
    - ✓ Use dual-band (2.4 GHz and 5 GHz) or upgrade to Wi-Fi 6 for better throughput and device handling.
    - ✓ Enable external IPv6 support if available from your ISP and router to future-proof connectivity.
    - ✓ Ensure Enterprise security is properly configured with strong credentials and certificate validation.

These steps will help diagnose and resolve performance issues while ensuring the network remains secure, scalable, and efficient for all users.