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**IETF Meeting Network Requirements
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Abstract

The IETF Meeting Network has become integral to the success of any physical IETF meeting. Building such a network, which provides service to thousands of heavy users and their multitude of devices, spread throughout the event venue, with very little time for setup and testing is a challenge. This document provides a set of requirements, derived from hard won experience, as an aid to anyone involved in designing and deploying such future networks.

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1. Introduction

The IETF Meeting Network has grown and evolved over time as has the IETF overall. In addition, the way that the IETF network is built and provisioned has also changed. It is time for the IETF community to consider the requirements of this infrastructure and its role in supporting the mission of the IETF. This document is meant to help frame that conversation. Additionally, this document may eventually be developed to be useful to others outside the IETF in specifying and building their own successful event networks.

This document is currently being revised as part of an IETF community discussion on the network requirements for the IETF meeting network. Version -00 represents the requirements as articulated the last time these requirements was documented by the IETF NOC Team (<https://www.ietf.org/how/meetings/admin/meeting-network-requirements/>). The current draft plan is to update to a -01 that represents the requirements the IETF NOC Team currently builds to. Versions beyond that will represent input received from the community. A final version of this document may or may not be published depending on the desires of the IETF community and the potential usefulness of a document of this sort outside the scope of the IETF.

1.1. Terminology

In this document, the key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" are to be interpreted as described in [BCP 14](#), [RFC 2119](#) [[RFC2119](#)].

2. External Connectivity

- o A primary and backup link MUST be provided for redundancy. If technically feasible, these links SHOULD be aggregated or load balanced.
- o The primary and backup links MUST provide at least 1 Gbps bandwidth in both directions.
- o Recent events have peaked at roughly 850 Mbs and averaged in the 100-300 Mbps range.
- o The backup link SHOULD be supplied by a different Internet service provider from the primary link.
- o The primary and backup links SHOULD have physical and logical path diversity.
- o IPv6 MUST be provided.
- o The transit provided in support of the IETF MUST be capable of providing access to the IPv4 and IPv6 default free zones without the imposition of content filtering (e.g., URL, Site, application, port, or DPI based filtering).
- o The primary and secondary links MUST support BGP peering.
- o The provider(s) MUST allow the IETF to advertise (from the IETF AS number) the IETF IPv4 and IPv6 address ranges.
- o The provider(s) MUST implement IRR (or better) route filtering.
- o The provider(s) SHOULD carry and advertise full BGP tables.
- o The provider(s) SHOULD implement BGP communities, especially the ability to RTBH.

3. Meeting Facility

- o The meeting facility SHOULD have physical characteristics that support the deployment of additional wireless networks including techniques to limit interference where possible (?? or something along those lines).
- o The meeting facility SHOULD have installed network cabling that can be used to deploy the network infrastructure. (?? is this a should or must, are we past the days of running cable if we need to...)
- o The meeting facility SHOULD provide the network installation team with 24 hour access to key telecom spaces. The meeting facility MUST provide the network installation team with access to key telecom spaces from one hour prior to the beginning of sessions to one hour after the end of sessions and 9am to 5pm daily during the setup period. (?? are these the right timeframes)
- o All locations for network gear, with the exception of wireless APs, MUST be secure.
- o If wireless will be used for an external link then access to the roof or installed location MUST be provided.
- o The meeting facility MUST have adequate ventilation to support the equipment rooms and the terminal room.
- o The meeting facility MUST have adequate power available to support the equipment required to support the network infrastructure and its users. This may include 110v/220v requirements in technical closets, roof locations, and various public and back-of-the-house areas.
- o The meeting facility The meeting facility SHOULD have UPS power available to support key network infrastructure components, including at least the core routers, core switches, and hardware to maintain the external links.
- o The meeting facility MUST provide sufficient power in all meeting rooms to handle the projected load from users' laptops. The projected load is for simultaneous usage for 100% of the projected number of attendees in each meeting room and the number of laptop users and projecting 70 watts of power usage per laptop. (?? do we want to provide actual power estimates?)

4. Internal Network

- o Wired Ethernet connections (network drops) MUST be provided in all the locations used for meeting rooms to support audio and video distribution for the purposes of remote participation.
- o Wired network drops MUST be provided to the registration desk. (?? need to confirm what the reg desk actually needs)
- o The network SHOULD have separate VLANS for wired (primarily terminal room and audio) and wireless traffic.
- o The network MUST NOT prohibit end-to-end and external connectivity for any traffic (no limiting firewalls or NATs).
- o The network SHOULD have mechanisms for detecting and silencing rogue servers (DHCP, IPv6 RA<92>s, etc)

5. Terminal Room or equivalent

- o A terminal room or quiet work space MUST be provided. This room MAY be a single room or distributed sites in reasonable proximity to the meeting rooms.
- o The terminal room SHOULD provide access to some number of wired Ethernet drops in addition to the standard wireless network.
- o The IETF users MUST have access to the terminal room from ?? to ??.
- o The terminal room MUST provide at least one network connected enterprise class printer. These printers SHOULD have duplex capability.
- o A color printer MAY be provided.
- o There SHOULD be a manned help desk from from ?? to ??. The help desk provides technical assistance to attendees, provides one potential interface to the trouble ticket system, and maintains the printers.
- o Power strips MUST be provided in the terminal room.
- o Power strips MAY be provided in common gathering areas (desirable).

6. Wireless

- o The network **MUST** provide Wi-Fi coverage in all meeting rooms (as identified by the Secretariat), common gathering spaces around the meeting rooms, the registration area, and the terminal room.
- o The network **SHOULD** provide Wi-Fi coverage in additional common spaces in the meeting venue including the lobby, bar, restaurant, and most commonly used hallways of the primary meeting hotel(s).
- o The network design **MUST** anticipate simultaneous usage of 100% of the projected number of attendees in each meeting room. and the number of wireless network users (historical utilization in excess of 1000 simultaneous wireless users has been observed during a plenary session).
- o The network **MAY** provide separate SSIDs for different specific requirements.
- o The network **MUST** provide at least one secure SSID and one open SSID.
- o The network **MAY** provide additional secured wireless access.
- o There **SHOULD** be mechanisms for identifying and silencing rogue Wireless Access Points.

7. Services

- o The network **MUST** provide redundant DHCPv4 servers.
- o The network **SHOULD** provide DHCPv6 service.
- o The network **MUST** provide local redundant DNS servers.
- o The network **SHOULD** provide NTP.
- o Printers **MUST** support IPP and **SHOULD** support LPR and Windows printing.
- o The network **MUST** provide VMs for the Remote Participation Service.

8. Network Monitoring

- o The network **MUST** provide sufficient monitoring to ensure adequate network availability and to detect faults before they impact the user experience.

- o The network SHOULD provide some visibility into the state of the network for attendees (e.g. public graphs of network utilization, number of wireless associations, etc.).
- o The network MUST collect data for future use in scaling IETF meeting network requirements. Minimum required metrics include bandwidth utilization (average and peak) for each external connection and user density per AP and radio.
- o The network provider SHOULD provide SNMP read-only access to the network devices to individuals as identified by the Secretariat for network management and planning purposes.

9. Miscellaneous Requirements

- o The network provider SHOULD maintain spares of critical network components on-site.
- o Attendees SHOULD be notified of power connector requirements well in advance of the meeting via both the IETF meeting web page.
- o A document MUST be provided to attendees detailing on-site network configuration information, including wireless configuration details, services available (e.g. printing), instructions on how to report network issues (e.g. trouble ticket system interface instructions), etc. Initial versions of this information SHOULD be provided in advance of the meeting.
- o The network provider MUST NOT view the IETF network as an experimental facility at the risk of impacting the IETF attendee experience. (Do not experiment with his/her favorite pet technology.)
- o The network provider SHOULD have attended at least one prior IETF to observe the IETF network deployment and operation.
- o The network provider SHOULD supply the IETF network design to an IETF technical review team for comments.

10. Security Considerations

While security is clearly important to the design and delivery of the IETF meeting network. Draft -00 represents the information captured on the original 2009 version. Security requirements (and considerations) will be more clearly addressed in subsequent versions of this draft.

11. IANA Considerations

There are no IANA considerations for this document.

12. Acknowledgements

These requirements represent past and current NOC teams including hosts, volunteers, and network staff. All errors and misstatements are the responsibility of the current author.

Contributors to this draft include Warren Kumari, Clemens Schrimpe, and Alessandro Amirante.

Contributors noted in the original 2009 version of this document are (in no particular order): Jim Martin, Karen O'Donoghue, Chris Elliott, Joel Jaeggli, Lucy Lynch, Bill Jensen, Chris Liljenstoipe, Bill Fenner, Hans Kuhn.

13. Revision comments

Draft -01 incorporated initial comments received from the NOC Team. These were not fully discussed in advance of publication because of the looming deadline.

Draft -00 was literally an import of the text developed in 2009 and put on a website. <https://www.ietf.org/how/meetings/admin/meeting-network-requirements/>. This was to ensure transparency by allowing the changes to be viewable in datatracker.

14. Normative References

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.

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