

06-10-2017

Deliverable D2.4

Shared Best Practice – Building and Running an Events Network

Deliverable D2.4

Contractual Date:	31-05-2017
Actual Date:	06-10-2017
Grant Agreement No.:	731122
Work Package/Activity:	2/NA2
Task Item:	Task 3
Nature of Deliverable:	R (Report)
Dissemination Level:	PU (Public)
Lead Partner:	GÉANT Assn
Document ID:	GN4-2-17-369C68
Authors:	C. Stover (GÉANT Assn); R. Gianfranchi (GÉANT Assn); S. Bosman (GÉANT Assn); J. Brockhoff (Pundamilia)

© GEANT Limited on behalf of the GN4-2 project.

The research leading to these results has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 731122 (GN4-2).

Abstract

This document provides an update on the work of the Events team (2/NA2 T3) including an analysis of the key organisational aspects of TNC17 and lessons learned as they apply to future editions of TNC and other GÉANT community events.

Table of Contents

Executive Summary	1
1 Introduction	2
2 Key Organisational Aspects: TNC17 Logistics	3
2.1 Overall Event Coordination and Planning	3
2.2 Marketing and Communications	4
2.3 Securing Commercial Sponsorship	5
2.4 Network and Services Setup	5
2.4.1 Adjusting Existing Infrastructure to TNC17 needs	5
2.4.2 Equipment provided by NORDUnet	6
2.4.3 Network Architecture and Services	7
2.5 Programme Committee	8
2.6 Overall Logistics	9
3 Lessons Learned	10
4 Lessons Applied	12
4.1 Events Team	12
4.2 Marketing and Communications	12
4.3 Network and Services Setup	13
4.4 Programme Committee	13
4.5 Overall Logistics	13
Appendix A TNC17 Sponsorship Package	14
Appendix B Plan of Network and other Infrastructure Services for TNC17 Conference in Linz	15
B.1 Preface	15
B.2 Existing Infrastructure	15
B.3 Network Infrastructure at the Design Center	16
B.4 Conference Centre Setup	17
B.5 Network	18
B.5.1 Connection to the AConet backbone	18
B.5.2 Cabling Infrastructure Wired Network	18
B.5.3 Wireless Network	19
B.6 Services	21

B.6.1	Authentication and Authorisation	21
B.6.2	Security and Login	22
B.6.3	Network Management, Monitoring and Statistics	22
B.6.4	Technical Support	22
B.6.5	AV equipment	23
	References	27
	Glossary	28

Table of Figures

Figure B.1:	TNC17 conference venue map	17
Figure B.2:	Basement	20
Figure B.3:	Ground Floor	20
Figure B.4:	First Floor	21

Table of Tables

Table 2.1:	Electrical needs for TNC17	6
Table A.1:	Sponsorship package for TNC17	14
Table B.1:	Electrical needs for TNC17	16
Table B.2:	Wired network socket distribution	18
Table B.3:	Wireless network design set up	19

Executive Summary

Within GN4-2, TNC as well as all other main community events, are organised by a subgroup of the partners in the project. The GN4-2 events team consists of a partnership that includes the GÉANT Association and GEANT Limited, as well as NORDUnet and PSNC. As with all other aspects of the GN4-2 project, this collaborative approach across various partner organisations requires close collaboration and synergetic activities to ensure that all partners deliver their expertise to the events organisation in a coordinated and collaborative way.

This deliverable describes the key organisational aspects of TNC, including overall events coordination and planning, Marketing and Communications, Network and Services Setup, Programme Committee, and Overall logistics. A few of the elements of these organisational aspects changed for TNC17 with respect to previous editions of the event, most notably with respect to sponsorship opportunities.

The events team also carried out an analysis of the lessons learnt during the planning and implementation of TNC17. These have been derived from discussions with all teams and partners involved in the organisation of the event. The lessons learnt have been turned into Best Practice applicable to events that are run within a project and are dependent on a collaborative team across multiple organisations working together.

During team discussions it became evident that conversation and dialogue, and bringing the various teams together early on and at the various stages of planning and implementation are fundamental towards the ultimate success of such events. It has equally been found that the joint site visit carried out by GÉANT, NORDUnet and PSNC to the Design Centre laid the foundation for the successful collaboration on the technical and logistics aspects of the delivery of TNC17.

The objective is to transfer Best Practices by using the existing capacities of the NA2 T3 partners, investment in equipment and building experience and expertise in event organisation and implementation. An additional benefit of this is the development of in-house expertise and collaborative environments in which the partners across the project can work harmoniously towards a common objective.

1 Introduction

Within the NA2 Communications and Outreach activity, Task 3 is responsible for the organisation of GÉANT community events such as the yearly TNC conference [[TNC17](#)] and the DI4R joint e-infrastructure conference [[DI4R](#)], as well as the GN4-2 project's internal GÉANT Symposium and GÉANT Convention.

Of these, TNC is undoubtedly the most prestigious and far-reaching in terms of its popularity and impact, and the lessons learnt from interactions with project partners during its planning and organisation, as well as its implementation and follow-up, also serve to determine best practice for smaller events, such as DI4R, the Symposium and the Convention.

Within GN4-2, TNC and other main community events are organised by a subgroup of the partners in the project. The GN4-2 events team consists of a partnership that includes the GÉANT Association and GEANT Limited, as well as NORDUnet and PSNC. As with all other aspects of the GN4-2 project, this collaborative approach across various partner organisations requires close collaboration and synergetic activities to ensure that all partners deliver their expertise in a coordinated and collaborative way. This is distinctly different from the usual way in which such events are organised, where usually local help is contracted.

Section 2 of this deliverable describes the key organisational aspects of TNC as the prime example of a community event organised within the context of GN4-2, including networking, streaming and other audiovisual (AV) capabilities, logistics and Marketing and Communications support.

The main elements in terms of lessons learned derived from TNC17, as applicable to other collaborative events within the community, are then described in sections 3 and 4 respectively. Details of the sponsorship package and Technical Requirements for TNC17 are included by way of example in the Appendices.

2 Key Organisational Aspects: TNC17 Logistics

The key organisational aspects of TNC17 include overall events coordination and planning, Marketing and Communications, Network and Services Setup, Programme Committee, and Overall logistics.

These are described in more detail in the sections that follow.

2.1 Overall Event Coordination and Planning

The main organising team for TNC is the GÉANT Events team, which is supported through NA2 T3 by PSNC, NORDUnet and the local host for each edition, which was ACOnet for TNC17 in Linz. Several other GÉANT organisation teams are also involved in the successful organisation and execution of TNC. These are the Marketing and Communications team (Marcomms), Finance, and IT. The close collaboration between all these teams, coordinated by the Events team, contributed greatly to the success of TNC17.

PSNC and NORDUnet were involved from the start to share their knowledge and bring in the expertise required for the professional setup of the network services and audiovisual equipment for the event.

In its capacity as the local host of TNC17, ACOnet provided support with the main network logistics as well as local contacts to contribute to TNC17's programme content and organisational matters. In addition, ACOnet hosted several local events throughout the conference week.

Planning work towards each TNC edition starts with the selection of a local host among the European NREN partners, followed up with a (technical) site visit. For TNC17, the events team visited the Design Center in Linz in October 2016. PSNC and NORDUnet also joined the visit to ensure that all partners had a full overview of the venue to enable them to discuss the setup for TNC17 and in particular the technical aspects regarding requirements for audiovisual equipment and 100Gbps network connectivity.

Following the site visit, bi-weekly videoconferencing meetings were coordinated between the GÉANT events team, PSNC and NORDUnet to discuss the progress of the conference setup, with ACOnet joining later, but who had however already been involved in the background from the start in setting up the network connectivity for the venue.

2.2 Marketing and Communications

Formal collaboration between the GÉANT Marcomms and Events teams around TNC17 began in September 2016 through regular meetings. A joint timeline and planning of the communication and visibility campaign was agreed and put into practice. The Events team coordinated activities with PSNC, who was responsible for the website and the design aspects of the event at the venue.

The Marcomms team delivered the following:

- Drafting, editing and publication of news items on TNC17 and associated topics:
 - [Students enlighten TNC17!](#)
 - [GÉANT pays tribute to 2017 Community Award winners.](#)
 - [As TNC17 closes, we ask was this the best TNC yet?](#)
- Writing of plenary scripts.
- Social media coverage, before, during and after the conference including event marketing campaigns prior to TNC17.
- Preparation and distribution of MailChimp campaigns for notifications to participants prior to and during the event.
- Communications around Community Awards and Vietsch Foundation Award.
- Communications around local host events organised by ACOnet.
- Input to Events Team for all printed material and website content and design for TNC.
- Liaison with photographer and uploading images to GÉANT Community Facebook page and Instagram.
- Liaison with ACOnet PR staff and press, including support for the Design Center Linz TNC17 TV report and preparation of media packs.
- Input to preparation and selection of the questions for the TNC17 feedback form.
- Production of '[What does TNC17 mean to you?](#)' community video [[TNC17 Video](#)].
- Substantial pre-TNC17 coverage in the CONNECT magazine including a special [CONNECT25 TNC17 issue \[CONNECT25\]](#).

Original design and artwork was created for the following:

- Artwork for the [CONNECT25 TNC17 issue](#).
- Development and distribution of TNC17 GÉANT PowerPoint template used by presenters from the GÉANT organisation and project.
- Design of MailChimp templates for email communication with participants.
- Input was provided to PSNC for artwork on branded TNC material.

The Marcomms team supported the PSNC team with the following web items:

- Design of banners for TNC17 website hosted by PSNC.
- TNC17 feature on homepage of GÉANT website.
- TNC17 videos uploaded to [GÉANT YouTube channel \[GEANTtv\]](#).

- Setting up news pages on GÉANT website to feed into the media page on TNC17 website.
- Managing daily online announcements.
- Flagging up issues with the TNC site and ensuring these were resolved.
- Setting up dedicated TNC page on GÉANT website.

To showcase GÉANT and the GN4-2 project and its interactions with European e-infrastructures, the Marcomms team ran the GÉANT and shared e-infrastructure booths during TNC17.

2.3 Securing Commercial Sponsorship

In preparation for the event, special emphasis was given to securing commercial sponsorships. To this end, the Marcomms team developed a new sponsorship agreement and proactively approached industry stakeholders. To make changes to the sponsorship package, NA2 T1 held extensive conversations with the sponsors of previous TNC conferences and put together an attractive offer to encourage increased sponsor commitment. The sponsorship agreement was discussed with the GÉANT Board and approved in March 2017 to ensure the commercial viability of TNC17. The main difference introduced is that sponsors are no longer only involved with GÉANT as an organisation and a community for the duration of the conference itself, but rather remain involved in various activities for a whole year. These activities are listed in Appendix A.

2.4 Network and Services Setup

The setup of network services and connectivity, wireless connectivity via eduroam, and audio-visual equipment in the plenary room and side rooms was coordinated by the Events team in close collaboration with the partners PSNC, NORDUnet and ACOnet. Drawing on the local hosts' as well as NORDUnet's and PSNC's experience and expertise was essential towards the success of the conference. The section below highlights some of the main technical aspects addressed for the TNC17 in Linz. The complete list of network and services which were agreed upon and set up in preparation of the conference is provided in the document included in Appendix B.

2.4.1 Adjusting Existing Infrastructure to TNC17 needs

TNC17 took place in the Design Center in Linz, Austria, on 29 May – 2 June 2017. To ensure the conference's connectivity needs were met, the Design Center was connected to ACOnet's network via rented dark fibre. Electrical, optical and UTP infrastructure cabling was available at the venue. The network situation was evaluated during the on-site visit. Additional Electrical switchboards were provided by the AV company and PSNC. A detailed overview of the electrical needs surveyed for the venue is shown in Table 2.1 below.

Room	Installed power (A)	Max consumption (Watt)	Required outlets for laptops	Sockets	Max capacity (people)
Plenary Hall	32A and 63A in many places	6kW on stage + 4kW on stack + rented equipment	4	PSNC has own power distribution from 32A and 63A sockets Rented equipment from DC will have own power distribution	
Seminar room 1 (U1)			2		
Seminar room 2 (U1)			2		
Congress Hall (U2)			2		Min. 12 rows x 12 seats with tables
Other rooms			On demand		
Demos			4-6		
Exhibition Hall	32A and 230V in many places	1x10kW (OB van) + ...	1 per booth	1x32A for OB van Cable entry from Foyer to plenary hall	

Table 2.1: Electrical needs for TNC17

2.4.2 Equipment provided by NORDUnet

To ensure the connectivity needs of TNC17 were met, NORDUnet installed additional equipment in the Design Centre. Thanks to its collaboration with Arista and Cisco, who provided part of the equipment, this was achieved without incurring too great an expense. The equipment installed included:

- At least 1 Arista Core Routers with 100Gbps uplinks (and a 10Gbps backup line) and at least 10x10Gbps ports for onwards connection.
- 2 servers to provide DHCP, RADIUS accounting, syslog management and DNS resolving.
- Cabling fibre patches SM LC-ST and Cat6 patches and cables of different lengths.
- 6 Extra Juniper fanless small switches.
- 15 AP3702I on stands with internal antennas.
- Extra SFP+ and SFP modules for multi-mode connectivity.

2.4.3 Network Architecture and Services

The following network architecture equipment and services were installed and provided at the event site.

2.4.3.1 Connection to the AConet Backbone

- 100Gbit as main connectivity – production, directly connected to GÉANT PoP router in Vienna.
- 10Gbit – backup routed through AConet, used just for backup
- One rented pair of SM fibres connects the Design Center to AConet's PoP. The line is equipped with DWDM devices (provided by ARISTA) to ensure IP channels (100Gbps).
- Backup – one rented pair of SM fibres connects the Design Center to another AConet's PoP, 10Gbps.
- At the Design Center:
 - 10 Gbits Primary IP connection;
 - 10 Gbits Demo IP connection.
- Layer 3 services (IPv4, IPv6 both unicast and multicast) available in the Design Center, Layer 2 services available upon request.
- BGP routing. The event was using AConet's IP addresses, as allocated by the AConet NIC.
- Cabling Infrastructure

2.4.3.2 Authentication and Authorisation

A general eduroam network which all federative users could connect to was installed in the Design Center. A second network called “TNC17” was provided for those without a federative account or who experienced issues connecting to eduroam. This network had PSK-based authentication implemented on a separate VLAN and participants were able to collect an envelope with unique personal credentials from the registration desk.

2.4.3.3 Network Management, Monitoring and Statistics

At the Design Center, the main network elements (routers and switches) were monitored based on the SNMP protocol. The system generated detailed graphs and statistics about the load, network traffic and system resources utilisation of each network box and data line.

Detailed monitoring of the WiFi infrastructure (APs, clients, radio parameters, etc.) was ensured directly by the wireless controller.

Statistics were collected on the following:

- Unique devices
- Type of devices
- eduroam
- Non-eduroam
- Wired connectivity uses

2.5 Programme Committee

The Programme Committee (PC), led by its Chair, contributes to the successful running of a conference through developing its overall programme. Coordinated and supported by the Events team, the PC issues the calls for proposals, demos, posters and lightning talks and chooses the keynote speakers. Two face-to-face PC Meetings were organised prior to TNC17 to develop the content for the conference.

At the first PC meeting in September 2016, an outline of the conference programme was created, with plenary sessions for the opening and closing sessions and for the last two days of the conference.

The programme committee consisted of 22 members from several partner organisations and NRENs, including: ACONet, GRNET, Internet2, SURFnet, CERT.LV, CANARIE, CSC / EUDAT, AARNET, ESnet, UNINETT, CSC/Funet, EUNIS/University of Umea, Google, the Internet Society, RIPE NCC, Jisc, Ciena, i2CAT and ARNES.

The aim and objectives of the September 2016 meeting were to:

- Provide the PC with an overview of the progress of conference preparations.
- Decide the structure of the programme for the conference.
- Allocate areas of responsibility to individual PC members.
- Discuss elements of the programme, for example the desired mix of invited vs. submitted papers and whether tutorials, demonstrations or other features should be included in the programme.
- Discuss keynote speakers and allocate responsibility for inviting them to the conference.
- Explain the procedure for reviewing submitted papers.
- Brainstorm on other conference issues such as sponsors, registration fee, conference proceedings, etc.

The second PC Meeting took place in January 2017, with the following aims:

- Make the final decision on which submitted presentations, sessions, tutorials, demonstrations etc. to accept, and allocate them to suitable sessions.
- Report on progress with inviting keynote speakers (usually confirmed at this stage).
- Allocate sessions to tracks and times within the conference programme.
- Assign chairpersons and co-chairs (for submitted sessions) for conference sessions.

During the conference, the PC members chaired the sessions (both keynotes and parallel), attended the Speakers' Reception, the PC dinner and provided feedback for future conferences.

2.6 Overall Logistics

The GÉANT Events team closely collaborated with a local Professional Conference Organiser whose services were contracted in August 2016. The organisers helped GÉANT with local arrangements in Linz and price arrangements for the conference. In addition, they provided onsite support and main liaison with local suppliers on behalf of GÉANT.

3 Lessons Learned

GÉANT is a collaborative community and this way of working is replicated in the organisation of TNC. The main lessons learnt from TNC are that an event is successfully planned and executed when the partners collaborating in the delivery work harmoniously together and clear organisational responsibilities are assigned.

Overall coordination of the partners is needed, as provided through the Events Team. To guarantee a successful outcome, there is an ongoing need for the partners to meet and check in with each other to ensure that the event is delivered by all teams in unison and no silos with groups working in isolation are being created.

In general, the following main areas of collaboration were highlighted when organising an event in a community environment:

- **Site meeting prior to the start of the main conference organisation** – Visiting the conference destination and venue with the Events team and partners early on in the organisational process has proven to be very valuable towards ensuring smooth collaboration in the remaining months prior to the conference, and to gain a clear understanding of the work that needs to be completed. It allows to build relationships with suppliers and vendors well in advance so that their work can be coordinated in a same direction. The joint site visit with PSNC and NORDUnet allowed the technical team to gain a full understanding of the infrastructure available at the site and to plan for any additional equipment necessary to meet the requirements of the conference and its participants. This type of visit took place for the first time for the last edition of TNC in 2016, but then only involved a small technical team of two people. This team was extended for TNC17, which has further improved collaboration.
- **Team meetings:**
 - Bi-weekly video conferencing meetings – Following the site visit, bi-weekly team calls were held to keep all team members up to date on progress for the organisation of the conference.
 - Face-to-face PC Meetings – In addition to the video conferencing meetings, bringing together the PC members in two two-day face-to-face meetings to develop the content of the conference proved very beneficial towards developing a high-quality program. Face-to-face meetings allow the committee to fully focus on the work required for the conference, build relationships and benefit from all the network ties the PC members bring to the conference.
- **Close collaboration with the Marketing & Communications team** – The collaboration between the GÉANT Events and Marketing & Communications teams was strengthened, enabling to benefit from the expertise of all members, further contributing to the success of

the conference. TNC17 was the first edition of the conference in which the fully merged GÉANT team worked together and the collaboration brought visible positive results.

- **Specific requirements for Network connectivity and services for community events –** Sufficient connectivity to the venue and a robust wireless setup using eduroam is clearly a fundamental need for any conference targeted at networkers and the global R&E networking community.

4 Lessons Applied

TNC17 is by far the largest conference organised by the GÉANT events team and by NA2 T3. All lessons learnt and best practices gathered during TNC17 will be applied to TNC18 and beyond in a continuous exercise of improvements of this main GÉANT event. However, some of the best practices gathered from TNC17 will also be considered when planning the smaller GÉANT project Symposium.

The GÉANT Symposium is a major meeting which gathers together all hands of the GN4-2 project. The next Symposium will take place in Budapest, Hungary, in early October 2017. Planning is already well underway and the events team is taking on board the lessons learnt during TNC17 towards the event's organisation.

4.1 Events Team

A site visit to Budapest will be carried out in late summer 2017 to ensure that it can fully accommodate the needs of the circa 230 participants to the GÉANT Symposium. This is to ensure the requirements for the plenary sessions, break-out sessions, and demos, as well as site meetings, can be fully met.

For TNC18, site meetings have already been planned with the local organiser, UNINETT, in Norway.

4.2 Marketing and Communications

The GÉANT Marcomms team is closely involved in the internal communications around the Symposium. However, as the Symposium is an internal project event, the outreach and visibility activities in this instance will focus on the internal GN4-2 project audience, providing support for the production of materials and posters for the conference, and the write-up of blogs and news items during and after the Symposium.

With regard to TNC18, the Marcomms and Events teams are already establishing a joint plan of activities at the time of writing of this deliverable in July 2017, ahead of the planning schedule with respect to previous years.

4.3 Network and Services Setup

In the same way as for TNC, the technical setup of the Symposium will be supported by PSNC and NORDUnet, as well as the local NREN, in this case NIIF/HUNGARNET in Budapest.

A site meeting will be held in August 2017 prior to the GÉANT Project Symposium in order to draw up a detailed plan to fulfil the technical requirements for the running of the event.

4.4 Programme Committee

As it is a smaller-scale event than TNC, a single face-to-face meeting only was organised for the GÉANT Project Symposium 2017, while a first meeting was held via Video Conferencing.

During the face-to-face meeting, a well-structured and high-quality programme for the Symposium was set out, including action items, clearly structured responsibilities of the PC members, deadlines and a clear timeline for the remaining part of the event organisation, and made available to all participants on the GÉANT Intranet.

4.5 Overall Logistics

Due to the smaller scale of the event, no professional conference organiser services are required for local logistics for the Symposium in Budapest. However, NIIF/HUNGARNET will support GÉANT with local arrangements.

Appendix A TNC17 Sponsorship Package

Sponsorship Levels	NfP €2,000	Silver €5,000	Gold €10,000	Plat. €20,000	Indicative costs for non-partners
Benefits					
Access to SIG	✓	✓	✓	✓	0.-
Access to TF	✓	✓	✓	✓	0.-
Access to TNC VIP Dinner				X	
Logo in newsletter	✓	✓	✓	✓	
Logo on Association Partner site	✓	✓	✓	✓	
Newsletter editorials in regular publications	1	1	3	5	€500.-
Service Webinars	1	1	2	3	€750.-
Logo on back of Conn Mag	✓	✓	✓	✓	
Advertisorial quarter page	1	1	2	3	€500.-
Advertisorial spread			1	2	€5000.-
Number of Free TNC Passes and discount	2	2	3	4	€1000 pp
Meeting Room @TNC				✓	
Press Coverage				✓	
Booth Space at TNC (discount on standard footprint rate)	25%	25%	6m ²	12m ²	

Table A.1: Sponsorship package for TNC17

Appendix B Plan of Network and other Infrastructure Services for TNC17 Conference in Linz

The plan that was drawn up to assess the infrastructure services needed for TNC17 prior to the setup of the conference site is included for reference below.

B.1 Preface

The annual TNC conference in 2017 will be held in at the Design Center in Linz. ACOnet is the hosting organisation. Network connectivity for the venue will be provided by ACOnet, while all other technical functions will be handled by the GÉANT Events team (including live streaming, Wifi and network setup within the venue, production of the plenaries and sessions, etc.).

B.2 Existing Infrastructure

TNC17 will take place in the Design Center in Linz, Austria, on 29 May – 2 June 2017. To ensure the conference's connectivity needs are met, the Design Center will be connected to ACOnet's network via rented dark fibre. Electrical, optical and UTP infrastructure cabling is available at the venue. The network situation was evaluated during the on-site visit. Additional Electrical switchboards will be provided by the AV company and PSNC. A detailed overview of the electrical needs scoped for the venue is shown in Table B.1 below.

Room	Installed power (A)	Max consumption (Watt)	Required outlets for laptops	Sockets	Max capacity (people)
Plenary Hall	32A and 63A in many places	6kW on stage + 4kW on stack + rented equipment	4	PSNC has own power distribution from 32A and 63A sockets Rented equipment from DC will have own power distribution	?
			2		

Room	Installed power (A)	Max consumption (Watt)	Required outlets for laptops	Sockets	Max capacity (people)
Seminar room 1 (U1)					
Seminar room 2 (U1)			2		
Congress Hall (U2)			2		Min. 12 rows x 12 seats with tables
Other rooms ?			On demand		
Demos ?			4-6		
Exhibition Hall	32A and 230V in many places	1x10kW (OBVan) + ...	1 per booth	1x32A for OBVan Cable entry from Foyer to plenary hall	

Table B.1: Electrical needs for TNC17

B.3 Network Infrastructure at the Design Center

Equipment list for WLAN infrastructure setup:

- 2 WLC (5508 or 3504) in HA configuration.
- 14 AP3702E on stands with AIR-ANT2566D4M-R directional antennas.
- 14 AP3702P on stands with AIR-ANT2513P4M-N HD directional antennas.
- 12 AP3702I on stands with internal antennas.
- 15 C3560CX-8PC-S with 10Gbps uplink SFP+ LR-optics (to provide 30W PoE for AP:s and a few spares) must be fanless.
- WS-C3650-48FQM-S (or equivalent) with 10Gbps-LR optics (30W PoE).
- 2-3 WS-C3850-24XS-S For 10Gbps aggregation with 10Gbps-LR optics (depending on topology).

Equipment Provided by NORDUnet:

- At least 1 Arista Core Routers with 100Gbps uplinks (and a 10Gbps backup line) and at least 10x10Gbps ports for onwards connection.
- 2 servers to provide DHCP, RADIUS accounting, syslog management and DNS resolving.
- Cabling fibre patches SM LC-ST (?) And Cat6 patches and cables of different lengths.
- 6 Extra Juniper fanless small switches.
- 15 AP3702I on stands with internal antennas.
- Extra SFP+ and SFP modules for multi-mode connectivity.

B.4 Conference Centre Setup

In preparation of the conference, the floor plan of the conference centre has been shared with the team.

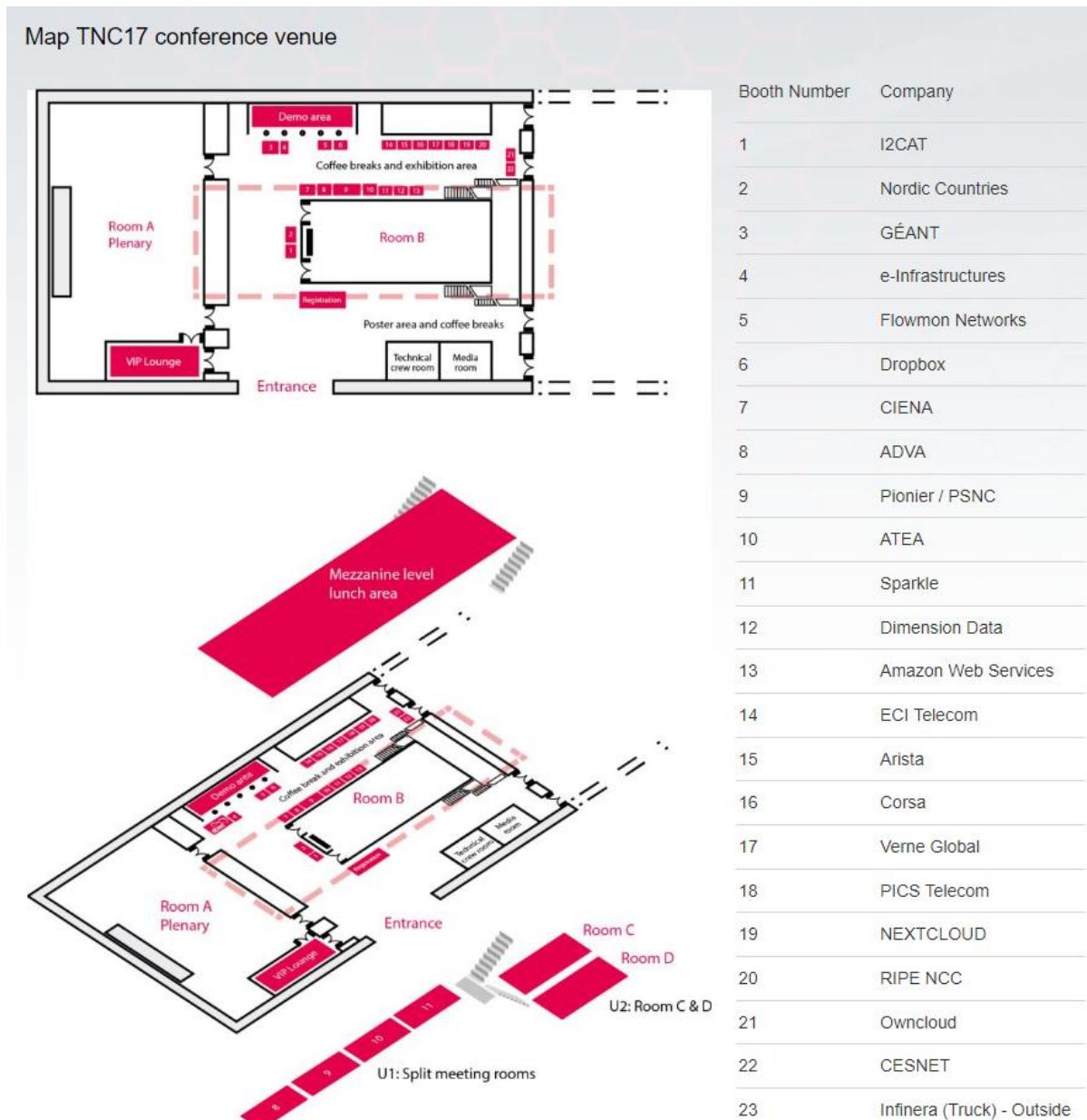


Figure B.1: TNC17 conference venue map

B.5 Network

B.5.1 Connection to the ACOnet backbone

- 100Gbit as main connectivity – production, directly connected to GÉANT PoP router in Vienna.
- 10Gbit - backup line routed through ACOnet.
- One rented pair of SM fibers connects the Design Center to ACOnet's PoP. The line is equipped with DWDM devices (provided by ARISTA) to ensure IP channels (100Gbps).
- Backup – one rented pair of SM fibers connects the Design Center to another ACOnet's PoP, 10Gbps.
- At the Design Center two connections will be in place a week before event:
 - 10 Gbits Primary IP connection
 - 10 Gbits Demo IP connection
- Layer 3 services (IPv4, IPv6 both unicast and multicast) are available in the Design Center, L2 services will be available upon request.
- The routing protocol will be BGP. The event will be using ACOnet's IP addresses, as allocated by the ACOnet NIC. Dedicated address spaces could be improved.

B.5.2 Cabling Infrastructure Wired Network

Room	Number of 1Gbps network sockets	Number of 10Gbps network sockets	Note
Room A (Track 1)	4	0	
Room B (Track 2)	4	0	
Room C (Track 3)	4	0	
Room D (Track 4)	4	0	
Tech/Secr Room	8	0	
Speakers Room	4	0	
Demo	4	0	+ 2 internal - for Immersia TV demo (i2cat + PSNC)
Interview Room	4	0	
Exhibition Hall	24	0	Provided by a SW Switch might be needed

Table B.2: Wired network socket distribution

PSNC requirements for wired network (to be provided by ACOnet):

- A 1Gbps copper or fibre connection containing internet with DHCP that will be provided to the AV control equipment at Plenary room A.
- Another 1Gbps connection with a public address for the OB van (tagged VLAN) and a direct VLAN connection to PSNC over GÉANT infrastructure.
- 5 public addresses and a direct VLAN to PSNC are needed in the editing room.

B.5.3 Wireless Network

Number of participants: 800-850.

Local WiFi infrastructure of the venue will not be used and will be replaced by a design setup provided by NORDUnet.

Room	Number of Access Points
Event hall Room A	8
Congress Hall Room B	4
Lunch Area (upstairs)	6-8
Demo area	1
Speakers Room	1
Exhibition and coffee area	4
Room C	2
Room D	2
TNC17 Tech crew room	1
Interview Room	1

Table B.3: Wireless network design set up

The location of the access points on the different levels is shown in the floor plans below.

Access points placement plan:

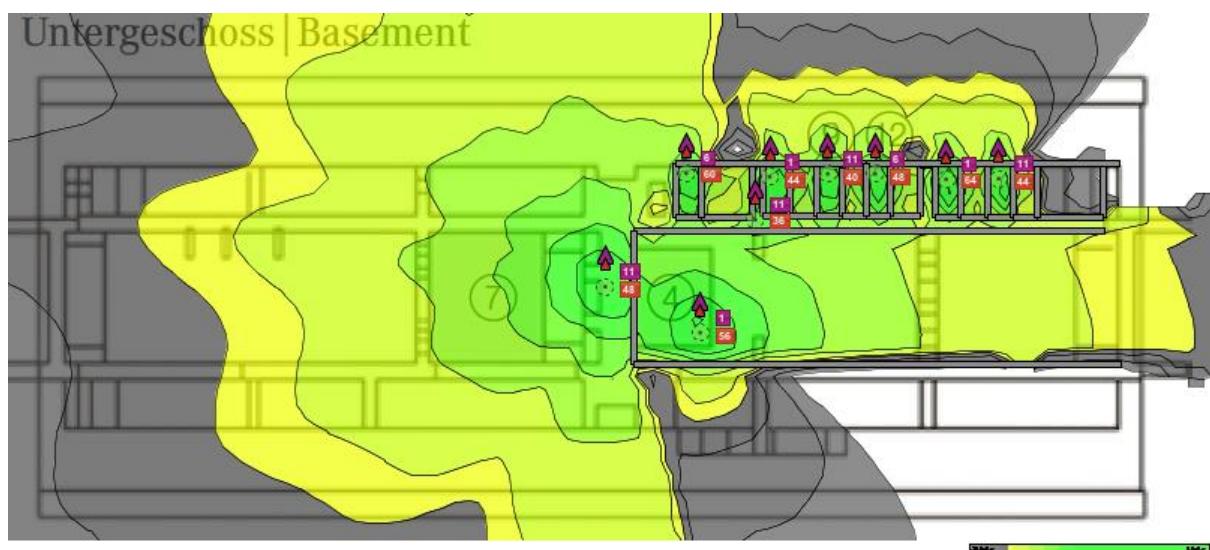


Figure B.2: Basement

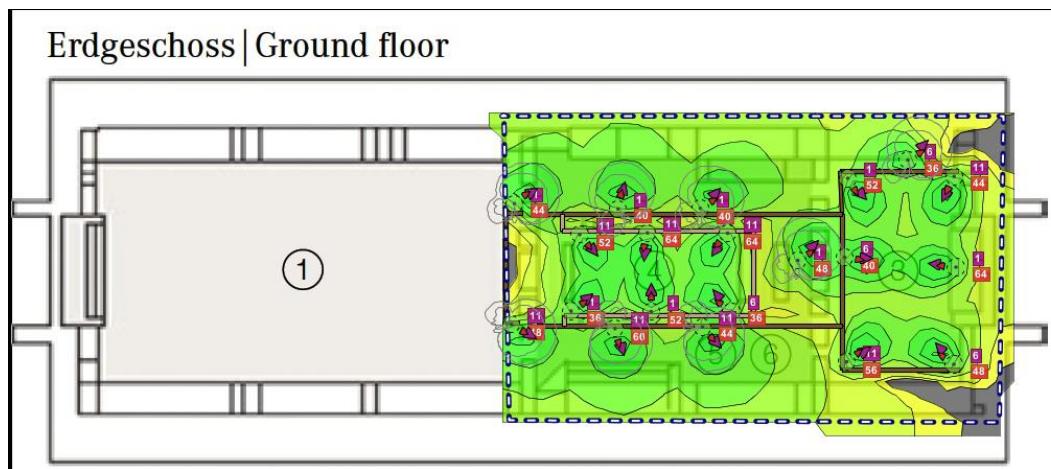


Figure B.3: Ground Floor

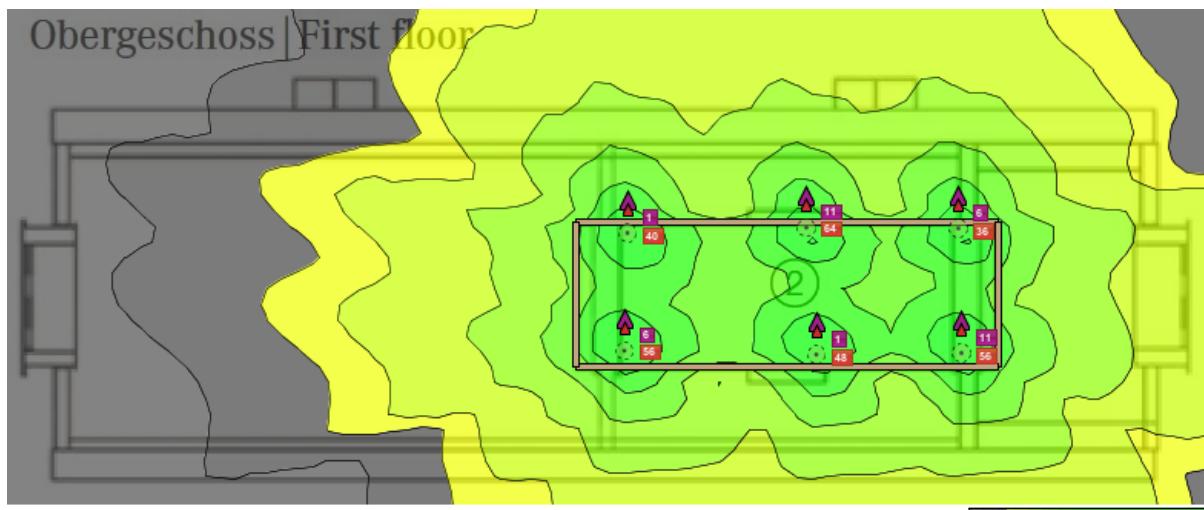


Figure B.4: First Floor

B.5.3.1 Rooms and Maximum Capacities

- Plenary room A (Ground floor) – theatre set up max. 1.178 persons (most likely max set up for 700+).
- Room B (Ground floor) – school style 378 persons.
- Seminar room C (Basement) theatre set up 200 persons or school style 150 persons.
- Seminar room D (Basement) theatre set up 200 persons or school style 150 persons.
- Split meeting room 10 (Basement) – theatre set up 20 persons or school style 15 persons.
- Split meeting room 11 (Basement) – theatre set up 60 persons or school style 40 persons.
- Demonstration room – Ground floor.
- Crew room 1 and 2 – Ground floor.
- Coffee break area and exhibition: Ground floor.
- Registration and poster area: Ground floor.
- Lunch area – First floor

B.6 Services

B.6.1 Authentication and Authorisation

A general eduroam network, to which all federative users could connect to, will be installed in the Design Center. A second network provided called “TNC17” will be provided for those without a federative account or who experience issues connecting to eduroam. This network had PSK-based

authentication implemented on a separate VLAN and participants will be able to collect an envelope with unique personal credentials from the registration desk.

B.6.2 Security and Login

- To avoid any compatibility issues, only publicly routable IP address space will be used. For the same reason firewalls will not be used against IP blocks dedicated for end-user devices. ACLs have been applied to limit unauthorised access to core network boxes such as routers and switches.
- All log messages produced by the network equipment are sent to a remote syslog server.
- All equipment is synchronised using an NTP service.
- NTP server – ACOnet server can be used (ts2.aco.net or ts1.aco.net), with NORDUNet server as a backup.

B.6.3 Network Management, Monitoring and Statistics

At the Design Center the main network elements (routers and switches) will be monitored based on the SNMP protocol. The system generates detailed graphs and statistics about the load, network traffic and system resources utilisation of each network box and data line.

Detailed monitoring of the WiFi infrastructure (APs, clients, radio parameters, etc.) will be ensured directly by the wireless controller.

Statistics will be collected on the following:

- Unique devices
- Type of devices (nice to have - Andres)
- eduroam
- Non-eduroam
- Wired connectivity uses

B.6.4 Technical Support

During the conference, the ACOnet technical team will support users, for instance with network connection problems, software issues, and other technical questions.

The support team will consist of employees of the ACOnet NOC.

NORDUNet will provide streaming specialists to serve their equipment.

NORDUNet will be responsible for the local production on the 3 main tracks. PSNC will be responsible for the production of the plenary session. ACOnet is responsible for providing the people needed to operate the cameras and the stage assistant as well as technical support in the sessions.

The manning of the Production, cameras and stage assistant is as below.

Role	Plenary	Track 1	Track 2	Track 3	Responsible
Production	1	1	1	1	
Tech. host	1	1	1	1	
Camera 1	1	1	1	1	
Stage assistant	1	1	1	1	
Camera 3	1				

NORDUnet will provide:

- 3 video recording and webcasting flight packs consisting of:
 - 2 x Canon ASF10/ASF25 cameras
 - Encoder based on MacPro 12 kernel 32GB ram 9TB storage
 - Optical fiber infrastructure w/ intercom
 - Blackmagic HD SDI capture device
 - Blackmagic HD ATEM video mixer
 - BlackMagic HD SDI recorder
 - Accessories
- 1 video recording and webcasting flight pack consisting of (backup):
 - 2 x Canon ASF10/ASF25 cameras + 1 additional Canon XF305 camera
 - Encoder based on MacBook Pro
 - Video switcher controller (MacBook Pro)
 - Blackmagic HD SDI capture device
 - Blackmagic HD ATEM video mixer
 - BlackMagic HD SDI recorder
 - Accessories
- 1 Video encoder (for plenary room):
 - Encoder based on MacPro 12 kernel 32GB ram 9TB storage
 - Blackmagic HD SDI capture device
 - Accessories

B.6.5 AV equipment

The broadcasting van (OB Van) will be located inside the venue building, between entrances to plenary room.

Information displays will be made available throughout the venue.

Presentations in the plenary and side rooms will be run from locally installed macs. The necessary software will be installed prior to the event.

B.6.5.1 *Streaming video*

Live streaming:

NORDUnet will provide on-site encoders, live stream transcoders and CDN for global video delivery. NORDUnet will provide four livestream players – one for each track. The players can be implemented via provided embed codes. The players are HTML5 first with Flash fallback and autodetection/support for mobile devices.

Live streaming and on demand video hosting are provided by NORDUnets OnPrem Kaltura installation.

B.6.5.2 *Stage equipment (main hall)*

Sound System:

- Line array PA from dB Technologies 4pcs of T12, 4pcs of T8, 4pcs of S30N and some monitor wedges.
- Wired microphones for music band from Audix, Shure and Sennheiser.
- Wireless system from Shure and Sennheiser, Beta 87A, Beta 58; On-head miniature system from DPA and RODE.
- Mixing Console Midas PRO 1 and stage boxes from Midas Pro series.

Light system:

- 4 spot moving heads.
- 8 wash moving head.
- 4 beam moving heads.
- 20 LED bar with 18 independent 3x3W RGB sections each.
- 4 LED bar wash with 8 independent 3x10W RGB sections each.
- 2 LED flood 150W RGB.
- Specialised LED fixtures for decorative stage truss illumination.
- Profile spots from ETC.
- TV lighting from Sachtler.
- Standard PAR64 lights if needed.
- Stage truss construction based on tri-system, can be installed on special stands or in fly configuration (about 50m total length).
- Main light desk: Chamsys MQ60 supported with Madrix software (DMX and ArtNet will be used).

Visual system (various options to be discussed, depending on stage layout):

- Large panoramic screen (8m horizontal base).
- Possibility of blending bunch of 4K projectors to achieve ultra-panoramic picture.

- Various screen layouts with many input sources possible on entire pixelspace of the panoramic screen.
- Sources can be presented on screen (presentation, TV camera feed, graphics, backgrounds moving or static).
- Possibility of creating AUX screens on sides showing any combination of input sources.

TV system:

- Complete TV realisation system.
- Full HD OB Van with 20 input mixer, CG generator, playouts, network streamers and complete audio section.
- 6 Full HD cameras with intercom and full studio control.
- Camera crane with electric fast-speed camera head.
- Complete light system.

Surroundings:

- TV reports / interviews.
- OB Van for studio and main hall TV realisation.
- Technical integration of all services.
- Possible on-site TV material production and delivery.

Archived streams:

During the conference, after a session has finished, the recorded streams will be made available on the Online Video Platform provided by NORDUnet (Kaltura), hosted by NORDUnet.

Once videos are ready they can be distributed via embed players or embedded playlists. The specific workflow for the updating process will be agreed between NORDUnet and the MarComms team.

Videos will be embedded into the TNC17 website as well as several playlists:

- 4 live streams players (embedded).
- 4 playlist players.
- Individual players for each talk.
- Push of all videos to YouTube.

Push feature via Kaltura to other channels (YouTUBE) archived streams and use the Kaltura platform for the live and archived streams.

Video conferences:

Video conferencing will be made available in the Plenary room:

- 1 Fixed for the Plenary A - Cisco SX80 (PSNC).
- 2 Mobile VC cart with VC unit Cisco SX20 and screen (PSNC) + C60.
- NORDUNET will take back-up terminals as well.

- Plenary room: PSNC Cisco SX80 / C60 - for integration with room cameras.
- Additional: Cisco SX20 (for small rooms).
- Nordunet - to provide backup VC terminal.

References

- [CONNECT25] https://www.geant.org/News_and_Events/CONNECT/Documents/CONNECT_25.pdf
- [DI4R] <https://www.digitalinfrastructures.eu/>
- [GEANTtv] <https://www.youtube.com/user/GEANTtv>
- [TNC17] <https://tnc17.geant.org/>
- [TNC17_Video] https://www.geant.org/News_and_Events/Events/TNC/Pages/home.aspx

Glossary

BGP	Border Gateway Protocol
DC	Design Center
DHCP	Dynamic Host Configuration Protocol
F2F	Face-to-face
HA	High availability
HD-SDI	High-Definition Serial Digital Interface
IP	Internet Protocol
NfP	Not for Profit
NIC	Network Interface Controller
OB	Outside broadcasting
PC	Programme Committee
SM	Single mode
SW	Switch
UTP	unshielded twisted pair
VC	Video conferencing
VGA	Video Graphics Array
VLAN	Virtual local area network
WLC	Wireless LAN Controller