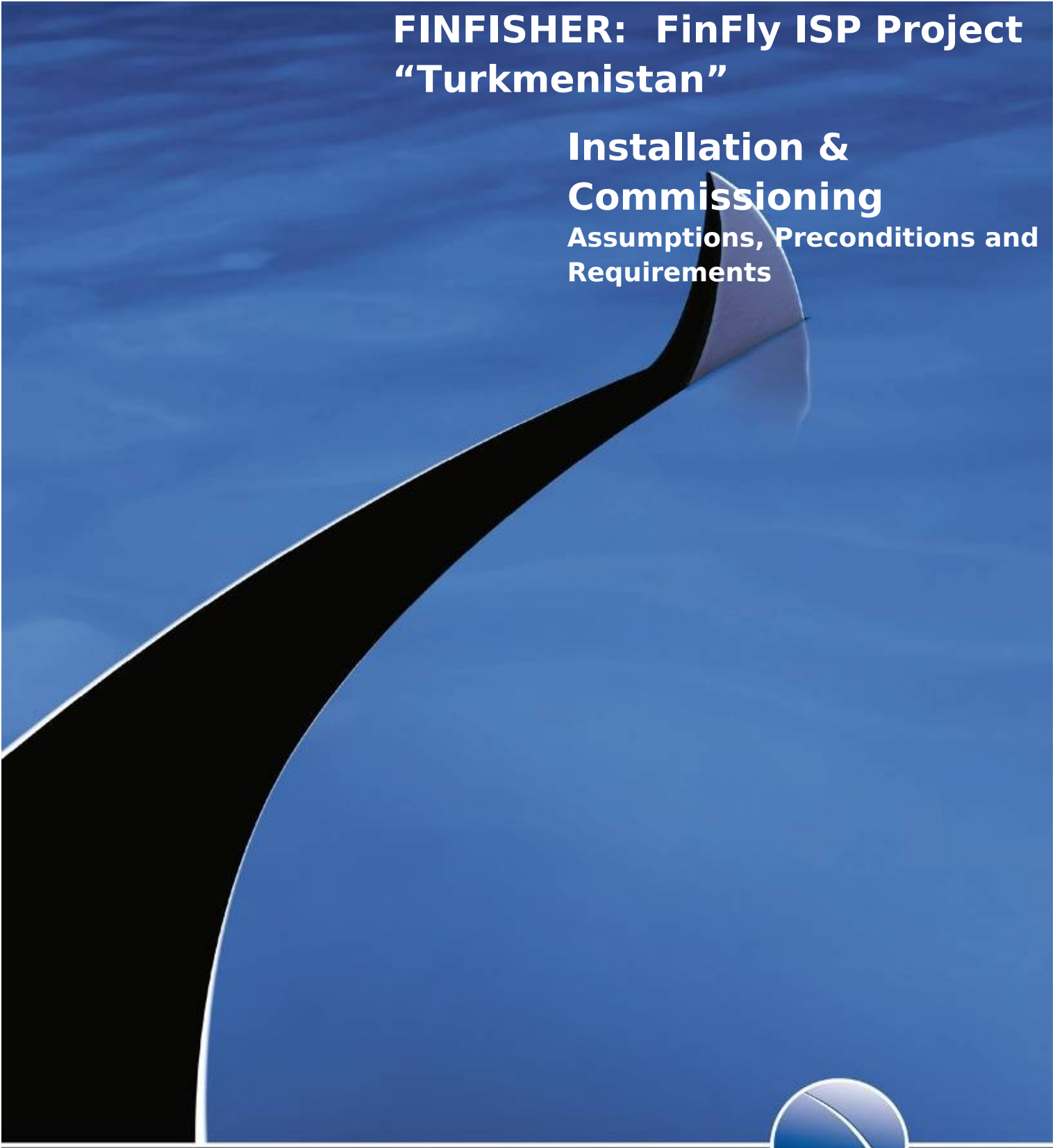
FINFISHER: FinFly ISP Project "Turkmenistan"

Installation & Commissioning

Assumptions, Preconditions and Requirements



FINFISHER
IT INTRUSION

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1 GENERAL

The Preconditions and Requirements listed in this document have to be fulfilled and/or confirmed either prior to delivery of the FinFly ISP equipment, in a time period before installation will start or latest during the installation phase of the project itself.

Some of the requirements will make it a necessity to have an on-site survey prior to delivery to ensure that preconditions and assumptions are fulfilled and didn't change during the last months and to get a common understanding between all parties involved in this project.

2 CO-OPERATION DUTIES

For the FinFly ISP Project, Gamma Group assumes the following co-operation and project support on the part of the client (the customer and/or Elaman GmbH):

No.	Requirements / Preconditions / Assumption	Prior to Delivery	Before Installation starts	Latest during Installation	Site Survey necessary	fulfilled Date/Signature
2.1	The client will make available document templates and information necessary for the execution of the work	**X**				
2.2	The client will inform parties involved in the project about the upcoming work		**X**			
2.3	The client will organize all necessary information, accesses and entries that are required for the workflow of the project		**X**			
2.4	The client will organize meetings and establish contact with the parties involved		**X**		**X**	
2.5	The client will make available the network connections (minimum FE; GE Fiber is assumed for this project) and the network between the all FinFly ISP Appliances deployed in the two different Networks and at the LEMF		**X**		**X**	
2.6	The client will make available sufficient network connections for the delivered components		**X**		**X**	
2.7	The client will make available housing space for the delivered turn-key solutions (Server Racks) and appropriate power connections		**X**		**X**	

2.8	The client will organize the transport of staff and material during installation, testing and training.			**X**		
2.9	The client will organize all additional test equipment for the Final Acceptance Test / End-2-End Tests			**X**		

3 PROJECT ASSUMPTIONS, LIMITATIONS AND PRECONDITIONS

3.1 General

The System(s) to be deployed in this project can only INFECT international traffic of ADSL, dial-up and the fixed IP-Address broadband subscribers in Turkmen Telecom network and Mobile Subscribers using a Notebook / PC as the terminal to access the Internet via the Gateways between the Mobile Network Provider TMCell and Turkmen Telecom.

The project was offered with the following assumptions, limitations and preconditions. The following preconditions must be fulfilled by the client (the customer and/or Elaman GmbH):

1. The client will forego all assertion of claims on account of any possible adverse effects and/or damages that may arise in connection with the assignment. Reserved are damages that arise through serious negligence or deliberate actions or omissions by the staff of Dreamlab and/or Gamma.
2. The current approach covers the mobile and fixed networks of the country of Turkmenistan (TMCell and Turkmen Telecom).
   Until now relevant information for this project are not 100% available and/or certain. Therefore the following assumptions have been used:

*These Limitations and Requirements listed in the following chapters **I**, **II** (II A and II B) below are pre-conditions which apply to this project. If during the course of the on-site survey and/or installation some of the above named preconditions and limitations are not fulfilled Gamma and Dreamlab reserve the right to treat the work linked to such missing preconditions as change requests to this project.*

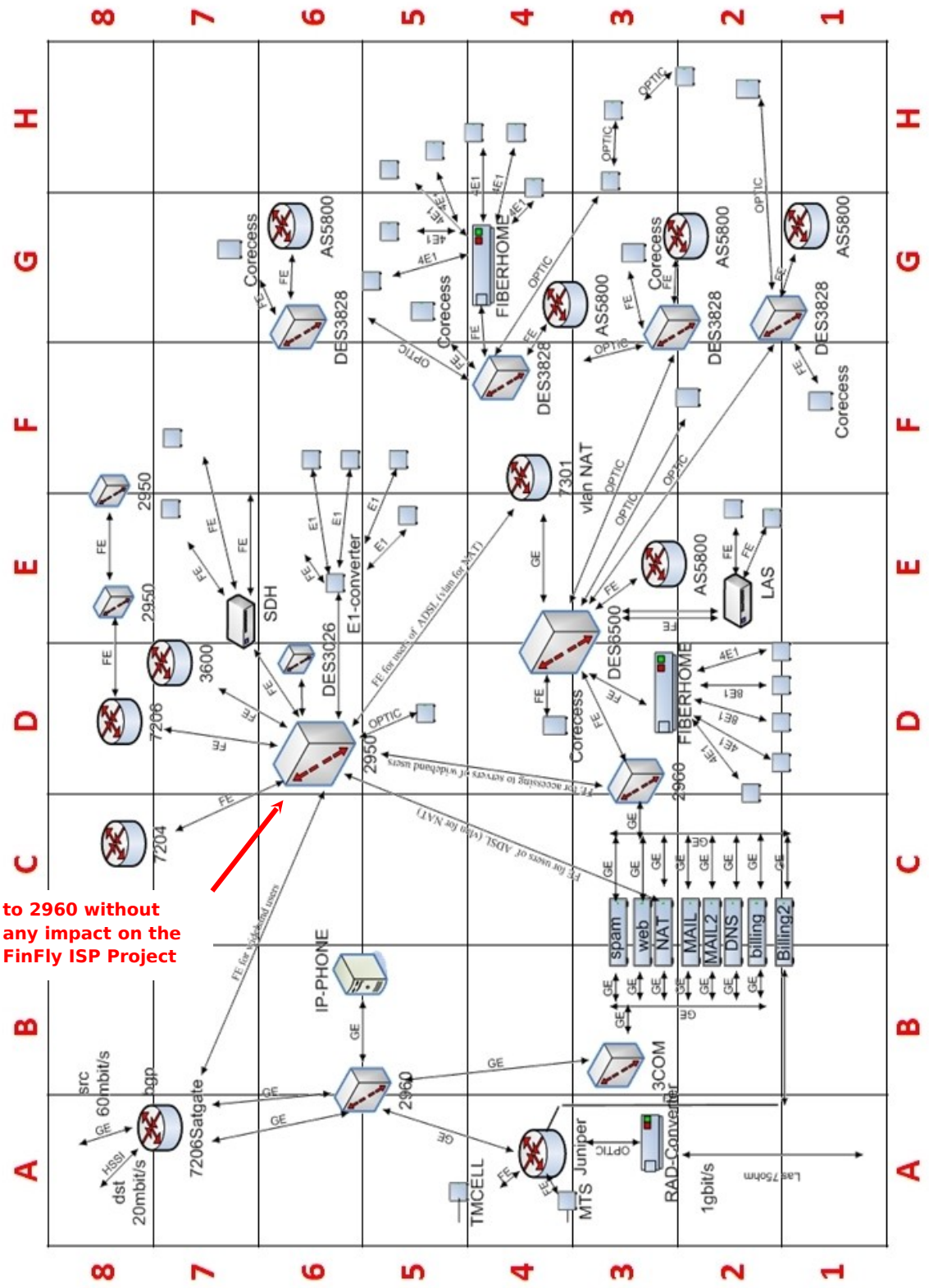
I. Turkmen Telecom (fixed Network)

We refer positioning to the graphic “Turkmen Telecom Network Infrastructure Overview” with the

Cartesian Coordinates on the following page and the two network traces (Turkmentel.pcap,

Turkmentel2.pcap). We assume that the traffic sample Turkmentel.pcap has been taken on the

links between 2950 (D6) and 2960 or NAT in (C/D 3).



a) All NATed customer traffic flows through the links between 2950 (D6) and 2960 or NAT in (C/D 3)

b) All non NATed customer internet traffic flows though the link 2950 (D6) and Satgate (A7).

c) All dynamic IP's are solely provisioned via RADIUS.

d) All RADIUS traffic flows through the link between 2950 (D6) and 2960 or NAT in (C/D 3)

e) The only RADIUS dialog that is provisioning dynamic IP addresses is shown in the Turkmenistan.pcap in packet number 7 and 8. The property to set IP's is “FRAMED-IP-Address”. A sample for a failed Access-Request is documented in packet 5 and 6 in the same trace file.

f) If there are more RADIUS dialog variants they will be documented and outlined by the provider.

g) We assume there is no other or more dynamic IP provisioning mechanisms in place.

h) All fixed IP address traffic flows through the link 2950 (D6) and Satgate (A7).

i) All links are based on copper medium and support 10/100/1000 Mbps Ethernet.

We have found non internal source IP-Addresses in the Turkmentel.pcap sample and need an
explanation how this is possible.

Please do precisely document any additional information, differences, amendments or comments.

Preconditions / Requirements:

No.	Requirements / Preconditions / Assumption	Prior to Delivery	Before Installatio	Latest during	Site Survey	fulfilled Date/Signat

			n starts	Installatio n	necessar y	ure
3.1 **I**	Confirm that everything listed above a) – i) is correct and unchanged	**X**			**X**	

II. TMCell (mobile Network)

The TMCell network delivers mobile IP services and is split in a Huawei and a NSN domain.

Both domains maintain one active and one passive link in between the SGSN and the GGSN.

A) ***Huawei domain:***

a) The Huawei domain's network is based on copper 10/100/1000 Mbps Ethernet media

b) The dynamic IP's of targets are provisioned on the Gn-Interface. The traffic sample TMCell_Huawei_SGSN-Gn-1_active.pcap contains all provisioning mechanisms.

c) The mechanism for provisioning is showed in file TMCell_Huawei_SGSN-Gn-1_active.pcap in packet 1548 and 1560. The unique target identifier can be the IMSI or the MSISDN (phone number). In this sample the mobile target receives the IP address 172.16.190.73.

d) All subsequent mobile IP traffic from the target is as well flowing through the same Gn-Interface found in TMCell_Huawei_SGSN-Gn-1_active.pcap.

e) The same mobile IP traffic flows through the Gi-Interface found in TMCell_Huawei_GGSN-Gi-2_active.pcap without GTP encapsulation.

f) All mobile IP traffic is flowing through the Gn- and Gi-Interfaces on the active and upon failure the passive link.

g) The TMCell_Huawei_SGSN-Gn-1_active.pcap traffic sample has been sniffed on the links between the SGSN and the GGSN.

h) The TMCell_Huawei_GGSN-Gi-2_active.pcap traffic sample has been sniffed on the links between the GGSN and nsnfw01 and nsnfw02.

Preconditions / Requirements:

No.	Requirements / Preconditions / Assumption	Prior to Delivery	Before Installation starts	Latest during Installation	Site Survey necessary	fulfilled Date/Signature

3.1 **II A**	Confirm that everything listed above a) – h) is correct and unchanged	**X**			**X**	

B) ***NSN domain:***

a) The NSN domain's network is based on Fiber 1 Gbps Ethernet media

b) The dynamic IP's of targets are provisioned on the Gn-Interface. The traffic sample TMCell_NSN_01-09Gn-1.pcap contains all provisioning mechanisms.

c) The mechanism for provisioning is showed in file TMCell_NSN_01-09Gn-1.pcap in packet 532 and 533. The unique target identifier can be the IMSI or the MSISDN (phone number). In this sample the mobile target receives the IP address 172.19.8.243.

d) All subsequent mobile IP traffic from the target is as well flowing through the same Gn interface found in TMCell_NSN_01-09Gn-1.pcap.

e) The same mobile IP traffic flows through the Gi-Interface found in TMCell_NSN_01-09Gi-1.pcap without GTP encapsulation.

f) All mobile IP traffic is flowing through the Gn- and Gi-Interfaces on the active and upon failure the passive link.

g) The TMCell_NSN_01-09Gn-1.pcap traffic sample has been sniffed on the links between the SGSN and the GGSN

h) The TMCell_NSN_01-09Gi-1.pcap traffic sample has been sniffed on the links between the GGSN and nsnfw01 and nsnfw02.

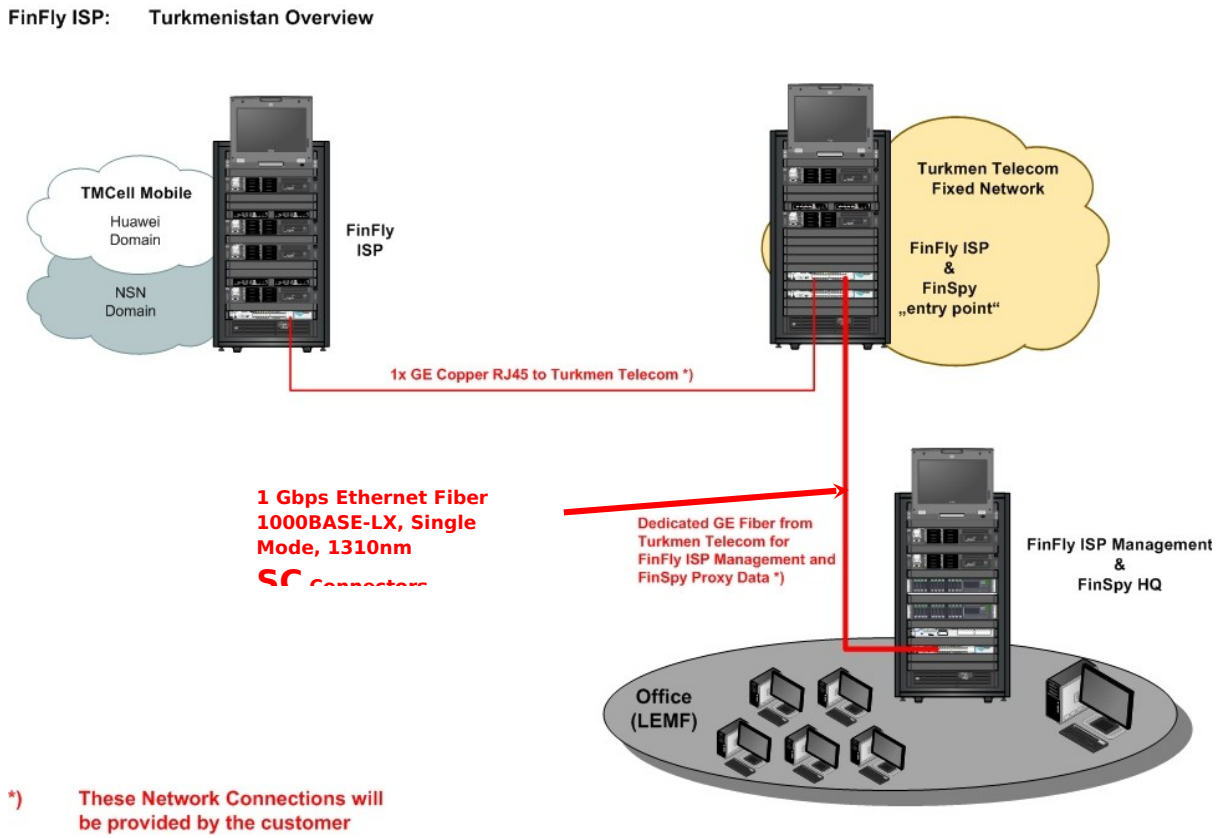
Preconditions / Requirements:

No.	Requirements / Preconditions / Assumption	Prior to Delivery	Before Installation starts	Latest during Installation	Site Survey necessary	fulfilled Date/Signature
3.1 **II B**	Confirm that everything listed above a) – h) is correct and unchanged	**X**			**X**	

3.2 Technical Details

3.2.1 Project Overview

The following graphic shows an overview of the project setup:



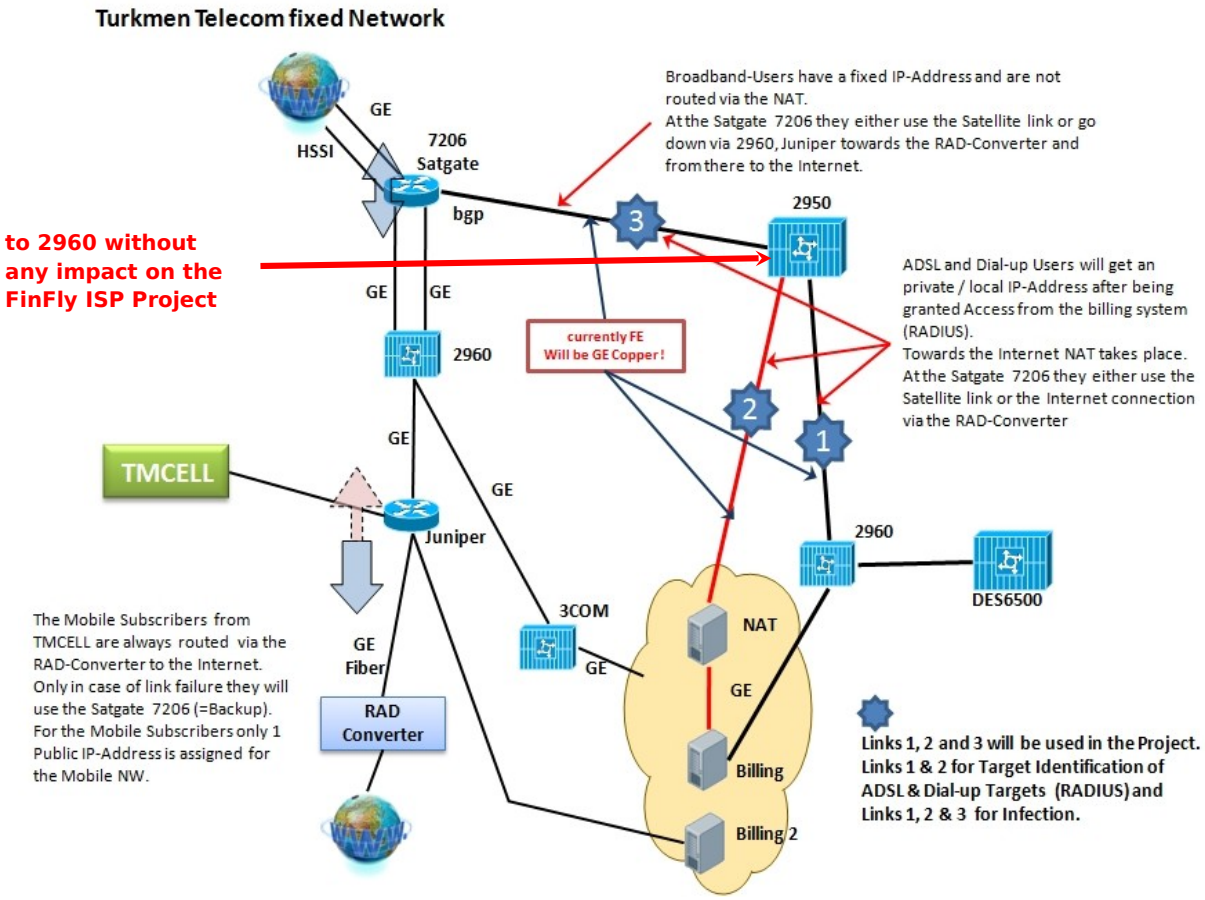
Preconditions / Requirements:

The customer has to provide the two (2) network connections (red lines) between

No.	Requirements / Preconditions / Assumption	Prior to Delivery	Before Installation starts	Latest during Installation	Site Survey necessary	fulfilled Date/Signature
3.2.1 **1**	TMCell and Turkmen Telecom 1 Gbps Ethernet COPPER (1000BASE-T; RJ45 / 8P8C Connectors 	**X**			**X**	
3.2.1 **2**	Turkmen Telecom and Office /LEMF 1 Gbps Ethernet Single Mode FIBER (1000BASE-LX 1310nm; **SC**-Connectors) 	**X**			**X**	

3.2.2 Turkmen Telecom (fixed Network)

The following graphics shows the relevant parts of the Turkmen Telecom fixed network used for the FinFly ISP Project:



Preconditions / Requirements:

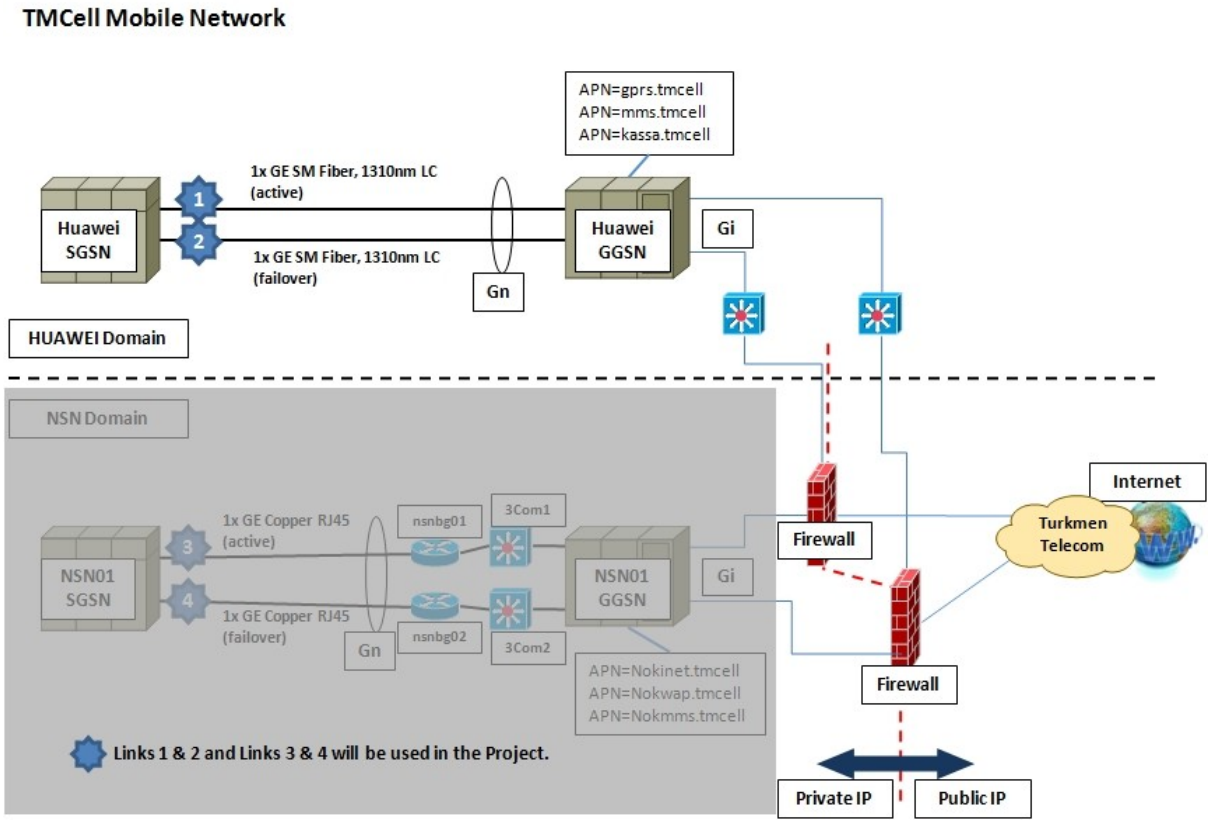
The three (3) links FinFly ISP has to be connected to (1, 2, 3 – blue stars) are:

No.	Requirements / Preconditions / Assumption	Prior to Delivery	Before Installation starts	Latest during Installation	Site Survey necessary	fulfilled Date/Signature
3.2.2 **1**	**either** 100 Mbps Ethernet COPPER (1000BASE-T; F[illegible] Connectors) 	**X**			**X**	
3.2.2 **2**	**or** 1 Gbps Ethernet COPPER (1000BASE-T; RJ45 / 8P8C Connectors) 	**X**			**X**	

3.2.3 TMCell (mobile Network)

3.2.3.1 HUAWEI Domain

The following graphics shows the relevant parts of the Huawei Domain of the TMCell mobile network used for the FinFly ISP Project:



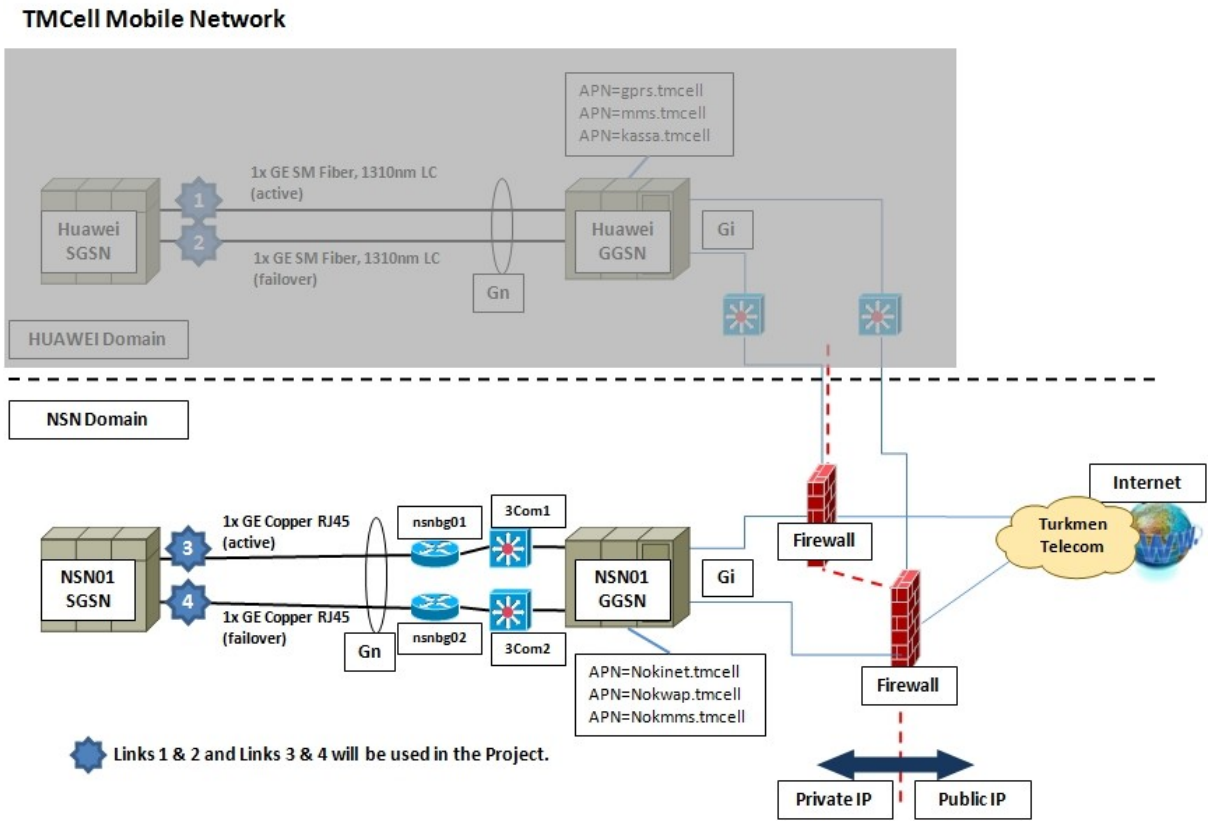
Preconditions / Requirements:

The two (2) links FinFly ISP has to be connected to (1, 2 – blue stars) are:

No.	Requirements / Preconditions / Assumption	Prior to Delivery	Before Installation starts	Latest during Installation	Site Survey necessary	fulfilled Date/Signature
3.2.3.1 **1**	**Active** 1 Gbps Ethernet Single Mode FIBER (1000BASE-LX 1310nm **LC**-Conn 	**X**			**X**	
3.2.3.2 **2**	**Failover** 1 Gbps Ethernet Single Mode FIBER (1000BASE-LX 1310 **LC**-Conn 	**X**			**X**	

3.2.3.2 NSN Domain

The following graphics shows the relevant parts of the NSN Domain of the TMCell mobile network used for the FinFly ISP Project:



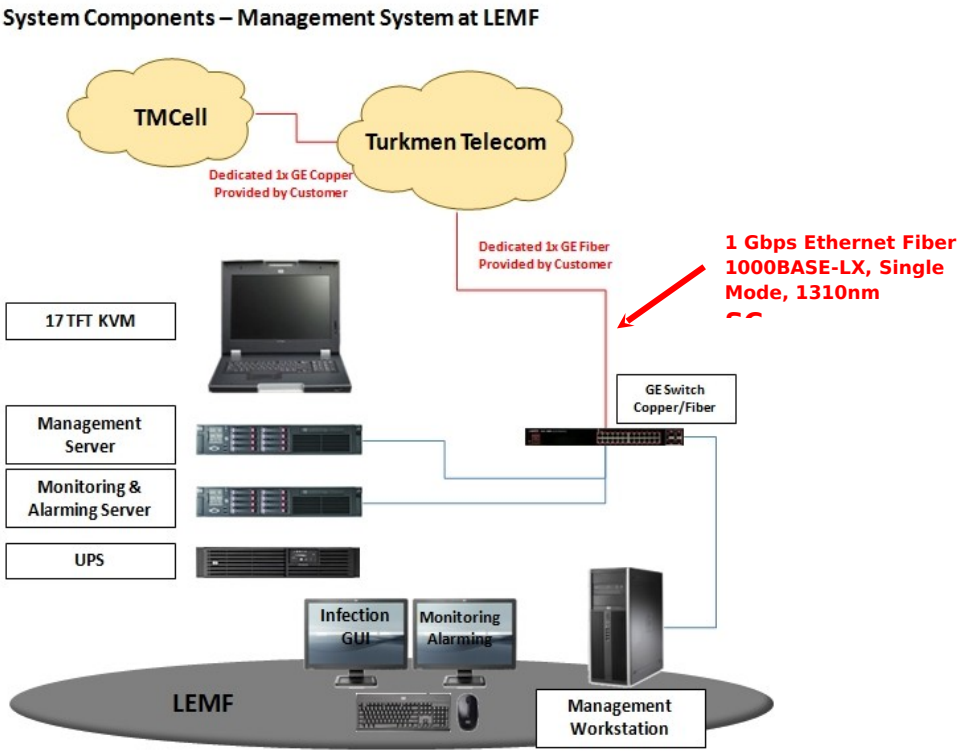
Preconditions / Requirements:

The two (2) links FinFly ISP has to be connected to (3, 4 – blue stars) are:

No.	Requirements / Preconditions / Assumption	Prior to Delivery	Before Installation starts	Latest during Installation	Site Survey necessary	fulfilled Date/Signature
3.2.3.2 **1**	**Active** 1 Gbps Ethernet COPPER (1000BASE-T; RJ45 / 8P8C Connectors) 	**X**			**X**	
3.2.3.2 **2**	**Failover** 1 Gbps Ethernet COPPER (1000BASE-T; RJ45 / 8P8C Connectors) 	**X**			**X**	

3.2.4 Office / LEMF

The following graphics shows an overview of the Office / LEMF location for the FinFly ISP Project:



Preconditions / Requirements:

For the Monitoring and Alarming Server it must be ensured that:

No.	Requirements / Preconditions / Assumption	Prior to Delivery	Before Installation starts	Latest during Installation	Site Survey necessary	fulfilled Date/Signature
3.2.4 **1**	An Internet connection is available to send Alarm-Emails			**X**		
3.2.4 **2**	Email Address(es) have to be provided to send Alarm-Emails			**X**		
3.2.4 **3**	GSM-coverage is available on location to send Alarm-SMS			**X**		

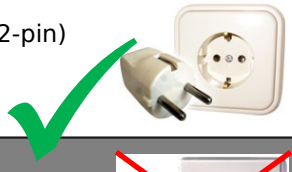
3.2.4 **4**	Two (2) SIM-Cards of two (2) different Providers (if possible) have to be provided to send Alarm-SMS **ONLY 1 SIM-Card will be provided, because there is only 1 Mobile Provider**			**X**		

3.2.5 All FinFly ISP Locations

At all locations there must be appropriate amount of space provided for:

No.	Requirements / Preconditions / Assumption	Prior to Delivery	Before Installation starts	Latest during Installation	Site Survey necessary	fulfilled Date/Signature
3.2.5 **1**	Space for Server Racks provided (Turkmen Telecom, TMCell and Office / LEMF		**X**		**X**	
3.2.5 **2**	Space for FinFly ISP Management Workstation with two (2) 24”-TFT Displays, Keyboard, Mouse			**X**		

For all FinFly ISP locations it has to be decided by the customer, what kind of Power Plugs have be delivered to connect the Server Racks (UPS), the Switches and the Management Workstation.

No.	Requirements / Preconditions / Assumption	Prior to Delivery	Before Installation starts	Latest during Installation	Site Survey necessary	fulfilled Date/Signature
3.2.5 **3**	Type B (American 3-pin) 	**X**			**X**	
3.2.5 **4**	Type F (Schuko 2-pin) 	**X**			**X**	
3.2.5 **5**	Type G (British 3-pin) 	**X**			**X**	
3.2.5 **6**	All FinFly ISP Sites must provide 200 – 240 V AC @ 50/60 Hz 16 Ampere / 3.000 Watt	**X**			**X**	

Remarks:

All FinFisher Products (except FinFly ISP) will be delivered with Power Plugs “Type G” and appropriate Adapter Sets to fulfill worldwide requirements.

3.3 Final Acceptance Tests (Test Equipment)

Gamma and Dreamlab assume the presence of the following, permanently installed and operational Test Equipment at the Office / LEMF location for Final Acceptance Testing:

Preconditions / Requirements:

No.	Requirements / Preconditions / Assumption	Prior to Delivery	Before Installation starts	Latest during Installation	Site Survey necessary	fulfilled Date/Signature
3.3 **1**	Test Target laptop and/or desktop with configured Windows Operating System, to be used for Infection			**X**		
3.3 **2**	xDSL-link with configured Router and Internet Access via Turkmen Telecom for the Test Target(s) mentioned above			**X**		
3.3 **3**	Dial-up connection with internet access via Turkmen Telecom, including valid credentials and a dial-up modem for the Test Target(s) mentioned above			**X**		
3.3 **4**	Mobile Internet Access via TMCell for the Test Target(s) mentioned above			**X**		

Regarding the location / the room for the Final Acceptance Tests pls. see the next chapter 3.4 “Training”

3.4 FinFly ISP Training

A five (5) days Training is part of the project and will be performed after the Final Acceptance Document is signed by all parties. The training will cover technical and operational topics for the FinFly ISP System and the Monitoring & Alarming System.

Preconditions / Requirements:

No.	Requirements / Preconditions / Assumption	After Installation	fulfilled Date/Signature
3.4 **1**	A maximum of six (6) students will participate in the trainings	**X**	
3.4 **2**	The Test Equipment listed in chapter 3.3 above with all listed Internet connections has to be kept available for the training	**X**	
3.4 **3**	Appropriate seating and desk space for up to 6 students	**X**	
3.4 **4**	At least one of the following should be available in the room – flipchart, whiteboard and / or interactive whiteboard	**X**	
3.4 **5**	Suitable heating / air conditioning system must be available in the classroom	**X**	
3.4 **6**	Adequate lighting must be available in classroom and blinds should be available if necessary to reduce glare on projector screen	**X**	
3.4 **7**	Trainer will need full details of the fire evacuation procedure in the building	**X**	
3.4 **8**	Health and Safety considerations must be observed e.g. trailing cables etc.	**X**	
3.4 **9**	A LCD Projector / Beamer is required	**X**	
3.4 **10**	A writing pad and ball pen for each student is required	**X**	
3.4 **11**	Hot and cold drinks should be provided for student breaks and ideally served near the classroom to prevent delays	**X**	
3.4 **12**	Lunch should be provided and again ideally served near to the classroom to prevent delays in returning to class	**X**	