

## 1 Content of GTS IP VPN

The principle of GTS IP VPN lies in transferring subscriber data in the form of IP datagrams between the interfaces of the end devices located at subscriber's sites, or between any end points of the agreed IP VPN network, respectively. The data communication uses the IP/MPLS protocol implemented above the provider's IP/MPLS network. The provider's IP/MPLS network ensures that each individual IP VPN network is securely and logically separated from other IP VPN networks and the Internet.

GTS IP VPN is implemented via the MPLS network and pursuant to the terms and conditions stipulated in this GTS IP VPN Service Description, while the individual specific parameters of GTS IP VPN are agreed with the subscriber in the contract and the respective GTS IP VPN Service Specification, or attachments thereto.

Connections of GTS IP VPN are implemented via an Ethernet circuit, a dedicated digital circuit, or via xDSL technology.

GTS IP VPN is a complex service monitored by the provider throughout the network and along the entire connection routes down to the termination interface.

## 2 Optional additions and variants of GTS IP VPN

### 2.1 Multi IP VPN

The Multi IP VPN variant provides for data interconnection via an IP VPN solution for multiple independent legal entities (companies), including separate invoicing. Multi IP VPN will be shared by those legal entities. The individual branch connections will be allowed to communicate only with the central connection, not with one another. Access to Multi IP VPN will be provided only with consent of the founder (owner) of Multi VPN specified in the Service Specification. Each entity will be charged only for the service related to its respective part of the network.

### 2.2 International IP VPN

The international variant of GTS IP VPN provides for data communication between the subscriber's sites located in different countries. The service is provided in the following countries within the GTS Central Europe Group: Czech Republic, Slovakia, Romania, Hungary, and Poland. The service may be provided in other countries in co-operation with partners; in such a case, some parameters and properties of the service offered in those individual countries may differ from the parameters and properties of the service offered in the Czech Republic.

### 2.3 Central Internet

The solution provides for fixed Internet access directly via a connection of GTS IP VPN. All connections of the respective customer IP VPN may access the Internet as standard; it is not possible to differentiate which connections will access the Internet and which not. Interconnection of the IP VPN and the Internet is secured by NAT (address transfer).

### 2.4 Back-up

Availability of GTS IP VPN service may be increased by a back-up of the primary connection. The primary connection may be backed-up by:

- § a dedicated connection;
- § a shared (ADSL) connection;
- § an ISDN line;
- § an alternative connection – provides for back-up of the primary connection via a mobile connection (CDMA, GPRS, EDGE) or a proprietary Internet connectivity of the customer (a fixed IP address and an Ethernet interface will be required; back-up speed limited to 2Mbps at maximum).

The Back-up valued added service will include extension of the end equipment with an interface and modification of its configuration so that the back-up connection is automatically established by the end device in case of outage of the primary connection. Service will be typically restored via the back-up connection within 30 seconds. An ISDN line may be provisioned and operated as a part of GTS IP VPN, or it may be provisioned and operated by the subscriber at its own cost.

### 2.5 Remote access

This is a remote access to subscriber IP VPN via the following access variants:

- § IP Sec – via any Internet connection using a software solution providing for access to subscriber IP VPN by encoded connection (IP Sec)
- § Dial-Up – via a telephone network; either via a 800 telephone number (connection free-of-charge, the fees are paid by the subscriber), or a 971 telephone number (reduced call prices according to the applied tariff, the call fee is paid by the calling party).

### 2.6 Traffic statistics

Traffic statistics are an optional value added service providing for monitoring values of some traffic parameters of GTS IP VPN for the individual connections.

The data and information provided by this application are for information purposes only and they may not be used as basis for calculation of sanctions for failure to comply with SLA or for calculation of the price of the provided service, respectively.

The optional value added service of traffic statistics is available only for the IP VPN connections, where the end device has been provided and is managed by the provider. The service is only available in the following countries: Czech Republic, Poland, Slovakia, Hungary, and Romania.

### 2.7 Pro-active monitoring

The provider will initiate the process of connection failure remedy within 15 minutes as of detection of the 100% Packet Loss status (100% packet loss detected by the internal monitoring tools of the provider). The failure remedy process includes notification of the contact person of the subscriber.

The optional value added service pro-active monitoring is available only for the IP VPN connections, where the end device has been provided and is managed by the provider. This value added service is only available in the following countries: Czech Republic, Poland, Slovakia, Hungary, and Romania.

### 2.8 Multiple IP VPN

The Multiple IP VPN variant of the service provides for creation of multiple separated IP VPN's that can be simultaneously provided at a customer's single site, i.e. multiple IP VPN's can be provided via a single service (i.e. a connection and CPE). The service is available only in the Czech Republic and depends on access technology.

### 2.9 QoS

The value added service QoS providing for allocation of access line capacity to classes of service may be ordered with GTS IP VPN. Classes of service are intended for data communication of the designated applications (e.g. VOIP, SAP, Internet, etc.).

The value added service QoS is provided in two variants.

- § The first variant includes fixed DSCP values (determined by the provider) and it is not possible to use IP Precedence values instead of DSCP.
- § The second variant is DSCP transparent. This variant is used in case the subscriber requires application of custom DSCP values as well as transparent end-to-end transmission of DSCP values.

GTS IP VPN offers the following 5 classes of service:

Class of service	Applied to the following applications
Diamond	VoIP
Platinum	Business critical application, Video streaming, video conferencing
Gold	Business application
Silver	Other Business application
Bronze	Best effort

Profiles of classes of service on access lines:

Profile	Applied to the following applications
P1	Bronze, Silver
P2	Bronze, Diamond
P3	Bronze, Silver, Diamond
P4	Bronze, Silver, Gold, Diamond
P5	Bronze, Silver, Gold, Platinum, Diamond

Rules for setting bandwidth for QoS classes within profiles P1 to P5:

- § throughput within class of service is entered as % of the connection capacity;
- § the minimum capacity of any class is 5% of the connection capacity and 64 kbps;
- § the step of change of class capacity is 5% of the connection capacity;
- § the maximum capacity of the Diamond class is 50% of the connection capacity;
- § Platinum class is dedicated to Multicast traffic (in case of Multicast IP VPN value added service, see 2.11);
- § the sum of capacities of Bronze to Diamond classes is 95% of the connection capacity at maximum (Note: 5 % of the connection capacity is allocated to control traffic of the provider).

### 2.10 IPv6 VPN

Additional service IPv6 enables implementation of IP VPN service in IPv6 address space (standard is IPv4).

This additional service is not supported on all access technologies, it is not compatible with all the additional services listed in this Service Description in the event that the service provided by GTS IP VPN outside the GTS Central Europe, may have this additional service its other limitations. Condition for the establishment of the service is a positive technical survey.

### 2.11 Multicast IP VPN

Multicast IP VPN value added service is a fully managed and innovative solution designed for multimedia broadcasting and native multicast applications. Unlike the traditional unicast network communication (individual end-to-end transmissions for individual users), Multicast IP VPN value added service supports distribution of a single data stream to all users (user groups).

Multicast IP VPN is not supported by all access technologies and it may have certain limitations (e.g. the SHDSL technology does not support the MTU>1500 Bytes transmission, etc.). A positive output of the technical survey is required for provisioning of the service. Multicast IP VPN value added service is not compatible with all value added services listed in this Service Description.

Multicast IP VPN is available only in the Czech Republic.

### 3 Performance indicators of GTS IP VPN

The below values of the following performance indicators (Packet loss, Jitter, Latency) are common in the backbone network of the provider and in the access network with regard to provision of GTS IP VPN, on condition that load on the access line does not exceed 95%.

#### Performance indicators

- § **Packet loss** – this indicator represents the percentage of lost packets that do not reach the destination router or that are not confirmed by the router. The value is provided as an average per calendar month.
- § **Jitter** – fluctuation of packet delay when travelling through the network (this appears e.g. on routers as a result routing changes, behaviour of router queues, etc.). The value is provided as an average per calendar month.
- § **Latency** – unidirectional delay of a packet. The time from the moment of packet sending by the source router to the moment of packet reception by the destination router. The value is provided as an average per calendar month.

#### Performance indicators in the backbone network of the provider

The following values of performances indicators are common (for orientation) in the backbone network of the provider:

Performance indicator	Measured in national backbone network (PE-PE)	Measured in international backbone network (PE-PE)
Packet Loss	≤0.1%	≤0.1%
Jitter	≤3ms	≤5ms
Latency	≤10ms	≤40ms

#### Performance indicators in the access network

Common values of performance indicators (for orientation) in the access network depend on the access technology used for connection of GTS IP VPN; they are provided only for DIAMOND class of service. Depending on the type of technology, the typical values of performance indicators are the following:

#### Connections using ADSL technology

Class of service	Measured in access network (PE-CE)		
	Packet loss	Jitter	Latency
Diamond	≤1%	≤10ms	≤35ms

#### Connections using SHDSL technology

Class of service	Measured in access network (PE-CE)		
	Packet loss	Jitter	Latency
Diamond	≤0.5%	≤5ms	≤25ms

#### Symmetric connections using other than xDSL technology (capacity up to 2048 kbps)

Class of service	Measured in access network (PE-CE)		
	Packet loss	Jitter	Latency
Diamond	≤0.1%	≤5ms	≤25ms

#### Symmetric connections using other than xDSL technology (capacity > 2048 kbps)

Class of service	Measured in access network (PE-CE)		
	Packet loss	Jitter	Latency
Diamond	≤0.1%	≤3 ms	≤20ms

#### Conditions of measuring performance indicators

Performance indicators are measured under the following conditions:

- § source and destination router are parts of the provider's network;
- § measuring in the DIAMOND class of service takes place every minute by sending 1,000 packets of 56B with delay of 20ms between any two packets;
- § the load on the access line does not exceed 95%.

The subscriber acknowledges and expressly agrees that the above values of performance indicators of IP VPN are common (for orientation) values only for the service in the provider's network and thus the values are not guaranteed

to the subscriber by the provider; therefore, should the provider fail to comply with such values, the subscriber shall not be eligible to sanction, service price discount, or to damage compensation.

## 4 SLA – service availability

All information regarding definition of service availability parameters and adherence thereto is common to all data services by the provider and they are stipulated in the applied “Operational Conditions of Provision of Publicly Available Service of Electronic Communication” of GTS Czech s.r.o.

The subscriber shall be eligible to select the respective service level (SLA) depending on the type of connection of GTS IP VPN; the specific SLA level (STANDARD, TOP, PLUS) will be defined for the GTS IP VPN in the respective GTS IP VPN Service Specification made between the provider and the subscriber. Detailed terms and conditions regarding service level (SLA) are stipulated in the applied SLA Service Description.

## 5 Technical information

### 5.1 Service interface

GTS IP VPN consists of a connection terminated by end equipment with an Ethernet 10/100/1000Base-TX interface (connector RJ-45 female ISO 8877).

### 5.2 Connections

The following connection types and capacities are provided within GTS IP VPN:

#### 5.2.1 Shared connections – ADSL technology:

Basic service level	SLA STANDARD	SLA PLUS	SLA TOP	QoS (profile) availability	Telephone line*
<b>Czech Republic (CZ)</b>					
2048/128 kbit/s, 1:50	YES	NO	NO	YES (P1)	With active voice service / without active voice service (naked)
4096/256 kbit/s, 1:50	YES	NO	NO	YES (P1, P2)	
6144/384 kbit/s, 1:50	YES	NO	NO	YES (P1, P2)	
8192/512 kbit/s, 1:50	YES	NO	NO	YES (P1, P2, P3)	
2048/128 kbit/s, 1:20	YES	NO	NO	YES (P1)	
4096/256 kbit/s, 1:20	YES	NO	NO	YES (P1, P2)	
6144/384 kbit/s, 1:20	YES	NO	NO	YES (P1, P2)	
8192/512 kbit/s, 1:20	YES	NO	NO	YES (P1, P2, P3)	

#### 5.2.2 Dedicated connections – asymmetric – ADSL technology:

Basic service level	SLA STANDARD	SLA PLUS	SLA TOP	QoS availability	Telephone line*
<b>Czech Republic (CZ)</b>					
2048/512 kbps	YES	NO	NO	YES (P1 – P5)	With active voice service / without active voice service (naked)
3072/512 kbps	YES	NO	NO	YES (P1 – P5)	
4096/512 kbps	YES	NO	NO	YES (P1 – P5)	
<b>Slovak Republic (SK)</b>					
512/512 kbps	YES	NO	NO	NO	With active voice service / without active voice service (naked)
2048/512 kbps	YES	NO	NO	NO	
3072//512 kbps	YES	NO	NO	NO	
<b>Hungary (HU)</b>					
5000/500 kbps	YES	NO	NO	YES (P1 – P5)	With active voice service / without active voice service (naked)
10000/500 kbps	YES	NO	NO	YES (P1 – P5)	
15000/500 kbps	YES	NO	NO	YES (P1 – P5)	
25000/5120 kbps	YES	NO	NO	YES (P1 – P5)	With active voice service (naked)
1280/128 kbps	YES	NO	NO	NO	
4480/256 kbps	YES	NO	NO	NO	
8096/512 kbps	YES	NO	NO	NO	
<b>Poland (PL)</b>					
512/128 kbps	YES	NO	NO	NO	With active voice service (naked)
1024/256 kbps	YES	NO	NO	NO	
2048/256 kbps	YES	NO	NO	NO	
6144/512 kbps	YES	NO	NO	NO	
10240/1024 kbps	YES	NO	NO	NO	

\* The telephone line may be in the mode:

- with active voice service, i.e. the subscriber continues to have a contractual relationship with the Provider of voice service. The Provider of voice services charges the Subscriber with the agreed recurring monthly fee (flat rate) for the telephone line.

- without active voice service, i.e. the Subscriber does not have a contractual relationship with the Provider of voice service. Therefore, the Provider of voice service does not charge the Subscriber with the recurring monthly fee (flat rate) for the telephone line, but the Subscriber shall be obliged to pay to provider of GTS IP VPN the agreed recurring monthly fee for GTS IP VPN or the agreed Surcharge for the variant without voice service (naked ADSL) to the recurring monthly fee for GTS IP VPN.

Valid from September 1st 2012.

## 5.2.3 Dedicated connections – symmetric – SHDSL technology:

Basic service level	SLA STANDARD	SLA PLUS	SLA TOP	QoS availability
<b>Czech Republic (CZ)</b>				
128 kbps	YES	NO	NO	NO
256 kbps	YES	NO	NO	YES (P1, P2, P3)
512 kbps	YES	NO	NO	YES (P1 – P5)
1 024 kbps	YES	NO	NO	YES (P1 – P5)
2 - 8 Mbps	YES	NO	NO	YES (P1 – P5)
10 - 20 Mbps	YES	NO	NO	YES (P1 – P5)
<b>Hungary (HU)</b>				
512 kbps	YES	NO	NO	YES (P1 – P5)
1024 kbps	YES	NO	NO	YES (P1 – P5)
2048 kbps	YES	NO	NO	YES (P1 – P5)
<b>Poland (PL)</b>				
1024 kbps	YES	NO	NO	NO
2048 kbps	YES	NO	NO	NO
4096 kbps	YES	NO	NO	NO
<b>Romania (RO)</b>				
512 kbps	YES	NO	NO	NO
1024 kbps	YES	NO	NO	NO
2048 kbps	YES	NO	NO	NO

## 5.2.4 Dedicated connections – symmetric - other:

Basic service level	SLA STANDARD	SLA PLUS	SLA TOP	QoS availability
<b>Czech Republic (CZ), Hungary (HU), Poland (PL), Romania (RO), Slovak Republic (SK)</b>				
64 kbps	YES	YES	YES	NO
128 kbps	YES	YES	YES	NO
192 kbps	YES	YES	YES	NO
256 kbps	YES	YES	YES	YES (P1, P2, P3)
320 kbps	YES	YES	YES	YES (P1, P2, P3)
384 kbps	YES	YES	YES	YES (P1, P2, P3)
512 kbps	YES	YES	YES	YES (P1 – P5)
768 kbps	YES	YES	YES	YES (P1 – P5)
1 024 kbps	YES	YES	YES	YES (P1 – P5)
1 536 kbps	YES	YES	YES	YES (P1 – P5)
2 048 kbps	YES	YES	YES	YES (P1 – P5)
4 Mbps or 2x 2048 kbps	YES	YES	YES	YES (P1 – P5)
6 Mbps or 3x 2048 kbps	YES	YES	YES	YES (P1 – P5)
8 Mbps	YES	YES	YES	YES (P1 – P5)
10 Mbps	YES	YES	YES	YES (P1 – P5)
16 Mbps	YES	YES	YES	YES (P1 – P5)
20 Mbps	YES	YES	YES	YES (P1 – P5)
25 Mbps	YES	YES	YES	YES (P1 – P5)
30 Mbps	YES	YES	YES	YES (P1 – P5)
34 Mbps	YES	YES	YES	YES (P1 – P5)
100 Mbps	YES	YES	YES	YES (P1 – P5)
155 Mbps	YES	YES	YES	YES (P1 – P5)

## 5.2.5 Alternative mobile connections:

Mobile technology	Bandwidth	Latency**	Access to MPLS network
<b>Czech Republic (CZ)</b>			
CDMA	up to 512 kbps	≤180 ms	IPSEC
CDMA	up to 1024 kbps	≤180 ms	IPSEC
GPRS/EDGE	up to 80/238 kbps	≤450/500 ms	IPSEC
<b>Poland (PL)</b>			
GPRS/EDGE/UMTS/HSDPA	up to 1.8 Mbps	≤450/500/150/150 ms	Dedicated APN
<b>Slovak Republic (SK)</b>			
GPRS/EDGE/UMTS/HSDPA	do 1,8 Mbit/s	≤450/500/150/150 ms	IPSEC

\*\* The subscriber undertakes and expressly agrees that the values stated here are only the common (for orientation) values of the service in the provider's network, and that as such, the values are not guaranteed to the subscriber by the provider and in case they are not adhered to by the provider, the subscriber shall not be eligible to any sanction, discount, or compensation.

Valid from September 1st 2012.

### 5.3 Connection bandwidth

The connection bandwidth is determined on the physical level of the OSI model. The actual speed is lower by the overhead traffic of the higher levels, or potentially also influenced by aggregation.

### 5.4 Aggregation

The shared connections of GTS IP VPN are provided with aggregation. The available aggregations include 1:50 and 1:20. The aggregation ratio is applied to the entire transmission bandwidth and both data flow directions (downstream and upstream).

## 6 Provisioning of GTS IP VPN

The service will be provisioned and commissioned to the subscriber after a test of the access circuit intended to verify the functionality and qualitative parameters of the circuit and/or after a test of IP connectivity using ICMP pings between end points.

In case the provider is not capable of complying with the term of provisioning of GTS IP VPN, the provider shall be eligible to temporarily provision GTS IP VPN with an alternative line upon consent of the subscriber stated in the GTS IP VPN Service Specification – by a CDMA mobile connection (hereinafter also as “alternative connection”) instead of the shared or the dedicated connection, until full provisioning of GTS IP VPN with the agreed shared or dedicated connection, but not for a period in excess of three months. In such a case, the provider shall not be in default regarding provisioning of the agreed GTS IP VPN, if the provider has temporarily provisioned a service with an alternative connection as of the agreed date of provisioning of GTS IP VPN. The subscriber shall be obliged to accept such service (i.e. with an alternative connection) from the provider for a temporary period of the time and subsequently to accept from the provider the agreed GTS IP VPN with the agreed shared or dedicated connection after it has been provisioned instead of the temporary alternative connection. For the period of temporary provision of an alternative connection, the Subscriber shall be temporarily charged with the recurring monthly fee for the alternative connection stipulated by the valid Pricelist of GTS IP VPN, instead of the agreed recurring monthly fee for GTS IP VPN – shared connection or GTS IP VPN – dedicated connection. GTS IP VPN with an alternative connection is provided without SLA.