



## **Service Description ViPNet.**

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## Table of Contents.

|  |   |
|--|---|
| 1. Basic Service.....                                      | 3 |
| 1.1 Network interconnection point (NNI).....               | 3 |
| 1.2 Description of the VipNet Carrier service. ....        | 3 |
| 1.2.1 VipNet Carrier terminal. ....                        | 3 |
| 1.2.2 VipNet Carrier connection.....                       | 3 |
| 1.2.3 Physical interface.....                              | 3 |
| 1.2.4 Connection bandwidth. ....                           | 4 |
| 1.2.5 VipNet Carrier data link.....                        | 4 |
| 1.2.6 Carrier service options.....                         | 4 |
| 1.2.6.1 Unbundling.....                                    | 4 |
| 1.2.6.2 Dedicated line. ....                               | 4 |
| 1.2.6.3 Ethernet. ....                                     | 4 |
| 1.2.6.4 VipNet Dialup.....                                 | 4 |
| 1.2.6.5 VipNet ADSL/SDSL. ....                             | 5 |
| 1.3 Service Level Agreements.....                          | 5 |
| 1.4 Producing the VipNet Carrier connection. ....          | 5 |
| 1.4.1 General preconditions in terms of construction. .... | 6 |
| 1.4.2 Line unit. ....                                      | 6 |
| 1.4.3 Network termination point. ....                      | 6 |
| 1.4.4 Installation.....                                    | 7 |
| 1.4.5 Customer connection.....                             | 7 |
| 2. VipNet Carrier Service Categories. ....                 | 7 |
| 2.1 Full Router Service. ....                              | 7 |
| 2.2 Shared Router Service. ....                            | 8 |
| 2.3 No Router Service. ....                                | 8 |
| 3. Routing in the VipNet Carrier service. ....             | 8 |
| 4. Security / privacy of the VipNet Carrier service.....   | 8 |
| 5. Service management.....                                 | 8 |
| 6. Service handover.....                                   | 8 |
| 7. Agreement on parameters.....                            | 8 |
| 8. Technical description and interfaces. ....              | 9 |

## **1. Basic Service.**

Drei provides customers a networking infrastructure within the scope of Drei's technical and operating capabilities. By means of this infrastructure and based on IP-protocol, terminals (e.g. routers) obtain access to an IP-based private network via dialup data links (analog or ISDN) or permanent link. In this process, depending on the VipNet Carrier option dialed (see Point 2), the terminals and their configuration either form a constituent part of the service (Full Router Service 2.1) or do not (Shared Router Service or No Router Service respectively, Points 2.2 and 2.3).

The complete traffic of the networking service is transferred by Drei via V-LAN to the carrier, at a network interconnection point (NNI).

In this process, communication is effected solely via the Internet Protocol – this provides any-to-any connectivity exclusively between the customer's access points via the customer's VipNet Carrier service.

The Drei network ensures that access points from different customers cannot communicate with each other under any circumstances (no distribution of other parties' routes, packages only routed between access points of the same customer).

The following standard IP-addresses are used as default mode in the VipNet Carrier, for the IP addressing between the customer router and the Drei backbone, or respectively for management purposes (these are then unavailable for customer-internal addressing):

- 212.152.187.0 up to 212.152.187.255 inclusive, for the carrier services - unbundling, dedicated line and Ethernet,
- 212.152.186.0 up to 212.152.186.255 inclusive, for VipNet dialup connections and
- 172.31.0.0 up to 172.31.255.255 inclusive, for DSL management (applies exclusively to unbundled lines)

However, upon request these IP-addresses can also be made available by the customer. The descriptions of services for the respective carrier services and for the NNI form a constituent part of the VipNet Carrier contract.

### **1.1 Network interconnection point (NNI).**

You will find the exact description and specification of all parameters for the network interconnection point in the Drei NNI description of services.

### **1.2 Description of the VipNet Carrier service.**

#### **1.2.1 VipNet Carrier terminal.**

The VipNet Carrier terminal makes the essential functionality available for the (Local Area Networks) data link. A Drei carrier service is used for the data link of the terminals at the customer sites.

#### **1.2.2 VipNet Carrier connection.**

The VipNet Carrier connection provides the data link between VipNet Carrier backbone and the customer site. The VipNet Carrier connection consists of a carrier service or / and a language line (based on SDH/IP technology); this is set up on the terminal (port) at the customer site (standard interface).

#### **1.2.3 Physical interface.**

According to requirements, the customer's physical interface is provided as a

- 10Base-T (IEEE 802.3i)
- 100Base-TX or 100Base-FX or as
- Gigabit Ethernet (IEEE 802.3ab, IEEE 802.3z or IEEE 802.3z) interface
- S0
- S2M
- E&M
- FXO / FXS interface for language connections, at the existing VipNet Carrier terminal, or at one installed at the customer site.

#### **1.2.4 Connection bandwidth.**

For the most part, the connection bandwidth is pre-defined when the physical interface is decided upon (e.g.: 10BaseT ≡ 10 Mbit/s or S0 ≡ 2 x 64 kbps); in the case of other interfaces, like e.g. X.21, it is decided upon in the proposed solution between the customer and Drei.

#### **1.2.5 VipNet Carrier data link.**

The VipNet Carrier data link is established through configuration of the VipNet Carrier terminals and the Drei network nodes, within the Drei carrier network, between two VipNet Carrier connections; this makes it possible for the customer to communicate between these two connections. The VipNet Carrier service conveys data which are allocated to the respective opposite connection: this is done by using connection references which correspond to the VipNet Carrier protocol, using help from the routing functionalities of the VipNet Carrier terminals.

#### **1.2.6 Carrier service options.**

The selection and dimensioning of the carrier service (connection band width, jitter and delay, CIR, Ethernet Service Class...) shall be the responsibility of Drei.

##### **The options for selection are:**

- Unbundling
- Dedicated line
- Ethernet
- VipNet dialup
- VipNet ADSL/SDSL (Wholesale Service)

##### **1.2.6.1 Unbundling.**

You will find the precise description of the service in the xDSL Description of Services.

##### **1.2.6.2 Dedicated line.**

You will find the precise description of the service in the Carrier Line Description of Services.

##### **1.2.6.3 Ethernet.**

You will find the precise description of the service in the Ethernet P2P Description of Services.

##### **1.2.6.4 VipNet Dialup.**

VipNet dialup enables terminals (e.g. routers) to be connected with the VipNet Carrier Service, via a dialup connection (analog modem, ISDN etc.), and to exchange IP packages with other access points connected to the VipNet Carrier service.

For this purpose, a terminal must dial into the VipNet Carrier service, using the VipNet Carrier call number, and subsequently authenticate itself with user name and password (=account). In this procedure the dialing process must always originate from the terminal at the customer's site (or respectively from the VipNet Carrier router in the case of the VipNet Carrier); the VipNet dialup service is not able to carry out active dialing procedures (solely a dial-in into the service, but no dial-out from the VipNet Carrier service). Only IP packages can be put through to VipNet dialup if this VipNet dialup access point has an active data link with the VipNet Carrier service, at the point in time when the package is sent. If a VipNet dialup access point is not active, the package will be rejected by VipNet Carrier service.

The charge for the data links set up is subject to the customer; it takes the following as its reference point:

- For dialing-in from fixed-network connections within Austria, the reference point is the respective valid VipNet Dialup charge; this is charged with the Service Business.
- For dialing-in from mobile communications networks, as well as from abroad, the reference point is the respective data link fee for a data link to a fixed-line connection in Austria (Vienna). This fee is charged, not by Drei, but by the respective operator.
- When registering, the customer must provide the following global parameters for VipNet dialup:
- VipNet dialup Class C network address (x.x.x.x/24)
- Official Internet domain name

The two highest IP-addresses (x.x.x.253 und x.x.x.254) in the VipNet dialup Class C network are used by the VipNet Carrier Service. This Class C network must be routed at all VipNet Carrier direct accesses; this

is in order that the dialup access points are reachable from the customer network (insofar as no dynamic routing protocol (RIPv2) is used).

If no Internet domain is given in the registration, Drei provides a domain. If so wished, an 'xxx.vipnet.at'-type domain can be issued free-of-charge. However, there is no entitlement to a specific domain name.

In addition, when registering the customer, a list of 'Accounts' is specified. For each 'Account' the following information is given in advance by the customer in the registration form:

- IP-address for this account
- Bandwidth (analog or ISDN 64kbit/s)

The user name and password for each account are generated automatically by Drei and stated in the handover protocol for the service. The IP-addresses for these connections must originate from the "VipNet dialup Class C Network".

Drei makes a master account available to each VipNet Dialup customer; this can be used for locking and unlocking and also changing passwords of the VipNet dial-up accounts, at <http://www.myzone.at>.

At VipNet Carrier the user name, password and IP-address are issued for each site by Drei and configured in the VipNet Carrier router.

For each account, precisely the one address stated in the registration form is routed by the VipNet Carrier service. If a whole network is linked up via one dial-up access point, PAT (Port Address Translation) must be carried out from the terminal (the customer carries the responsibility for the correct configuration of the terminal for Port Address Translation). No dynamic routing protocol is possible via VipNet dialup.

In the case of extension of the service to VipNet Carrier, PAT is included in the scope of the standard configuration.

On dial-up access points, PPP (Point-to-Point Protocol) is used as access protocol, via ISDN or modem. The accounts of VipNet dialup (username@domain and password) are validated through PPP-PAP or PPP-CHAP. It is exclusively IP packages which are conveyed between the VipNet dialup access points. When dialing-in, username@domain must be given as the user name (example: Domain: Hightech.vipnet.at, Username: Max.Hans – configuration of VipNet dialup with Max.Hans@Higtech.vipnet.at). A notice for Windows users: the domain must not be entered into the 'domain' field of the registration dialog.

VipNet dialup can be used, via the customer's analog telephone connections, as well as via mobile phone connections, with bandwidths up to 56 kbps (V.90), via ISDN connections with 64 kbps.

Warning: In the case of VipNet Dialup access points, there is no possibility for a 'back-up in the clouds'!

#### **1.2.6.5 VipNet ADSL/SDSL.**

Here the end-customer receives a normal VipNet dialup account (see Point 1.1.7.4). In addition, he is given clearance for TA-ADSL/SDSL. Regarding the dialup domain, @utadsl (Realm, e.g. customer@customer.vipnet.at@utadsl) is to be attached for dialing-in. There is a choice between the following bandwidths:

|          |          |             |           |           |
|----------|----------|-------------|-----------|-----------|
| 512/128  | 2048/320 | 4096/512    | 512/512   | 2048/2048 |
| 768/256  | 2048/512 | 6144/512    | 768/768   | 4096/4096 |
| 2048/256 | 3072/512 | 2048/384 n. | 1024/1024 |           |

As this option for a line-up is a cooperation with A1 Telekom Austria AG, the latter company continues to charge a monthly basic fee for telephony (apart from 2048/384 n.), in addition to the ADSL/SDSL charges, as well as a single-payment installation fee.

### **1.3 Service Level Agreements.**

For technical and administrative Service Levels please refer to the 'Service Description VipNet Carrier SLA' document.

### **1.4 Producing the VipNet Carrier connection.**

Drei sets up a VipNet Carrier link-up for the customer at each terminal within the country, insofar as this is commercially and technically possible.

#### **1.4.1 General preconditions in terms of construction.**

The establishment of a VipNet Carrier link up requires a set-up area and an operating area at the customer's site; this must be clean, dry, free of dust and sufficiently ventilated. The customer must ensure an operating temperature range from +5°C to +40°C and relative air humidity from 35 to 75% (not condensing).

#### **1.4.2 Line unit.**

Drei installs or integrates (respectively) a line unit (depending on the VipNet Carrier option selected, refer to Point 2) in the set-up area, at a suitable place on the customer's premises, easily accessible for the event of a failure. The line unit consists of a carrier-service terminal (modem, NT-network termination) and VipNet Carrier terminal equipment (router and/or language multiplexer), as well as a dialup modem, necessary for possible Network Management access and with a direct dialing capability (standard: analog; optional: digital ISDN). The line unit may optionally be extended by an ISDN back-up.

The carrier service terminal is a table-top unit, also suitable for wall-mounting. The housing is of plastic, with the following approximate dimensions - width: 30 cm, length: 25 cm, height: 8 cm.

The VipNet Carrier terminal equipment can be provided as a table-top unit or as a 19-inch push-in unit. The size of the VipNet Carrier terminal equipment is directed to customer's requirements: it is typically between the following – width: 30 cm, length: 25cm, height: 8 cm and, (alternatively, as a 19-inch push-in unit) - width: 19 inches, length: 30 cm, height: 4.5 cm, or respectively max. 2 units of height.

The dialup modem is a table-top unit, also suitable for wall-mounting. The housing is of plastic, with the following approximate dimensions - width: 20 cm, length: 30 cm, height: 6 cm. A corresponding dialing connection with a direct dial capability must be made available by the customer, free of charge, in the immediate proximity of the VipNet Carrier terminal equipment (ca. 1.5m) in the form of an RJ45 socket.

ISDN back-up is provided via a push-in card in the VipNet Carrier terminal equipment. One or, in the event of a back-up larger than 2 x 64 kbps, several corresponding ISDN S0 connections with direct dial capability must be provided by the customer, at the customer's cost and responsibility, in the immediate proximity of the VipNet Carrier terminal equipment (ca. 1.5m) in the form of an RJ45 socket; alternatively, it is provided by Drei in the case of the "package service" service option. Any connection charges incurred in the case of back-up are to be carried by the customer in the Self-Service option; in the Flat-Rate and Package-Service options they are part of the charge for the ISDN back-up. The ISDN back-up version, where applicable, is contained in the suggested solution.

The space required for the line unit is to be made available by the customer at an appropriate place. The customer has no entitlement to the provision of a line unit in a particular version.

The power supply (230 VAC) required for the line unit is to be provided by the customer. In the normal case, provision is to be made for each line unit to have its own source of power supply (excepting the case of redundant power supply). In addition, a further power supply is to be made available for necessary error correction measures. The length of the power supply cable is ca. 1,5 m.

If the customer site is in an area of heightened lightning risk, so that the installation of a voltage overload protection is necessary, it is provided by Drei and subject to costs being charged; the customer has to get a potential equalization line and nonlinear resistance arrestors installed for these, at his own cost, by a suitably state-authorized electrical services company.

Drei can also have the assembly of the line unit carried out by appointed third parties.

The line unit made available remains the property of Drei, or respectively that of the company appointed by Drei, unless an agreement has been made to the contrary.

#### **1.4.3 Network termination point.**

The VipNet Carrier connection represents the end of the transmission path for VipNet Carrier network, and thus the network termination point.

The network termination point defines the boundary of responsibility between Drei and the customer. All network equipment in front of the line unit (on the network side) and also the carrier service terminal itself are within Drei's area of responsibility. All the equipment behind the network termination point (e.g. server) is within the customer's area of responsibility: at most, the customer has to implement any necessary changes in configuration.

#### **1.4.4 Installation.**

The VipNet Carrier connection is implemented according to the customary rules for installation (standard installation). The cabling is set up accordingly, with a screened, 4-wired cable, "Surface Mounted"; care should be taken to ensure that there are no interfering fields or noise fields in the immediate proximity of the cabling (e.g. transformer stations, radio apparatus).

Within the building, if the customer wishes to direct the subscriber loop through piping work or cable channels, or if this is necessary due to other reasons beyond the responsibility of Drei (e.g. stipulation by the party with decision-making authority), the corresponding pipework or cable channels must be provided by the customer.

Costs for any necessary protective measures against the influence of other sources of current must be carried by the customer.

#### **1.4.5 Customer connection.**

The customer connects his terminals (hub, router, switch, host, PBX etc.) via corresponding connection cable to the network termination point. Thus access is provided to the VipNet Carrier service. The connection cables required must be provided by the customer.

The customer may only connect up terminals to the line unit which are suitable for the VipNet Carrier service and which are compatible with the electrical and mechanical interface conditions stated in Chapter 3. In a case of doubt the customer must obtain the agreement of Drei.

### **2. VipNet Carrier Service Categories.**

The VipNet Carrier service can be implemented in the following options:

#### **2.1 Full Router Service.**

Drei supplies the complete solution for the corporate network, ranging from the carrier service to any terminals required (e.g. router), maintenance and management. All terminals and accessories (modem, etc.) supplied remain the property of Drei. The service agreements reached by means of the service class (see 1.1.8. Service Classes) are valid for the complete solution. The terminal equipment is integrated into the central Drei management system. All configurations of the terminal equipment are stored in this system and played into the router again in the event of an error.

- Full maintenance of all terminal equipment supplied by Drei, with error correction on site.
- Management integration of all SNMP-capable terminal equipment supplied by Drei, with central archiving of all configuration files, reactive management. In the case of the Full Router Service it is an obligatory requirement that there is a management access point, via outbound management access, with an analog modem or an ISDN terminal adapter respectively. The dialing-in infrastructure (analog or ISDN line) must be provided by the customer at the installation, free of charge and operationally ready.
- For the agreed duration of the provision of service, the implementation of configurations or of changes to them respectively, as well as any extension of the hardware, is only to be carried out by Drei or by third parties appointed by Drei.
- Service assignments attributable to fault on the part of the customer, or of third parties appointed by the customer (e.g. change of configuration), are not included in the standard remuneration; they will be invoiced according to expenditure of resources, at the specialist's hourly rate of Drei.
- Other equipment, software, push-in units or other accessories, for which no service classes are agreed with Drei, are excluded from the service level agreements.
- Drei archives the configuration file of the last change ordered (official set-up); in the case of error this configuration is played in again (if possible, remote from the NOC by means of TFTP, otherwise on site). If the error is thus corrected, the conclusion made is that the error was caused due to changes in the configuration, by the customer or by a third party appointed by the customer, and that correction of the error is thus not contained in the service classes.
- Changes to configuration conducted remotely are not contained in the scope of services and are treated as a new order. Work is invoiced according to expenditure of resources at the respective valid specialist's hourly rate for Drei.

With the Full Router Service there is an obligatory requirement for a management access point, via outbound Management Access, using an analog modem or an ISDN terminal adapter respectively. The dialing-in infrastructure (analog or ISDN line) must be provided by the customer at installation, free of charge and ready for operation. In the case of a dedicated line as a carrier service, with both terminals of the dedicated line in Austria, one management modem is sufficient per data link. In the case of VipNet Carrier connections, implemented via VipNet as a carrier service with Cisco terminals, no management modem is necessary.

## **2.2 Shared Router Service.**

Drei supplies the complete solution for the corporate network, ranging from the carrier service to any terminals required (e.g. routers). The terminals purchased pass over into the property of the customer. The service responsibility of Drei applies to the complete solution; however, the terminals are not integrated into the central management system. The service responsibility of Drei terminates at the interface of the line unit to the terminal equipment. The correction of errors is carried out according to the service class.

## **2.3 No Router Service.**

Drei supplies the carrier services necessary for the Corporate Network solution, without the terminals. The service responsibility of Drei ends at the interface of the line unit to the terminal equipment. For the Unbundling carrier service, it is obligatory that a Drei terminal is installed; this can be used from the carrier as a router.

## **3. Routing in the VipNet Carrier service.**

The VipNet Carrier service exchanges the routes, known in the VipNet Carrier service for this customer, with all the access points of the customer. Thus the routes to the networks behind these VipNet direct access points can be distributed to all other VipNet Carrier access points, via the VipNet Carrier service. RIP V2, BGB or static routing are available as routing protocol.

## **4. Security / privacy of the VipNet Carrier service.**

The VipNet Carrier service ensures that a self-enclosed IP network is provided for each end-customer and for each carrier. Within this network, only the IP-addresses known in the customer network are routed. For a customer network, no routes of other IP networks are visible within the VipNet Carrier service – packages are only ever conveyed within the private network for the customer.

## **5. Service management.**

To maintain the availability of the service, Drei will endeavor to correct as soon as possible any occurring failures. The provision of service includes the correction of all disturbances and failures within the field of responsibility of Drei. The removal of failures and disturbances for which Drei or its vicarious agents are responsible is free of charge.

However, if Drei is called to correct a disturbance and it is ascertained either that there is no error in the provision of the VipNet Carrier service, or the disturbance is the responsibility of the customer, the customer must reimburse Drei for the expenditure incurred, according to the specialist's hourly rate (see Drei General Terms and Conditions of Business).

## **6. Service handover.**

For each access point implemented, the service handover of the VipNet Carrier service is completed when the handover protocol is presented to the customer. This is also the point in time at which the calculation commences for the service level provided by Drei, regarding to the VipNet Carrier access point which is handed over.

## **7. Agreement on parameters.**

Via the VipNet Carrier connection, the Internet protocol IPv4 is available according to RFC 791. Thus the customer has the possibility to use the entire TCP (Transmission Control Protocol: RFC793) and UDP (User Datagram Protocol: RFC 768) protocol suite.

Upcoming IPv6 is basically supported via VipNet Carrier, for detailed information please refer to up-to-date Drei IPv6 support publication.



To use the VipNet Carrier service of Drei, the terminal (e.g. router) must adhere to the relevant Requests for Comments (RFC), particularly RFC 1661 (PPP), RFC 1618 (PPP over ISDN), RFC 1332 (PPP IPCP), RFC 1994 (PPP CHAP), RFC 1990 (PPP multilink), RFC-1122 and RFC-1123 (Host Requirements), and RFC-1812 (Requirements for IP Version 4 Routers). No claim can be asserted in the event of non-adherence to RFC standards or the use of proprietary solutions.

In the Drei IP/MPLS Backbone within Austria, the typical package running time is up to 35 ms. Some operating systems are optimized for transmission in LANs (package running time typically 0.5-3 ms); they thus do not have the full throughput in the case of transmission via WANs (typ. 15-300 ms). So that each system in the customer's private network can reach a high throughput with individual TCP sessions (> 2 Mbit/s per session), certain TCP/IP settings have to be changed in the operating systems – according to the specifications in the RFC 1323 (TCP Extensions for High Performance). The customer is responsible for the necessary changes to the systems. These changes are not carried out by Drei.

## **8. Technical description and interfaces.**

**Connection bandwidth:** 64kbps - STM-64 SDH

**Ethernet:** 10/100/1000 Mbps

**Interfaces** x.21, G.703, G.957

**Ethernet:** 10Base-T (IEEE 802.3i), 100Base-TX (IEEE 802.3u) or 100Base-FX, Gigabit Ethernet (IEEE 802.3ab, IEEE 802.3z or IEEE 802.3z)

**Protocols, MTU size, etc.:** subject to agreement