



## 1 SERVICE DESCRIPTION FOR BUSINESS VPN SATELLITE SERVICE – TERRESTRIAL SHARED

### 1.1 Definition

The Orange Business VPN Satellite Service – Terrestrial Shared provides connectivity to remote Locations where terrestrial based services are inaccessible or highly degraded or as a back-up of terrestrial networks. As noted below, Customer may choose from four (4) types of Business VPN Satellite Service – Terrestrial Shared. Business VPN Satellite Service – Terrestrial Shared is only available for use with an Orange Network Service, which is described in separate Service Description attached to this Agreement. Capitalized terms used and not otherwise defined in this Service Description will have the meanings ascribed to them in the Service Level Agreement for Business VPN Satellite Service – Terrestrial Shared or elsewhere in the Agreement.

There are four (4) types of Business VPN Satellite Service – Terrestrial Shared:

- (a) **Standard Service:** With Standard Service, Customer's satellite bandwidth is shared between multiple Orange customers and multiple remote Locations. Standard Service is offered both on C and Ku band microwave frequencies. The microwave frequency bands are shared between Locations using Internet Protocol Time Division Multiple Access ("IP TDMA") technology. Orange offers a Service Level Objective (SLO) with the Standard Service, as described in a separate document attached to this Agreement.
- (b) **Extended Service:** With Extended Service, Orange provides a managed solution that shares satellite capacity among Customer's remote Locations and the locations of other Orange customers. Extended Service is offered both on C and Ku band microwave frequency. The microwave frequency bands are shared between Locations using IP TDMA technology. Orange offers a Service Level Agreement (SLA) with the Extended Service, as described in a separate document attached to this Agreement.
- (c) **Premium Service:** With Premium Service, Customer's satellite bandwidth is shared between multiple remote Customer Locations, but not with other Orange customers. Premium Service is offered both on C and Ku band microwave frequency. The microwave frequency bands are shared between Locations using IP TDMA technology. Orange offers an SLA with the Premium Service, as described in a separate document attached to this Agreement.
- (d) **Back-Up Service:** Back-Up Service is equivalent to Standard Service, but is limited to Ku microwave frequency band. The Ku band microwave frequency is shared between Locations using IP TDMA technology. Back-Up Service provides a secondary satellite access node used for backing-up terrestrial or satellite networks. Orange offers the same SLO for Back-Up Service as it does for Standard Service, as described in a separate document attached to this Agreement.

### 1.2 Overview

The Service is provided by Orange on a satellite based TCP/IP network with a star topology (i.e. a single hub Location to one or more remote Locations). A Time Division Multiplexed (TDM) broadcast downstream channel from a central hub Location is shared by a number of remote Locations. Hub and remote Location technologies are based on satellite equipment provided to Orange or Customer by third parties, some of whom may be an intended third-party beneficiary of the Agreement solely with respect to the Service. The remote Locations transmit to the hub on shared upstream carriers using Deterministic-TDMA (D-TDMA) based on dynamic time plan slot assignment generated by the protocol processor. The Business VPN Satellite Service - Terrestrial Shared is provided by Orange from multiple teleports and satellite coverage zones. The asymmetric full duplex transmission is based on:

- TDM in the hub to remote Location direction (outbound, downstream or forward carrier) based on broadcast;
- D-TDMA in the remote Location to hub direction (inbound, upstream or return carrier);
- Dynamic bandwidth provisioning (bandwidth-on-demand);
- DVB-S2 standard together with Automatic Code Modulation (ACM);
- TCP acceleration in both directions; and
- Quality of Service (QoS) control.

The Business VPN Satellite Service - Terrestrial Shared provides fixed and dedicated capacity for IP applications via a network of two-way satellite terminals that operate in a star configuration.

Bandwidth is made available independently in the hub to remote Location direction (outbound, downstream, or forward carrier) or in the remote Location to hub direction (inbound, upstream, or return carrier) or in both directions at the same time. A bi-directional call between two remote terminals implies the use of bandwidth between Terminal 1 and the hub and between the hub and Terminal 2, and vice-versa. In such case, twice the amount of satellite capacity is used by a double satellite hop.

The forward carrier is a TDM-based transmission. For the Premium Service, the relevant forward carrier or subpart of it is devoted to the Customer network. This means that the entire capacity in the forward carrier or subpart of it is reserved for Customer and is independent from other Orange customer networks. For the Standard, Extended, and Back-Up Services, the forward carrier is shared among multiple Orange customers.

The return carrier link is a D-TDMA based transmission. Each Customer network can run with a single or multiple return carrier configuration depending on the network sizing requirements. For Premium Service, the return carrier or subpart of it is fully devoted only to a single specific Customer network. For the Standard, Extended, and Back-Up Services, the return carrier is shared among multiple Orange customers.

### 1.3 Service Features and Functions

The Business VPN Satellite Service – Terrestrial Shared is provided with a range of available forward carrier and return carrier sizes from which Customer may choose. The satellite space segment is dedicated to Customer for the Premium Service, but shared among Customer's remote Locations for the same VPN using the Orange Network.

Customer may configure the Business VPN Satellite Service – Terrestrial Shared Locations with dynamic Committed Information Rate ("CIR") on available bandwidth or with no dynamic CIR. The Locations with dynamic CIR will take priority over other Locations. In addition to the transmission delay associated with satellite access services, contention on the space segment may generate delay variation (i.e. jitter), and an overhead is introduced on the return direction of data (i.e. from the remote Location to the hub Location), which also will affect transmission. CIR is provided to Extended, Premium, and Back-Up Services.

### 1.4 Optional Service Features

Business VPN Satellite Service – Terrestrial Shared is fully compatible with most of characteristics of the Orange Network. The following optional service features may be available with Business VPN Satellite Service – Terrestrial Shared upon prior written approval by Orange, which will be based on specific tests and validations conducted by Orange:

- A contingency option of bundled Satellite Equipment (excluding the antenna), where the primary Satellite Equipment is secured by the secondary indoor unit and outdoor unit when failure occurs on the primary Satellite Equipment;
- Internet access may be configured on a non-satellite connected Location;
- IPSec over the Orange Network;
- Multi VPN;
- Mission-critical sites; and
- Resiliency service options.

### 1.5 Network Service Features Not Supported

Except as otherwise agreed upon by Orange in writing, Network Service options other than those identified in Clause 1.4 (Optional Service Features) above are not available with Business VPN Satellite Service – Terrestrial Shared, including:

- ATM access;
- Integrated Internet access on the Customer Edge Router (as defined in the IP VPN Service Description) connected through the satellite link; and
- Multiprotocol Support (e.g. SNA, X.25, APLS, MATIP, DecNet IV, and IPX).

### 1.6 Security and Warranty Disclaimer

The Satellite Equipment includes an embedded encryption chip (e.g. 3 DES encryption), which may be activated only upon Customer's request and subject to an additional Charge. Notwithstanding the foregoing, however:

NEITHER ORANGE NOR ITS THIRD-PARTY SUPPLIERS WARRANT OR GUARANTEE THE SECURITY OF CUSTOMER'S SATELLITE TRANSMISSIONS USING THE ENCRYPTION CHIP OR OTHERWISE. CUSTOMER ACKNOWLEDGES THAT UNAUTHORIZED INTERCEPTION OF SATELLITE TRANSMISSIONS MAY OCCUR AND ORANGE WILL NOT BE LIABLE FOR ANY SUCH INTERCEPTION OR OTHER BREACH OF SECURITY RELATING TO ANY SATELLITE TRANSMISSION. CUSTOMER WILL BE SOLELY RESPONSIBLE FOR ITS OWN NETWORK SECURITY POLICY AND SECURITY VIOLATION RESPONSE PROCEDURES.

**1.7 Acceptance Testing**

Upon completion of the physical installation of the Business VPN Satellite Service – Terrestrial Shared, Orange will commence acceptance testing to confirm that all aspects of the Service are operational with the terms set forth in this Service Description.

**END OF SERVICE DESCRIPTION FOR BUSINESS VPN SATELLITE SERVICE – TERRESTRIAL SHARED**