

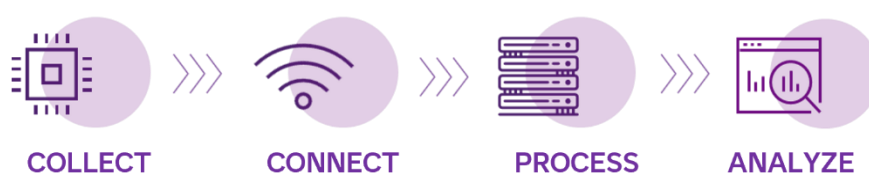
M2M (MACHINE TO MACHINE)

TELEFÓNICA PRODUCTS

PRODUCT DESCRIPTION

1. M2M CONNECTIVITY

M2M (Machine to Machine) is a connectivity solution that allows direct communication between machines without the need for human intervention. The (terminal) device, containing an active SIM card, captures an event, and the network forwards it to a specific application/server, which transforms this captured event into information, as can be represented in the scheme below:



1.1 ADVANTAGES OF THE SOLUTION

M2M enables the automation and optimization of all data collection and processing processes obtained for decision-making. With this automation, your business gains in agility, failure control and effectiveness in processes, leaving employees with more time to dedicate to strategic actions.



With the constant expansion of operations in the IoT market, vivo has different types of network access technology, such as 3G, 4G and Low Power Wide Area (LPWA).

3G and 4G networks guarantee optimal performance in solutions with high data transfer rates and continuous transmission, with lower latency for obtaining information in real time.

In addition, we offer Low Power Wide Area (LPWA), NB-IOT and LTE-M, which are dedicated networks for data transmission of IoT solutions that require wide coverage and longer device life, maintaining the security standards of traditional networks.

	NB-IoT	LTE-M	3G	4G	5G NSA
 DATA RATE	UL up to 20Kbps	UL up to 250Kbps	UL up to 100Kbps	UL up to 1Mbps	UL up to 10Mbps
 FREQUENCY	700 Mhz (b28)	1800 Mhz (b3)	850 Mhz (b5)	700 Mhz (b28) 1800 Mhz (b3) 2600 Mhz (b1)	2.3 Ghz (b40)
 LATENCY	1.6 – 10s	0.3 – 4s	100-500ms	30 – 50ms	20 – 30ms
 PENETRATION (-)	164dB	160 – 164dB	120-130 dB	130-140	100 – 120dB

1.2 PORTFOLIO M2M

Vivo Companies has a **diversified portfolio** of data packages, ranging from 50KB to 500GB per line, meeting all consumption profiles. In the event of use over the limit of the contracted package, there will be a charge for everyone (1) byte surplus, with an amount proportional to the MB price.

The blocking of surpluses may be carried out by the **NAME-CUSTOMER** through settings on the line management platform or through alarms and limits also configured on the platform

Dynamic Sharing

The Vivo M2M product data packages have dynamic sharing, where each line has an individual data allowance (package) and price configuration, but with total sharing (pool) of data allowances between lines belonging to the same billing account (limited to four hundred and fifty thousand lines per billing account) and the same portfolio and data allowance.

Dynamic sharing is only compatible with lines that have a status of "PENDING ACTIVATION/ACTIVE." If any other status description is presented for the line(s), it/they will not be eligible for allowance granting and, therefore, will not be counted for sharing.

The object of the contracted services includes various packages offered by VIVO, considering the M2M Portfolio COM INTERAÇÃO HUMANA 3/4/5G and the M2M 3/4/5G Portfolio.

Dynamic sharing is available to the customer, who can decide whether or not to use it. The service will only be allowed between lines from the M2M COM INTERAÇÃO HUMANA (POS) portfolio with M2M COM INTERAÇÃO HUMANA 3/4/5G and M2M SEM INTERAÇÃO HUMANA with M2M 3/4/5G. Therefore, if different portfolios are contracted, separate data pools will be created.

To share data allowances between M2M COM INTERAÇÃO HUMANA (POS) with M2M COM INTERAÇÃO HUMANA 3/4/5G and M2M SEM INTERAÇÃO HUMANA with M2M 3/4/5G, the customer must have contracted at least one package corresponding to the portfolio ending in "3/4/5G" and have a line with

PENDING ACTIVATION/ACTIVE status. The added allowances will be available in the sharing pool in the next billing cycle.

Kite Platform

With Vivo M2M, customers have access to the most robust management platform on the market to manage, monitor and analyze data about the connectivity of their devices. The Kite Platform allows greater visibility and control of M2M SIM Cards, providing management and reduction of operating costs, customized alarms, location through antenna triangulation, and other functionalities that provide efficiency for the operation.

Recognized for the tenth consecutive year as a leader in Gartner's Magic Quadrant, which evaluates vendors for managed connectivity and industry expertise, Kite Platform provides a variety of capabilities that enable data analytics for decision-making, new insights, security tools, self-care, and localization.

Security:

- Authorized IMEI Detection and Control;
- Detection of changing the location of an equipment;
- Prevention of cyberattacks and spam, using private APN.

Cost control:

- Data-package sharing;
- Rules for alarming and authorizing additional spending;
- Prevention of use of unauthorized services (voice, SMS and international roaming).

Availability:

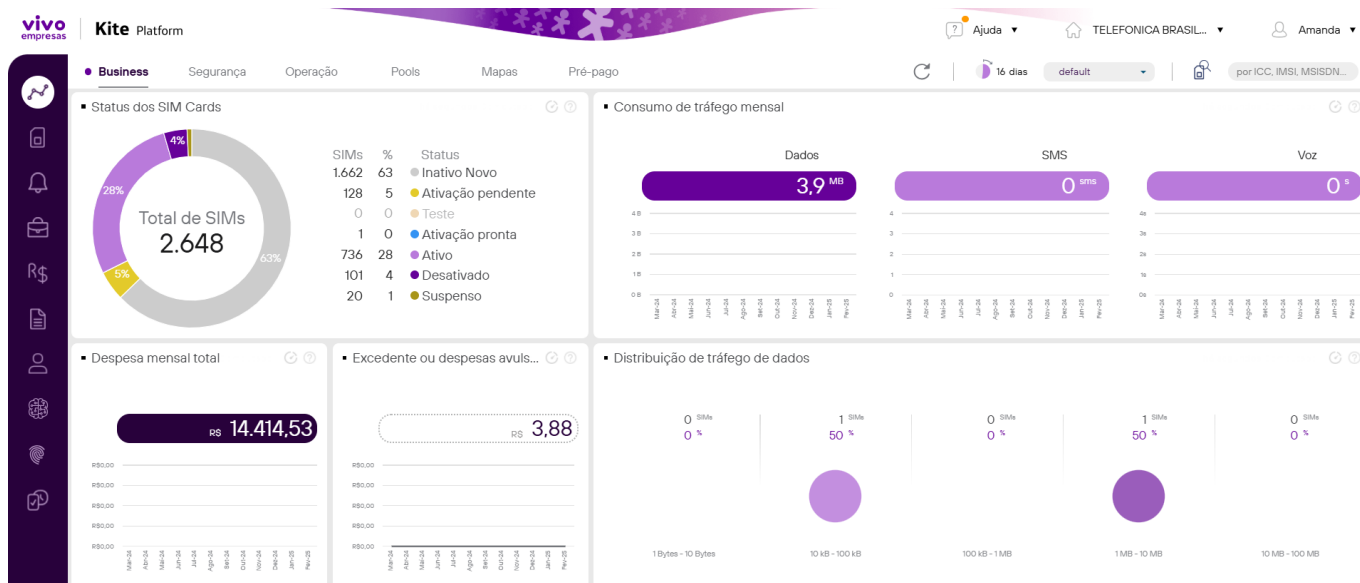
- Redundant dedicated infrastructure;
- Coverage Backup (3G operation);
- After Sales Support with provisioning access to accelerate troubleshooting.

Management:

- Full control of SIM inventory;
- Activation and deactivation of SIMs;
- Remote control of SIMs with autonomous diagnosis on the status of the lines;
- APIs for integration between systems;
- Heatmap;
- Managing permissions for users;
- Analysis of data and insights through various dashboards and reports.

Kite Platform Interface

The graphical interface of the **Kite Platform** was developed intuitively with the ease of everyday life in mind. From its home screen, it is possible to observe a structured summary in different dashboards with information on consumption, security, use of the data package and concentration of SIM Cards by region:



When accessing the **Inventory** module, the data visualization can be configured best for each user, showing information considered of greater relevance, such as identification of SIM Cards, status, traffic controls, and connection information, among others.

Kite Platform

Todos: 2.648 SIMs

Mostrar seção de filtros

por arquivo | por ICC, IMSI, MSISDN...

Selecionar todos | Dados de exportação | Operações com arquivos | Colunas

	Informação SIM: Número de ICC	Parâmetros de rede		Informação de dispositivos: Número de IMEI	Consumo de tráfego mensal		Despesa individual: Total excedente (*)	Grupos: Plano comercial	País	Op
		Número de MSISDN	Status		Consumo Dados (*)	Consumo SMS (*)				
								SC Ri 20 MB VIVO ...	REPUBLICA DA ...	SKT...
								SC M2M 100 MB DL...	BRASIL	Vivo
								SC M2M 1 GB DIN+...		
								SC M2M 100 MB DL...		
								SC M2M 50 MB DL...		
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								SC M2M 50 MB DL...		
								SC M2M 50 MB DL...		
								SC M2M 8 MB DIN...		
								SC M2M 8 MB DIN...		

Atribuir | Alterar | Ativar | Desativar | eSIM | Rede | Bloqueio | Cancelar |

SIMs por página: 50 | Anterior | 1 de 53 | Próximo

1.3 OPTIONAL SERVICES AND FACILITIES

In addition to hiring a data package by SIM Card, you can optionally hire other services from the portfolio to compose a complete solution for your business needs.

Single Voice Service

Individual voice service is available per line and charged per minute of call made. Currently, it allows local calls, such as VC1, in addition to VC2, VC3 and National Roaming calls. Hiring the Voice service also enables the CSD (Circuit Switched Data) connection, a "mobile digital dial-up" connection widely used for redundancy and charged as Voice per minute.

Separate SMS

Separate SMS is available for contracting, with billing per message sent; the receipt is free in the national territory. In this modality, it is possible to send P2P (Peer-to-Peer Short Message Service) messages with up to 150 characters.

Kite Message

In this option, SMS sending for large-scale use (1,000 to 10 million SMS franchises) can be contracted. Messages are sent from an application to all active terminals on the Kite Platform, enabling SMS sending through the platform. In this modality, it is possible to send A2P (Application-to-peer Short Message Service) and P2A (peer-to-application Short Message Service) messages, with MT (Mobile Terminated) sending only for Vivo line bases. Contact us for commercial technical analysis.

Internacional Roaming

International roaming in M2M allows companies to connect devices in several countries without changing their SIM cards. In this way, it is possible to maintain communication even in places outside the Vivo network. The services are priced individually and according to use.

Data: charge per MB used;

SMS: charge per message sent;

Voice: charge per minute of call made or received.

Accounting Facility

All information relevant to the customer's daily life is exposed directly on the Kite platform, in the dashboards, inventory or reports. Information such as the user's identity, the nature of the service delivered, when the service starts and when the connection ends can be received. If necessary, Vivo Companies will make the Accounting information available via VPN; the detailed access records will be delivered in real time.

Integration via API

Several APIs (Application Programming Interface) integrate the product's functionalities into the customer's systems as part of the Kite Platform tools, enabling the simplified management of high-volume SIM cards.

1.4 PRIVATE APN

An APN (Access Point Name) defines the traffic route from your mobile device on the Vivo Companies network to its destination on the customer's network. We are prepared to create APNs according to the customer's need. Here are some advantages:

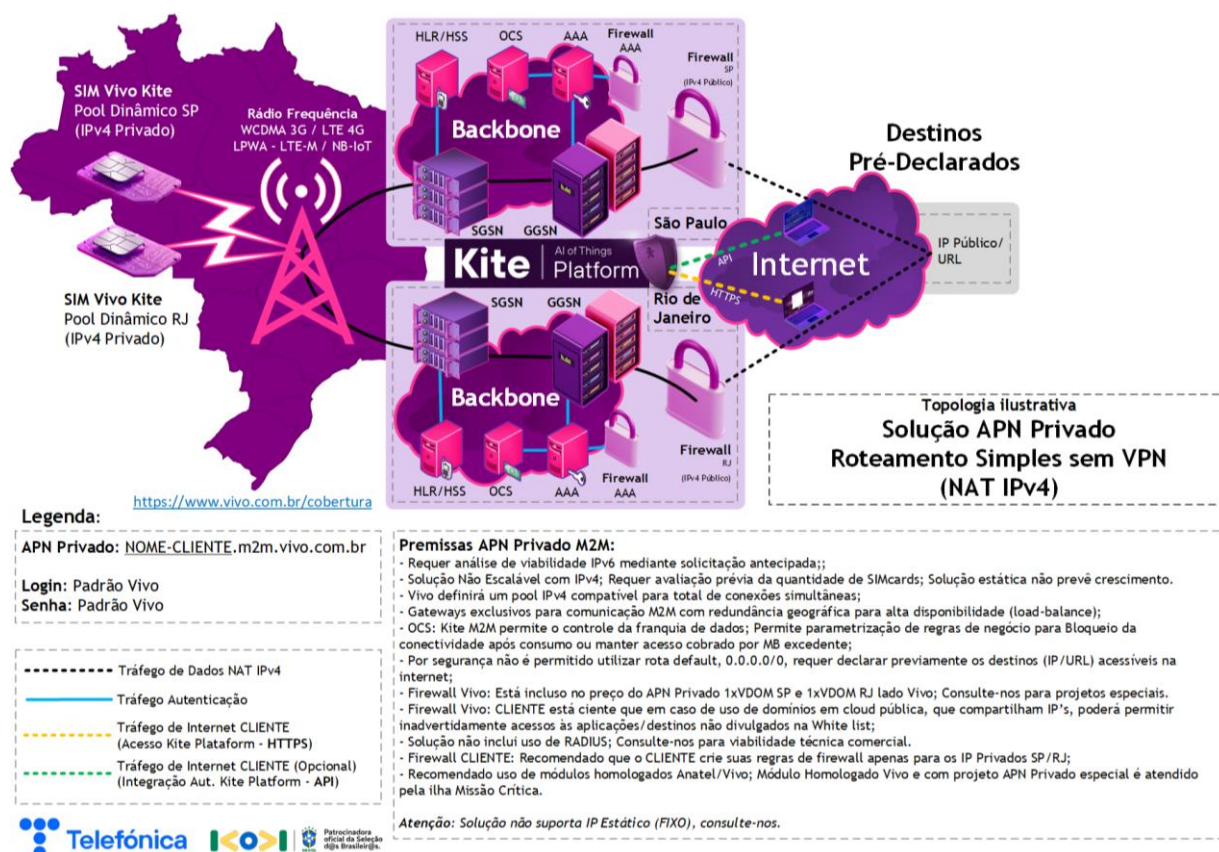
Security: Private APN creates a route for data traffic to be routed directly to the customer's IP network. This means that the devices do not share public data routes, which ensures complete control of access from the devices to internal applications and company resources.

Stability: Information circulates between devices and back-end systems, ensuring stability and improving the user experience, especially in real-time applications

Controle de custos: It is possible to apply usage policies preventing access to unauthorized destinations. Understanding that security is essential in the flow of information trafficked over the internet, the configuration of this resource is mandatory when contracting Vivo Companies' M2M. For this reason, the creation of the APN has no additional cost to be configured, except when it requires additional customizations in other network elements and service.

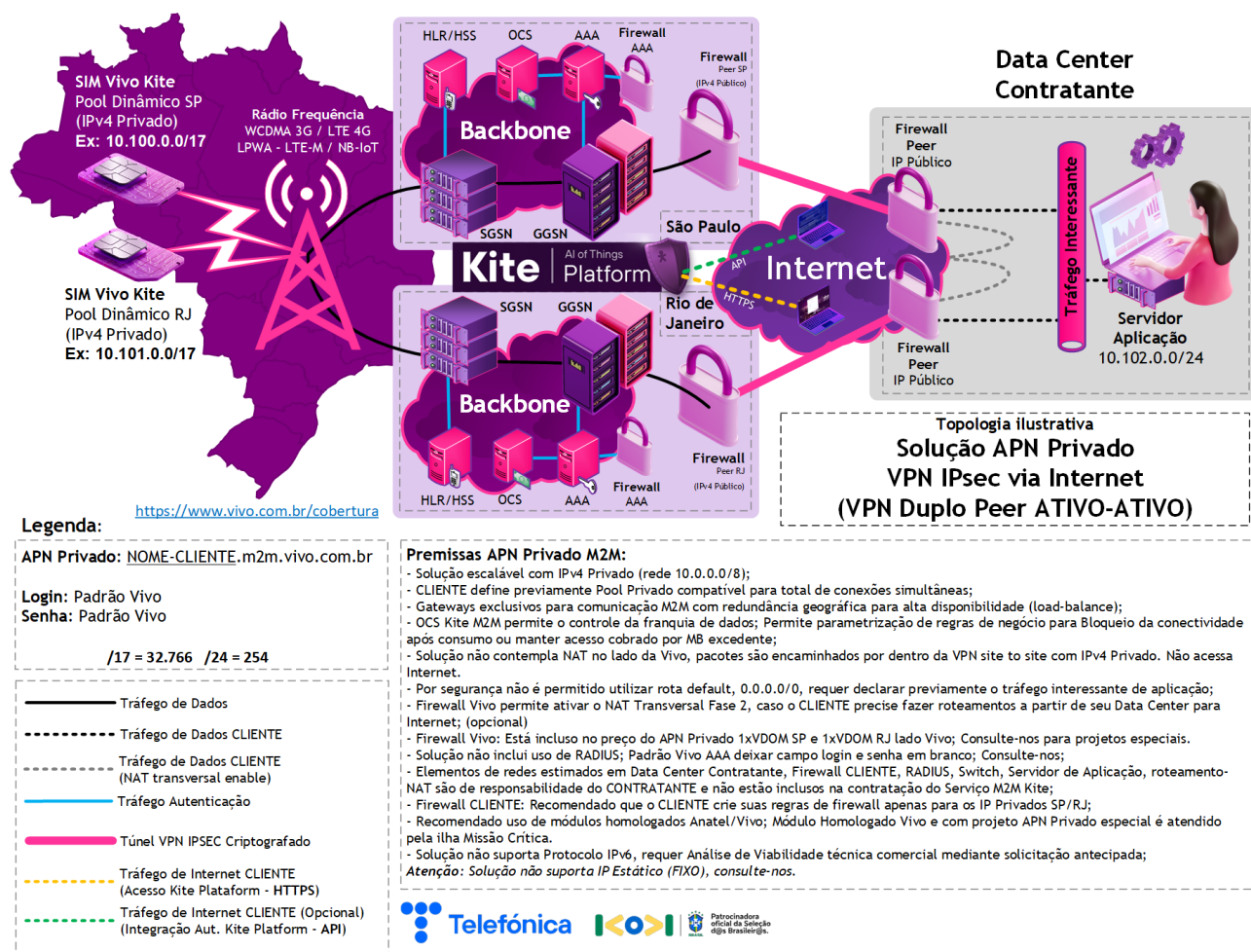
APN Private

Routing APN: Non-scalable IPv4 solution; By forwarding packages to the IPs or Domains of the customer's infrastructure on the Internet, only pre-declared destinations can be accessed, avoiding surplus charges for improper data transmission. The solution uses Dynamic Private IPv4 technology by NAT (Network Address Translator) with a Firewall system.



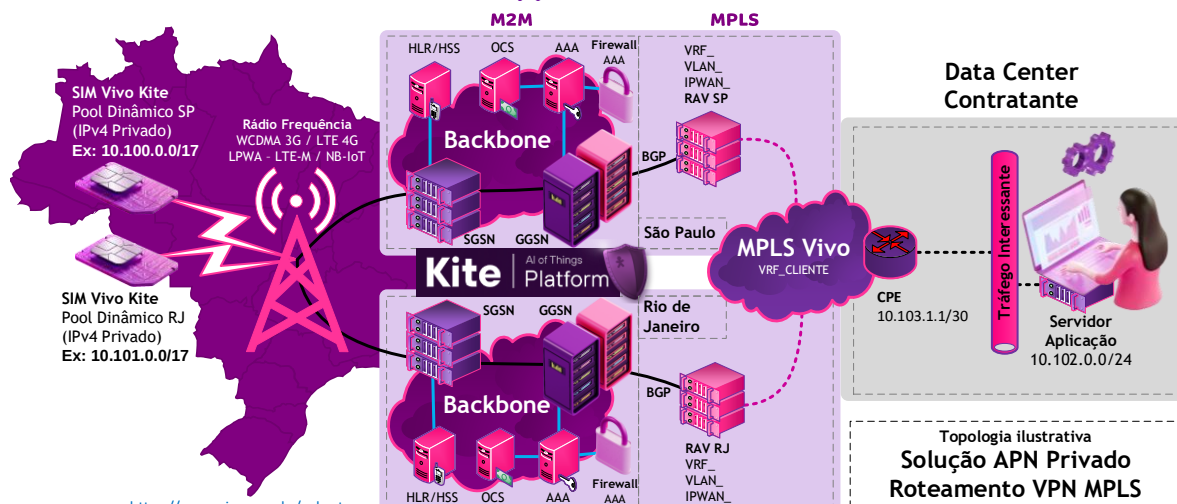
APN IPSec

Scalable solution that uses Private IPv4 inside IPsec VPN established via Internet between Vivo and **NAME-CUSTOMER** peers, solution provides security for data transmissions using AES encryption, SHA authentication to ensure high security in information traffic over the Internet. In this Private APN, there is the concept of exciting traffic, where the authorized subnets (Application Servers) to communicate with the remote device (Gateway with M2M Kite SIM card) are pre-declared; the operation of IPsec is divided into two phases, in the first there is negotiation between the peers and in the second the encryption and transmission of data; Solution allows additional customizations, please contact us.



APN MPLS

A scalable solution uses Private IPv4 for routing through MPLS VPN in VFP exclusive to the CUSTOMER's Vivo MPLS concentrator point (new or existing). This particular project provides for the contracting of the MPLS Link(s) + Special M2M Interconnection Project; It presents better latency because it does not use the internet medium for package routing; it allows an additional MPLS concentrator point management layer. MPLS project not included in this Proposal. Solution allows additional customizations, please contact us.



Legenda: <https://www.vivo.com.br/cobertura>

APN Privado: NOME-CLIENTE.m2m.vivo.com.br

Login: Padrão Vivo
Senha: Padrão Vivo

/17 = 32.766 /24 = 254

Tráfego de Dados
Tráfego de Dados CLIENTE
Tráfego Autenticação
Link Físico MPLS X Mbps
Link Lógico MPLS X Mbps (ID=Atributo M2M, sem entrega de router)



Premissas APN Privado M2M:

- Solução escalável com IPv4 Privado (rede 10.0.0.0/8);
- CLIENTE define previamente Pool Privado compatível para total de conexões simultâneas;
- Gateways exclusivos para comunicação M2M com redundância geográfica para alta disponibilidade (load-balance);
- OCS Kite M2M permite o controle da franquia de dados; Permite parametrização de regras de negócio para Bloqueio da conectividade após consumo ou manter acesso cobrado por MB excedente;
- Solução não contempla NAT no lado da Vivo, pacotes são encaminhados por dentro da VPN site to site com IPv4 Privado. Não acessa Internet.
- Por segurança não é permitido utilizar rota default, 0.0.0.0/0, requer declarar previamente o tráfego interessante de aplicação;
- Solução não inclui uso de RADIUS; Padrão Vivo AAA deixar campo login e senha em branco; Consulte-nos;
- Elementos de redes estimados em Data Center Contratante, CPE, Switch, Servidor de Aplicação, roteamento e cabeamento interno são de responsabilidade do CONTRATANTE e não estão incluídos na contratação do Serviço M2M Kite;
- Recomendado uso de módulos homologados Anatel/Vivo; Módulo Homologado Vivo e com projeto APN Privado especial é atendido pela ilha Missão Crítica.
- Solução não suporta Protocolo IPv6 e IPsec; Requer Análise de Viabilidade técnica comercial mediante solicitação antecipada;
- Solução permite customizar outra rota por VPN IPSEC Internet por Firewall (simultâneo mesmo APN Privado), consulte-nos

Atenção: Solução não suporta IP Estático (FIXO), consulte-nos.

Premissas MPLS:

- Requer Estudo de Viabilidade Técnica MPLS-M2M; Capacidade RAV para o Tráfego solicitado;
- Pool Privados serão divulgados pelos BGP existentes GGSNs-RAVs;
- 1 ID_Vantive COM Atributo M2M, sem entrega de roteador, somente configuração lógica RAV MPLS SP (TATUAPÉ), 1 (uma) VRF por APN;
- 1 ID_Vantive COM Atributo M2M, sem entrega de roteador, somente configuração lógica RAV MPLS RJ (BARRA), 1 (uma) VRF por APN;
- 1 ID_Vantive de entrega dos Links (Concentrador), SEM atributo M2M;
- Desenho Projeto Técnico (PT) MPLS e validação com planejamento EV-ATP;
- Envio de Proposta Técnica Comercial Específica Projeto MPLS.

Important

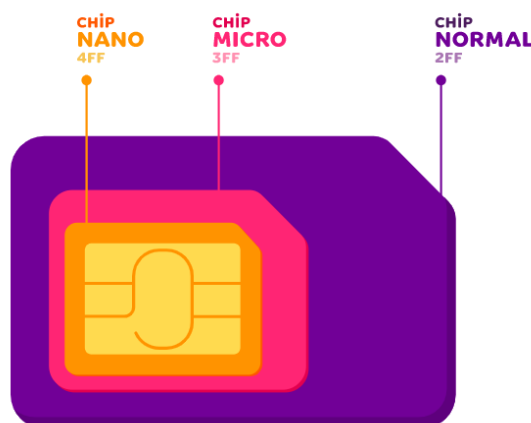
- The M2M SIM Card does not access the Internet; it only forwards packages to the customer's concentrator inside the VPN through the Internet;
- For routing through dedicated Vivo MPLS VPN, please contact us;
- Simple session authentications are done in Vivo Companies' AAA (Authentication, Authorization and Accounting);
- Standard Private APN creation deadline twenty (20) business days, consult us for special projects. Solution with MPLS refers to the particular project deadline in the specific service proposal;
- The customer must have the compatible infrastructure to create the private APN; if not, consult us for commercial and technical feasibility.

SIM Card

We offer exclusive SIM card models for the M2M/IoT segment, with electrical profiles designed to ensure the best functioning of your devices.

It is possible to choose between the options:

- Standard size (2FF), simplified or robust (plastic or ceramic, resistant to 105°C);
- Simplified or robust micro size (3FF);
- Triple cut (detachable 2/3/4FF sizes).



4. CONDITIONS OF SERVICE AND SUPPORT

Service Structure

Vivo Companies will provide NAME-CUSTOMER with the following service structure:

Business Manager: They are responsible for meeting the bill nationally to define business strategies and identify relationship opportunities. They offer advisory and specialized services to enhance and improve your company's communication needs. Main responsibilities: to present current portfolio of devices, negotiate packages and tariffs, negotiate new projects, inform on products and services, inform on contracts, and work on continuous improvement in the quality of services.

Pre-sales Solutions Consultant: They are responsible for working with Business Managers in negotiations and projects requiring a specialized product and involving interaction with internal areas of Vivo Companies to make the project viable.

Relationship Consulting: Compliance with requests from the account administrator, available 7x24, in all states through the number 0800 015 1551 option 1 (Móvel) / option 1 (M2M) or 10315, which can be called from anywhere in Brazil. Vivo Companies' service center follows the service rules determined by ANATEL.

Critical Mission: Specialized service to the administrator's requests registered for a particular project and ANATEL/VIVO-approved module. Subject to consultation of availability of specialized personnel in the special Mission Critical requirement, therefore, requires project-by-project evaluation.

The Vivo Companies network, including all service platforms, is monitored uninterruptedly 24 hours a day, seven days a week. A state-of-the-art monitoring system supervises the various elements of the network and can identify any anomalies in their operation. This allows quick and effective action to solve any problems quickly, thus ensuring the greatest availability and the best quality of the service provided.

Associated with the monitoring system, systems that evaluate the performance of the various network elements constantly collect statistical information, allowing their performance analysis.

This analysis can identify the occupation of network resources (central, ERBs, platforms, etc.) and define actions to expand capacity and redirect traffic, always seeking to maintain the use of such resources, as provided for in the project.

Thus, the constant performance of these analyses avoids congestion in the network, ensuring service provision with the required quality.

As described, the Vivo Companies network is monitored by a state-of-the-art system capable of supervising all its network elements. In this case, all existing service platforms responsible for implementing the applications provided in this proposal are likewise integrated into this system.

Thus, in the same way that the performance of network elements is monitored and evaluated, the performance of applications and services is also continuously evaluated to identify possible performance drops. In such events, corrective actions are taken immediately, aiming to minimize the impact on the service user and maintain quality at its expected levels.

Concept of Vivo Network Unavailability

Interruption of the service provided by the contractor' means the occurrence that results in the unavailability of Vivo's network, making it impossible for the user to use the service in a generalized way.

The basic condition for us to consider is that the Vivo Companies network is interrupted/inoperative when several neighborhoods simultaneously present unavailability of the service by the customer.

Vivo Network Availability Index

Vivo Companies' network will be available twenty-four (24) hours a day, seven (07) days a week and three hundred and sixty-five (365) days a year to access the customer's data transmission, in compliance with the rules and regulations of ANATEL (National Telecommunications Agency).

We clarify that ANATEL requires a network availability index of 95%; however, Vivo Companies is committed to guaranteeing the Customer a Network Availability index of 97.7%

Term For Failure Recovery

We reiterate that Article 17 - Response rate to the user, of Resolution 335 of April 17, 2003, of the Personal Communication Service Quality Indicators Regulation – PCS (ANATEL), provides that the service provider's response period for complaints received by the customer must be up to five (05) business days. However, Vivo maintains a response period of up to two (02) business days, except when the cause is related to the exceptions mentioned in the item below.

Exceptions For Application of Sanctions

The interruption/unavailability of the service caused by acts of God or force majeure, or even by atmospheric effect, due to failure in the equipment/applications of the customer or third party hired by the customer, due to an emergency, due to technical or safety abnormalities of the customer's facilities, and also due to tests, adjustments or corrective and preventive maintenance in the Vivo Companies network, will not be considered for the purpose of applying sanctions.

Vivo Network Maintenance Window

Vivo Companies reserves the right to carry out the scheduled interventions or corrective maintenance on the network from 00:00 to 06:00 without prior notice to the customer. Considering the characteristics of the receptive service of Vivo Companies, when the customer contacts the Vivo Companies Relationship Center through service channels 10315 or 0800 015 1551, if it has a record of any intervention or maintenance of any kind, at the time of contact, the representative of Vivo Companies will inform the customer of the cause of the problem and the forecast of solution.