

Cabo Verde

1 Key Features

The Republic of Cabo Verde comprises an archipelago of 10 volcanic islands in the central Atlantic Ocean about 570 kilometres distant from the West African tip of the continent, and covering an area of just over 4,000 square kilometres (Figure 1.1)¹. With a total population of about 520 000 in 2015, all but one of the islands is inhabited, with the largest island being Santiago, with just over 50% of the total population, in which the capital, Praia, is situated. There are slightly more Cabo Verdians living outside the country.

Figure 1.1: Map of Cabo Verde



Although lacking in natural resources, Cabo Verde is one of the most developed countries in Africa, with a GNI per capita of USD 3,290 in 2015, and a GDP of about USD 1.9 billion. About 50% of its export income is generated by the fishing industry. Cabo Verde's strategic location at the crossroads of mid-Atlantic air and sea lanes has been enhanced by improvements at harbours, and international airports.

In 2008, Cabo Verde graduated to middle income status and it has been a stable representational democracy since the 1990s. Cabo Verde is recognised for its good governance in Africa, having received the third-highest ranking for governance performance in the 2015 Mo Ibrahim Index of African Governance (IIAG), out of 52 countries (after Mauritius and Botswana).

Portuguese is the official language and the literacy rate is about 87%. In 2015, 23% of the Cabo Verdean population had either attended or graduated from secondary schools while 9% of men and 8% of women held a bachelor's degree or had attended universities.

¹ <http://noticias.sapo.cv/info/artigo/1238715.html>

2 Connectivity Indicators

	Year	Total	Penetration (as a % of population)
Population		529,000	
Mobile Subscriptions (SIM cards)		624,947 (-3%)	118%
Internet Users		312,940 (-14%)	59%
Broadband Subscriptions, mobile		35,553 (-16%)	6.7%
Broadband Subscriptions, fixed		14,994(-13%)	
International capacity in use		5.75 (Gbps)	11 (Kbps/capita)
AS Numbers		3	
IP addresses (v4/v6)		34.304	
ccTLD Domain Names registered		1.400	

Sources:

To be included in table: fixed line and 3G usage and fixed wireless subscribers.

Fixed wireless Subscribers (WiFi)	700	
3G coverage (population)	94%	55%
Fixed Lines	59,249	11%

When the communications sector was liberalized in 2005, a competitor to the incumbent operator entered the market, accelerating the penetration of services, and with the arrival of the WACS submarine cable providing much more international capacity, broadband services expanded substantially.

Aside from the fixed ADSL service, 3G Internet access is provided by the two mobile operators, and there is one small ISP providing service via WiFi in Santa Maria on the Ilha do Sal. 4G/LTE services have not yet been launched. OpenSignal maps reports¹ an average 3G download speed of 1.7Mbps.

ANAC estimates that there were 312,940 Internet users at the end of Q2 2016, of which 84% access the Internet through a 'small screen' mobile phone device while 11% access via a 'large screen' tablet or dongle device, 5% via ADSL and 0.2% via the Wifi provider in Ilha do Sal.

VoIP is gaining in popularity, increasing from 32,000 minutes in Q2 last year to 166,000 minutes in Q2 this year, however this is still relatively low compared to the 2 million minutes in international outgoing calls and 13 million incoming calls.

ANAC also tracks the number of leased lines, which dropped by about 8% compared to Q2 last year, to 488 (of which 36 were circuits to other providers and 452 as retail circuits).

¹ <http://opensignal.com/networks/cabo-verde/cvmovel-cobertura>

3 National ICT Policy & Regulatory Frameworks

3.1 Authorities

ICT Policy Agency	Direccao Geral das Comunicacoes ANAC, the Agência Nacional de Comunicações (National Communications Agency http://anac.cv)	ANAC, the Agência Nacional de Comunicações (National Communications Agency http://anac.cv) is the authority responsible for telecom and internet services, TV, and spectrum. ANAC has also operated the domain name registry for the .cv ccTLD since 2006 (http://dns.cv).
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Association for Progressive Communications (APC) <http://access.apc.org>

National Regulatory Authority	National Communications Agency (ANAC)	Comments
Universal Service Agency	USA Name (or operated by regulator)	Comments
ccTLD registry	Name	Comments
ICT Statistics agency(ies)	Name(s)	ICT Statistics gathered
Radio Spectrum Management Agency	Name	Comments

[1 http://www.governo.cv/index.php/rss/6277-governo-aprova-estrategia-nacio...](http://www.governo.cv/index.php/rss/6277-governo-aprova-estrategia-nacio...)

[2 http://anac.cv/index.php?option=com_content&view=article&id=62&Itemid=56...](http://anac.cv/index.php?option=com_content&view=article&id=62&Itemid=56...)

3.2 Policies and Regulations

National ICT Policy and Broadband Plan	Names and Links to documents, (date)	Comments, plans
Basic Telecom Law (Legislation and regulations on market entry/licensing and competition)	Names and Links to documents, (date)	Comments, plans
Infrastructure sharing regulations	Names and Links to documents, (date)	Comments, plans
Interconnection regulations	Names and Links to documents, (date)	Comments, plans
Cybersecurity/e-commerce/privacy	Names and Links to documents, (date)	Comments, plans
Intermediary liability legislation	Names and Links to documents, (date)	Comments, plans
Universal Service legislation	Names and Links to documents, (date)	Comments, plans
Radio spectrum regulations and assignments	Names and Links to documents, (date)	Comments, plans
Policies to reduce gender imbalance and increase the role of women	Names and Links to documents, (date)	Comments, plans

The telecom sector was liberalized in 2005 and a series of initiatives to improve the enabling policy and regulatory environment for ICTs have been taken since then. Most recently, a national broadband strategy (Estratégia Nacional de *Banda Larga* - ENBL) was approved by the Council of Ministers in November 2015¹. The ENBL aims to increase the availability of connectivity generally, promote public-private partnerships and focus resources on the strategic sectors of the country's transformation agenda (sea, aero navigation, financial services and ICTs), along with the expansion of digital learning programs.

The strategy envisions the creation of an observatory to monitor progress and a cross-sectoral co-ordination mechanism to maximize synergies. The programme has a set time frame for implementation and will close at the end of 2018, with final report due March 31 2019.

The government has been trying to interest a third operator to enter the market, but so far it has not been successful. In November 2015 the regulator, ANAC finalised a public consultation on the provision of 4G services. ANAC expects the 800Mhz band will be made available for 4G services even although the analog-digital broadcasting process is not complete, because only one channel is currently in use for the national TV broadcaster.

Since 2009 the government has had regulations that established a public key infrastructure (PKI-Chaves Públicas de Cabo Verde, ICP-CV)².

4 Network Infrastructure

4.1 International connectivity

Atlantis-2 was Cabo Verde's first link - a 12,000km cable initiated by Brazil's parastatal operator Embratel in 2000 to link Brazil with Europe via Portugal, which includes Senegal, Cabo Verde and the Canary Islands. Although the cable only has an ultimate design capacity of 160Gbps, the cable gives Cabo Verde a direct link with Dakar, Senegal where other submarine cables can be accessed.

Map: Atlantis-II Submarine Cable



Source: Embratel

More recently, CV Telecom invested in the West African Cable Systems (WACS) - <http://wacscable.com> which began operations in May 2012, linking 14 countries along the west coast of Africa including Portugal and the UK. The cable has a design capacity of 14.5Tbps.

In addition some HF radio telephone links are operated to Senegal and Guinea-Bissau.

Pricing data

Wholesale international pricing data is not currently published.

4.2 Public Network Operators

[CV Telecom](#), [Unitel](#) and the [Main Government Web Site](#)

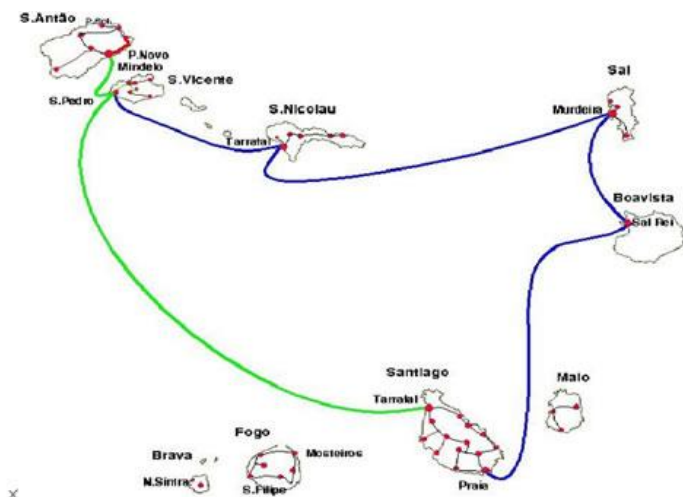
The dominant Internet provider on the island is CV Telecom, which is a subsidiary of Portugal Telecom (PT). Brazilian operator Oi was a 40% shareholder in CV Telecom but in September 2016 it announced it would be selling its shares to PT.

The CV Telecom group provides fixed and mobile voice and Internet services as well as IP TV under the brands CV Telecom (fixed line voice services) CV Movel (mobile voice and data) and CV Multimedia (voice, data and TV).

CV Telecom has domestic fibre optic infrastructure on the major islands and also operates a submarine cable providing a ring which interconnects the islands which was completed in 2002 as shown below. Six of the most populated islands were initially connected, with the remaining being connected in 2011.

Map: Initial Domestic Inter-Island Submarine Fibre Network in Cabo Verde (2002)

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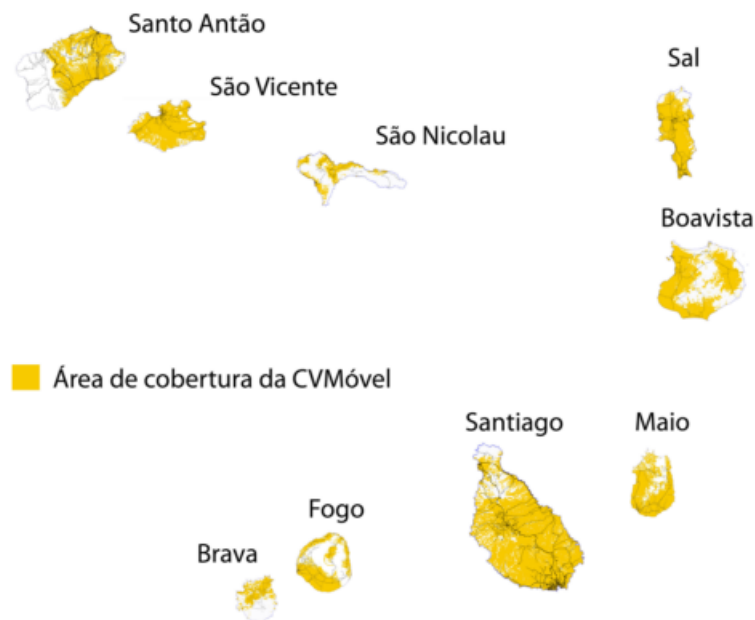


Source: CV Telecom

In 2012 ANAC determined that CV Telecom had dominant market power and imposed a number of obligations on the operator, in particular to provide wholesale services at regulated prices, and to allow access to its facilities for other operators.

Sister company CVMovel claims to cover 94% of the population, as shown in the map below which does not distinguish between lower bandwidth services such as EDGE and 3G. 4G services have not yet been rolled out and CV Movel's service supports 12Mbps downloads but only 1Mbps upload.

Figure: CV Movil mobile data coverage

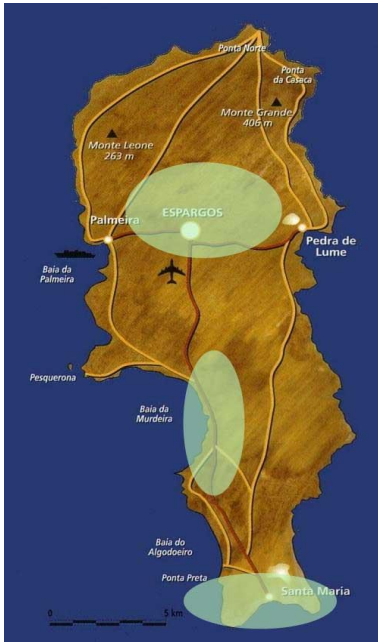


Source: <https://www.cvmovel.cv/nacional-gsm-3g-edge-e-gprs>

Unitel Mais/T+ (<http://www.uniteltmais.cv>), owned by the Angolan Unitel group which also has operations in Sao Tome e Principe and is headed by Isabel dos Santos, is the second mobile operator in the country, providing fixed and mobile voice services via its 3G platform.

Cabocom provides a wifi-based service on the island of Ilha do Sal (<http://cabocom.cv>) as shown in the coverage map below.

Map: Cabocom Coverage



Pricing data

As a triple play provider, CV Telecom/Multimedia (CVM) has a complex set of different services and bundles¹:

- ZAP TV, CVM's bundled ADSL-based TV and broadband package costs US 79/month for 25 channels and 128Kbps up / 12Mbps down broadband, or US 86 for 40 Channels and 128Kbps/12Mbps
- A business ADSL broadband connection costs US 141/month for 1Mbps up and 24Mbps down. A symmetric 2Mbps connection costs US 2,046/month.
- CVM's triple-play offering ZAP 3P includes TV, mobile and internet. The low end package - 12 TV channels, 6Gb data and free on-net calls costs US 16.7/month. 45 channels and 18GB costs US 54/month while 45 channels plus unlimited data, free on-net calls costs US 74/month.
- With no TV, the unlimited broadband package costs US 64/month.
- The lowest package with no TV, free on-net calls and 5Gb of data costs US 9.8/month. No internet but free on-net calls and 12 TV channels also costs the same as no TV, just calls and Internet - US 9.8/month.
- Off-net calls to T+ (the other mobile operator in CV) cost about US 0.25c/minute, while in contrast, calls to the US, Canada and China only cost 8c/minute. From T+ to CV Movil calls cost US 0.44c/minute.
- All mobile internet speeds are offered at 1Mbps up and 12Mbps down.

T+/Unitel charge US 5/month for 2GB data and unlimited on-net calls and text messages.

Cabocom offers a 3Mbps wireless connection with 4Gb cap at US 39/month, 6Gb is US 59 /month, 9Gb/month is US 88.

CV Telecom is required to provide access to its facilities for other operators and the details of the facilities leasing fees and requirements are published by ANAC². Wholesale prices for Ethernet circuits on CV Telecom's national infrastructure have also been determined, and are also published³.

¹ <http://www.cvmultimedia.cv/zap-3p>

² http://anac.cv/images/orall_precos.pdf

³ <http://anac.cv/images/deliberacaocaretificacao.pdf>

4.3 Government Networks

The government network - Rede Tecnológica e Privativa do Estado (RTPE) - is operated by the state national ICT unit - NOSi. RTPE consists of leased cable and in-house wireless links interconnecting the islands and dozens of buildings, with about 2500 users, as shown in the map below.

Map: Government Network in Cabo Verde (NOSi)



Source: NOSi

A radio station, Rádio Educativa, is dedicated to distance education and is operated by the Ministry of Education.

4.4 Private Networks

Little information is available on private networks in Cabo Verde however NOSi provides services to private companies as well, and a VPN service is available.

4.5 Civil Society/NGO Networks

No independent non-profit networks appear to be operating in Cabo Verde.

4.6 Interconnection and hosting

The Núcleo Operacional da Sociedade de informação (NOSi) operates a carrier neutral data centre¹ <http://www.nosi.cv/> Detailed prices for services are published².

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Currently there is no Internet Exchange Point in Cabo Verde, or related caching facilities.

[1 http://www.nosi.cv/index.php/servicos1/data-center](http://www.nosi.cv/index.php/servicos1/data-center)

[2 http://www.nosi.cv/index.php/servicos1/tabela-de-precos/send/18-tabela-d...](http://www.nosi.cv/index.php/servicos1/tabela-de-precos/send/18-tabela-d...)

4.6.1 Data centers

4.6.2 IXPs

4.6.3 Caching and other shared services

4.7 Capacity building Infrastructure

Mobile operator CV Móvel is working with the Ministry of Education and Sports (MED), the Ministry of Higher Education Science and Innovation (MESCI) and the Ministry of Infrastructure and Maritime Economy (MIEM) to provide low tariff connectivity and access equipment to students, teachers and university staff. The project is part of the national broadband strategy and aims to:

- Promote literacy and digital inclusion in schools and universities
- Boost e-learning and the implementation of the virtual learning environment
- Stimulate the production of Open Educational Resources developed in Cabo Verde
- Provide free internet access in educational venues
- Ensure the educational community has access to tablets and smartphones, as well low cost Internet access

Currently Cabo Verde is not participating actively in the West and Central African Education and Research Network (WACREN), which is the regional network for the academic and research sector, providing access to the global research networks.

4.8 Power supply infrastructure

Continued economic growth has left Cabo Verde with a power supply deficit and relatively high electricity tariffs (about 0.25 euro per KWh). To address this constraint the country has made ambitious plans¹ to harness more renewable energy and investment in wind and solar energy has seen the country achieve a 25% renewable energy base by 2014.

[1 http://www.ecowrex.org/system/files/documents/2011_summary-of-cape-verde...](http://www.ecowrex.org/system/files/documents/2011_summary-of-cape-verde...)

4.9 Government ICT Programmes and Projects

The government has an inter-ministerial Commission on innovation and the information society – the Comissão Interministerial para a Inovação e Sociedade de Informação – which is headed by the Prime Minister. The Commission established the specialised ICT agency - Núcleo Operacional da Sociedade de informação (NOSi) – <http://nosi.cv> – to support the implementation of public sector ICT activities. In 2014 NOSi became a parastatal entity (Entidade Pública Empresarial - EPE).

The government has hopes of creating a ‘cyber-island’, providing services such as business process outsourcing, back office operations and software development and maintenance. To support this the government has taken Euro 31.6 million loan from the ADB loan to create a technology park called Praia

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Technology Park¹.

4.9.1 E-government

NOSi has developed a range of ICT applications for government administration including:

- SNIAC – the National Identification and Civil Authentication System which was one of the first parts of the administrative modernization strategy, with an associated National Identification Card (CNI)
- SIE- Electoral Information System - has been made available as a smartphone app¹.
- MKonekta – (Serviços Públicos na Bu Mô) which is a platform for provision of government services on mobile devices, including payments

Local government

The Municipal Information System (Sistema de Informação Municipal) developed with NOSi includes the infrastructure for local networks, access to the NOSi data center and an information system that covers municipal management, in particular, financial and human resources management and taxes, licensing and land ownership

5.2 Banking & E-payments

Banks in Cabo Verde are generally all online. Pagali.cv provides an open electronic payments platform.

¹ <http://www.nosi.cv/index.php/solucoes/eleicoes>

4.9.2 Education and Health

NOSi have assisted with the development of a number of online applications in the education and health area¹. These include:

- Integrated School Management Systems (Sistema Integrado de Gestão Escolar –SIGE) provides secondary and basic education schools with a networked information system that aims to reduce administrative costs and allows schools engage with students and with parents / guardians.
- The System for Integrated Management and Monitoring of Higher Education Students (SIGAE) is a management tool that aims to improve the allocation of jobs, scholarships, financial management, registration of fellows and tracking them in Cabo Verde and the diaspora.
- Integrated Health System (Sistema Integrado da Saúde - SIS) is a set of modules supporting management of the daily activities carried out in health facilities.

¹ <http://nosi.cv/index.php/solucoes/saude-seguranca-social>

4.9.3 Emergency services

In the past, emergency communication systems in Cabo Verde had been inefficient and based on obsolete radio technology. However the government took the opportunity to extend the use of ICTs in emergency response when the volcano on the island of Fogo erupted in 2014, close to two communities, leaving many

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homeless. Co-ordinated by ANAC, mobile operators provided improved access to the Internet in the affected areas and free voice communications for those working there, including being given traffic priority. Satellites as well as drones were used to monitor the status of the volcano activity, along with modelling tools to predict the lava path and speed.

The coverage of the event spread among social networks resulting in significant fund raising and international support. Going forward, there are plans to monitor water temperature, the weather, and volcanic activity to identify imminent hazards; create an information system to manage evacuations efficiently, and develop the use of smartphones, to warn the public of potential danger. In addition remote medical and psychological assistance for people while waiting for rescue teams is envisioned, along with international cooperation in emergency communications (Cape Verde has recently approved its accession to the Tampere Convention).

The government has since created a Task Force to organize emergency communications with three main roles:

- Implement an Emergency Coordination Center that operates the emergency number 112
- Develop a new national emergency communication plan that includes ICT based procedures
- Implement a new national emergency communication network

4.10 Banking and repayments

4.11 Media

ZAP TV¹, a streaming IPTV product provided by ISP CVMultimedia over ADSL, with a set of packages ranging from 12 to 40 TV channels, as well as premium sport, cinema and adult channels.

RTC - Radio Televisão Caboverdiana (<http://www.rtc.cv>) is the state broadcaster, operating one national television channel (TCV) and two radio channels, RCV and RCV Mais/RCV+ (youth oriented). All three broadcasts are also streamed live on the Internet.

TIVER - Televisão Independente de Cabo Verde (<http://tiver.cv>) is the sole private television broadcaster, operating since 2007. It also makes its programming available online and operates a streaming radio station RadioDIA (<http://tiver.cv/index.php/radio-dia>). Aside from CV Multimedia, Boom-TV is the only other operator to have obtained a pay TV license.

Of particular note is the extensive use of community radio on the islands - there are 13 different community stations registered², operated by a diverse range of local civil society groups including farmers, cultural or musical associations and municipalities.

There are 12 other private or non-government radio broadcasters which include private Rádio Comercial, and Rádio Educativa, which is dedicated to distance education and operated by the Ministry of Education, and Rádio Nova, run by the Catholic Church. Almost all the stations in Cap Verde are available for live streaming at <http://muzika.sapo.cv/radios>.

SAPO, the Lusophone listings web service, operates an extensive portal in Cap Verde - <http://www.sapo.cv>.

In August 2015 ANAC selected Thomson Broadcast to oversee its analogue-to-digital migration process which should be relatively straightforward considering there is only one free-to-air stat

[1 http://www.cvmultimedia.cv/servi%C3%A7o-zap-tv-0](http://www.cvmultimedia.cv/servi%C3%A7o-zap-tv-0)

[2 http://www.dgcs.gov.cv/index.php/operadoras/sector-da-radio](http://www.dgcs.gov.cv/index.php/operadoras/sector-da-radio)

[1 http://www.afdb.org/fileadmin/uploads/afdb/Documents/Boards-Documents/Ca...](http://www.afdb.org/fileadmin/uploads/afdb/Documents/Boards-Documents/Ca...)

5. INFRASTRUCTURE READINESS POLICY CHECKLIST

[Contribute to the Infrastructure Readiness Policy Checklist >](#)

6. Commentary

Cabo Verde's government has made consistent and forward looking efforts to improve the country's connectivity and use of ICTs, which have paid off in the relatively high levels of broadband adoption, extent of use by government and availability of local online services.

However relatively high Internet usage fees remain as most services are metered, which indicates that some parts of the value chain are not sufficiently competitive, but is also likely to be partly a result of the limited economies of scale due to the small population scattered across numerous islands.

However it is likely that further reductions in the cost of access will be necessary before the full benefits from more widespread adoption can be obtained. Ideally an additional operator could be encouraged to enter the market at both international and retail levels. Special efforts could also be made to ensure that plans for any submarine cables passing nearby include Cabo Verde - an obvious example is Ellalink (<http://www.islalink.es>) which is currently planned to run from Brazil to Portugal and is not due for service until 2018.

7. Country contacts and online resources

African Development Bank (AfDB). 2014. Cabo Verde Country Strategy Paper.

http://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/2014-2018_-_Cape_Verde_Country_Strategy_Paper.pdf

Instituto Universitário de Lisboa. 2015. A Regulação da Comunicação Social em Cabo Verde na Era Digital.

<http://www.portaldoconhecimento.gov.cv/bitstream/10961/4789/1/%C3%A9Alma%20vers%C3%A3o.pdf>

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