

Voice Telephone Services: Status as of December 31, 2020

Industry Analysis Division
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Table of Contents

Introduction	1
Comparison to Local Telephone Competition Report	1
Retail Voice Telephone Service Connections	2
Figure 1 Retail Voice Telephone Service Connections, 2017-2020	2
Figure 2 Wireline Retail Voice Telephone Service Connections by Technology, Regulatory Status, and Customer Type as of December 31, 2020	3
Retail Service Relationships	4
Figure 3 Interconnected VoIP Subscribership by Reported Service Features, Regulatory Status, and Customer Type as of December 31, 2020	5
Figure 4 Retail Relationships of Wireline Voice Telephone Service with Internet Access Service by Regulatory Status as of December 31, 2020	6
Detailed Voice Telephone Services Data	7
Table 1 Voice Subscriptions – Total for US	8
Table 2 Number of Providers Reporting Voice Subscriptions – Total for US	10
Table 3 Residential Wireline Voice Telephone Service Connections and Households by State as of December 31, 2020	12
Table 4 Mobile Voice Telephone Service Subscriptions and Population by State as of December 31, 2020	13
Technical Notes.....	14
Glossary.....	15
Materials Available on the FCC Website (https://www.fcc.gov/voice-telephone-services-report)	
Table 1 Voice Subscriptions – Total for US	
Table 2 Number of Providers Reporting Voice Subscriptions – Total for US	
Table 3 Residential Wireline Voice Telephone Service Connections and Households by State as of December 31, 2020	
Table 4 Mobile Voice Telephone Service Subscriptions and Population by State as of December 31, 2020	
Table S.1 Voice Subscriptions – State	
Table S.2 Number of Providers Reporting Voice Subscriptions – State	
Table S.3 Fixed Voice Subscriptions – County	
Table S.4 Voice Subscriptions – Back to 2008	
Table S.5 Number of Providers Reporting Voice Subscriptions – Back to 2014	
Table S.6 Crosswalk to Local Telephone Competition: Status as of December 31, 2013 report	

Voice Telephone Services: Status as of December 31, 2020

Introduction

The Commission has used FCC Form 477 to collect subscribership information from providers of voice telephone services – incumbent local exchange carriers (ILECs), competitive local exchange carriers (CLECs), and mobile voice providers – since December 1999.¹ The Commission has required interconnected Voice over Internet Protocol (“interconnected VoIP”) service providers to report subscribership information since December 2008.² Also, starting with the data reported for 2014, Form 477 has been modified to distinguish “over-the-top” (colloquially, “bring your own broadband”) interconnected VoIP subscriptions from other interconnected VoIP subscriptions.³

Comparison to Local Telephone Competition Report

This report was previously titled *Local Telephone Competition*. Reports under the earlier title summarized Form 477 data through December 31, 2013. Reports under the current title provide much of the summarized data as supplemental spreadsheet files, available at <https://www.fcc.gov/voice-telephone-services-report>. A crosswalk between data elements in this report and data elements in the *Local Telephone Competition* report is available at that page.

¹ An Incumbent Local Exchange Carrier is an entity that was providing local exchange telephone service in a particular area on February 8, 1996, the date on which the Telecommunications Act of 1996 was enacted into law. *See* 47 C.F.R. § 51.5.

² The FCC’s rules (at 47 C.F.R. § 9.3) state:

An interconnected Voice over Internet Protocol (VoIP) service is a service that:

- (1) Enables real-time, two-way voice communications;
- (2) Requires a broadband connection from the user’s location;
- (3) Requires Internet protocol-compatible customer premises equipment; and
- (4) Permits users generally to receive calls that originate on the public switched telephone network and to terminate calls to the public switched telephone network.

We note that the current interpretation of element (4) of the definition excludes certain VoIP services (e.g., those offered by Skype) and subscribers to those services are not reported on Form 477.

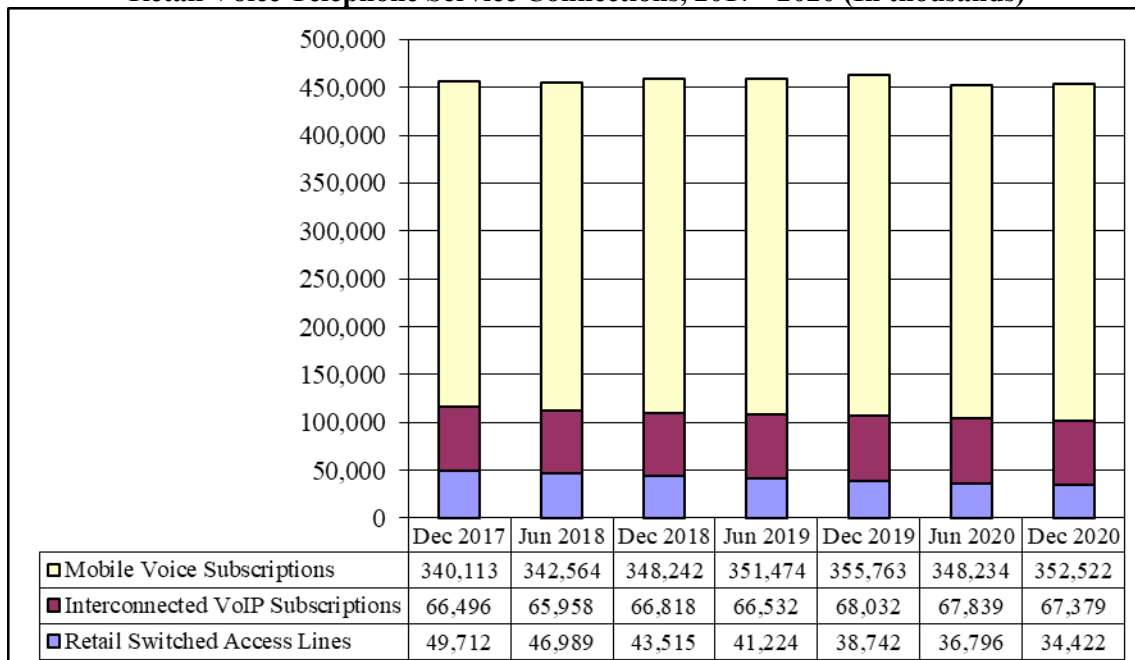
³ The Technical Notes and the Glossary that appear at the end of this report provide more-detailed information about the current Form 477 and the meaning of terms used in this report. To be consistent with modifications to Form 477 adopted in 2013 (to be effective for reporting June 2014 and later data), this report no longer uses the terms “standalone VoIP” and “broadband bundle.” Standalone VoIP in the earlier, *Local Telephone Competition*, reports has a different meaning from “over-the-top” VoIP in this report. In particular, subscriptions reported as standalone VoIP for December 2013 and earlier dates included over-the-top subscriptions as defined in this report and also video-plus-VoIP service subscriptions sold by cable TV system operators and other entities that own last-mile facilities to end-user premises. We note that, accordingly, 13% of total interconnected VoIP subscriptions were categorized as standalone VoIP in December 2013 and, by contrast, 10% of total interconnected VoIP subscriptions were categorized as over-the-top VoIP in December 2014.

Retail Voice Telephone Service Connections

Retail voice telephone service customers are served by two wireline technologies – end-user switched access lines and interconnected VoIP subscriptions – and by mobile wireless subscriptions.⁴

- In December 2020, there were 34 million end-user switched access lines in service, 67 million interconnected VoIP subscriptions, and 353 million mobile subscriptions, for a total of 454 million retail voice telephone service connections in the United States. See Figure 1.
- Over the three-year period presented in Figure 1, interconnected VoIP subscriptions increased at a compound annual growth rate of 0.4%, mobile voice subscriptions increased at a compound annual growth rate of 1.2%, and retail switched access lines declined at a compound annual growth rate of 11.5% per year.⁵

Figure 1
Retail Voice Telephone Service Connections, 2017 - 2020 (In thousands)



Note: Some previously published data have been revised.

- Of the 102 million wireline retail voice telephone service connections (including both switched access lines and interconnected VoIP subscriptions) in December 2020, 48 million (or 47%) were residential connections and 54 million (or 53%) were business connections.⁶ See Figure 2.
- We believe mobile voice subscriptions decreased by 2% between December 2019 and June 2020 due to a change in accounting procedures by one or more providers.

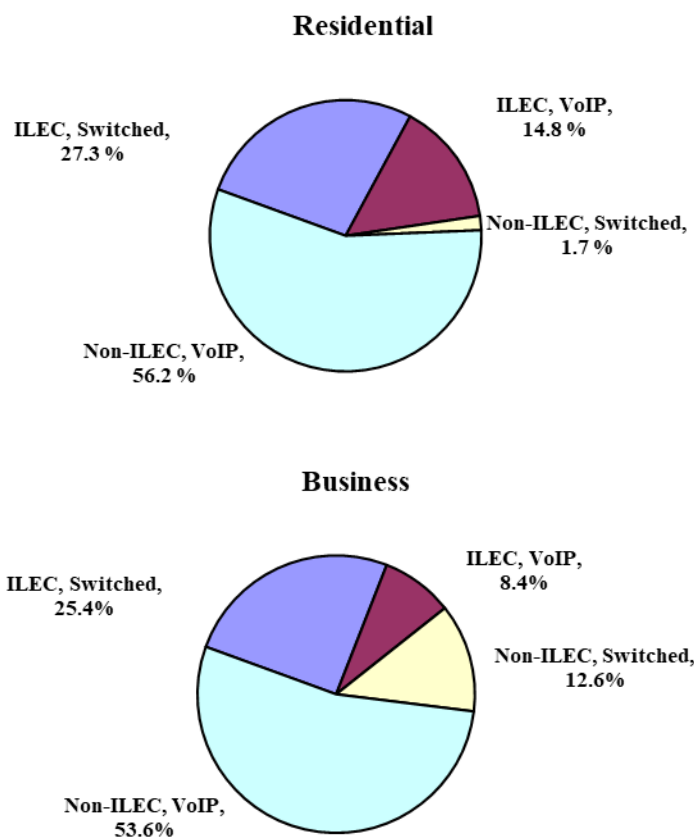
⁴ The presentation of mobile wireless telephone subscriber counts in this report does not constitute, or imply, Commission analysis of the extent to which wireline and mobile wireless telephone services are demand substitutes or complements in general or in any particular situation.

⁵ The compound annual growth rate is a smoothed rate of growth calculated in three steps. First, divide the ending value by the beginning value. Second, raise the result of that division to a power equal to one divided by the number of years in the period (in this case, 3 years, so the power is 1/3). Third, subtract one from the result of the second step.

Figure 2
Wireline Retail Voice Telephone Service Connections by Technology, Regulatory Status,
And Customer Type as of December 31, 2020 (In thousands)

Total	Switched Access Lines	Interconnected VoIP	Total
ILEC	26,767	11,586	38,353
Non-ILEC	7,655	55,793	63,448
Total	34,422	67,379	101,801
Residential			
ILEC	13,027	7,044	20,071
Non-ILEC	809	26,794	27,603
Residential Total	13,837	33,837	47,674
Business			
ILEC	13,740	4,542	18,282
Non-ILEC	6,845	29,000	35,845
Business Total	20,585	33,542	54,127

Note: Figures may not sum to totals due to rounding. A voice service affiliate of an ILEC that is operating outside of the ILEC's traditional service area ("study area") is a Non-ILEC.



- Cross-classified by technology and the retailer’s regulatory status in Figure 2, the 48 million wireline residential connections in December 2020 were: 27.3% ILEC switched access lines, 56.2% non-ILEC interconnected VoIP subscriptions, 14.8% ILEC interconnected VoIP subscriptions, and 1.7% non-ILEC switched access lines. Similarly, the 54 million wireline business connections were: 25.4% ILEC switched access lines, 53.6% non-ILEC interconnected VoIP subscriptions, 8.4% ILEC interconnected VoIP subscriptions, and 12.6% non-ILEC switched access lines.

Retail Service Relationships

Respondents submit two types of information about retail service relationships on the current Form 477.

- Interconnected VoIP service retailers distinguish over-the-top (“OTT”) interconnected VoIP subscriptions—where the end user accesses the service using a broadband connection from an entity that is not affiliated with the VoIP service retailer—from all other interconnected VoIP subscriptions.⁷ See Figure 3.
- Retailers of switched access lines and retailers of interconnected VoIP service distinguish between sales to end users who also purchase Internet access from them (including affiliates) and those who do not. See Figure 4.

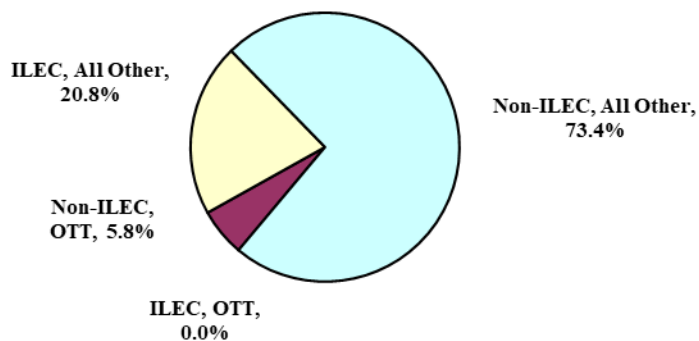
⁷ A broadband connection may or may not provide the end user with internet access.

Figure 3
Interconnected VoIP Subscribership by Reported Service Features, Regulatory Status,
and Customer Type as of December 31, 2020 (In thousands)

Total	Over-the-Top (OTT)	All Other VoIP	Total
ILEC	68	11,518	11,586
Non-ILEC	14,374	41,419	55,793
Total	14,442	52,937	67,379
Residential			
ILEC	1	7,042	7,044
Non-ILEC	1,958	24,835	26,794
Residential Total	1,960	31,877	33,837
Business			
ILEC	67	4,475	4,542
Non-ILEC	12,416	16,584	29,000
Business Total	12,482	21,059	33,542

Note: Figures may not sum to totals due to rounding.

Residential



Business

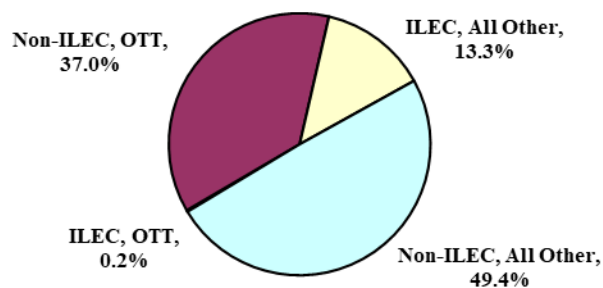
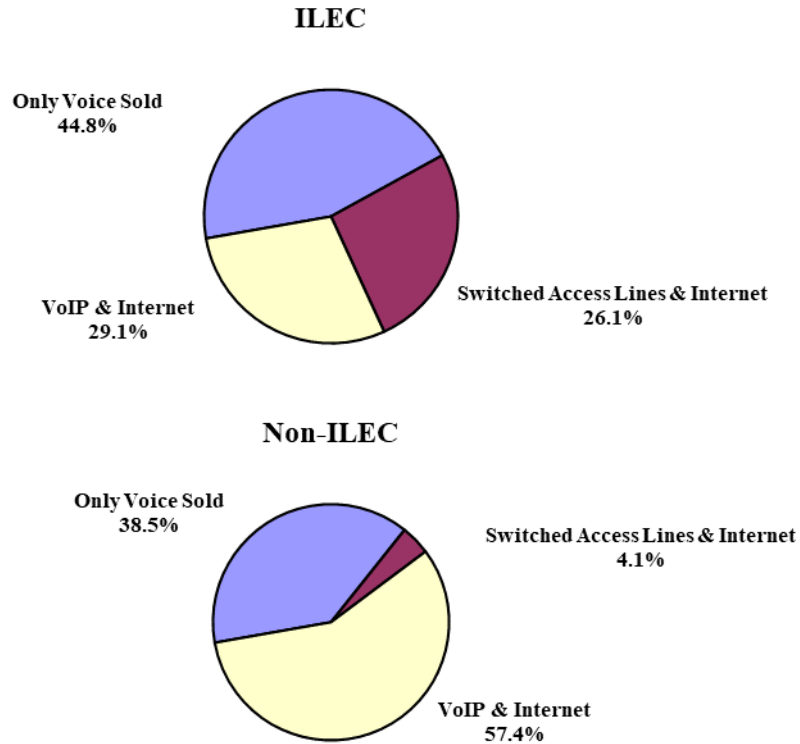


Figure 4
Retail Relationships of Wireline Voice Telephone Service with Internet Access Service
By Regulatory Status as of December 31, 2020 (In thousands)

Total	ILEC	Non-ILEC	Total
Switched Access Lines	26,767	7,655	34,422
Over-the-Top VoIP	68	14,374	14,442
All Other VoIP	11,518	41,419	52,937
Total	38,353	63,448	101,801
Sold with Internet			
Switched Access Lines	10,021	2,579	12,600
Over-the-Top VoIP	0	0	0
All Other VoIP	11,160	36,448	47,608
Total	21,181	39,027	60,208
Sold Without Internet			
Switched Access Lines	16,746	5,076	21,822
Over-the-Top VoIP	68	14,374	14,442
All Other VoIP	358	4,971	5,329
Total	17,172	24,421	41,593

Note: Figures may not sum totals due to rounding.



Detailed Voice Telephone Services Data

- Table 1 summarizes national-level voice telephone service subscription data for December 2019, and for June and December 2020, for individual data elements collected by FCC Form 477.
- Table 2 shows the number of entities that reported subscription data for the same time periods.
- Table 3 shows residential wireline voice telephone service connections by state for December 2020.
- Table 4 shows mobile voice telephone service subscriptions by state for December 2020.

Tables 1, 2, 3, and 4 are available in Excel format at <https://www.fcc.gov/voice-telephone-services-report>. Also available at that page are:

- State-level Subscriptions table in Excel format (data back to December 2019)
- State-level Number of Providers table in Excel format (data back to December 2019)
- County-level Subscription information in Excel format (data back to June 2014)
- CSV-format file of the consistent data series that are available back to December 2008, when interconnected VoIP retailers were first required to report subscription information on Form 477.

Earlier data, back to December 1999, are available in the Local Telephone Competition reports at <https://www.fcc.gov/general/local-telephone-competition-reports>. However, researchers using the complete data series for trend analysis should be aware of the following discontinuities in the data.

- Between December 1999 and December 2004, Form 477 collected state-by-state data only from local exchange carriers with at least 10,000 end-user switched access lines in service in the state, and from facilities-based mobile voice carriers with at least 10,000 mobile voice subscriptions in service in the state.
- Prior to December 2008, interconnected VoIP service retailers were not required to submit Form 477, but an unknown amount of interconnected VoIP service was included along with the switched access lines reported by some Form 477 filers.
- As discussed earlier in this report, the category standalone interconnected VoIP that was reported from December 2008 to December 2013 is different (that is, includes more subscriptions) than the category over-the-top interconnected VoIP that is reported starting with the June 2014 data.⁸

⁸ See footnote 3, above.

Table 1. Voice Subscriptions (in Thousands) - Total for US

Reference	Data element	Dec 2019	June 2020	Dec 2020
1	Mobile telephony	355,763	348,234	352,522
2	Directly-billed or prepaid	314,122	308,767	303,547
3	Not directly-billed or prepaid	41,641	39,467	48,974
4	Wireline End-User Switched Access Lines and Interconnected VoIP Subscriptions	106,774	104,634	101,801
5	Incumbent LECs	42,208	40,401	38,353
6	Other (Non-ILECs) - Note: ILEC voice-service affiliate operating outside ILEC's study area is included here.	64,566	64,233	63,448
7	Consumer-grade service	51,794	50,085	47,674
8	Incumbent LECs	22,570	21,266	20,071
9	Other (Non-ILECs)	29,224	28,819	27,603
10	Business & Government-grade service	54,981	54,549	54,127
11	Incumbent LECs	19,638	19,136	18,282
12	Other (Non-ILECs)	35,343	35,414	35,845
13	Local exchange telephone service (Switched Access Lines)	38,742	36,796	34,422
14	Incumbent LECs	29,897	28,414	26,767
15	Other (Non-ILECs) - Note: ILEC voice-service affiliate operating outside ILEC's study area is included here.	8,844	8,382	7,655
16	Consumer-grade service	15,496	14,737	13,837
17	Incumbent LECs	14,603	13,813	13,027
18	Other (Non-ILECs)	893	924	809
19	Business & Government-grade service	23,245	22,059	20,585
20	Incumbent LECs	15,294	14,600	13,740
21	Other (Non-ILECs)	7,951	7,459	6,845
22	Interconnected VoIP Subscriptions - Note: Includes both Over-the-top (OTT) and All Other sub-categories.	68,032	67,839	67,379
23	Incumbent LECs	12,310	11,988	11,586
24	Other (Non-ILECs) - Note: ILEC voice-service affiliate operating outside ILEC's study area is included here.	55,722	55,851	55,793
25	Consumer-grade service	36,297	35,348	33,837
26	Incumbent LECs	7,966	7,452	7,044
27	Other (Non-ILECs)	28,331	27,896	26,794
28	Business & Government-grade service	31,735	32,490	33,542
29	Incumbent LECs	4,344	4,535	4,542
30	Other (Non-ILECs)	27,391	27,955	29,000
31	Over-the-top interconnected VoIP	11,788	13,270	14,442
32	Incumbent LECs	71	74	68
33	Other (Non-ILECs) - Note: ILEC voice-service affiliate operating outside ILEC's study area is included here.	11,717	13,196	14,374
34	Consumer-grade service	2,251	2,298	1,960
35	Incumbent LECs	2	2	1
36	Other (Non-ILECs)	2,249	2,296	1,958
37	Business & Government-grade service	9,537	10,973	12,482
38	Incumbent LECs	69	73	67
39	Other (Non-ILECs)	9,468	10,900	12,416
40	All Other interconnected VoIP	56,244	54,568	52,937
41	Incumbent LECs	12,240	11,913	11,518
42	Other (Non-ILECs) - Note: ILEC voice-service affiliate operating outside ILEC's study area is included here.	44,005	42,655	41,419
43	Consumer-grade service	34,046	33,051	31,877
44	Incumbent LECs	7,964	7,451	7,042
45	Other (Non-ILECs)	26,082	25,600	24,835
46	Business & Government-grade service	22,198	21,518	21,059
47	Incumbent LECs	4,275	4,462	4,475
48	Other (Non-ILECs)	17,923	17,055	16,584
49	Local exchange telephone service by last-mile delivery medium	38,742	36,796	34,422
50	Fiber-to-the-premises	4,687	4,651	4,575
51	Incumbent LECs	2,712	2,728	2,691
52	Other (Non-ILECs)	1,975	1,923	1,884
53	Coaxial cable	466	441	442
54	Incumbent LECs	47	46	52
55	Other (Non-ILECs)	419	394	391

Table 1. Voice Subscriptions (in Thousands) - Total for US

Reference	Data element	Dec 2019	June 2020	Dec 2020
56	Terrestrial fixed wireless	34	30	33
57	Incumbent LECs	15	14	13
58	Other (Non-ILECs)	18	16	20
59	Copper local loop	33,555	31,674	29,366
60	Incumbent LECs	27,123	25,625	24,009
61	Other (Non-ILECs)	6,432	6,049	5,357
62	All Other interconnected VoIP by last-mile delivery medium	56,244	54,568	52,937
63	Fiber-to-the-premises	8,963	8,479	8,364
64	Incumbent LECs	6,080	5,850	5,729
65	Other (Non-ILECs)	2,883	2,629	2,635
66	Coaxial cable	33,409	32,883	32,204
67	Incumbent LECs	11	11	12
68	Other (Non-ILECs)	33,398	32,872	32,192
69	Terrestrial fixed wireless or satellite	206	219	221
70	Incumbent LECs	0	0	0
71	Other (Non-ILECs)	206	219	221
72	Copper local loop	13,666	12,987	12,148
73	Incumbent LECs	6,148	6,052	5,777
74	Other (Non-ILECs)	7,518	6,935	6,371
75	Non-Incumbent LEC local exchange telephone service by means of provisioning	8,844	8,382	7,655
76	Provided over owned last-mile facilities	3,220	3,119	2,956
77	Provided over UNE-L obtained from unaffiliated entity	1,473	1,381	1,164
78	Provided over other services obtained from unaffiliated entity	4,151	3,883	3,531
79	Incumbent LEC local exchange telephone service provided to unaffiliated carriers for resale	4,130	3,950	3,650
80	Wholesale lines	2,723	2,660	2,466
81	UNE-L	1,407	1,291	1,184
82	Local exchange telephone service and long-distance service	38,742	36,796	34,422
83	Consumer-grade service	15,496	14,737	13,837
84	Incumbent LEC is preferred long-distance carrier for its local exchange service customer	9,779	9,346	9,057
85	Incumbent LEC is not preferred long-distance carrier for its local exchange service customer	4,824	4,467	3,970
86	Non-ILEC is preferred long-distance carrier for its local exchange service customer	736	722	663
87	Non-ILEC is not preferred long-distance carrier for its local exchange service customer	157	202	147
88	Business & Government-grade service	23,245	22,059	20,585
89	Incumbent LEC is preferred long-distance carrier for its local exchange service customer	8,621	8,120	8,232
90	Incumbent LEC is not preferred long-distance carrier for its local exchange service customer	6,673	6,481	5,506
91	Non-ILEC is preferred long-distance carrier for its local exchange service customer	6,102	5,443	5,008
92	Non-ILEC is not preferred long-distance carrier for its local exchange service customer	1,849	2,016	1,834
93	End user buys local exchange telephone service and Internet access service from same entity	14,033	13,013	12,600
94	End user buys both services from incumbent LEC or affiliates	11,173	10,691	10,021
95	End user buys both services from Non-ILEC or affiliates	2,860	2,322	2,579
96	End user buys interconnected VoIP and Internet access service from same entity	50,274	49,187	47,608
97	End user buys both services from incumbent LEC or affiliates	11,860	11,555	11,160
98	End user buys both services from Non-ILEC or affiliates	38,414	37,633	36,448

Table 2. Number of Providers Reporting Voice Subscriptions - Total for US

Reference	Data element	Dec 2019	June 2020	Dec 2020
1	Mobile telephony	69	66	65
2	Directly-billed or prepaid	69	65	63
3	Not directly-billed or prepaid	8	7	9
4	Wireline End-User Switched Access Lines and Interconnected VoIP Subscriptions	2,028	2,103	2,191
5	Incumbent LECs	715	716	713
6	Other (Non-ILECs) - Note: ILEC voice-service affiliate operating outside ILEC's study area is included here.	1,625	1,716	1,815
7	Consumer-grade service	1,315	1,334	1,318
8	Incumbent LECs	715	715	712
9	Other (Non-ILECs)	904	938	932
10	Business & Government-grade service	1,923	1,995	2,088
11	Incumbent LECs	711	711	710
12	Other (Non-ILECs)	1,520	1,608	1,710
13	Local exchange telephone service (Switched Access Lines)	966	965	952
14	Incumbent LECs	709	710	707
15	Other (Non-ILECs) - Note: ILEC voice-service affiliate operating outside ILEC's study area is included here.	506	514	507
16	Consumer-grade service	871	870	856
17	Incumbent LECs	709	710	707
18	Other (Non-ILECs)	402	409	401
19	Business & Government-grade service	952	947	939
20	Incumbent LECs	707	707	705
21	Other (Non-ILECs)	489	494	492
22	Interconnected VoIP Subscriptions - Note: Includes both Over-the-top (OTT) and All Other sub-categories.	1,464	1,562	1,671
23	Incumbent LECs	144	161	167
24	Other (Non-ILECs) - Note: ILEC voice-service affiliate operating outside ILEC's study area is included here.	1,403	1,497	1,607
25	Consumer-grade service	671	708	713
26	Incumbent LECs	80	84	92
27	Other (Non-ILECs)	625	662	664
28	Business & Government-grade service	1,364	1,457	1,566
29	Incumbent LECs	139	154	161
30	Other (Non-ILECs)	1,307	1,394	1,504
31	Over-the-top interconnected VoIP	907	977	1,073
32	Incumbent LECs	31	36	33
33	Other (Non-ILECs) - Note: ILEC voice-service affiliate operating outside ILEC's study area is included here.	893	962	1,058
34	Consumer-grade service	177	197	178
35	Incumbent LECs	12	12	9
36	Other (Non-ILECs)	170	189	172
37	Business & Government-grade service	863	934	1,029
38	Incumbent LECs	28	34	33
39	Other (Non-ILECs)	852	921	1,014
40	All Other interconnected VoIP	805	842	865
41	Incumbent LECs	137	150	159
42	Other (Non-ILECs) - Note: ILEC voice-service affiliate operating outside ILEC's study area is included here.	745	777	804
43	Consumer-grade service	554	573	595
44	Incumbent LECs	75	79	87
45	Other (Non-ILECs)	512	530	548
46	Business & Government-grade service	733	768	789
47	Incumbent LECs	133	144	153
48	Other (Non-ILECs)	676	705	729
49	Local exchange telephone service by last-mile delivery medium	966	965	952
50	Fiber-to-the-premises	758	765	768
51	Incumbent LECs	613	622	632
52	Other (Non-ILECs)	368	374	375
53	Coaxial cable	79	82	87
54	Incumbent LECs	17	20	23
55	Other (Non-ILECs)	71	73	75

Table 2. Number of Providers Reporting Voice Subscriptions - Total for US

Reference	Data element	Dec 2019	June 2020	Dec 2020
56	Terrestrial fixed wireless	74	83	80
57	Incumbent LECs	40	49	49
58	Other (Non-ILECs)	48	51	47
59	Copper local loop	749	744	706
60	Incumbent LECs	552	547	525
61	Other (Non-ILECs)	319	320	306
62	All Other interconnected VoIP by last-mile delivery medium	805	842	865
63	Fiber-to-the-premises	543	571	600
64	Incumbent LECs	125	140	149
65	Other (Non-ILECs)	491	511	543
66	Coaxial cable	216	214	212
67	Incumbent LECs	10	10	12
68	Other (Non-ILECs)	209	207	205
69	Terrestrial fixed wireless or satellite	283	301	314
70	Incumbent LECs	10	11	12
71	Other (Non-ILECs)	276	294	307
72	Copper local loop	226	225	213
73	Incumbent LECs	57	56	61
74	Other (Non-ILECs)	194	194	181
75	Non-Incumbent LEC local exchange telephone service by means of provisioning	506	514	507
76	Provided over owned last-mile facilities	379	399	392
77	Provided over UNE-L obtained from unaffiliated entity	105	103	97
78	Provided over other services obtained from unaffiliated entity	192	177	178
79	Incumbent LEC local exchange telephone service provided to unaffiliated carriers for resale	20	25	23
80	Wholesale lines	18	23	21
81	UNE-L	10	11	11
82	Local exchange telephone service and long-distance service	966	965	952
83	Consumer-grade service	871	870	856
84	Incumbent LEC is preferred long-distance carrier for its local exchange service customer	668	668	665
85	Incumbent LEC is not preferred long-distance carrier for its local exchange service customer	662	659	658
86	Non-ILEC is preferred long-distance carrier for its local exchange service customer	379	387	380
87	Non-ILEC is not preferred long-distance carrier for its local exchange service customer	270	274	265
88	Business & Government-grade service	952	947	939
89	Incumbent LEC is preferred long-distance carrier for its local exchange service customer	667	665	664
90	Incumbent LEC is not preferred long-distance carrier for its local exchange service customer	638	641	637
91	Non-ILEC is preferred long-distance carrier for its local exchange service customer	444	457	456
92	Non-ILEC is not preferred long-distance carrier for its local exchange service customer	313	311	311
93	End user buys local exchange telephone service and Internet access service from same entity	877	882	880
94	End user buys both services from incumbent LEC or affiliates	693	695	696
95	End user buys both services from Non-ILEC or affiliates	425	440	440
96	End user buys interconnected VoIP and Internet access service from same entity	741	768	790
97	End user buys both services from incumbent LEC or affiliates	128	137	147
98	End user buys both services from Non-ILEC or affiliates	686	710	733

Table 3: Residential Wireline Voice Telephone Service Connections and Households by State as of December 31, 2020
(Connections and households, in thousands)

State	Households	Switched Access		Interconnected VoIP		Total	
		Connections	Ratio	Connections	Ratio	Connections	Ratio
Alabama	1,889	218	0.12	405	0.21	623	0.33
Alaska	255	*	*	*	*	83	0.33
American Samoa	10	5	0.52	-	*	5	0.52
Arizona	2,643	219	0.08	490	0.19	710	0.27
Arkansas	1,171	162	0.14	136	0.12	298	0.25
California	13,103	1,284	0.10	3,938	0.30	5,222	0.40
Colorado	2,137	267	0.12	482	0.23	749	0.35
Connecticut	1,385	136	0.10	642	0.46	779	0.56
Delaware	371	29	0.08	197	0.53	227	0.61
District of Columbia	288	26	0.09	85	0.29	110	0.38
Florida	7,931	531	0.07	2,438	0.31	2,969	0.37
Georgia	3,830	548	0.14	899	0.23	1,447	0.38
Guam	42	22	0.52	*	*	*	*
Hawaii	468	85	0.18	129	0.28	215	0.46
Idaho	649	97	0.15	42	0.06	139	0.21
Illinois	4,884	415	0.08	1,212	0.25	1,627	0.33
Indiana	2,603	286	0.11	495	0.19	781	0.30
Iowa	1,274	278	0.22	194	0.15	472	0.37
Kansas	1,142	125	0.11	179	0.16	304	0.27
Kentucky	1,748	372	0.21	323	0.18	695	0.40
Louisiana	1,752	171	0.10	367	0.21	538	0.31
Maine	570	113	0.20	164	0.29	277	0.49
Maryland	2,231	209	0.09	967	0.43	1,176	0.53
Massachusetts	2,647	203	0.08	1,293	0.49	1,496	0.57
Michigan	3,980	293	0.07	1,052	0.26	1,345	0.34
Minnesota	2,208	416	0.19	392	0.18	807	0.37
Mississippi	1,117	118	0.11	151	0.14	268	0.24
Missouri	2,440	273	0.11	483	0.20	756	0.31
Montana	436	95	0.22	74	0.17	169	0.39
Nebraska	767	140	0.18	123	0.16	263	0.34
Nevada	1,130	88	0.08	269	0.24	357	0.32
New Hampshire	539	84	0.16	227	0.42	311	0.58
New Jersey	3,272	228	0.07	1,818	0.56	2,045	0.62
New Mexico	793	142	0.18	104	0.13	246	0.31
New York	7,417	627	0.08	3,372	0.45	3,999	0.54
North Carolina	4,032	529	0.13	1,057	0.26	1,586	0.39
North Dakota	321	71	0.22	24	0.07	95	0.30
Northern Mariana Islands	16	6	0.37	*	*	*	*
Ohio	4,717	554	0.12	1,146	0.24	1,700	0.36
Oklahoma	1,494	155	0.10	218	0.15	373	0.25
Oregon	1,643	201	0.12	339	0.21	540	0.33
Pennsylvania	5,107	718	0.14	1,877	0.37	2,595	0.51
Puerto Rico	1,206	*	*	*	*	*	*
Rhode Island	415	32	0.08	163	0.39	194	0.47
South Carolina	1,961	290	0.15	424	0.22	714	0.36
South Dakota	348	78	0.22	33	0.09	111	0.32
Tennessee	2,639	354	0.13	528	0.20	882	0.33
Texas	9,906	737	0.07	1,949	0.20	2,687	0.27
Utah	1,003	105	0.10	164	0.16	269	0.27
Vermont	263	87	0.33	79	0.30	166	0.63
Virgin Islands	30	*	*	*	*	10	0.34
Virginia	3,184	378	0.12	1,039	0.33	1,417	0.45
Washington	2,906	342	0.12	679	0.23	1,021	0.35
West Virginia	734	186	0.25	171	0.23	357	0.49
Wisconsin	2,378	319	0.13	542	0.23	861	0.36
Wyoming	233	36	0.15	37	0.16	74	0.32
United States	123,657	13,837	0.11	33,837	0.27	47,674	0.39

- = Rounds to Zero; * = Data withheld to maintain firm confidentiality.

Notes: Numbers may not sum to totals due to rounding. Total fixed voice connections equal the sum of switched access lines and interconnected VoIP subscriptions. We calculate residential fixed voice connections per household using, in the denominator, U.S. household estimates from the 2016-2020 ACS 5-year estimates and, for Puerto Rico and the other inhabited island areas, Census 2010 households.

**Table 4: Mobile Voice Telephone Service Subscriptions and Population by State
as of December 31, 2020**
(Connections and population, in thousands)

State	Population	Directly-Billed		Not Directly-Billed		Total	
		Subscriptions	Ratio	Subscriptions	Ratio	Subscriptions	Ratio
Alabama	4,893	4,328	0.88	857	0.18	5,185	1.06
Alaska	737	687	0.93	35	0.05	721	0.98
American Samoa	56	*	*	*	*	*	*
Arizona	7,174	6,465	0.90	706	0.10	7,171	1.00
Arkansas	3,012	2,445	0.81	777	0.26	3,222	1.07
California	39,346	39,513	1.00	5,564	0.14	45,076	1.15
Colorado	5,685	5,244	0.92	701	0.12	5,945	1.05
Connecticut	3,571	3,486	0.98	487	0.14	3,972	1.11
Delaware	968	893	0.92	161	0.17	1,053	1.09
District of Columbia	702	1,284	1.83	253	0.36	1,537	2.19
Florida	21,217	19,609	0.92	2,729	0.13	22,338	1.05
Georgia	10,517	9,635	0.92	1,725	0.16	11,360	1.08
Guam	159	178	1.12	-	*	178	1.12
Hawaii	1,420	1,405	0.99	169	0.12	1,574	1.11
Idaho	1,754	1,566	0.89	201	0.11	1,767	1.01
Illinois	12,716	11,884	0.93	2,152	0.17	14,036	1.10
Indiana	6,697	5,391	0.81	1,337	0.20	6,728	1.00
Iowa	3,150	2,783	0.88	398	0.13	3,180	1.01
Kansas	2,913	2,488	0.85	448	0.15	2,936	1.01
Kentucky	4,462	3,615	0.81	750	0.17	4,365	0.98
Louisiana	4,665	4,131	0.89	794	0.17	4,925	1.06
Maine	1,341	1,040	0.78	308	0.23	1,348	1.01
Maryland	6,038	5,770	0.96	761	0.13	6,530	1.08
Massachusetts	6,873	6,615	0.96	899	0.13	7,514	1.09
Michigan	9,974	8,839	0.89	1,658	0.17	10,497	1.05
Minnesota	5,600	5,032	0.90	806	0.14	5,837	1.04
Mississippi	2,982	2,546	0.85	410	0.14	2,956	0.99
Missouri	6,124	5,271	0.86	818	0.13	6,089	0.99
Montana	1,062	890	0.84	191	0.18	1,081	1.02
Nebraska	1,924	1,727	0.90	288	0.15	2,015	1.05
Nevada	3,030	2,777	0.92	327	0.11	3,104	1.02
New Hampshire	1,355	1,162	0.86	233	0.17	1,395	1.03
New Jersey	8,885	9,147	1.03	1,359	0.15	10,506	1.18
New Mexico	2,097	1,922	0.92	253	0.12	2,175	1.04
New York	19,515	19,068	0.98	3,593	0.18	22,661	1.16
North Carolina	10,386	8,633	0.83	1,910	0.18	10,543	1.02
North Dakota	760	688	0.90	108	0.14	796	1.05
Northern Mariana Islands	54	*	*	*	*	*	*
Ohio	11,675	10,272	0.88	2,134	0.18	12,406	1.06
Oklahoma	3,949	3,348	0.85	513	0.13	3,861	0.98
Oregon	4,176	3,799	0.91	620	0.15	4,419	1.06
Pennsylvania	12,795	11,257	0.88	2,155	0.17	13,412	1.05
Puerto Rico	3,256	2,902	0.89	372	0.11	3,274	1.01
Rhode Island	1,058	988	0.93	139	0.13	1,127	1.07
South Carolina	5,092	4,126	0.81	883	0.17	5,009	0.98
South Dakota	879	733	0.83	135	0.15	868	0.99
Tennessee	6,772	6,023	0.89	1,111	0.16	7,135	1.05
Texas	28,635	27,124	0.95	2,897	0.10	30,021	1.05
Utah	3,151	2,725	0.86	353	0.11	3,078	0.98
Vermont	624	469	0.75	133	0.21	602	0.96
Virgin Islands	106	*	*	*	*	*	*
Virginia	8,509	7,835	0.92	1,157	0.14	8,992	1.06
Washington	7,512	6,963	0.93	938	0.12	7,901	1.05
West Virginia	1,807	1,375	0.76	239	0.13	1,614	0.89
Wisconsin	5,807	4,807	0.83	934	0.16	5,741	0.99
Wyoming	581	526	0.90	93	0.16	619	1.06
United States	330,200	303,547	0.92	48,974	0.15	352,522	1.07

- = Rounds to Zero; * = Data withheld to maintain firm confidentiality.

Notes: Numbers may not sum to totals due to rounding. Directly-billed subscriptions are those where the customer is directly billed by the facilities-based provider. Total mobile voice subscriptions equal the sum of subscriptions that are directly-billed and those that are not. We calculate mobile voice subscriptions per person using, in the denominator, U.S. population estimates from the 2016-2020 ACS 5-year estimates and, for Puerto Rico and the other inhabited island areas, Census 2010 populations.

Technical Notes

Detailed information about the current Form 477 reporting requirements is available at <https://www.fcc.gov/general/form-477-resources-filers>.

Counting lines and subscribers

- Form 477 counts both switched access lines and interconnected VoIP subscriptions as the maximum number of calls that may be active, simultaneously, from the end user's location under the purchased service plan. All VoIP subscriptions discussed in this report are interconnected VoIP subscriptions.
- Form 477 data may not count all VoIP phone connections to Internet Protocol Private Branch Exchange (IP PBX) equipment that is owned by business end users because of the variety of ways the IP PBX may connect to the public switched telephone network.

Holding company-subsidary relationships

- When counting service providers that report voice telephone service in a particular geography, we count a holding company or common-control entity no more than once in any specified sub-category of total providers.
- Nationwide counts of providers are unique counts for any specified sub-category of total providers (for example, all non-ILECs or all interconnected VoIP providers); an entity operating in multiple states is counted only once.

ILEC-CLEC affiliations

- If a CLEC is affiliated with an ILEC and reports some end-user switched access lines or interconnected VoIP subscriptions in the ILEC's service area in the state, then the switched access lines or interconnected VoIP subscriptions reported by the CLEC are allocated between the ILEC and non-ILEC categories based on staff estimates.

Mobile voice subscriptions

- Commercial mobile radio service carriers that own or operate wireless networks report both their retail voice service subscriptions and the retail subscriptions of the mobile voice service resellers that use their network. Mobile voice service resellers do not file Form 477.
- Providers may assign subscriptions to a particular state based on the area code of the device's telephone number, or by using some other method that best reflects the subscriber's location, such as a billing address of the device's place of primary use address.

UNE-Platform lines replaced by commercial agreements

- UNE-Platform (UNE-P) was the combination of ILEC loop UNE, switching UNE, and transport UNE. The Commission directed CLECs to migrate their retail customers served by UNE-P to an alternative arrangement within 12 months of the effective date of the *Triennial Review Remand Order*, that is, by March 11, 2006. See C.F.R. § 51.319(d)(2)(ii). Such lines are reported on Form 477 as ILEC wholesale lines provided to unaffiliated providers for resale.

Glossary

Term	Definition
All Other interconnected VoIP	Interconnected VoIP service other than OTT interconnected VoIP. (See the definition of OTT VoIP, below.)
Broadband connection	A wired line or wireless channel that terminates at an end-user location and enables the end user to receive information from and/or send information to the Internet at information transfer rates exceeding 200 kilobits per second in at least one direction.
Circuit switching	A method of completing electronic communications in which a transmission path is established for dedicated use by a communication; the basis of the public switched telephone network.
Coaxial cable	The technology widely used by cable system operators to terminate their services at the end user's premises.
Copper local loop	The technology widely used by telephone companies to terminate their service at the end user's premises.
CLEC	Competitive Local Exchange Carrier: A local exchange carrier (LEC) that operates within the traditional service area of an unaffiliated incumbent LEC.
End users	Residential, business, institutional, or government entities that use services for their own purposes and who do not resell such services to other entities.
Fixed wireless service	A radio communication service between specified fixed points.
FTTP or FTTH	Fiber to the Premises (Home): A network access architecture in which optical fiber is deployed all the way to the customer's premises (home).
Internet access service	Service that provides end users access to the Internet.
ILEC	Incumbent Local Exchange Carrier: A company or cooperative that was providing telephone service in a localized area, typically on a monopoly basis, prior to enactment of the Telecommunications Act of 1996.
Internet protocol or IP	A language and set of formal rules that govern how packets transit the Internet.
Interconnected VoIP	A service that enables real-time, two-way voice communications; requires a broadband connection from the user's location; requires Internet-protocol compatible customer premises equipment; and permits users generally to receive calls that originate on the public switched telephone network and to terminate calls to the public switched telephone network.
LEC	Local Exchange Carrier: A company that provides telephone service within a localized area and access services that connect its customers to long-distance (Interexchange Carrier) networks.
Local loop	The physical connection between the customer's premises and the telephone company's local switching office, typically provided using copper, fiber, or a combination of copper and fiber facilities.
Mobile wireless service	A radio communication service between mobile and fixed stations, or between mobile stations.

Non-ILEC	Any provider of communications services who does not have ILEC regulatory status. A voice-service affiliate of an ILEC that is operating outside the ILEC's traditional service area ("study area") is a Non-ILEC.
OTT interconnected VoIP	Over-the-top interconnected VoIP: Service delivered to the end-user customer's premises over a high-capacity connection that the customer obtains (that is, buys), or has the use of, from an entity not affiliated with the interconnected VoIP service provider. (Colloquially, "bring-your-own-broadband.")
PBX	Private Branch Exchange: A communications switch that is owned or leased by the service provider's end-user customer and generally located on the customer's premises.
Packet switching	A method of completing electronic communications in which the information is disassembled into discrete packets that are transmitted independently and later reassembled; IP is an example.
Retail wireline voice telephone service	Switched access lines and interconnected VoIP subscriptions for which an end user is the customer.
Switched access line	A service connection between an end user and the local telephone company's switch; the basis of plain old telephone service (POTS).
UNE	Unbundled Network Element: A physical or functional element of an ILEC network that must be provided to a CLEC at a cost-based price, as provide for in the Telecommunications Act of 1996.
UNE-L	UNE-Loop: An ILEC unbundled local loop provided to a CLEC at a cost-based price.
Wholesale switched access lines	Local telephone service provided to an unaffiliated telephone company, which resells the service to end users; typically provided by an ILEC to a CLEC.

Customer Response

Publication: *Voice Telephone Services: Status as of December 31, 2020*

You can help us provide the best possible information to the public by completing this form and returning it to the Industry Analysis Division of the FCC's Office of Economics and Analytics.

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3. Overall, how do you rate this report?
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4. How can this report be improved?

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