

Voice Telephone Services: Status as of December 31, 2019

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Voice Telephone Services: Status as of December 31, 2019

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.

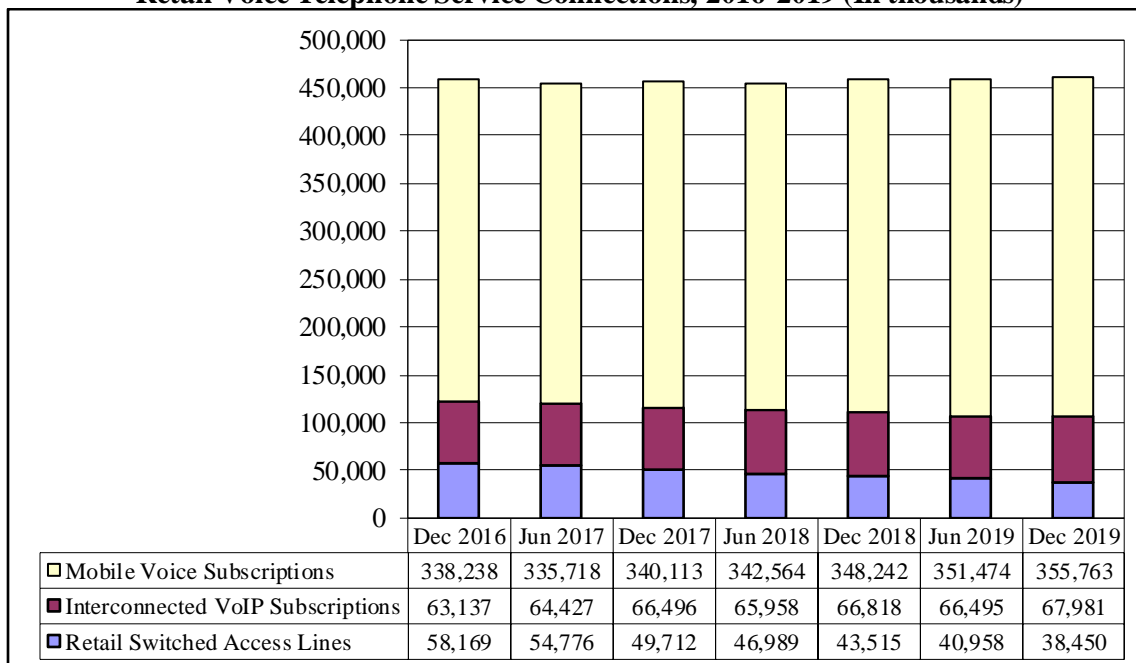
³ The Technical Notes and the Glossary that appear at the end of this report provide more-detailed information about the current Form 477 and the meaning of terms used in this report. To be consistent with modifications to Form 477 adopted in 2013 (to be effective for reporting June 2014 and later data), 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 2019, there were 38 million end-user switched access lines in service, 68 million interconnected VoIP subscriptions, and 356 million mobile subscriptions, for a total of 462 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 2%, mobile voice subscriptions increased at a compound annual growth rate of 2%, and retail switched access lines declined at a compound annual growth rate of 13% per year.⁵

Figure 1
Retail Voice Telephone Service Connections, 2016-2019 (In thousands)



Note: Some previously published data have been revised.

- Of the 106 million wireline retail voice telephone service connections (including both switched access lines and interconnected VoIP subscriptions) in December 2019, 52 million (or 49%) were residential connections and 55 million (or 51%) were business connections.⁶ See Figure 2.

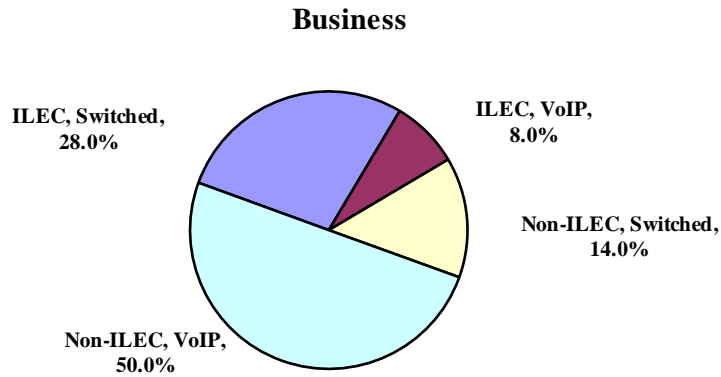
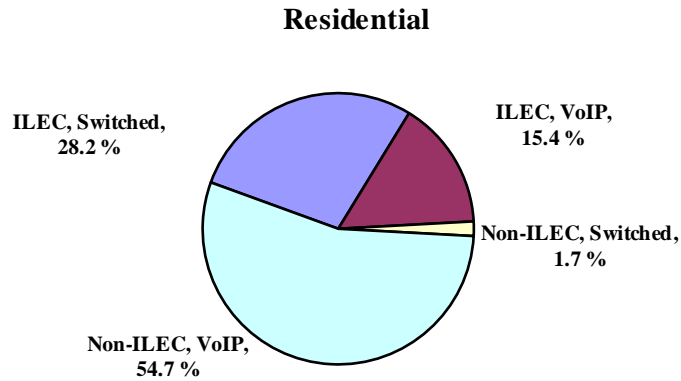
⁴ The presentation of mobile wireless telephone subscriber counts in this report does not constitute, or imply, Commission analysis of the extent to which wireline and mobile wireless telephone services are demand substitutes or complements in general or in any particular situation.

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 the number 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, 2019 (In thousands)

Total	Switched Access Lines	Interconnected VoIP	Total
ILEC	29,897	12,310	42,207
Non-ILEC	8,553	55,671	64,224
Total	38,450	67,981	106,431
Residential			
ILEC	14,603	7,966	22,569
Non-ILEC	893	28,331	29,224
Residential Total	15,496	36,297	51,794
Business			
ILEC	15,294	4,344	19,638
Non-ILEC	7,660	27,340	35,000
Business Total	22,953	31,684	54,638

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 52 million wireline residential connections in December 2019 were: 28.2% ILEC switched access lines, 54.7% non-ILEC interconnected VoIP subscriptions, 15.4% ILEC interconnected VoIP subscriptions, and 1.7% non-ILEC switched access lines. Similarly, the 55 million wireline business connections were: 28.0% ILEC switched access lines, 50.0% non-ILEC interconnected VoIP subscriptions, 8.0% ILEC interconnected VoIP subscriptions, and 14.0% 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.

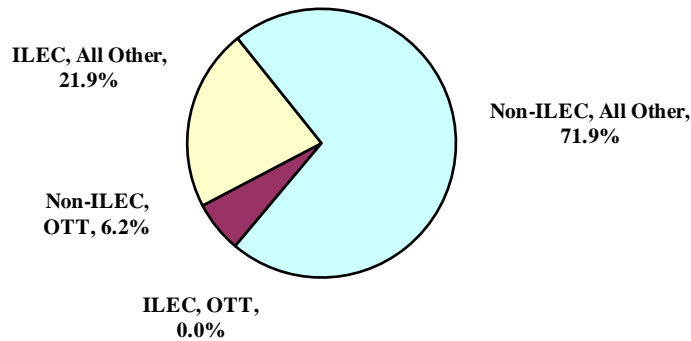
⁷ A broadband connection may or may not provide the end user with internet access.

Figure 3
Interconnected VoIP Subscribership by Reported Service Features, Regulatory Status,
and Customer Type as of December 31, 2019 (In thousands)

Total	Over-the-Top (OTT)	All Other VoIP	Total
ILEC	71	12,240	12,310
Non-ILEC	11,715	43,956	55,671
Total	11,786	56,195	67,981
Residential			
ILEC	2	7,964	7,966
Non-ILEC	2,249	26,082	28,331
Residential Total	2,251	34,046	36,297
Business			
ILEC	69	4,275	4,344
Non-ILEC	9,467	17,874	27,340
Business Total	9,535	22,149	31,684

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

Residential



Business

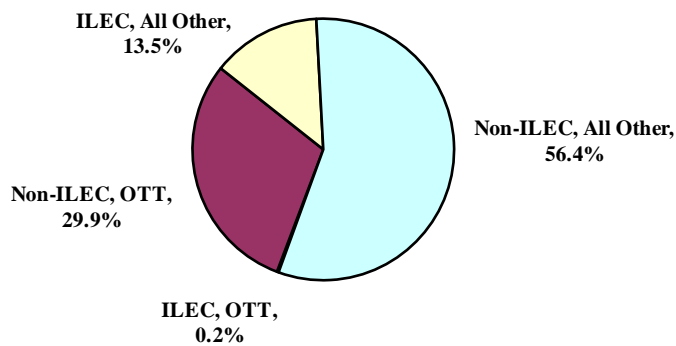
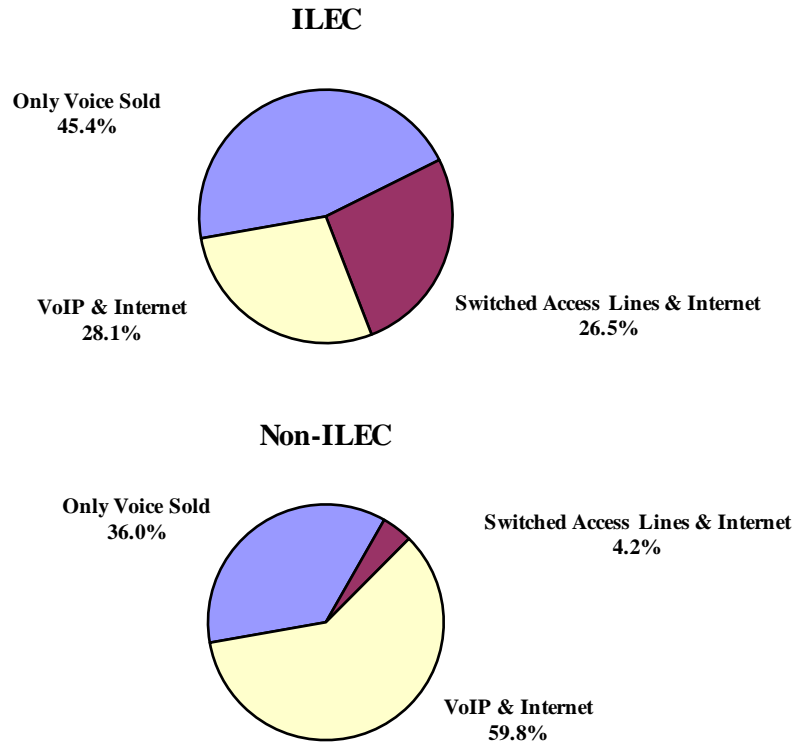


Figure 4
Retail Relationships of Wireline Voice Telephone Service with Internet Access Service
By Regulatory Status as of December 31, 2019 (In thousands)

Total	ILEC	Non-ILEC	Total
Switched Access Lines	29,897	8,553	38,450
Over-the-Top VoIP	71	11,715	11,786
All Other VoIP	12,240	43,956	56,195
Total	42,207	64,224	106,431
Sold with Internet			
Switched Access Lines	11,172	2,705	13,878
Over-the-Top VoIP	0	0	0
All Other VoIP	11,860	38,381	50,241
Total	23,032	41,086	64,119
Sold Without Internet			
Switched Access Lines	18,725	5,848	24,572
Over-the-Top VoIP	71	11,715	11,786
All Other VoIP	380	5,575	5,954
Total	19,175	23,138	42,312

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 2018, and for June and December 2019, 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 2019.
- Table 4 shows mobile voice telephone service subscriptions by state for December 2019.

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 2018)
- State-level Number of Providers table in Excel format (data back to December 2018)
- 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 2018	June 2019	Dec 2019
1	Mobile telephony	348,242	351,474	355,763
2	Directly-billed or prepaid	308,726	310,668	314,122
3	Not directly-billed or prepaid	39,516	40,807	41,641
4	Wireline End-User Switched Access Lines and Interconnected VoIP Subscriptions	110,333	107,452	106,431
5	Incumbent LECs	47,256	44,639	42,207
6	Other (Non-ILECs) - Note: ILEC voice-service affiliate operating outside ILEC's study area is included here.	63,077	62,813	64,224
7	Consumer-grade service	56,209	53,862	51,794
8	Incumbent LECs	25,604	24,027	22,569
9	Other (Non-ILECs)	30,605	29,835	29,224
10	Business & Government-grade service	54,124	53,590	54,638
11	Incumbent LECs	21,652	20,612	19,638
12	Other (Non-ILECs)	32,472	32,978	35,000
13	Local exchange telephone service (Switched Access Lines)	43,515	40,958	38,450
14	Incumbent LECs	34,054	31,975	29,897
15	Other (Non-ILECs) - Note: ILEC voice-service affiliate operating outside ILEC's study area is included here.	9,460	8,982	8,553
16	Consumer-grade service	17,609	16,470	15,496
17	Incumbent LECs	16,568	15,511	14,603
18	Other (Non-ILECs)	1,041	959	893
19	Business & Government-grade service	25,906	24,488	22,953
20	Incumbent LECs	17,486	16,465	15,294
21	Other (Non-ILECs)	8,419	8,023	7,660
22	Interconnected VoIP Subscriptions - Note: Includes both Over-the-top (OTT) and All Other sub-categories.	66,818	66,495	67,981
23	Incumbent LECs	13,201	12,663	12,310
24	Other (Non-ILECs) - Note: ILEC voice-service affiliate operating outside ILEC's study area is included here.	53,617	53,831	55,671
25	Consumer-grade service	38,600	37,393	36,297
26	Incumbent LECs	9,036	8,516	7,966
27	Other (Non-ILECs)	29,564	28,877	28,331
28	Business & Government-grade service	28,218	29,102	31,684
29	Incumbent LECs	4,165	4,147	4,344
30	Other (Non-ILECs)	24,053	24,955	27,340
31	Over-the-top interconnected VoIP	10,039	10,928	11,786
32	Incumbent LECs	69	70	71
33	Other (Non-ILECs) - Note: ILEC voice-service affiliate operating outside ILEC's study area is included here.	9,969	10,858	11,715
34	Consumer-grade service	2,318	2,268	2,251
35	Incumbent LECs	2	2	2
36	Other (Non-ILECs)	2,316	2,266	2,249
37	Business & Government-grade service	7,720	8,659	9,535
38	Incumbent LECs	67	68	69
39	Other (Non-ILECs)	7,653	8,591	9,467
40	AllOther interconnected VoIP	56,780	55,568	56,195
41	Incumbent LECs	13,132	12,594	12,240
42	Other (Non-ILECs) - Note: ILEC voice-service affiliate operating outside ILEC's study area is included here.	43,648	42,974	43,956
43	Consumer-grade service	36,282	35,124	34,046
44	Incumbent LECs	9,034	8,514	7,964
45	Other (Non-ILECs)	27,249	26,610	26,082
46	Business & Government-grade service	20,498	20,443	22,149
47	Incumbent LECs	4,098	4,080	4,275
48	Other (Non-ILECs)	16,400	16,364	17,874
49	Local exchange telephone service by last-mile delivery medium	43,515	40,958	38,450
50	Fiber-to-the-premises	5,714	4,604	4,469
51	Incumbent LECs	3,851	2,784	2,711
52	Other (Non-ILECs)	1,863	1,820	1,757
53	Coaxial cable	480	542	466
54	Incumbent LECs	56	56	47
55	Other (Non-ILECs)	424	486	419

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

Reference	Data element	Dec 2018	June 2019	Dec 2019
56	Terrestrial fixed wireless	29	30	34
57	Incumbent LECs	14	13	15
58	Other (Non-ILECs)	15	17	18
59	Copper local loop	37,292	35,782	33,481
60	Incumbent LECs	30,134	29,123	27,123
61	Other (Non-ILECs)	7,158	6,658	6,358
62	All Other interconnected VoIP by last-mile delivery medium	56,780	55,568	56,195
63	Fiber-to-the-premises	8,843	8,633	8,920
64	Incumbent LECs	6,230	6,239	6,080
65	Other (Non-ILECs)	2,613	2,395	2,840
66	Coaxial cable	34,385	33,950	33,409
67	Incumbent LECs	7	8	11
68	Other (Non-ILECs)	34,378	33,942	33,398
69	Terrestrial fixed wireless or satellite	189	201	206
70	Incumbent LECs	0	0	0
71	Other (Non-ILECs)	189	200	206
72	Copper local loop	13,363	12,784	13,660
73	Incumbent LECs	6,895	6,347	6,148
74	Other (Non-ILECs)	6,468	6,437	7,512
75	Non-Incumbent LEC local exchange telephone service by means of provisioning	9,460	8,982	8,553
76	Provided over owned last-mile facilities	3,162	3,082	2,936
77	Provided over UNE-L obtained from unaffiliated entity	1,440	1,352	1,473
78	Provided over other services obtained from unaffiliated entity	4,859	4,548	4,144
79	Incumbent LEC local exchange telephone service provided to unaffiliated carriers for resale	4,686	4,526	4,130
80	Wholesale lines	3,015	2,870	2,723
81	UNE-L	1,671	1,657	1,407
82	Local exchange telephone service and long-distance service	43,515	40,958	38,450
83	Consumer-grade service	17,609	16,470	15,496
84	Incumbent LEC is preferred long-distance carrier for its local exchange service customer	11,189	10,515	9,779
85	Incumbent LEC is not preferred long-distance carrier for its local exchange service customer	5,379	4,996	4,824
86	Non-ILEC is preferred long-distance carrier for its local exchange service customer	861	799	736
87	Non-ILEC is not preferred long-distance carrier for its local exchange service customer	180	160	157
88	Business & Government-grade service	25,906	24,488	22,953
89	Incumbent LEC is preferred long-distance carrier for its local exchange service customer	9,613	9,371	8,621
90	Incumbent LEC is not preferred long-distance carrier for its local exchange service customer	7,873	7,094	6,673
91	Non-ILEC is preferred long-distance carrier for its local exchange service customer	6,001	6,075	5,808
92	Non-ILEC is not preferred long-distance carrier for its local exchange service customer	2,418	1,948	1,851
93	End user buys local exchange telephone service and Internet access service from same entity	15,520	15,546	13,878
94	End user buys both services from incumbent LEC or affiliates	12,292	12,332	11,172
95	End user buys both services from Non-ILEC or affiliates	3,229	3,213	2,705
96	End user buys interconnected VoIP and Internet access service from same entity	51,930	50,354	50,241
97	End user buys both services from incumbent LEC or affiliates	12,828	12,288	11,860
98	End user buys both services from Non-ILEC or affiliates	39,103	38,067	38,381

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

Reference	Data element	Dec 2018	June 2019	Dec 2019
1	Mobile telephony	72	71	69
2	Directly-billed or prepaid	72	71	69
3	Not directly-billed or prepaid	7	7	8
4	Wireline End-User Switched Access Lines and Interconnected VoIP Subscriptions	1,917	1,971	2,028
5	Incumbent LECs	727	723	715
6	Other (Non-ILECs) - Note: ILEC voice-service affiliate operating outside ILEC's study area is included here.	1,498	1,560	1,626
7	Consumer-grade service	1,278	1,294	1,315
8	Incumbent LECs	727	722	715
9	Other (Non-ILECs)	846	876	905
10	Business & Government-grade service	1,820	1,871	1,923
11	Incumbent LECs	723	719	711
12	Other (Non-ILECs)	1,400	1,459	1,521
13	Local exchange telephone service (Switched Access Lines)	993	977	966
14	Incumbent LECs	724	720	709
15	Other (Non-ILECs) - Note: ILEC voice-service affiliate operating outside ILEC's study area is included here.	514	505	507
16	Consumer-grade service	897	881	871
17	Incumbent LECs	724	719	709
18	Other (Non-ILECs)	408	401	403
19	Business & Government-grade service	975	963	952
20	Incumbent LECs	721	717	707
21	Other (Non-ILECs)	494	489	490
22	Interconnected VoIP Subscriptions - Note: Includes both Over-the-top (OTT) and All Other sub-categories.	1,325	1,398	1,464
23	Incumbent LECs	135	143	144
24	Other (Non-ILECs) - Note: ILEC voice-service affiliate operating outside ILEC's study area is included here.	1,269	1,342	1,403
25	Consumer-grade service	610	641	671
26	Incumbent LECs	77	81	80
27	Other (Non-ILECs)	566	595	625
28	Business & Government-grade service	1,231	1,299	1,364
29	Incumbent LECs	128	138	139
30	Other (Non-ILECs)	1,182	1,247	1,307
31	Over-the-top interconnected VoIP	813	859	907
32	Incumbent LECs	29	30	31
33	Other (Non-ILECs) - Note: ILEC voice-service affiliate operating outside ILEC's study area is included here.	802	848	893
34	Consumer-grade service	181	181	177
35	Incumbent LECs	13	13	12
36	Other (Non-ILECs)	174	172	170
37	Business & Government-grade service	770	814	863
38	Incumbent LECs	26	27	28
39	Other (Non-ILECs)	762	805	852
40	All Other interconnected VoIP	739	782	805
41	Incumbent LECs	125	136	137
42	Other (Non-ILECs) - Note: ILEC voice-service affiliate operating outside ILEC's study area is included here.	684	727	745
43	Consumer-grade service	492	520	554
44	Incumbent LECs	70	75	75
45	Other (Non-ILECs)	451	477	512
46	Business & Government-grade service	671	711	733
47	Incumbent LECs	119	131	133
48	Other (Non-ILECs)	622	660	676
49	Local exchange telephone service by last-mile delivery medium	993	977	966
50	Fiber-to-the-premises	758	757	758
51	Incumbent LECs	601	611	613
52	Other (Non-ILECs)	368	362	369
53	Coaxial cable	83	83	79
54	Incumbent LECs	23	21	17
55	Other (Non-ILECs)	69	72	71

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

Reference	Data element	Dec 2018	June 2019	Dec 2019
56	Terrestrial fixed wireless	79	76	74
57	Incumbent LECs	50	41	40
58	Other (Non-ILECs)	42	45	48
59	Copper local loop	784	774	748
60	Incumbent LECs	581	574	552
61	Other (Non-ILECs)	330	324	318
62	All Other interconnected VoIP by last-mile delivery medium	739	782	805
63	Fiber-to-the-premises	481	512	543
64	Incumbent LECs	113	123	125
65	Other (Non-ILECs)	432	459	491
66	Coaxial cable	215	221	216
67	Incumbent LECs	9	12	10
68	Other (Non-ILECs)	211	214	209
69	Terrestrial fixed wireless or satellite	252	282	283
70	Incumbent LECs	12	11	10
71	Other (Non-ILECs)	243	274	276
72	Copper local loop	220	229	225
73	Incumbent LECs	52	56	57
74	Other (Non-ILECs)	193	199	193
75	Non-Incumbent LEC local exchange telephone service by means of provisioning	514	505	507
76	Provided over owned last-mile facilities	380	382	380
77	Provided over UNE-L obtained from unaffiliated entity	110	101	105
78	Provided over other services obtained from unaffiliated entity	199	188	191
79	Incumbent LEC local exchange telephone service provided to unaffiliated carriers for resale	21	21	20
80	Wholesale lines	19	19	18
81	UNE-L	10	10	10
82	Local exchange telephone service and long-distance service	993	977	966
83	Consumer-grade service	897	881	871
84	Incumbent LEC is preferred long-distance carrier for its local exchange service customer	677	674	668
85	Incumbent LEC is not preferred long-distance carrier for its local exchange service customer	670	671	662
86	Non-ILEC is preferred long-distance carrier for its local exchange service customer	384	378	380
87	Non-ILEC is not preferred long-distance carrier for its local exchange service customer	272	275	271
88	Business & Government-grade service	975	963	952
89	Incumbent LEC is preferred long-distance carrier for its local exchange service customer	676	671	667
90	Incumbent LEC is not preferred long-distance carrier for its local exchange service customer	645	652	638
91	Non-ILEC is preferred long-distance carrier for its local exchange service customer	450	445	444
92	Non-ILEC is not preferred long-distance carrier for its local exchange service customer	323	309	315
93	End user buys local exchange telephone service and Internet access service from same entity	906	885	877
94	End user buys both services from incumbent LEC or affiliates	707	704	693
95	End user buys both services from Non-ILEC or affiliates	437	421	426
96	End user buys interconnected VoIP and Internet access service from same entity	671	711	741
97	End user buys both services from incumbent LEC or affiliates	117	124	128
98	End user buys both services from Non-ILEC or affiliates	620	662	686

Table 3: Residential Wireline Voice Telephone Service Connections and Households by State as of December 31, 2019
(Connections and households, in thousands)

State	Households	Switched Access		Interconnected VoIP		Total	
		Connections	Ratio	Connections	Ratio	Connections	Ratio
Alaska	253	*	*	*	*	87	0.34
Alabama	1,868	246	0.13	437	0.23	683	0.37
Arkansas	1,158	173	0.15	167	0.14	340	0.29
American Samoa	10	4	0.41	-	-	4	0.41
Arizona	2,571	247	0.10	569	0.22	817	0.32
California	13,044	1,439	0.11	4,231	0.32	5,670	0.43
Colorado	2,149	302	0.14	502	0.23	804	0.37
Connecticut	1,371	154	0.11	681	0.50	835	0.61
District of Columbia	284	41	0.14	92	0.32	132	0.46
Delaware	363	35	0.10	205	0.56	240	0.66
Florida	7,736	614	0.08	2,631	0.34	3,244	0.42
Georgia	3,759	567	0.15	960	0.26	1,527	0.41
Guam	42	21	0.50	*	*	*	*
Hawaii	459	95	0.21	129	0.28	224	0.49
Iowa	1,265	310	0.24	211	0.17	520	0.41
Idaho	630	104	0.17	44	0.07	149	0.24
Illinois	4,846	470	0.10	1,322	0.27	1,793	0.37
Indiana	2,570	326	0.13	532	0.21	858	0.33
Kansas	1,129	139	0.12	199	0.18	338	0.30
Kentucky	1,735	385	0.22	339	0.20	724	0.42
Louisiana	1,739	198	0.11	439	0.25	637	0.37
Massachusetts	2,617	241	0.09	1,375	0.53	1,616	0.62
Maryland	2,205	241	0.11	1,038	0.47	1,279	0.58
Maine	560	123	0.22	169	0.30	291	0.52
Michigan	3,935	328	0.08	1,114	0.28	1,442	0.37
Minnesota	2,186	462	0.21	415	0.19	877	0.40
Missouri	2,415	304	0.13	527	0.22	831	0.34
Northern Mariana Isl	16	7	0.44	*	*	*	*
Mississippi	1,104	129	0.12	165	0.15	294	0.27
Montana	428	103	0.24	77	0.18	180	0.42
North Carolina	3,965	586	0.15	1,095	0.28	1,681	0.42
North Dakota	318	79	0.25	27	0.08	105	0.33
Nebraska	759	156	0.21	134	0.18	289	0.38
New Hampshire	532	92	0.17	237	0.45	329	0.62
New Jersey	3,232	273	0.08	1,948	0.60	2,221	0.69
New Mexico	780	152	0.19	104	0.13	257	0.33
Nevada	1,099	103	0.09	302	0.27	405	0.37
New York	7,343	732	0.10	3,570	0.49	4,302	0.59
Ohio	4,676	615	0.13	1,225	0.26	1,840	0.39
Oklahoma	1,480	171	0.12	257	0.17	428	0.29
Oregon	1,612	226	0.14	344	0.21	570	0.35
Pennsylvania	5,053	889	0.18	1,978	0.39	2,867	0.57
Puerto Rico	1,193	*	*	*	*	*	*
Rhode Island	410	37	0.09	182	0.44	219	0.53
South Carolina	1,922	321	0.17	440	0.23	761	0.40
South Dakota	344	86	0.25	36	0.10	122	0.35
Tennessee	2,597	389	0.15	553	0.21	942	0.36
Texas	9,692	821	0.08	2,171	0.22	2,992	0.31
Utah	977	115	0.12	173	0.18	288	0.29
Virginia	3,151	434	0.14	1,137	0.36	1,571	0.50
Virgin Islands	30	*	*	*	*	11	0.37
Vermont	260	94	0.36	81	0.31	175	0.67
Washington	2,848	377	0.13	709	0.25	1,086	0.38
Wisconsin	2,358	354	0.15	571	0.24	924	0.39
West Virginia	733	198	0.27	206	0.28	404	0.55
Wyoming	230	40	0.17	39	0.17	79	0.34
United States	122,046	15,496	0.13	36,297	0.30	51,794	0.42

- = 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 2015-2019 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, 2019**
(Connections and population, in thousands)

State	Population	Directly-Billed		Not Directly-Billed		Total	
		Subscriptions	Ratio	Subscriptions	Ratio	Subscriptions	Ratio
Alaska	737	680	0.92	30	0.04	710	0.96
Alabama	4,876	4,310	0.88	745	0.15	5,055	1.04
Arkansas	2,999	2,379	0.79	788	0.26	3,167	1.06
American Samoa	56	*	*	*	*	*	*
Arizona	7,050	6,480	0.92	717	0.10	7,197	1.02
California	39,283	40,998	1.04	3,453	0.09	44,451	1.13
Colorado	5,610	5,403	0.96	723	0.13	6,126	1.09
Connecticut	3,575	3,446	0.96	367	0.10	3,812	1.07
District of Columbia	693	1,382	2.00	212	0.31	1,593	2.30
Delaware	957	854	0.89	134	0.14	988	1.03
Florida	20,902	20,304	0.97	1,975	0.09	22,279	1.07
Georgia	10,404	9,782	0.94	1,512	0.15	11,295	1.09
Guam	159	188	1.18	-	-	188	1.18
Hawaii	1,422	1,487	1.05	133	0.09	1,620	1.14
Iowa	3,140	2,829	0.90	364	0.12	3,193	1.02
Idaho	1,718	1,557	0.91	184	0.11	1,741	1.01
Illinois	12,771	12,776	1.00	1,450	0.11	14,226	1.11
Indiana	6,666	5,646	0.85	1,093	0.16	6,739	1.01
Kansas	2,911	2,549	0.88	684	0.23	3,233	1.11
Kentucky	4,449	3,697	0.83	650	0.15	4,347	0.98
Louisiana	4,664	4,314	0.92	1,151	0.25	5,465	1.17
Massachusetts	6,851	7,165	1.05	847	0.12	8,012	1.17
Maryland	6,019	6,084	1.01	760	0.13	6,844	1.14
Maine	1,335	1,035	0.77	297	0.22	1,332	1.00
Michigan	9,965	9,406	0.94	1,317	0.13	10,723	1.08
Minnesota	5,563	5,152	0.93	804	0.14	5,956	1.07
Missouri	6,105	5,545	0.91	864	0.14	6,409	1.05
Northern Mariana Isl	54	*	*	*	*	*	*
Mississippi	2,984	2,441	0.82	373	0.12	2,814	0.94
Montana	1,051	871	0.83	177	0.17	1,048	1.00
North Carolina	10,265	9,014	0.88	1,386	0.14	10,400	1.01
North Dakota	757	690	0.91	102	0.13	792	1.05
Nebraska	1,915	1,784	0.93	233	0.12	2,016	1.05
New Hampshire	1,348	1,155	0.86	206	0.15	1,361	1.01
New Jersey	8,879	8,972	1.01	1,211	0.14	10,183	1.15
New Mexico	2,092	1,881	0.90	204	0.10	2,085	1.00
Nevada	2,972	2,827	0.95	327	0.11	3,155	1.06
New York	19,572	20,955	1.07	3,280	0.17	24,235	1.24
Ohio	11,655	11,031	0.95	1,676	0.14	12,706	1.09
Oklahoma	3,933	3,405	0.87	459	0.12	3,865	0.98
Oregon	4,130	3,885	0.94	496	0.12	4,381	1.06
Pennsylvania	12,792	11,771	0.92	2,094	0.16	13,864	1.08
Puerto Rico	3,318	2,763	0.83	281	0.08	3,045	0.92
Rhode Island	1,057	931	0.88	116	0.11	1,047	0.99
South Carolina	5,021	4,171	0.83	784	0.16	4,956	0.99
South Dakota	871	721	0.83	132	0.15	853	0.98
Tennessee	6,709	6,316	0.94	920	0.14	7,236	1.08
Texas	28,261	27,878	0.99	2,491	0.09	30,369	1.07
Utah	3,097	2,771	0.89	282	0.09	3,053	0.99
Virginia	8,454	7,870	0.93	972	0.11	8,842	1.05
Virgin Islands	106	*	*	*	*	*	*
Vermont	624	472	0.76	129	0.21	601	0.96
Washington	7,404	7,001	0.95	866	0.12	7,867	1.06
Wisconsin	5,791	5,001	0.86	819	0.14	5,820	1.01
West Virginia	1,817	1,359	0.75	280	0.15	1,639	0.90
Wyoming	581	526	0.91	87	0.15	613	1.06
United States	328,391	314,122	0.96	41,641	0.13	355,763	1.08

- = 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 2015-2019 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-subsidiary 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.
FOTP 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, 2019*

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Data accuracy	()	()	()	()	()
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3. Overall, how do you rate this report?	Excellent	Good	Satisfactory	Poor	No opinion
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