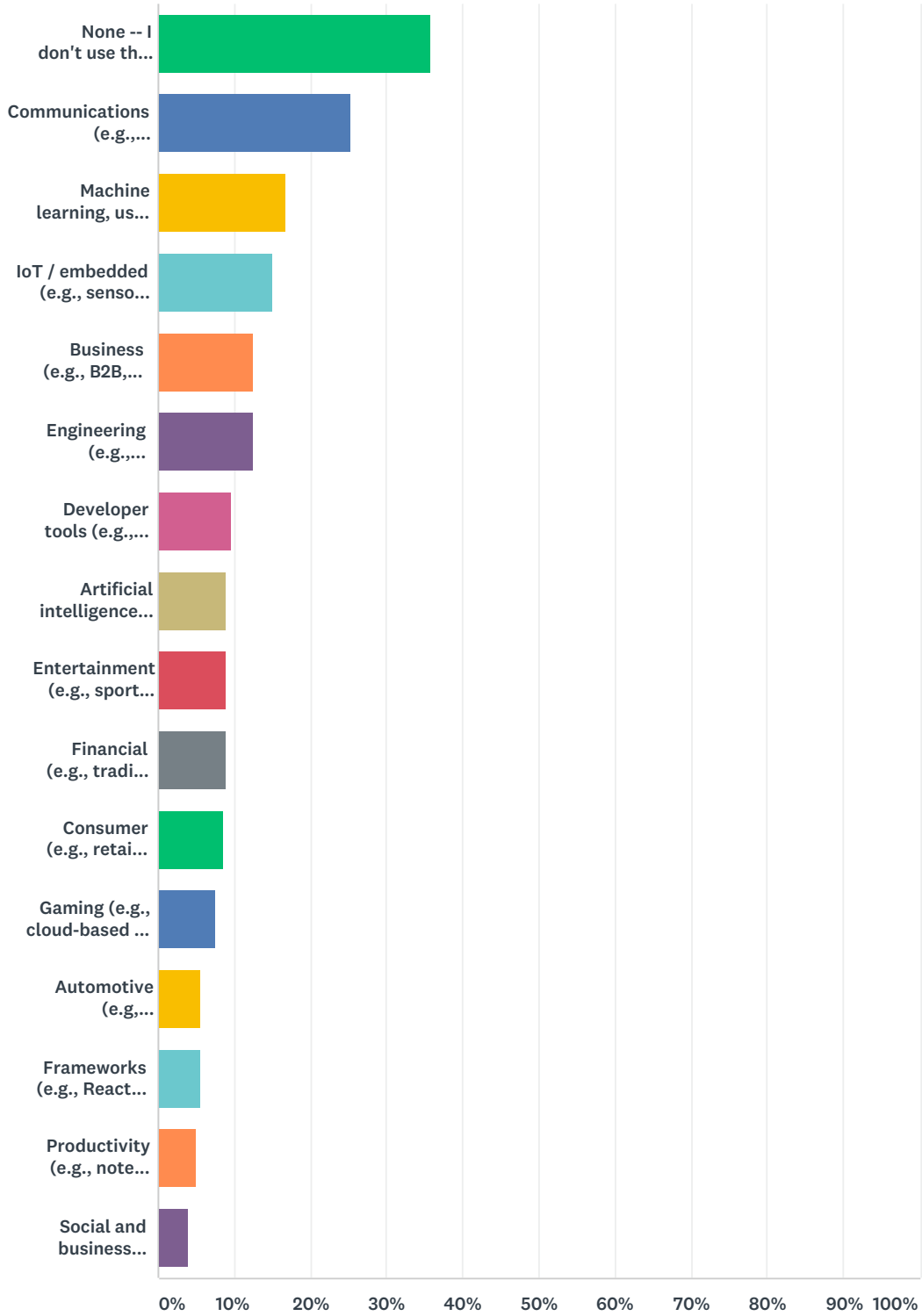


Q1 This month we focus on how C++ is used, or could be better for use, in cloud-related applications and environments. In what (if any) kinds of cloud computing-related workloads do you use C++? (select all that apply)

Answered: 198 Skipped: 5

C++ Developer Survey "Lite": 2018-08 -- C++ and Cloud



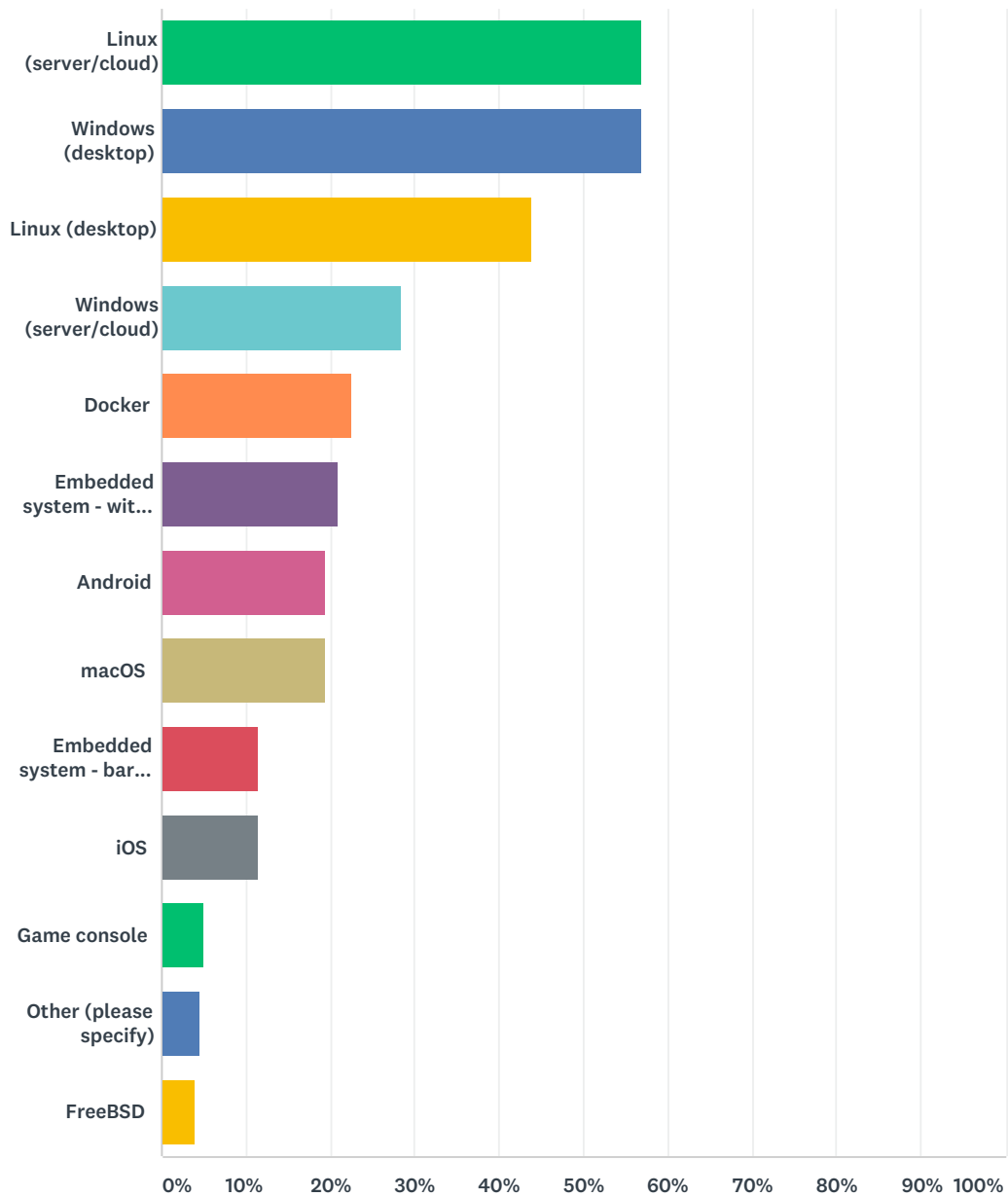
ANSWER CHOICES	RESPONSES	
None -- I don't use the cloud in any way in my C++ projects	35.86%	71
Communications (e.g., networking, email)	25.25%	50
Machine learning, using data to train software to learn patterns and make predictions (e.g., forecasting)	16.67%	33
IoT / embedded (e.g., sensors, embedded systems, home automation)	15.15%	30
Business (e.g., B2B, B2E)	12.63%	25

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Engineering (e.g., avionics, power management)	12.63%	25
Developer tools (e.g., compilers, code editors)	9.60%	19
Artificial intelligence, software that works and reacts like humans (e.g., digital assistants)	9.09%	18
Entertainment (e.g., sports apps, video streaming)	9.09%	18
Financial (e.g., trading, mortgage, asset management)	9.09%	18
Consumer (e.g., retail websites, mobile apps)	8.59%	17
Gaming (e.g., cloud-based and mobile games)	7.58%	15
Automotive (e.g., self-driving car software)	5.56%	11
Frameworks (e.g., React, Unreal)	5.56%	11
Productivity (e.g., note taking)	5.05%	10
Social and business networking (e.g., Facebook, Twitter)	4.04%	8
Total Respondents: 198		

Q2 What device and/or server platforms do you develop for? (select all that apply)

Answered: 200 Skipped: 3



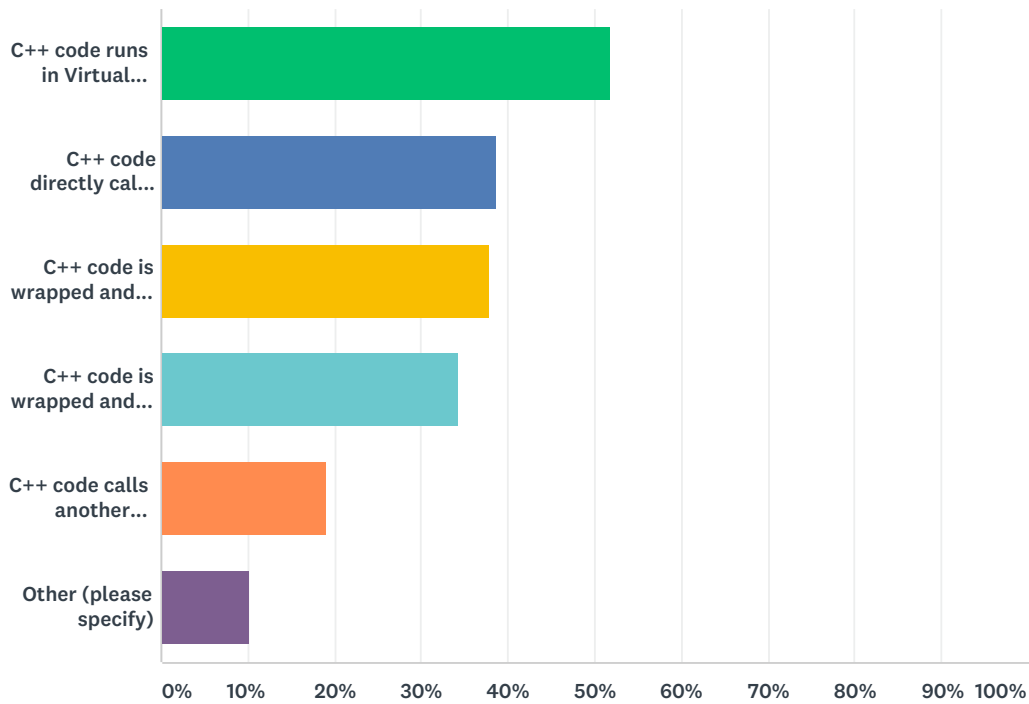
ANSWER CHOICES	RESPONSES	
Linux (server/cloud)	57.00%	114
Windows (desktop)	57.00%	114
Linux (desktop)	44.00%	88
Windows (server/cloud)	28.50%	57
Docker	22.50%	45

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Embedded system - with OS	21.00%	42
Android	19.50%	39
macOS	19.50%	39
Embedded system - bare metal	11.50%	23
iOS	11.50%	23
Game console	5.00%	10
Other (please specify)	4.50%	9
FreeBSD	4.00%	8
Total Respondents: 200		

Q3 For the C++ parts of your cloud-related project, how is your C++ code touching the cloud? (select all that apply)

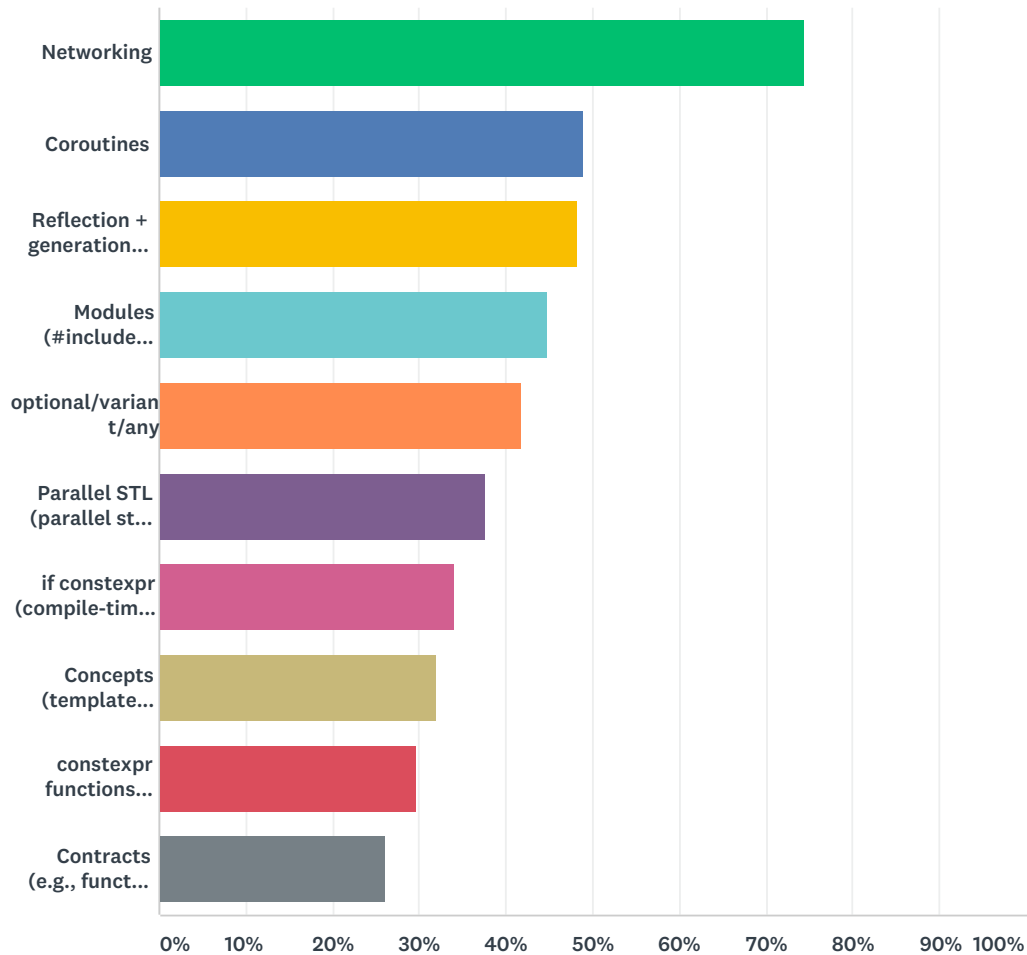
Answered: 137 Skipped: 66



ANSWER CHOICES	RESPONSES	
C++ code runs in Virtual Machines in the cloud	51.82%	71
C++ code directly calls a cloud API (e.g., authentication, storage)	38.69%	53
C++ code is wrapped and exposed as a REST service	37.96%	52
C++ code is wrapped and exposed via a container	34.31%	47
C++ code calls another language that calls a cloud API for me (e.g., because it's easier via the other language)	18.98%	26
Other (please specify)	10.22%	14
Total Respondents: 137		

Q4 Which of the following recent or upcoming standard C++ features help your cloud-related development, or do you expect will help when they are available?

Answered: 141 Skipped: 62

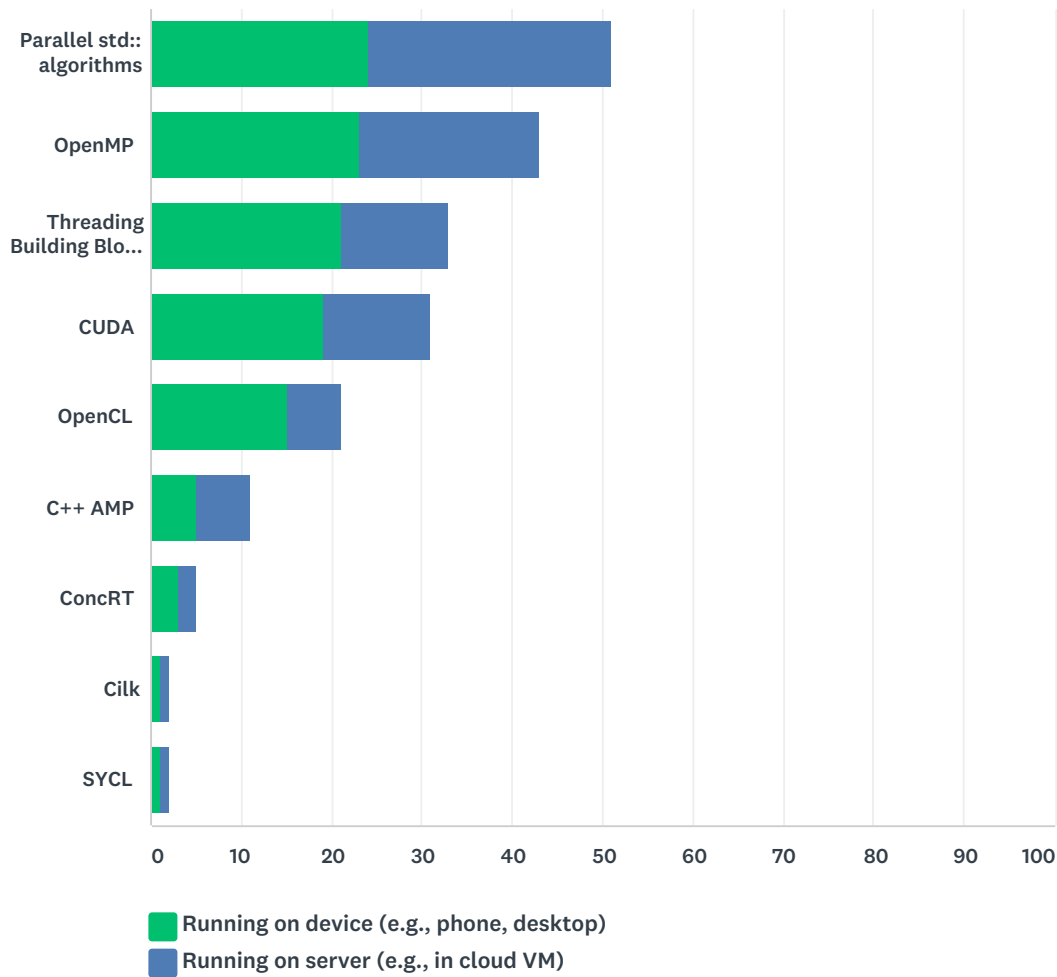


ANSWER CHOICES	RESPONSES	
Networking	74.47%	105
Coroutines	48.94%	69
Reflection + generation (ability to query functions/types + create new ones programmatically)	48.23%	68
Modules (#include replacement)	44.68%	63
optional/variant/any	41.84%	59
Parallel STL (parallel std:: algorithms)	37.59%	53
if constexpr (compile-time if)	34.04%	48
Concepts (template constraints)	31.91%	45
constexpr functions (compile-time computation)	29.79%	42
Contracts (e.g., function pre/post conditions)	26.24%	37

Total Respondents: 141

Q5 Which technologies do you use for parallelism on the device and/or server? (select all that apply)

Answered: 85 Skipped: 118



	RUNNING ON DEVICE (E.G., PHONE, DESKTOP)	RUNNING ON SERVER (E.G., IN CLOUD VM)	TOTAL RESPONDENTS
Parallel std:: algorithms	70.59% 24	79.41% 27	34
OpenMP	71.88% 23	62.50% 20	32
Threading Building Blocks (TBB)	77.78% 21	44.44% 12	27
CUDA	73.08% 19	46.15% 12	26
OpenCL	83.33% 15	33.33% 6	18
C++ AMP	71.43% 5	85.71% 6	7
ConcRT	75.00% 3	50.00% 2	4

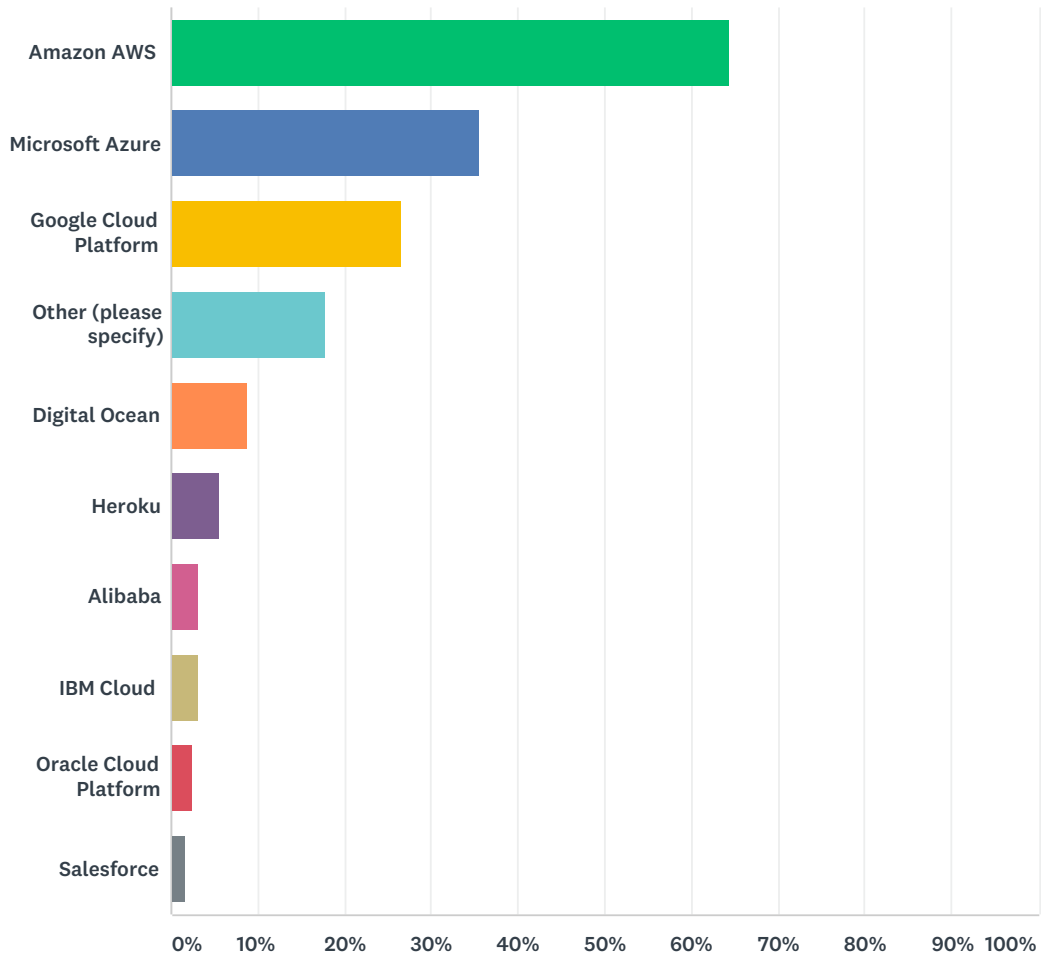
C++ Developer Survey "Lite": 2018-08 -- C++ and Cloud

Cilk	100.00%	100.00%	
	1	1	1

SYCL	100.00%	100.00%	
	1	1	1

Q6 Which cloud providers do you use? (select all that apply)

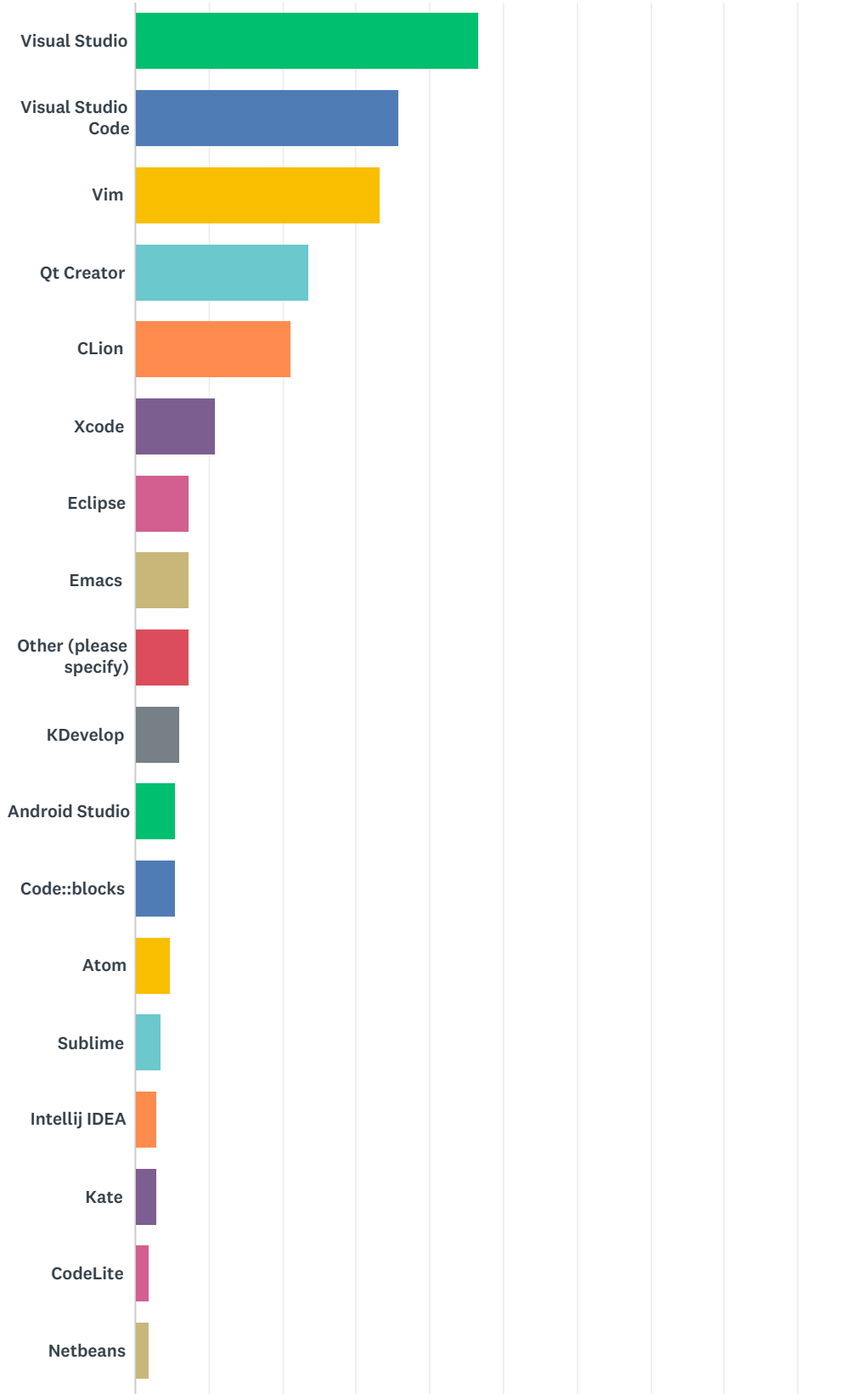
Answered: 124 Skipped: 79



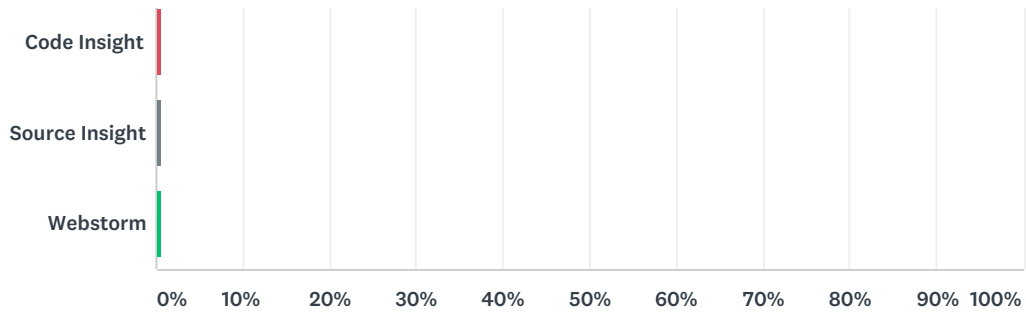
ANSWER CHOICES	RESPONSES	
Amazon AWS	64.52%	80
Microsoft Azure	35.48%	44
Google Cloud Platform	26.61%	33
Other (please specify)	17.74%	22
Digital Ocean	8.87%	11
Heroku	5.65%	7
Alibaba	3.23%	4
IBM Cloud	3.23%	4
Oracle Cloud Platform	2.42%	3
Salesforce	1.61%	2
Total Respondents: 124		

Q7 Which development environments (IDEs) or editors do you use for development for the C++ portions of your cloud-related project?

Answered: 165 Skipped: 38



C++ Developer Survey "Lite": 2018-08 -- C++ and Cloud



ANSWER CHOICES	RESPONSES	
Visual Studio	46.67%	77
Visual Studio Code	35.76%	59
Vim	33.33%	55
Qt Creator	23.64%	39
CLion	21.21%	35
Xcode	10.91%	18
Eclipse	7.27%	12
Emacs	7.27%	12
Other (please specify)	7.27%	12
KDevelop	6.06%	10
Android Studio	5.45%	9
Code::blocks	5.45%	9
Atom	4.85%	8
Sublime	3.64%	6
Intellij IDEA	3.03%	5
Kate	3.03%	5
CodeLite	1.82%	3
Netbeans	1.82%	3
Code Insight	0.61%	1
Source Insight	0.61%	1
Webstorm	0.61%	1
Total Respondents: 165		

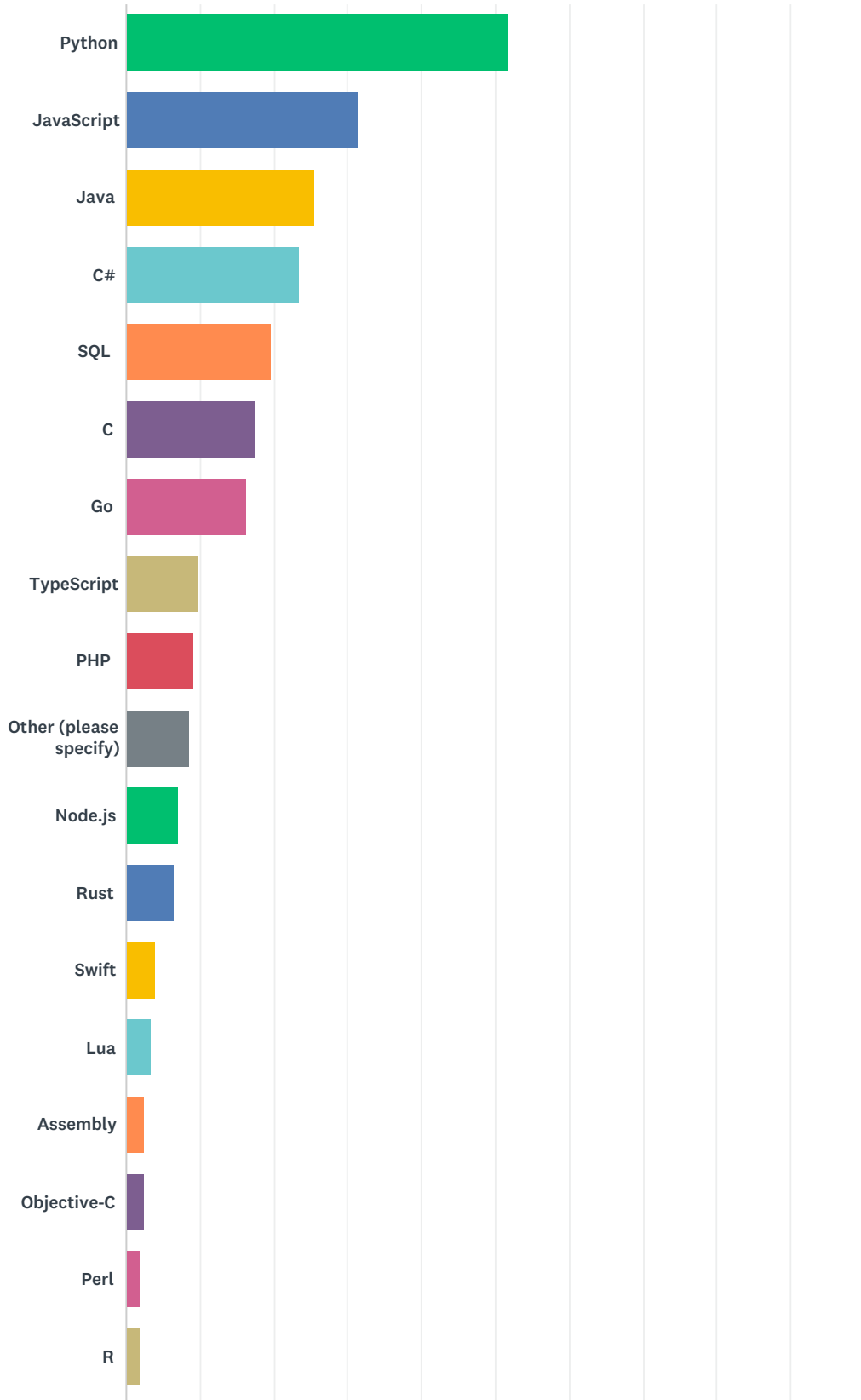
Q8 What do you like best about the tools you selected in the previous question that help you with cloud-related work? And what things do you wish they could do better that would help you with your cloud-related work?

Answered: 50 Skipped: 153

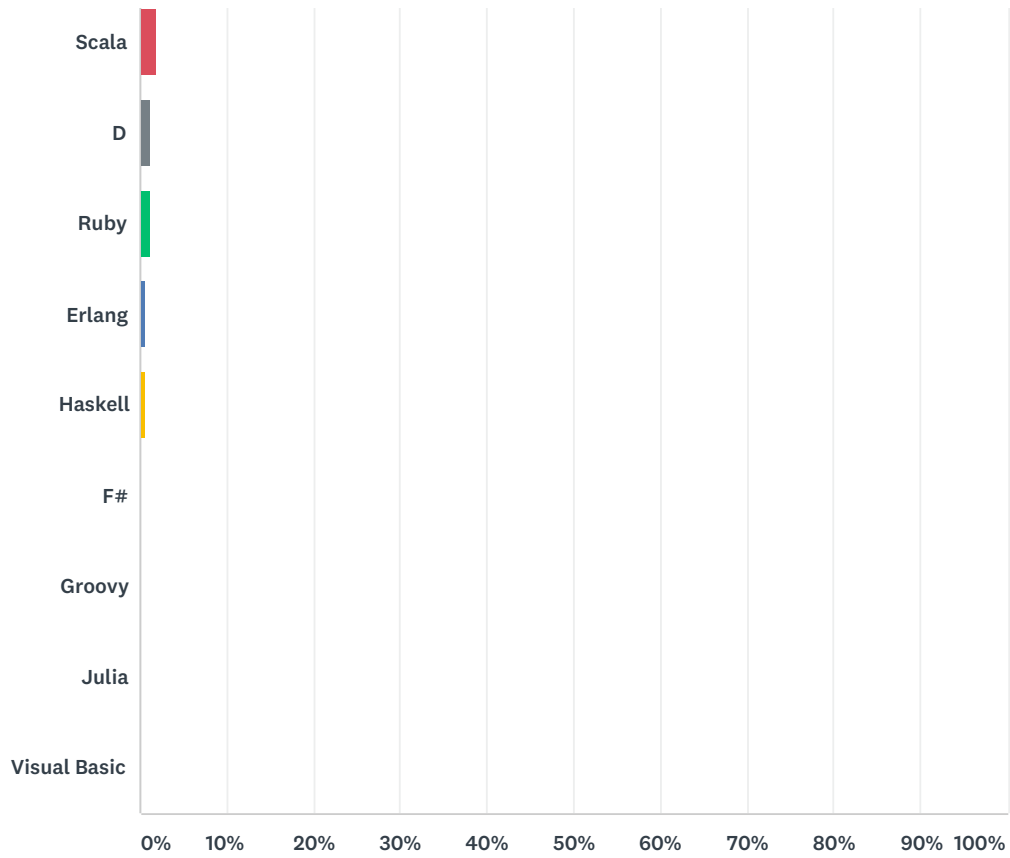
Vim vs best network Visual Studio project debugging integration better
built code CLion support Nothing cloud even use IDE Works tool

Q9 Besides C++, what programming languages/environments do you use in your cloud-related projects? (select all that apply)

Answered: 153 Skipped: 50



C++ Developer Survey "Lite": 2018-08 -- C++ and Cloud



ANSWER CHOICES	RESPONSES	
Python	51.63%	79
JavaScript	31.37%	48
Java	25.49%	39
C#	23.53%	36
SQL	19.61%	30
C	17.65%	27
Go	16.34%	25
TypeScript	9.80%	15
PHP	9.15%	14
Other (please specify)	8.50%	13
Node.js	7.19%	11
Rust	6.54%	10
Swift	3.92%	6
Lua	3.27%	5
Assembly	2.61%	4
Objective-C	2.61%	4
Perl	1.96%	3

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R	1.96%	3
Scala	1.96%	3
D	1.31%	2
Ruby	1.31%	2
Erlang	0.65%	1
Haskell	0.65%	1
F#	0.00%	0
Groovy	0.00%	0
Julia	0.00%	0
Visual Basic	0.00%	0
Total Respondents: 153		

Q10 For the C++ parts of your cloud-related project, did you try using another language first (e.g., to prototype) and then switch to C++? If yes, please describe which language you tried first, and what C++ helped you accomplish that you couldn't accomplish as well in the other language.

Answered: 42 Skipped: 161

A word cloud visualization of survey responses. The words are arranged in a horizontal line, with 'Python' being the largest and most prominent word. Other words include 'use', 'writing', 'Java', 'first', 'performance', 'language', 'code', 'go', 'type', 'latency', 'memory', 'needed', 'project', and 'prototype'. The words are in various shades of blue and black.

Q11 If you could wave a magic wand and add/change one thing in any part of C++ that would help you with your cloud-related project, or let you use C++ more with the cloud, what would it be and how would that change help your project?

Answered: 53 Skipped: 150



A word cloud of responses to the question. The words are in various sizes and orientations, with 'library' and 'support' being the most prominent. Other visible words include 'cloud', 'build', 'REST', 'easier', 'MODULES', 'standard', 'Networking', 'need much', 'system', 'etc', 'simple', 'compiler', 'tools', 'make', and 'std'.

Q12 Do you have any additional feedback for C++ standardization, regarding using C++ for cloud applications in particular? (e.g., what's missing, how could C++ standardization help you in ways it currently is not)

Answered: 41 Skipped: 162

use features systems future standard really support Build networking
instead cloud go library package good etc language Modules things new