Kubernetes Usage in Telecommunications

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Survey Demographics
Company Size - Large

How many employees are in your organization?

40 responses

- 100-499: 10%
- 500-999: 10%
- 1000-4999: 10%
- 5000-9999: 10%
- 10,000+: 72.5%
What type of company do you work for?

40 responses

- 67.5% Telecommunication
- 32.5% Vendor
What is your current role?

40 responses

- Business: 37.5%
- Developer: 27.5%
- Management: 12.5%
- Network Architect: 10%
- Operations: 
- Platform Architect: 
- Security: 
- Other:
Are you currently running Kubernetes in any environment?
40 responses

- Yes: 87.5%
- No: 10%
- Not Sure: 2.5%
What level of adoption does Kubernetes have?

36 responses

- Testing/Pilot: 27.8%
- Pre-Production: 19.4%
- First Production Deployments: 27.8%
- Large Scale Production Deployments: 25%
What percentage of your workloads currently run on Kubernetes?

34 responses

- 1: 4 (11.8%)
- 2: 6 (17.6%)
- 3: 6 (17.6%)
- 4: 2 (5.9%)
- 5: 3 (8.8%)
- 6: 3 (8.8%)
- 7: 2 (5.9%)
- 8: 3 (8.8%)
- 9: 1 (2.9%)
- 10: 4 (11.8%)
What level of adoption do you expect Kubernetes have by July 2021?

36 responses

- 50% Large Scale Production Deployments
- 25% First Production Deployments
- 11.1% Pre-Production
- 13.9% Testing/Pilot
How many clusters do you have?

33 responses

- 48.5% have Many Clusters (50+)
- 36.4% have 1
- 2-5 clusters make up 6.1%
- 6-10 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 clusters make up 11-20 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How many nodes does your average cluster have?

31 responses

- 1-10: 48.4%
- 10-50: 32.3%
- 50-200: 9.7%
- 200-1000: 9.7%
- 1000+: 7.2%
How do we run Kubernetes?
Where are you running Kubernetes? (check all that apply)

- Public Cloud: 15 (41.7%)
- Hybrid Cloud: 10 (27.8%)
- Private Cloud: 33 (91.7%)
- Rental Data Center: 3 (8.3%)
- Edge Environment: 13 (36.1%)
- bare metal: 1 (2.8%)
- Telco cloud: 1 (2.8%)
What type of environments are you running Kubernetes? (check all that apply)

36 responses

- Containers on bare-metal: 27 (75%)
- Containers in virtualization: 30 (83.3%)
- Other nested virtualization environments: 1 (2.8%)
What type of workloads do you plan to run on Kubernetes?

- Containerized: 35 (97.2%)
- Virtualized: 19 (52.8%)
- Physical: 5 (13.9%)

36 responses
What type of workloads are you currently running on Kubernetes?

36 responses

- Network Functions: 28 (77.8%)
- IT Type Workloads: 23 (63.9%)
- Management: 16 (44.4%)
- Operations: 16 (44.4%)
- Radio Workloads: 10 (27.8%)
- Accelerated AI/ML Workloads: 10 (27.8%)
- Telcom Edge Workloads: 14 (38.9%)
How will Kubernetes be deployed?
Do you plan to use a vendor implementation or run your own Kubernetes infrastructure?

36 responses

- 36.1% Own
- 33.3% Vendor
- 30.6% Both
Usually More than One Vendor

How many vendors do you plan to use for your Kubernetes infrastructure?

33 responses

- 0 vendors: 6 (18.2%)
- 1 vendor: 7 (21.2%)
- 2 vendors: 12 (36.4%)
- 3 vendors: 5 (15.2%)
- 4 vendors: 1 (3%)
- 5 vendors: 2 (6.1%)
RA2 Not Widely Adopted Yet

Do you plan to use CNTT RA2 as a basis of the requirements for your infrastructure?

34 responses

- Yes: 35.3%
- No: 26.5%
- Heard of it but don't know what it is: 8.8%
- Haven't heard of it: 29.4%
Workloads on Kubernetes
Docker Still Dominates

Which Container Runtimes are you using

37 responses

- Docker: 67.6%
- Containerd: 10.8%
- CRI-O: 18.9%
- Containerd and Docker: 0%
Operators Lead Orchestration

How are you deploying and managing your workloads? (check all that apply)

40 responses

- Kubernetes Operators: 23 (57.5%)
- NFV-MANO compliant orchestrator: 15 (37.5%)
- Other vendor’s orchestration: 10 (25%)
- Private Orchestration: 13 (32.5%)
- Vendor’s orchestration based on ONAP: 12 (30%)
- Vendor’s orchestration based on OSM: 1 (2.5%)
How do you currently, or plan, to separate Kubernetes Applications from different teams or vendors? (check all that apply)

36 responses

Namespaces: 26 (72.2%)
Labels: 11 (30.6%)
Separate Clusters: 22 (61.1%)
Not Applicable to Me: 5 (13.9%)
Annotations, taints, tolerations, affinity: 1 (2.8%)
Using Kata containers: 1 (2.8%)
OpenShift multi-tenancy: 1 (2.8%)
Do you plan to use CNTT RA2 as a basis of the requirements for your selection/use of CNFs?

38 responses

- Yes: 44.7%
- No: 18.4%
- Heard of it but don't know what it is: 28.9%
- Haven't heard of it: 7.9%
Technical Considerations
Networking Divided Market

Which CNI plug-ins or Kubernetes networking solutions are you using?
36 responses

- Calico: 36.1%
- Cilium: 19.4%
- DANM: 11.1%
- Flannel: 11.1%
- Multus: 11.1%
- SR-IOV: 11.1%
- Weave: 11.1%
- Multiple: Calico, Multus, SR-IOV, OVN...
Graduated Projects Used

What other CNCF technologies are you using with your Kubernetes deployments?

33 responses

- Prometheus: 30 (90.9%)
- Envoy: 17 (51.5%)
- CoreDNS: 12 (36.4%)
- Containerd: 19 (57.6%)
- Fluentd: 11 (33.3%)
- Jaeger: 12 (36.4%)
- TUF: -1 (3%)
- Velero: -1 (3%)
- gRPC: 12 (36.4%)
- Linkerd: -2 (6.1%)
- Helm: -2 (6.1%)
- Harbor: -4 (12.1%)
- Etc: 23 (69.7%)
- Open Policy Agent: -1 (3%)
- Kibana, Grafana, NSM: -1 (3%)
- Calico, Kustomize, Kibana: -1 (3%)
- ONAP4K8s: -1 (3%)
- DANM CNI: -1 (3%)

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What are your largest challenges with adopting Kubernetes?

39 responses

- Cultural Changes: 13 (33.3%)
- Security: 17 (43.6%)
- Complexity: 18 (46.2%)
- Lack of Training: 13 (33.3%)
- Monitoring: 7 (17.9%)
- Networking: 27 (69.2%)
- Storage: 7 (17.9%)
- Logging: 6 (15.4%)
- Multi Cluster Management: 4 (10.3%)
- Reliability: 8 (20.5%)
- Finding Vendor Support: 8 (20.5%)
- Lack of containerized network functions: 18 (46.2%)
Performance and VNFs Critical

What would be the most important features you are looking to see in a Kubernetes based platform?

38 responses

- Running VMs and VNFs in Kubernetes: 17 (44.7%)
- Easy integration with a CI/CD pipeline: 16 (42.1%)
- Availability of observability and monitoring: 15 (39.5%)
- Scalability and agile response to change: 12 (31.6%)
- Application resilience and recovery: 14 (36.8%)
- High throughput networking (HW acceleration): 20 (52.6%)
- Multi-vendor support for standard ecosys: 13 (34.2%)
- Better Multzus and SR-IOV support: 1 (2.6%)
What are the biggest application portability issues your company faced with?

35 responses

- External integrations (DNS, load balancer) - 21 (60%)
- Incompatible CNI plugins - 12 (34.3%)
- Incompatible Kubernetes versions - 11 (31.4%)
- Admin access - 7 (20%)
- Assumption of CNF workloads injecting into your application - 4 (11.4%)
- Inconsistency with included application components - 1 (2.9%)