

ScheduledThreadPoolExecutor, 87
 scheduler
 Automated Placement, 61-75
 Batch Job, 81
 benefits of, 335
 Daemon Service, 93
 Declarative Deployment, 29
 labels used by, 9
 Periodic Job, 87
 Pod order, 21
 requests amount, 18, 23, 325
 role of, 6, 16
 Service Discovery, 128
 SDN (software-defined networking), 234
 Sealed Secrets, 239-241
 secret management systems (SMSs), 238, 244
 Secret OPerationS (sops), 243
 Secrets
 centralized Secret management, 247-250
 creating, 187
 dependencies on, 17
 Sealed Secrets, 239-241
 security of, 190, 237
 similarities to ConfigMap, 185
 value encoding for, 186
 Secure Configuration, 237-252
 Configuration Resource, 237
 Init Container, 250
 Sealed Secrets, 239-241
 Sidecar, 250
 security policies, enforcing, 216 (see also Access Control; Network Segmentation; Process Containment; Secure Configuration)
 Self Awareness, 145-149, 170, 284
 Adapter, 170
 Controller, 284
 service accounts, 258
 Service Discovery, 7, 99, 110, 127-143 (see also discovery)
 Singleton Service, 99
 Stateless Service, 110
 service meshes, 34, 38, 158, 223, 232
 service oriented architecture (SOA), 128
 Services
 autoscaling (see Elastic Scale)
 basics of, 7
 capacity planning, 16
 controller for exposing, 283
 discovery (see Service Discovery)
 shell script-based controller, 286
 Shift Left model, 218, 222
 Sidecar, 4, 6, 157, 161-165, 167, 171, 232, 250
 Adapter, 167
 Ambassador, 171
 Init Container, 157
 Network Segmentation, 232
 Secure Configuration, 250
 Sidekick (see Sidecar)
 Singleton Service, 22, 97-104, 102, 124, 281
 Controller, 281
 Dapr's Distributed Lock, 102
 Predictable Demands, 22
 Stateful Service, 124
 SMSs (secret management systems), 238, 244
 SOA (service oriented architecture), 128
 software-defined networking (SDN), 234
 solid-state drive (SSD), 65
 sops (Secret OPerationS), 243
 Source-to-Image (S2I), 346
 Spring Batch, 85, 87
 Spring Boot, 182, 187
 Spring Framework, 5, 98
 SSD (solid-state drive), 65
 stakater/Reloader, 283
 startup probes, 46
 state reconciliation, 280
 Stateful Service, 99, 100, 115-124, 139, 311
 Elastic Scale, 311
 Service Discovery, 139
 Singleton Service, 99, 100
 Stateless Service, 107-114
 Automated Placement, 109
 Declarative Deployment, 108
 ReplicaSet, 108
 Service Discovery, 110
 static Pods, 94
 Strimzi operator, 306
 subjects, 257
 system maintenance, 87

T
 taints and tolerations, 70-72, 74, 94
 targetThresholds value, 314
 tenants, 222
 thresholds value, 314
 Tiller, 202
 topology spread constraints, 68
 topologyKey, 67

twelve-factor app, [12](#), [115](#), [177](#)

U

unmanaged Pod, [79](#)

updates

 Declarative Deployment, [29](#)

 partitioned updates, [122](#)

users, [257](#)

V

vertical Pod autoscaling, [325](#)

W

WildFly, [47](#), [194](#), [201](#), [203-206](#)

Work queue Jobs, [82](#)

Z

Zookeeper, [101-102](#), [116](#)

About the Authors

Bilgin Ibryam (@bibryam) is a product manager at Diagrid, where he drives the company's product strategy in bringing the Dapr project to the enterprise. Previously, he was a consultant and architect at Red Hat, where he mentored and led teams to be successful in building highly scalable and resilient solutions. Bilgin is an open source evangelist and member of the Apache Software Foundation, a regular blogger, speaker, and author of *Camel Design Patterns* (Leanpub). Bilgin's mission is to make creating distributed systems a no-brainer for all developers. Find out more about his work on Twitter: <https://twitter.com/bibryam>.

Dr. Roland Huß (@ro14nd@hachyderm.io) is a seasoned software engineer with over 25 years of experience in the field. Currently working at Red Hat, he is the architect of OpenShift Serverless and a former member of the Knative TOC. Roland is a passionate Java and Golang coder and a sought-after speaker at tech conferences. An advocate of open source, he is an active contributor and enjoys growing chili peppers in his free time.

Colophon

The animal on the cover of *Kubernetes Patterns* is a red-crested whistling duck (*Netta rufina*). The species name *rufina* means “red-haired” in Latin. Another common name for them is “red-crested pochard,” with *pochard* meaning “diving duck.” The red-crested whistling duck is native to the wetlands of Europe and central Asia. Its population has also spread throughout northern African and south Asian wetlands.

Red-crested whistling ducks reach 1.5–2 feet in height and weigh 2–3 pounds when fully grown. Their wingspan is nearly 3 feet. Females have varying shades of brown feathers with a light face and are less colorful than males. A male red-crested whistling duck has a red bill, rusty orange head, black tail and breast, and white sides.

The red-crested whistling duck's diet primarily consists of roots, seeds, and aquatic plants. They build nests in the vegetation beside marshes and lakes and lay eggs in the spring and summer. A normal brood is 8–12 ducklings. Red-crested whistling ducks are most vocal during mating. The call of the male sounds more like a wheeze than a whistle, and the female's is a shorter “vrah, vrah, vrah.”

The conservation status of the red-crested whistling duck is Least Concern. Many of the animals on O'Reilly covers are endangered; all of them are important to the world.

The cover illustration is by Karen Montgomery, based on a black-and-white engraving from *British Birds*. The cover fonts are Gilroy Semibold and Guardian Sans. The text font is Adobe Minion Pro; the heading font is Adobe Myriad Condensed; and the code font is Dalton Maag's Ubuntu Mono.