# Appendix A - Availability Table

# Availability Table

Availability is generally calculated based on how long a service was unavailable over some period. Assuming no planned downtime, indicates how much downtime is permitted to reach a given availability level.

Table 1-1. Availability table

| Availability level | Allowed unavailability window | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| | **per year** | **per quarter** | **per month** | **per week** | **per day** | **per hour** |
| 90% | 36.5 days | 9 days | 3 days | 16.8 hours | 2.4 hours | 6 minutes |
| 95% | 18.25 days | 4.5 days | 1.5 days | 8.4 hours | 1.2 hours | 3 minutes |
| 99% | 3.65 days | 21.6 hours | 7.2 hours | 1.68 hours | 14.4 minutes | 36 seconds |
| 99.5% | 1.83 days | 10.8 hours | 3.6 hours | 50.4 minutes | 7.20 minutes | 18 seconds |
| 99.9% | 8.76 hours | 2.16 hours | 43.2 minutes | 10.1 minutes | 1.44 minutes | 3.6 seconds |
| 99.95% | 4.38 hours | 1.08 hours | 21.6 minutes | 5.04 minutes | 43.2 seconds | 1.8 seconds |
| 99.99% | 52.6 minutes | 12.96 minutes | 4.32 minutes | 60.5 seconds | 8.64 seconds | 0.36 seconds |
| 99.999% | 5.26 minutes | 1.30 minutes | 25.9 seconds | 6.05 seconds | 0.87 seconds | 0.04 seconds |

Using an aggregate unavailability metric (i.e., "*X*% of all operations failed") is more useful than focusing on outage lengths for services that may be partially available—for instance, due to having multiple replicas, only some of which are unavailable—and for services whose load varies over the course of a day or week rather than remaining constant.

See Equations Time-based availability and Aggregate availability in Embracing Risk for calculations.

Chapter 34 - Conclusion

Appendix B - A Collection of Best Practices for Production Services