This summary has been written in 6 hours, please recheck the formulas before using them.

|  |  |
| --- | --- |
| **Dependability** | |
| MTTF, MTTR, Availability |  |
| Total Availability Parallel |  |
| MTTF, Paralell |  |
| MTTF, Series |  |
| Reliability |  |
| Total Reliability Parallel |  |

|  |  |
| --- | --- |
| **Hard Disk Performance** | |
|  | Block size  File size  Number of blocks  Mean I/O service time per block (no locality)  Mean I/O service time  Transfer time of 1 block  Overhead controller  Locality 0.xx  Transfer time  Mean latency  Service time  Data transfer rate |
|  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **RAID Performance** | | | | | |
| RAID | 0 | 1 | 0+1 | 5 | 6 |
| MTTDL (Data Loss) |  |  |  |  |  |

|  |  |  |
| --- | --- | --- |
| **Variables** | | |
|  | A service center or the whole system | |
|  | System observation interval period | |
|  | Number of arrivals, during T | |
|  | Number of completions, during T | |
|  | Time in which the system is busy, during T | |
|  | Average number of customers in the system, during T | |
|  | Think time | |
|  | Response time | |
|  | Throughput (or completion rate) | |
|  | | Think time |
|  | | Throughput (or completion rate) |
|  | | Arrival rate |
|  | | Utilization |
|  | | Mean service time per completed job |
|  | | Visit |
|  | | Average response time |
|  | | N Think and not Think |
|  | | N Think and not Think |
|  | | Throughput (or completion rate) |
|  | | Asymptotic upper bound of throughput |
|  | | Asymptotic lower bound of throughput |
|  | | Asymptotic upper bound of response time |
|  | | Asymptotic lower bound of response time |
|  | | System response time in queuing network |

|  |  |
| --- | --- |
| **Little Law** | |
| Can be applied to the entire system as well to subsystems. | |
|  | Accumulated time in the system |
|  | Average number of consumers in the system (only available in closed queue networks) |
|  | Average time spent by a consumer in the system |
|  | |

|  |  |
| --- | --- |
| **Forced Flow Law** | |
| Throughput (or flow) in all parts of the system, must be proportional to one another. | |
|  | Number of times a consumer visits a service center k. |

|  |
| --- |
| **Utilization Law** |
| Percentage of time that the k service station is in use by a customer. |
|  |

|  |
| --- |
| **General Residence Time Law** |
| Average residence time of a customer in the system. |

|  |
| --- |
| **Interactive Response** |
| Response time in an interactive system is the residence time minus the think time. |

* Number of arrivals is equal to the number of completions
* Arrival rate is equal to the completion rate





