



calculatoratoz.com



unitsconverters.com

Telecommunication Traffic System Formulas

Calculators!

Examples!

Conversions!

Bookmark calculatoratoz.com, unitsconverters.com

Widest Coverage of Calculators and Growing - **30,000+ Calculators!**
Calculate With a Different Unit for Each Variable - **In built Unit Conversion!**
Widest Collection of Measurements and Units - **250+ Measurements!**

Feel free to SHARE this document with your friends!

[Please leave your feedback here...](#)



List of 22 Telecommunication Traffic System Formulas

Telecommunication Traffic System

1) Availability

$$fx \quad A = \frac{u}{u + d}$$

Open Calculator 

$$ex \quad 0.699956 = \frac{15.98s}{15.98s + 6.85s}$$

2) Average Holding Time

$$fx \quad AHT = \frac{A_{avg} \cdot T}{n}$$

Open Calculator 

$$ex \quad 1.670007s = \frac{2.5 \cdot 30s}{44.91}$$

3) Average Number of Call

$$fx \quad n = \frac{A_{avg} \cdot T}{AHT}$$

Open Calculator 

$$ex \quad 44.91018 = \frac{2.5 \cdot 30s}{1.67s}$$



4) Average Occupancy

$$\text{fx } A_{\text{avg}} = \frac{n \cdot \text{AHT}}{T}$$

[Open Calculator !\[\]\(cbe80b694ebd74fcfe136a095b608235_img.jpg\)](#)

$$\text{ex } 2.49999 = \frac{44.91 \cdot 1.67\text{s}}{30\text{s}}$$

5) Average Poisson Call Arrival Rate

$$\text{fx } \lambda = \frac{A_p}{T}$$

[Open Calculator !\[\]\(3e2231b1ad3ca8da8658228c00dd08e0_img.jpg\)](#)

$$\text{ex } 3.813333 = \frac{114.4}{30\text{s}}$$

6) Call Setup Time

$$\text{fx } T_{\text{cs}} = T_{\text{other}} + K \cdot T_{\text{st}}$$

[Open Calculator !\[\]\(0d5ec72f61334709c3fc9450209b754f_img.jpg\)](#)

$$\text{ex } 0.353\text{s} = 0.11\text{s} + 3 \cdot 0.081\text{s}$$

7) Cost Capacity Index

$$\text{fx } C_{\text{ci}} = \frac{N \cdot \text{SC}}{C}$$

[Open Calculator !\[\]\(b64b40baaee5acddc1eab8538ba84754_img.jpg\)](#)

$$\text{ex } 30.36893 = \frac{15 \cdot 33.75}{16.67}$$



8) Cost of Common Hardware

$$fx \quad C_{ch} = C_{sw} - (n_{sw} \cdot C_s) - C_c$$

[Open Calculator !\[\]\(e78f798d4ea5c530c9db49e7d26e6b95_img.jpg\)](#)

$$ex \quad 26.05 = 29 - (0.25 \cdot 2) - 2.45$$

9) Cost of Switching System

$$fx \quad C_{sw} = n_{sw} \cdot C_s + C_{ch} + C_c$$

[Open Calculator !\[\]\(05be7c7a8995decd503647c99211f7c2_img.jpg\)](#)

$$ex \quad 29 = 0.25 \cdot 2 + 26.05 + 2.45$$

10) Cost per Subscriber

$$fx \quad C = \frac{N \cdot SC}{C_{ci}}$$

[Open Calculator !\[\]\(fe3aebe81acea8d45108cd2768939da7_img.jpg\)](#)

$$ex \quad 16.6749 = \frac{15 \cdot 33.75}{30.36}$$

11) Downtime

$$fx \quad d = \frac{u - A \cdot u}{A}$$

[Open Calculator !\[\]\(899d8b7697d64725bf017d3296cfcf1b_img.jpg\)](#)

$$ex \quad 6.848571s = \frac{15.98s - 0.70 \cdot 15.98s}{0.70}$$



12) Grade of Service

$$fx \quad GoS = \frac{N_L}{T_c}$$

[Open Calculator !\[\]\(e2376d476d06eb31946dc01a69a4403a_img.jpg\)](#)

$$ex \quad 0.270004 = \frac{6.985}{25.87}$$

13) Number of Lost Call

$$fx \quad N_L = T_c \cdot GoS$$

[Open Calculator !\[\]\(0b5e7e25e8775f7e7e80906ada4f0021_img.jpg\)](#)

$$ex \quad 6.9849 = 25.87 \cdot 0.27$$

14) Poisson Arrival

$$fx \quad A_p = \lambda \cdot T$$

[Open Calculator !\[\]\(bd3b31712ad9bab5a241210fa6925cdd_img.jpg\)](#)

$$ex \quad 114.3 = 3.81 \cdot 30s$$

15) Quantization Error

$$fx \quad e_q = \frac{V_{\sin}}{2 \cdot V}$$

[Open Calculator !\[\]\(7bc43b319a082987e20f7bf78f4bab80_img.jpg\)](#)

$$ex \quad 0.012 = \frac{2.88}{2 \cdot 120V}$$



16) Switching Capacity

$$\text{fx } SC = \frac{N \cdot TC}{2}$$

[Open Calculator !\[\]\(d3fb9f94af8b26d1c844efa9a98805b0_img.jpg\)](#)

$$\text{ex } 33.75 = \frac{15 \cdot 4.5}{2}$$

17) Time Required for Functions other than Switching

$$\text{fx } T_{\text{other}} = T_{\text{cs}} - K \cdot T_{\text{st}}$$

[Open Calculator !\[\]\(e1d6102fe77919492c04879c8450f1f5_img.jpg\)](#)

$$\text{ex } 0.11\text{s} = 0.353\text{s} - 3 \cdot 0.081\text{s}$$

18) Total Number of Offered Calls

$$\text{fx } T_c = \frac{N_L}{GoS}$$

[Open Calculator !\[\]\(ab4e2b3fc7e7887b7a72f548aa6f5e60_img.jpg\)](#)

$$\text{ex } 25.87037 = \frac{6.985}{0.27}$$

19) Traffic Handling Capability

$$\text{fx } TC = \frac{2 \cdot SC}{N}$$

[Open Calculator !\[\]\(5abce1a84a655b073239ab33e1199487_img.jpg\)](#)

$$\text{ex } 4.5 = \frac{2 \cdot 33.75}{15}$$



20) Trunk Occupancy

[Open Calculator !\[\]\(feabb98897b440bc8695a03336a6e2df_img.jpg\)](#)

$$\text{fx } \rho = A_o \cdot \frac{1 - \text{GoS}}{A_{\text{avg}}}$$

$$\text{ex } 0.2482 = 0.85 \cdot \frac{1 - 0.27}{2.5}$$

21) Unavailability of System

[Open Calculator !\[\]\(642aa997563f9a325b310230bb5078b7_img.jpg\)](#)

$$\text{fx } U = 1 - A$$

$$\text{ex } 0.3 = 1 - 0.70$$

22) Uptime

[Open Calculator !\[\]\(51514032c8ca341817228f39f1307b05_img.jpg\)](#)

$$\text{fx } u = \frac{A \cdot d}{1 - A}$$

$$\text{ex } 15.98333\text{s} = \frac{0.70 \cdot 6.85\text{s}}{1 - 0.70}$$



Variables Used



- **A** Availability
- **A_{avg}** Average Occupancy
- **A_o** Occupancy
- **A_p** Poisson Arrival
- **AHT** Average Holding Time (*Second*)
- **C** Cost per Subscriber
- **C_c** Cost of Common Control System
- **C_{ch}** Cost of Common Hardware
- **C_{ci}** Cost Capacity Index
- **C_s** Cost per Switching Element
- **C_{sw}** Cost of Switching System
- **d** Downtime (*Second*)
- **e_q** Quantization Error
- **GoS** Grade of Service
- **K** Number of Switching Stage
- **n** Average Number of Calls
- **N** Number of Subscriber Lines
- **N_L** Number of Lost Calls
- **n_{sw}** Number of Switching Element
- **SC** Switching Capacity
- **T** Time Period (*Second*)
- **T_c** Total Number of Offered Calls



- **T_{cs}** Call Setup Time (Second)
- **T_{other}** Time Required Other than Switching (Second)
- **T_{st}** Average Switching Time per Stage (Second)
- **TC** Traffic Handling Capacity
- **u** Uptime (Second)
- **U** Unavailability
- **V** Voltage (Volt)
- **V_{sin}** Sinusoidal Input
- **λ** Average Poisson Call Arrival Rate
- **ρ** Trunk Occupancy



Constants, Functions, Measurements used

- **Measurement: Time** in Second (s)
Time Unit Conversion 
- **Measurement: Electric Potential** in Volt (V)
Electric Potential Unit Conversion 



Check other formula lists

- [Digital Switching System Formulas](#) 
- [Telecommunication Traffic System Formulas](#) 

Feel free to SHARE this document with your friends!

PDF Available in

[English](#) [Spanish](#) [French](#) [German](#) [Russian](#) [Italian](#) [Portuguese](#) [Polish](#) [Dutch](#)

12/18/2023 | 3:39:36 PM UTC

[Please leave your feedback here...](#)

