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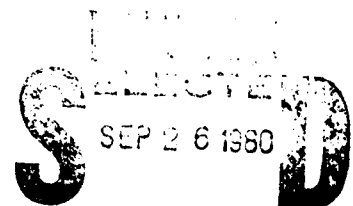
TABLES OF QUEUE SIZE DISTRIBUTION FOR QUEUEING
SYSTEMS WITH ERLANG INTERARRIVAL TIMES

BY

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Frederick S. Hillier, Project Director



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Tables of Queue Size Distribution for Queueing
Systems with Erlang Interarrival Times

by

David M. Avis, Larry A. Edison, Lawrence D. Fossett,
Frederick S. Hillier, Martin I. Reiman, and Oliver S. Yu

Abstract

This report provides a relatively comprehensive set of tables describing the steady-state behavior of $E_m/M/c$, $E_m/E_k/c$, and $E_m/D/c$ queueing systems. The results given are the expected number of customers in the queue (excluding those being served) for $E_m/M/c$ and $E_m/E_k/c$, and then the probability distribution of the number of customers in the system (including those being served) for all three classes of systems. The cases considered for $E_m/M/c$ are all combinations of $m = 2, 3, 4, 9, 16$ and $c = 1, 2, 3, 4, 5, 8, 10$, with the exception of $m = 16$ and $c = 10$ together. The computationally feasible subset of these combinations also are included for $E_m/E_k/c$ (with $k = 2, 3, 4$) and for $E_m/D/c$, along with some more values of m between 4 and 16 for certain small values of c . For each case, the results are tabulated for 16 values of the traffic intensity ranging from 0.10 to 0.99. These data represent one portion of the output from a large-scale project of theoretical research, algorithmic development, and computational effort to generate the obtainable numerical results for various classes of $GI/G/c$ systems.

1. Introduction

This report provides a relatively comprehensive set of tables describing the steady-state behavior of certain basic types of queueing systems having an Erlang distribution for the interarrival times, namely,

$E_m/M/c$ (Erlang interarrival times, exponential service times, c servers),

$E_m/E_k/c$ (Erlang interarrival times, Erlang service times, c servers),

$E_m/D/c$ (Erlang interarrival times, constant service times, c servers).

Both single-server ($c = 1$) and multiple-server ($c > 1$) cases are included.

The results given are expected number of customers in the queue (excluding those being served) for $E_m/M/c$ and $E_m/E_k/c$, and then the probability distribution of the number of customers in the system (including those being served) for all three classes of systems. The cases considered for $E_m/M/c$ are all combinations of $m = 2, 3, 4, 9, 16$ and $c = 1, 2, 3, 4, 5, 8, 10$, with the exception of $m = 16$ and $c = 10$ together. The computationally feasible subset of these combinations also are included for $E_m/E_k/c$ (with $k = 2, 3, 4$) and for $E_m/D/c$, along with some more values of m between 4 and 16 for certain small values of c . For each case, the results are tabulated for 16 values of the traffic intensity ranging from 0.10 to 0.99.

These data represent one portion of the output from a large-scale project of theoretical research, algorithmic development, and computational effort to generate the obtainable numerical results for various classes of GI/G/c systems. Much of the project's output is to appear in a book, Queueing Theory and Graphs, by Hillier et al. (1981). However, space limitations prevented presenting all obtainable data there, so supplementary data are being given in the present report, as well as in a companion report by Avis et al. (1980) that considers M/M/c, M/D/c, and D/M/c systems. In addition an earlier report by Hillier and Lo (1971) presented preliminary results from the project. For the sake of completeness,

much of the tabulated data in the present report are summarized graphically in the book.

2. Notation

The following notation will be used hereafter:

c = number of servers (parallel service channels)

λ = mean arrival rate

μ = mean service rate per busy server

$\text{RHO} = \rho = \frac{\lambda}{c\mu}$ = traffic intensity

N = number of customers in the system (including those being served) in steady state (a random variable)

STATE I = the condition of having $N = I$

$P(N = I)$ = probability that $N = I$

$P(N < = I) = P(N \leq I)$

L_q = steady-state expected number of customers in the queue (excluding those being served)

The tables of L_q are designated "Expected Length of Queue". Those of $P(N \leq I)$ are labeled "CDF of Number in System", where CDF stands for "Cumulative Distribution Function".

3. Organization of Tables

The tables are organized into three sections, with all of the tables for $E_m/M/c$ coming first, followed by the $E_m/E_k/c$ tables and then the $E_m/D/c$ tables. The first two sections begin with tables of L_q , followed by tables that give $P(N = I)$ and $P(N \leq I)$. Because numerical difficulties with the $E_m/D/c$ data prevented obtaining the tail of the distribution of N for large values of RHO , the third section does not include tables of L_q .

4. Reference for Additional Information

See Hillier et al. (1981) for additional information on the general nature of queueing systems (Sec. 1.1), the specific nature of the queueing systems studied here (Sec. 1.2), relationships between the results given here and other measures of performance (Sec. 1.5), and guidelines for interpolating or extrapolating on ρ or c (Sec. 1.6). This companion book also briefly summarizes the computational methods being used here (Sec. 1.7), and gives other references for the details of these methods.

REFERENCES

Avis, David M., Larry A. Edison, Lawrence D. Fossett, Frederick S. Hillier, Martin I. Reiman, and Oliver S. Yu (1980), "Tables of Queue Size and Waiting Time Distributions for M/M/c, M/D/c, and D/M/c Queueing Systems," Technical Report No. 90 (ONR Contract N00014-76-C-0418) and Technical Report No. 57 (NSF Grant ENG75-14847), Dept. of Operations Research, Stanford University.

Hillier, Frederick S., and Frederick D. Lo (1971), "Tables for Multiple-Server Queueing Systems Involving Erlang Distributions," Technical Report No. 31 (ONR Contract N00014-67-A-0112-0058) and Technical Report No. 14 (NSF Grant GK-2925), Dept. of Operations Research, Stanford University.

Hillier, Frederick S., and Oliver S. Yu, with David M. Avis, Lawrence D. Fossett, Frederick D. Lo, and Martin I. Reiman (1981), Queueing Tables and Graphs, Elsevier North-Holland, New York.

Tables for $E_m/M/c$ Queueing Systems

The Model: The time between arrivals of consecutive customers has an Erlang distribution with shape parameter m ;
service times have an exponential distribution;
 c servers operate in parallel.

Notation: See Section 1.2.

Tables Included: Comparison of L_q for $m = 1, 2, 3, 4, 9, 16, \infty$,
for $c = 1, 2, 3, 4, 5, 8, 10$ (but not $m = 16, c = 10$).
 $P(N = I)$ and $P(N \leq I)$ for all combinations of $m = 2, 3, 4, 9, 16$
and $c = 1, 2, 3, 4, 5, 8, 10$ except $m = 16, c = 10$.

EXPECTED LENGTH OF QUEUE FOR $E_m/M/1$

RHO	m: 1	2	3	4
0.10	0.11111E-01	0.30057E-02	0.12818E-02	0.68413E-03
0.20	0.50000E-01	0.20696E-01	0.12547E-01	0.89817E-02
0.30	0.12857E 00	0.64984E-01	0.45576E-01	0.36448E-01
0.40	0.26667E 00	0.15196E 00	0.11543E 00	0.97714E-01
0.50	0.50000E 00	0.30902E 00	0.24686E 00	0.21626E 00
0.55	0.67222E 00	0.42883E 00	0.34908E 00	0.30963E 00
0.60	0.90000E 00	0.59010E 00	0.48804E 00	0.43739E 00
0.65	0.12071E 01	0.81070E 00	0.67965E 00	0.61446E 00
0.70	0.16333E 01	0.11204E 01	0.95042E 00	0.86569E 00
0.75	0.22500E 01	0.15729E 01	0.13479E 01	0.12357E 01
0.80	0.32000E 01	0.22752E 01	0.19676E 01	0.18139E 01
0.85	0.48167E 01	0.34774E 01	0.30314E 01	0.28086E 01
0.90	0.81000E 01	0.59295E 01	0.52062E 01	0.48448E 01
0.95	0.18050E 02	0.13381E 02	0.11825E 02	0.11047E 02
0.98	0.48020E 02	0.35853E 02	0.31797E 02	0.29769E 02
0.99	0.98010E 02	0.73343E 02	0.65121E 02	0.61009E 02

RHO	m: 9	16	∞
0.10	0.12090E-03	0.42429E-04	0.45423E-05
0.20	0.40818E-02	0.27535E-02	0.14052E-02
0.30	0.22447E-01	0.18016E-01	0.12787E-01
0.40	0.69340E-01	0.59856E-01	0.48109E-01
0.50	0.16625E 00	0.14913E 00	0.12750E 00
0.55	0.24479E 00	0.22245E 00	0.19405E 00
0.60	0.35379E 00	0.32483E 00	0.28789E 00
0.65	0.50651E 00	0.46900E 00	0.42102E 00
0.70	0.72507E 00	0.67608E 00	0.61332E 00
0.75	0.10492E 01	0.98408E 00	0.90056E 00
0.80	0.15582E 01	0.14689E 01	0.13542E 01
0.85	0.24374E 01	0.23077E 01	0.21410E 01
0.90	0.42424E 01	0.40317E 01	0.37608E 01
0.95	0.97507E 01	0.92970E 01	0.87142E 01
0.98	0.26388E 02	0.25206E 02	0.23686E 02
0.99	0.54155E 02	0.51758E 02	0.48683E 02

EXPECTED LENGTH OF QUEUE FOR $E_m/M/2$

	m:	1	2	3	4
RHO					
0.10		0.20202E-02	0.25983E-03	0.70492E-04	0.27595E-04
0.20		0.16667E-01	0.46865E-02	0.23061E-02	0.14471E-02
0.30		0.59341E-01	0.23739E-01	0.14797E-01	0.11017E-01
0.40		0.15238E 00	0.74742E-01	0.52824E-01	0.42851E-01
0.50		0.33333E 00	0.18677E 00	0.14257E 00	0.12164E 00
0.55		0.47706E 00	0.28117E 00	0.22073E 00	0.19177E 00
0.60		0.67500E 00	0.41532E 00	0.33377E 00	0.29427E 00
0.65		0.95108E 00	0.60728E 00	0.49772E 00	0.44429E 00
0.70		0.13451E 01	0.88690E 00	0.73931E 00	0.66682E 00
0.75		0.19286E 01	0.13080E 01	0.11062E 01	0.10067E 01
0.80		0.28444E 01	0.19778E 01	0.16939E 01	0.15533E 01
0.85		0.44261E 01	0.31464E 01	0.27247E 01	0.25152E 01
0.90		0.76737E 01	0.55638E 01	0.48654E 01	0.45174E 01
0.95		0.17587E 02	0.12980E 02	0.11449E 02	0.10685E 02
0.98		0.47535E 02	0.35430E 02	0.31399E 02	0.29385E 02
0.99		0.97518E 02	0.72913E 02	0.64716E 02	0.60618E 02

	m:	9	16	∞
RHO				
0.10		0.23075E-05	0.55402E-06	0.30812E-07
0.20		0.49610E-03	0.29544E-03	0.12486E-03
0.30		0.58679E-02	0.44314E-02	0.28793E-02
0.40		0.27959E-01	0.23323E-01	0.17856E-01
0.50		0.88874E-01	0.78118E-01	0.64914E-01
0.55		0.14569E 00	0.13031E 00	0.11121E 00
0.60		0.23074E 00	0.20928E 00	0.18237E 00
0.65		0.35752E 00	0.32794E 00	0.29060E 00
0.70		0.54830E 00	0.50762E 00	0.45599E 00
0.75		0.84299E 00	0.78648E 00	0.71450E 00
0.80		0.13211E 01	0.12406E 01	0.11378E 01
0.85		0.21680E 01	0.20473E 01	0.18927E 01
0.90		0.39395E 01	0.37379E 01	0.34794E 01
0.95		0.94131E 01	0.89688E 01	0.83980E 01
0.98		0.26029E 02	0.24856E 02	0.23348E 02
0.99		0.53789E 02	0.51401E 02	0.48331E 02

EXPECTED LENGTH OF QUEUE FOR Em/M/3

RHO	m: 1	2	3	4
0.10	0.41152E-03	0.26141E-04	0.45818E-05	0.13226E-05
0.20	0.61644E-02	0.12057E-02	0.48386E-03	0.26594E-03
0.30	0.30012E-01	0.96815E-02	0.53843E-02	0.37325E-02
0.40	0.94117E-01	0.40357E-01	0.26640E-01	0.20728E-01
0.50	0.23684E 00	0.12184E 00	0.89192E-01	0.74219E-01
0.55	0.35832E 00	0.19733E 00	0.14992E 00	0.12772E 00
0.60	0.53212E 00	0.31027E 00	0.24307E 00	0.21110E 00
0.65	0.78230E 00	0.47892E 00	0.38486E 00	0.33959E 00
0.70	0.11488E 01	0.73327E 00	0.60211E 00	0.53834E 00
0.75	0.17033E 01	0.11273E 01	0.94277E 00	0.85238E 00
0.80	0.25888E 01	0.17682E 01	0.15023E 01	0.13713E 01
0.85	0.41388E 01	0.29066E 01	0.25034E 01	0.23037E 01
0.90	0.73535E 01	0.52923E 01	0.46127E 01	0.42749E 01
0.95	0.17233E 02	0.12676E 02	0.11164E 02	0.10410E 02
0.98	0.47160E 02	0.35105E 02	0.31094E 02	0.29090E 02
0.99	0.97136E 02	0.72581E 02	0.64403E 02	0.60317E 02

RHO	m: 9	16	∞
0.10	0.51576E-07	0.82264E-08	0.21410E-09
0.20	0.67802E-04	0.35179E-04	0.11945E-04
0.30	0.17085E-02	0.12073E-02	0.70979E-03
0.40	0.12415E-01	0.99872E-02	0.72505E-02
0.50	0.51567E-01	0.44393E-01	0.35801E-01
0.55	0.93356E-01	0.82192E-01	0.68573E-01
0.60	0.16069E 00	0.14400E 00	0.12336E 00
0.65	0.26718E 00	0.24286E 00	0.21246E 00
0.70	0.43526E 00	0.40024E 00	0.35613E 00
0.75	0.70500E 00	0.65450E 00	0.59051E 00
0.80	0.11561E 01	0.10819E 01	0.98742E 00
0.85	0.19741E 01	0.18599E 01	0.17139E 01
0.90	0.37149E 01	0.35200E 01	0.32703E 01
0.95	0.91563E 01	0.87188E 01	0.81570E 01
0.98	0.25753E 02	0.24586E 02	0.23087E 02
0.99	0.53505E 02	0.51125E 02	0.48064E 02

EXPECTED LENGTH OF QUEUE FOR $E_m/M/4$

RHO	m: 1	2	3	4
0.10	0.88271E-04	0.27998E-05	0.31802E-06	0.67706E-07
0.20	0.23952E-02	0.32796E-03	0.10742E-03	0.51686E-04
0.30	0.15878E-01	0.41548E-02	0.20637E-02	0.13319E-02
0.40	0.60466E-01	0.22796E-01	0.14076E-01	0.10510E-01
0.50	0.17391E 00	0.82577E-01	0.58067E-01	0.47158E-01
0.55	0.27720E 00	0.14331E 00	0.10554E 00	0.88257E-01
0.60	0.43056E 00	0.23895E 00	0.18276E 00	0.15647E 00
0.65	0.65821E 00	0.38784E 00	0.30602E 00	0.26714E 00
0.70	0.10002E 01	0.62008E 00	0.50217E 00	0.44540E 00
0.75	0.15283E 01	0.98974E 00	0.81944E 00	0.73649E 00
0.80	0.23857E 01	0.16043E 01	0.13533E 01	0.12302E 01
0.85	0.39061E 01	0.27144E 01	0.23267E 01	0.21352E 01
0.90	0.70898E 01	0.50702E 01	0.44065E 01	0.40771E 01
0.95	0.16937E 02	0.12422E 02	0.10927E 02	0.10181E 02
0.98	0.46844E 02	0.34831E 02	0.30837E 02	0.28842E 02
0.99	0.96813E 02	0.72301E 02	0.64140E 02	0.60062E 02

RHO	m: 9	16	∞
0.10	0.12208E-08	0.12823E-09	0.15247E-11
0.20	0.97597E-05	0.43975E-05	0.11909E-05
0.30	0.52312E-03	0.34541E-03	0.18322E-03
0.40	0.57784E-02	0.44809E-02	0.30815E-02
0.50	0.31186E-01	0.26297E-01	0.20580E-01
0.55	0.62132E-01	0.53856E-01	0.43935E-01
0.60	0.11578E 00	0.10254E 00	0.86386E-01
0.65	0.20572E 00	0.18537E 00	0.16017E 00
0.70	0.35447E 00	0.32386E 00	0.28557E 00
0.75	0.60221E 00	0.55651E 00	0.49885E 00
0.80	0.10208E 01	0.95973E 00	0.87201E 00
0.85	0.18201E 01	0.17112E 01	0.15723E 01
0.90	0.35320E 01	0.33426E 01	0.31002E 01
0.95	0.89426E 01	0.85107E 01	0.79563E 01
0.98	0.25520E 02	0.24359E 02	0.22868E 02
0.99	0.53266E 02	0.50891E 02	0.47837E 02

EXPECTED LENGTH OF QUEUE FOR $E_m/M/5$

RHO	m:	1	2	3	4
0.10		0.19500E-04	0.31025E-06	0.22860E-07	0.35752E-08
0.20		0.95785E-03	0.92040E-04	0.24608E-04	0.10363E-04
0.30		0.86311E-02	0.18364E-02	0.81493E-03	0.48968E-03
0.40		0.39801E-01	0.13229E-01	0.76462E-02	0.54800E-02
0.50		0.13037E 00	0.57295E-01	0.38737E-01	0.30716E-01
0.55		0.21848E 00	0.10634E 00	0.75986E-01	0.62394E-01
0.60		0.35423E 00	0.18762E 00	0.14021E 00	0.11840E 00
0.65		0.56188E 00	0.31936E 00	0.24766E 00	0.21396E 00
0.70		0.88162E 00	0.53196E 00	0.42528E 00	0.37430E 00
0.75		0.13854E 01	0.87941E 00	0.72124E 00	0.64469E 00
0.80		0.22164E 01	0.14695E 01	0.12314E 01	0.11150E 01
0.85		0.37087E 01	0.25527E 01	0.21786E 01	0.19942E 01
0.90		0.68624E 01	0.48797E 01	0.42301E 01	0.39080E 01
0.95		0.16678E 02	0.12201E 02	0.10720E 02	0.99820E 01
0.98		0.46566E 02	0.34591E 02	0.30611E 02	0.28624E 02
0.99		0.96528E 02	0.72054E 02	0.63908E 02	0.59837E 02

RHO	m:	9	16	∞
0.10		0.29666E-10	0.20567E-11	0.11059E-13
0.20		0.14468E-05	0.56538E-06	0.12178E-06
0.30		0.16489E-03	0.10167E-03	0.48600E-04
0.40		0.27657E-02	0.20670E-02	0.13459E-02
0.50		0.19345E-01	0.15980E-01	0.12136E-01
0.55		0.42334E-01	0.36134E-01	0.28828E-01
0.60		0.85212E-01	0.74613E-01	0.61829E-01
0.65		0.16141E 00	0.14422E 00	0.12312E 00
0.70		0.29341E 00	0.26644E 00	0.23289E 00
0.75		0.52145E 00	0.47977E 00	0.42742E 00
0.80		0.92556E 00	0.86080E 00	0.77883E 00
0.85		0.16916E 01	0.15873E 01	0.14545E 01
0.90		0.33759E 01	0.31913E 01	0.29553E 01
0.95		0.87567E 01	0.83297E 01	0.77819E 01
0.98		0.25315E 02	0.24159E 02	0.22674E 02
0.99		0.53055E 02	0.50684E 02	0.47638E 02

EXPECTED LENGTH OF QUEUE FOR Em/M/8

RHO	m: 1	2	3	4
0.10	0.23082E-06	0.46846E-09	0.92559E-11	0.58520E-12
0.20	0.67207E-04	0.22434E-05	0.32629E-06	0.92033E-07
0.30	0.15160E-02	0.17432E-03	0.55191E-04	0.26753E-04
0.40	0.12330E-01	0.28277E-02	0.13425E-02	0.85120E-03
0.50	0.59044E-01	0.20741E-01	0.12496E-01	0.92333E-02
0.55	0.11430E 00	0.46796E-01	0.30633E-01	0.23848E-01
0.60	0.20931E 00	0.97129E-01	0.67934E-01	0.55123E-01
0.65	0.36826E 00	0.18938E 00	0.13977E 00	0.11725E 00
0.70	0.63141E 00	0.35359E 00	0.27264E 00	0.23486E 00
0.75	0.10709E 01	0.64395E 00	0.51463E 00	0.45305E 00
0.80	0.18306E 01	0.11685E 01	0.96182E 00	0.86188E 00
0.85	0.32446E 01	0.21782E 01	0.18374E 01	0.16707E 01
0.90	0.63138E 01	0.44241E 01	0.38094E 01	0.35057E 01
0.95	0.16039E 02	0.11657E 02	0.10212E 02	0.94934E 01
0.98	0.45870E 02	0.33992E 02	0.30048E 02	0.28080E 02
0.99	0.95812E 02	0.71436E 02	0.63326E 02	0.59274E 02

RHO	m: 9	16	∞
0.10	0.48132E-15	0.93561E-17	0.45192E-20
0.20	0.51166E-08	0.12910E-08	0.14161E-09
0.30	0.56669E-05	0.28417E-05	0.99121E-06
0.40	0.33223E-03	0.22218E-03	0.12267E-03
0.50	0.50295E-02	0.39068E-02	0.27123E-02
0.55	0.14516E-01	0.11838E-01	0.88396E-02
0.60	0.36598E-01	0.30988E-01	0.24464E-01
0.65	0.83368E-01	0.72689E-01	0.59915E-01
0.70	0.17641E 00	0.15741E 00	0.13420E 00
0.75	0.35557E 00	0.32318E 00	0.28295E 00
0.80	0.70091E 00	0.64652E 00	0.57818E 00
0.85	0.13987E 01	0.13056E 01	0.11876E 01
0.90	0.30058E 01	0.28330E 01	0.26126E 01
0.95	0.83012E 01	0.78864E 01	0.73547E 01
0.98	0.24804E 02	0.23661E 02	0.22193E 02
0.99	0.52525E 02	0.50168E 02	0.47137E 02

EXPECTED LENGTH OF QUEUE FOR $E_m/M/10$

	m:	1	2	3
RHO				
0.10		0.12515E-07	0.63104E-11	0.53838E-13
0.20		0.11934E-04	0.19717E-06	0.19110E-07
0.30		0.49598E-03	0.37891E-04	0.95798E-05
0.40		0.58765E-02	0.10546E-02	0.43933E-03
0.50		0.36105E-01	0.10958E-01	0.61196E-02
0.55		0.76741E-01	0.28092E-01	0.17367E-01
0.60		0.15195E 00	0.64773E-01	0.43413E-01
0.65		0.28547E 00	0.13782E 00	0.98537E-01
0.70		0.51737E 00	0.27663E 00	0.20847E 00
0.75		0.91983E 00	0.53507E 00	0.42080E 00
0.80		0.16367E 01	0.10212E 01	0.83142E 00
0.85		0.30025E 01	0.19861E 01	0.16638E 01
0.90		0.60196E 01	0.41813E 01	0.35862E 01
0.95		0.15686E 02	0.11359E 02	0.99335E 01
0.98		0.45480E 02	0.33657E 02	0.29733E 02
0.99		0.95410E 02	0.71088E 02	0.62999E 02

	m:	4	9	∞
RHO				
0.10		0.18502E-14	0.32219E-18	0.25764E-24
0.20		0.40638E-08	0.11972E-09	0.16295E-11
0.30		0.40235E-05	0.62525E-06	0.77121E-07
0.40		0.25673E-03	0.84406E-04	0.25910E-04
0.50		0.43154E-02	0.21348E-02	0.10409E-02
0.55		0.13056E-01	0.73978E-02	0.41832E-02
0.60		0.34331E-01	0.21620E-01	0.13693E-01
0.65		0.81115E-01	0.55514E-01	0.38383E-01
0.70		0.17717E 00	0.12948E 00	0.95858E-01
0.75		0.36693E 00	0.28262E 00	0.22071E 00
0.80		0.74024E 00	0.59450E 00	0.48438E 00
0.85		0.15067E 01	0.12515E 01	0.10545E 01
0.90		0.32928E 01	0.28109E 01	0.24327E 01
0.95		0.92252E 01	0.80521E 01	0.71211E 01
0.98		0.27776E 02	0.24521E 02	0.21924E 02
0.99		0.58958E 02	0.52231E 02	0.46856E 02

E2/M/1 COF OF NUMBER IN SYSTEM

Table with columns for COF, P, PERCENT, STEP, and PRC. It contains multiple data blocks for different steps (e.g., Step 1, Step 2, Step 3, etc.), each listing various numerical values and percentages.

E3/M/1 COF OF NUMBER IN SYSTEM

MONT	PROJ. 10		STAT	PROJ. 15		STAT	PROJ. 9A	
	F(=1)	F(=2)		F(=1)	F(=2)		F(=1)	F(=2)
PROJ. 10								
1	4,224,000	4,224,000	10	4,224,000	4,224,000	10	4,224,000	4,224,000
2	4,224,000	4,224,000	11	4,224,000	4,224,000	11	4,224,000	4,224,000
3	4,224,000	4,224,000	12	4,224,000	4,224,000	12	4,224,000	4,224,000
PROJ. 15								
1	4,224,000	4,224,000	10	4,224,000	4,224,000	10	4,224,000	4,224,000
2	4,224,000	4,224,000	11	4,224,000	4,224,000	11	4,224,000	4,224,000
3	4,224,000	4,224,000	12	4,224,000	4,224,000	12	4,224,000	4,224,000
PROJ. 9A								
1	4,224,000	4,224,000	10	4,224,000	4,224,000	10	4,224,000	4,224,000
2	4,224,000	4,224,000	11	4,224,000	4,224,000	11	4,224,000	4,224,000
3	4,224,000	4,224,000	12	4,224,000	4,224,000	12	4,224,000	4,224,000
PROJ. 10								
1	4,224,000	4,224,000	10	4,224,000	4,224,000	10	4,224,000	4,224,000
2	4,224,000	4,224,000	11	4,224,000	4,224,000	11	4,224,000	4,224,000
3	4,224,000	4,224,000	12	4,224,000	4,224,000	12	4,224,000	4,224,000
PROJ. 15								
1	4,224,000	4,224,000	10	4,224,000	4,224,000	10	4,224,000	4,224,000
2	4,224,000	4,224,000	11	4,224,000	4,224,000	11	4,224,000	4,224,000
3	4,224,000	4,224,000	12	4,224,000	4,224,000	12	4,224,000	4,224,000
PROJ. 9A								
1	4,224,000	4,224,000	10	4,224,000	4,224,000	10	4,224,000	4,224,000
2	4,224,000	4,224,000	11	4,224,000	4,224,000	11	4,224,000	4,224,000
3	4,224,000	4,224,000	12	4,224,000	4,224,000	12	4,224,000	4,224,000

E9/M/1 COF OF NUMBER IN SYSTEM

STAFF	NAME	NO.	DATE	TIME	STAFF	NAME	NO.	DATE	TIME	STAFF	NAME	NO.	DATE	TIME
1	1000000	1	1000000	1000000	1	1000000	1	1000000	1000000	1	1000000	1	1000000	1000000

E2/M/2 COF OF NUMBER IN SYSTEM

RNO. 10				RNO. 15				RNO. 20				RNO. 25				RNO. 30				RNO. 35				RNO. 40				RNO. 45				RNO. 50				RNO. 55				RNO. 60				RNO. 65				RNO. 70							
DATE	TIME	PAGE	NO.	DATE	TIME	PAGE	NO.	DATE	TIME	PAGE	NO.	DATE	TIME	PAGE	NO.	DATE	TIME	PAGE	NO.	DATE	TIME	PAGE	NO.	DATE	TIME	PAGE	NO.	DATE	TIME	PAGE	NO.	DATE	TIME	PAGE	NO.	DATE	TIME	PAGE	NO.	DATE	TIME	PAGE	NO.	DATE	TIME	PAGE	NO.	DATE	TIME	PAGE	NO.				
10/04/64	10:04:00	10	1	10/04/64	10:04:00	10	1	10/04/64	10:04:00	10	1	10/04/64	10:04:00	10	1	10/04/64	10:04:00	10	1	10/04/64	10:04:00	10	1	10/04/64	10:04:00	10	1	10/04/64	10:04:00	10	1	10/04/64	10:04:00	10	1	10/04/64	10:04:00	10	1	10/04/64	10:04:00	10	1	10/04/64	10:04:00	10	1	10/04/64	10:04:00	10	1	10/04/64	10:04:00	10	1

E3/M/2 COF OF NUMBER IN SYSTEM

Table with columns: STAFF, P(ENR), P(OCAS), STAFF, P(ENR), P(OCAS), STAFF, P(ENR), P(OCAS), STAFF, P(ENR), P(OCAS). Rows contain numerical data for multiple staff members across different categories.

E16/M/2 CDF OF NUMBER IN SYSTEM

Table with columns for groups (BNOV. 10, BNOV. 15, BNOV. 20, BNOV. 25, BNOV. 30, BNOV. 35) and rows for individual data points with associated numerical values.

E2/M/3 CDF OF NUMBER IN SYSTEM

Table with columns for STATE, P(n,t), P(n+1,t), and P(n+2,t) for states 10 through 55. Each state section contains multiple rows of numerical data representing probabilities or counts over time.

E3/M/3 CDF OF NUMBER IN SYSTEM

Table with 15 columns: STEP, P(1), P(2), P(3), P(4), P(5). Multiple tables are arranged in a grid, each representing a different step in a process. Each table contains numerical data for probabilities at various steps.

E16/M/3 COF OF NUMBER IN SYSTEM

Table with columns: GROUP, P(N=1), P(N=2), P(N=3), P(N=4), P(N=5), P(N=6), P(N=7), P(N=8), P(N=9), P(N=10), P(N=11), P(N=12), P(N=13), P(N=14), P(N=15). Rows represent various data points grouped by ID (e.g., 2.076311, 2.076312, etc.).

E3/M/4 CDF OF NUMBER IN SYSTEM

M=20					M=25					M=30				
S*	P(R=1)	P(R=2)	P(R=3)	P(R=4)	S*	P(R=1)	P(R=2)	P(R=3)	P(R=4)	S*	P(R=1)	P(R=2)	P(R=3)	P(R=4)
BRO=10					BRO=15					BRO=20				
1	0.433192	0.637132	0.921458	0.000000	1	0.416870	0.619155	0.935108	0.000000	1	0.413210	0.615445	0.932220	0.000000
2	0.246808	0.696868	0.923658	0.000000	2	0.407020	0.619059	0.935550	0.000000	2	0.405510	0.615270	0.932100	0.000000
3	0.131754	0.806858	0.925858	0.000000	3	0.398150	0.619165	0.936000	0.000000	3	0.394010	0.615100	0.931980	0.000000
4	0.065874	0.906848	0.928058	0.000000	4	0.389280	0.619271	0.936450	0.000000	4	0.388020	0.614930	0.931860	0.000000
5	0.035918	0.996838	0.930258	0.000000	5	0.380410	0.619377	0.936900	0.000000	5	0.379860	0.614760	0.931740	0.000000
BRO=20					BRO=30					BRO=40				
1	0.433192	0.637132	0.921458	0.000000	1	0.416870	0.619155	0.935108	0.000000	1	0.413210	0.615445	0.932220	0.000000
2	0.246808	0.696868	0.923658	0.000000	2	0.407020	0.619059	0.935550	0.000000	2	0.405510	0.615270	0.932100	0.000000
3	0.131754	0.806858	0.925858	0.000000	3	0.398150	0.619165	0.936000	0.000000	3	0.394010	0.615100	0.931980	0.000000
4	0.065874	0.906848	0.928058	0.000000	4	0.389280	0.619271	0.936450	0.000000	4	0.388020	0.614930	0.931860	0.000000
5	0.035918	0.996838	0.930258	0.000000	5	0.380410	0.619377	0.936900	0.000000	5	0.379860	0.614760	0.931740	0.000000

E4/M/4 COF OF NUMBER IN SYSTEM

Table with columns: STAFF T, P(R=1), P(R<=1), STAFF I, P(R=1), P(R<=1), STAFF T, P(R=1), P(R<=1), STAFF I, P(R=1), P(R<=1), STAFF T, P(R=1), P(R<=1), STAFF I, P(R=1), P(R<=1). Rows are grouped by STAFF ID (e.g., 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12) and contain numerical data for various parameters.

E16/M/4 COF OF NUMBER IN SYSTEM

Table with columns: STATE, P(0-1), P(0-2), STATE, P(0-1), P(0-2), STATE, P(0-1), P(0-2). Rows are grouped by STATE (0-17) and contain numerical data for various configurations.

E4/M/5 CDF OF NUMBER IN SYSTEM

Table with 24 columns (STATE 1, P(=1), P(=2), STATE 2, P(=1), P(=2)) and 12 rows of data. Each row contains numerical values for different states and probabilities. The table is divided into sections labeled BRO. 10, BRO. 20, BRO. 30, BRO. 40, BRO. 50, BRO. 60, BRO. 70, BRO. 80, BRO. 90, BRO. 95, BRO. 99, and BRO. 99.9.

E3/M/8 CDF OF NUMBER IN SYSTEM

Table with multiple columns labeled STATE, P(0-1), P(0<1), STATE, P(0=1), P(0<1), STATE, P(0=1), P(0<1), STATE, P(0=1), P(0<1). Rows contain numerical data for states 1 through 80.

E4/M/8 COF OF NUMBER IN SYSTEM

STATE T P(0-1) P(0-2) STATE T P(0-1) P(0-2)

NUM-10 0 101064 0 201064 6 7630908-06 1 000000 1

NUM-20 0 133022 0 133022 1 363108-06 0 999999 1

NUM-10 0 454791-01 0 004791 6 1902692-02 0 999979 7

NUM-60 0 1455466-01 0 015546 10 1079102-02 0 999979 1

NUM-50 0 521070-01 0 052107 11 810178-02 0 999922 1

NUM-55 0 1020116-01 0 010201 11 1266558-02 0 999206 1

NUM-60 0 176066-02 0 760667 11 502727-03 0 999979 1

NUM-65 0 904519-01 0 004519 11 1729582-02 0 999360 1

NUM-70 0 501360-01 0 001360 11 032708-02 0 999570 1

STATE T P(0-1) P(0-2) STATE T P(0-1) P(0-2)

NUM-75 0 322259-01 0 222591 16 1029140-02 0 999926 1

NUM-10 0 160050-01 0 000500 16 1209126-01 0 970503 1

NUM-44 0 404091-01 0 004091 16 031645-02 0 972011 1

NUM-10 0 107766-08 0 000067 25 463281-02 0 999670 1

NUM-55 0 107722-70 0 002070 31 021662-02 0 999010 1

STATE T P(0-1) P(0-2) STATE T P(0-1) P(0-2)

NUM-80 0 801055-05 0 001055 34 422365-02 0 999005 1

NUM-10 0 160050-01 0 000500 16 1209126-01 0 970503 1

NUM-42 0 200011-05 0 000011 32 401909-02 0 999001 1

Table with columns STATE, T, P(0-1), P(0-2), STATE, T, P(0-1), P(0-2). Rows include NUM-10, NUM-20, NUM-10, NUM-60, NUM-50, NUM-55, NUM-60, NUM-65, NUM-70, NUM-75, NUM-80, NUM-10, NUM-44, NUM-10, NUM-42, NUM-60, NUM-65, NUM-70, NUM-75, NUM-80.

Table with columns STATE, T, P(0-1), P(0-2), STATE, T, P(0-1), P(0-2). Rows include NUM-75, NUM-10, NUM-44, NUM-10, NUM-42, NUM-60, NUM-65, NUM-70, NUM-75, NUM-80.

Table with columns STATE, T, P(0-1), P(0-2), STATE, T, P(0-1), P(0-2). Rows include NUM-80, NUM-10, NUM-42, NUM-60, NUM-65, NUM-70, NUM-75, NUM-80.

E9/M/8 CDF OF NUMBER IN SYSTEM

STEP	P(1)	P(2)	P(3)	P(4)	P(5)	STEP	P(1)	P(2)	P(3)	P(4)	STEP	P(1)	P(2)	P(3)	P(4)	STEP	P(1)	P(2)	P(3)	P(4)	STEP	P(1)	P(2)	P(3)	P(4)
ANNEX 1																									
1	0.00000	0.00000	0.00000	0.00000	0.00000	1	0.00000	0.00000	0.00000	0.00000	1	0.00000	0.00000	0.00000	0.00000	1	0.00000	0.00000	0.00000	0.00000	1	0.00000	0.00000	0.00000	0.00000
ANNEX 2																									
ANNEX 3																									
ANNEX 4																									
ANNEX 5																									
ANNEX 6																									
ANNEX 7																									
ANNEX 8																									
ANNEX 9																									
ANNEX 10																									
ANNEX 11																									
ANNEX 12																									
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ANNEX 96																									
ANNEX 97																									
ANNEX 98																									
ANNEX 99																									
ANNEX 100																									

E16/M/8 CDF OF NUMBER IN SYSTEM

STEP T	P(=1)	P(=2)	P(=3)	P(=4)	STEP I	P(=1)	P(=2)	P(=3)	P(=4)	STEP J	P(=1)	P(=2)	P(=3)	P(=4)	STEP K	P(=1)	P(=2)	P(=3)	P(=4)	
RHO=1.0																				
4	0.159033	0.159033	6	0.16672E-07	1.000000	1	0.15716E-03	0.003135	18	0.15427E-02	0.005332	5	0.15155E-04	0.000072	14	0.15155E-04	0.000072	14	0.15155E-04	0.000072
RHO=0.70																				
4	0.113234	0.113234	7	0.08108E-07	1.000000	1	0.10800E-01	0.005489	28	0.10800E-01	0.005489	10	0.10800E-01	0.005489	10	0.10800E-01	0.005489	10	0.10800E-01	0.005489
RHO=0.50																				
4	0.10696E-07	0.10696E-07	10	0.10696E-07	1.000000	1	0.10696E-07	0.10696E-07	10	0.10696E-07	0.10696E-07	10	0.10696E-07	0.10696E-07	10	0.10696E-07	0.10696E-07	10	0.10696E-07	0.10696E-07
RHO=0.30																				
4	0.10696E-07	0.10696E-07	10	0.10696E-07	1.000000	1	0.10696E-07	0.10696E-07	10	0.10696E-07	0.10696E-07	10	0.10696E-07	0.10696E-07	10	0.10696E-07	0.10696E-07	10	0.10696E-07	0.10696E-07
RHO=0.10																				
4	0.10696E-07	0.10696E-07	10	0.10696E-07	1.000000	1	0.10696E-07	0.10696E-07	10	0.10696E-07	0.10696E-07	10	0.10696E-07	0.10696E-07	10	0.10696E-07	0.10696E-07	10	0.10696E-07	0.10696E-07

E9/M/10 COP OF NUMBER IN SYSTEM

Table with 5 columns: STAFF I, P(I-1), P(I-2), P(I-3), P(I-4). Contains numerical data for staff members across multiple sections (E9-M-10).

Tables for $E_m/E_k/c$ Queueing Systems

The Model: The time between arrivals of consecutive customers has an Erlang distribution with shape parameter m ;
service times have an Erlang distribution with shape parameter k ;
 c servers operate in parallel.

Notation: See Section 1.2.

Tables Included: Comparison of L_q for selected values of m , for certain combinations of $k = 2, 3, 4$ and $c = 1, 2, 3, 4, 5, 8$.
 $P(N = I)$ and $P(N \leq I)$ for certain combinations of
 $m = 2, 3, \dots, 9, 16$, $k = 2, 3, 4$, and $c = 1, 2, 3, 4, 5, 8$.

EXPECTED LENGTH OF QUEUE FOR $E_m/E_2/1$

	m: 1	2	3
RHO			
0.10	0.83333E-02	0.16628E-02	0.52255E-03
0.20	0.37500E-01	0.12083E-01	0.58862E-02
0.30	0.96429E-01	0.39286E-01	0.23263E-01
0.40	0.20000E 00	0.94183E-01	0.62340E-01
0.50	0.37500E 00	0.19519E 00	0.13886E 00
0.55	0.50417E 00	0.27303E 00	0.19961E 00
0.60	0.67500E 00	0.37839E 00	0.28313E 00
0.65	0.90536E 00	0.52320E 00	0.39940E 00
0.70	0.12250E 01	0.72734E 00	0.56498E 00
0.75	0.16875E 01	0.10265E 01	0.80966E 00
0.80	0.24000E 01	0.14922E 01	0.11930E 01
0.85	0.36125E 01	0.22911E 01	0.18539E 01
0.90	0.60750E 01	0.39231E 01	0.32090E 01
0.95	0.13537E 02	0.88883E 01	0.73418E 01
0.98	0.36015E 02	0.23867E 02	0.19821E 02
0.99	0.73507E 02	0.48860E 02	0.40648E 02

	m: 4	9	16
RHO			
0.10	0.20793E-03	0.10969E-04	0.12621E-05
0.20	0.34859E-02	0.83076E-03	0.34982E-03
0.30	0.16244E-01	0.66746E-02	0.41561E-02
0.40	0.47557E-01	0.25431E-01	0.18705E-01
0.50	0.11188E 00	0.69528E-01	0.55767E-01
0.55	0.16408E 00	0.10748E 00	0.88715E-01
0.60	0.23668E 00	0.16181E 00	0.13664E 00
0.65	0.33865E 00	0.23989E 00	0.20631E 00
0.70	0.48492E 00	0.35389E 00	0.30898E 00
0.75	0.70231E 00	0.52570E 00	0.46478E 00
0.80	0.10444E 01	0.79901E 00	0.71396E 00
0.85	0.16363E 01	0.12757E 01	0.11503E 01
0.90	0.28529E 01	0.22614E 01	0.20551E 01
0.95	0.65693E 01	0.52838E 01	0.48346E 01
0.98	0.17799E 02	0.14431E 02	0.13252E 02
0.99	0.36542E 02	0.29702E 02	0.27308E 02

EXPECTED LENGTH OF QUEUE FOR $E_m/E_2/2$

m:	1	2	3	4
PHO				
0.10	0.16136E-02	0.12844E-03	0.21290E-04	0.52304E-05
0.20	0.13134E-01	0.26101E-02	0.94417E-03	0.45575E-03
0.30	0.46254E-01	0.14089E-01	0.70809E-02	0.44477E-02
0.40	0.11772E 00	0.46086E-01	0.27680E-01	0.19891E-01
0.50	0.25564E 00	0.11806E 00	0.79144E-01	0.61565E-01
0.55	0.36470E 00	0.17939E 00	0.12519E 00	0.10016E 00
0.60	0.51452E 00	0.26708E 00	0.19271E 00	0.15777E 00
0.65	0.72305E 00	0.39314E 00	0.29178E 00	0.24349E 00
0.70	0.10200E 01	0.57755E 00	0.43906E 00	0.37234E 00
0.75	0.14593E 01	0.85610E 00	0.66443E 00	0.57124E 00
0.80	0.21478E 01	0.13003E 01	0.10275E 01	0.89387E 00
0.85	0.33358E 01	0.20769E 01	0.16673E 01	0.14653E 01
0.90	0.57732E 01	0.36861E 01	0.30006E 01	0.26607E 01
0.95	0.13210E 02	0.86277E 01	0.71107E 01	0.63551E 01
0.98	0.35672E 02	0.23592E 02	0.19576E 02	0.17571E 02
0.99	0.73159E 02	0.48580E 02	0.40398E 02	0.36310E 02

m:	5	6	7
PHO			
0.10	0.16597E-05	0.63217E-06	0.27623E-06
0.20	0.26122E-03	0.16774E-03	0.11672E-03
0.30	0.31658E-02	0.24382E-02	0.19810E-02
0.40	0.15738E-01	0.13203E-01	0.11513E-01
0.50	0.51732E-01	0.45506E-01	0.41232E-01
0.55	0.85938E-01	0.76828E-01	0.70515E-01
0.60	0.13768E 00	0.12469E 00	0.11562E 00
0.65	0.21545E 00	0.19720E 00	0.18439E 00
0.70	0.33330E 00	0.30774E 00	0.28972E 00
0.75	0.51636E 00	0.48026E 00	0.45473E 00
0.80	0.81475E 00	0.76251E 00	0.72547E 00
0.85	0.13452E 01	0.12657E 01	0.12092E 01
0.90	0.24579E 01	0.23233E 01	0.22274E 01
0.95	0.59029E 01	0.56020E 01	0.53874E 01
0.98	0.16369E 02	0.15569E 02	0.14997E 02
0.99	0.33858E 02	0.32224E 02	0.31057E 02

m:	8	9	∞
PHO			
0.10	0.13436E-06	0.71221E-07	0.00000E 00
0.20	0.86181E-04	0.66583E-04	0.41003E-05
0.30	0.16721E-02	0.14519E-02	0.48981E-03
0.40	0.10314E-01	0.94230E-02	0.58345E-02
0.50	0.38125E-01	0.35769E-01	0.28938E-01
0.55	0.65892E-01	0.62366E-01	0.54288E-01
0.60	0.10895E 00	0.10383E 00	0.94775E-01
0.65	0.17491E 00	0.16763E 00	0.15727E 00
0.70	0.27635E 00	0.26604E 00	0.25249E 00
0.75	0.43574E 00	0.42105E 00	0.39888E 00
0.80	0.69784E 00	0.67645E 00	0.63255E 00
0.85	0.11669E 01	0.11342E 01	0.10370E 01
0.90	0.21557E 01	0.20999E 01	0.18609E 01
0.95	0.52266E 01	0.51016E 01	0.43578E 01
0.98	0.14569E 02	0.14235E 02	0.11858E 02
0.99	0.30183E 02	0.29502E 02	0.24357E 02

EXPECTED LENGTH OF QUEUE FOR $E_m/E_2/3$

	m:	1	2	3
RHO				
0.10		0.34109E-03	0.11321E-04	0.10183E-05
0.20		0.50112E-02	0.63025E-03	0.17030E-03
0.30		0.23993E-01	0.55732E-02	0.23809E-02
0.40		0.74176E-01	0.24544E-01	0.13396E-01
0.50		0.18442E 00	0.76619E-01	0.48499E-01
0.55		0.27753E 00	0.12555E 00	0.83807E-01
0.60		0.41015E 00	0.19931E 00	0.13898E 00
0.65		0.60024E 00	0.31004E 00	0.22418E 00
0.70		0.87786E 00	0.47780E 00	0.35617E 00
0.75		0.12966E 01	0.73849E 00	0.56493E 00
0.80		0.19638E 01	0.11637E 01	0.91020E 00
0.85		0.31297E 01	0.19203E 01	0.15311E 01
0.90		0.55441E 01	0.35085E 01	0.28443E 01
0.95		0.12957E 02	0.84282E 01	0.69335E 01
0.98		0.35405E 02	0.23379E 02	0.19386E 02
0.99		0.72887E 02	0.48362E 02	0.40204E 02

	m:	4	9	16
RHO				
0.10		0.15742E-06	0.56425E-09	0.12245E-10
0.20		0.65932E-04	0.58159E-05	0.22043E-05
0.30		0.12933E-02	0.29739E-03	0.13244E-03
0.40		0.84767E-02	0.30792E-02	0.17913E-02
0.50		0.32850E-01	0.15095E-01	0.99895E-02
0.55		0.57661E-01	0.28530E-01	0.19620E-01
0.60		0.96370E-01	0.50397E-01	0.35622E-01
0.65		0.15587E 00	0.85002E-01	0.61243E-01
0.70		0.24779E 00	0.13959E 00	0.10189E 00
0.75		0.39375E 00	0.22790E 00	0.16786E 00
0.80		0.63917E 00	0.37973E 00	0.28186E 00
0.85		0.10957E 01	0.67191E 00	0.50424E 00
0.90		0.21159E 01	0.13605E 01	0.10444E 01
0.95		0.55333E 01	0.38609E 01	0.31223E 01
0.98		0.16503E 02	0.12474E 02	0.10734E 02
0.99		0.35140E 02	0.27501E 02	0.24390E 02

EXPECTED LENGTH OF QUEUE FOR $E_m/E_2/4$

	m: 1	2	3
RHO			
0.10	0.75040E-04	0.10772E-05	0.52714E-07
0.20	0.19916E-02	0.15942E-03	0.32164E-04
0.30	0.12939E-01	0.23030E-02	0.83545E-03
0.40	0.48397E-01	0.13605E-01	0.67478E-02
0.50	0.13705E 00	0.51488E-01	0.30797E-01
0.55	0.21693E 00	0.90700E-01	0.57973E-01
0.60	0.33480E 00	0.15303E 00	0.10324E 00
0.65	0.50883E 00	0.25068E 00	0.17679E 00
0.70	0.76893E 00	0.40380E 00	0.29549E 00
0.75	0.11691E 01	0.64840E 00	0.48940E 00
0.80	0.18165E 01	0.10562E 01	0.81837E 00
0.85	0.29615E 01	0.17941E 01	0.14216E 01
0.90	0.53542E 01	0.33625E 01	0.27160E 01
0.95	0.12745E 02	0.82614E 01	0.67852E 01
0.98	0.35178E 02	0.23199E 02	0.19225E 02
0.99	0.72656E 02	0.48178E 02	0.40038E 02

	m: 4	9
RHO		
0.10	0.38434E-08	0.47536E-11
0.20	0.10518E-04	0.57057E-06
0.30	0.42030E-03	0.81048E-04
0.40	0.42734E-02	0.15226E-02
0.50	0.22266E-01	0.11025E-01
0.55	0.43875E-01	0.24247E-01
0.60	0.81044E-01	0.48814E-01
0.65	0.14297E 00	0.92208E-01
0.70	0.24484E 00	0.16685E 00
0.75	0.41376E 00	0.29490E 00
0.80	0.70365E 00	0.52036E 00
0.85	0.12398E 01	0.94543E 00
0.90	0.23975E 01	0.18760E 01
0.95	0.60521E 01	0.48401E 01
0.98	0.17243E 02	0.13950E 02
0.99	0.35974E 02	0.29351E 02

EXPECTED LENGTH OF QUEUE FOR $E_m/E_2/5$

	m:	1	2	3
RHO				
0.10		0.16894E-04	0.10446E-06	0.57262E-08
0.20		0.81050E-03	0.41364E-04	0.53417E-05
0.30		0.71421E-02	0.97543E-03	0.30021E-03
0.40		0.32266E-01	0.77221E-02	0.34790E-02
0.50		0.10378E 00	0.35345E-01	0.19983E-01
0.55		0.17249E 00	0.66829E-01	0.40923E-01
0.60		0.27751E 00	0.11961E 00	0.78122E-01
0.65		0.43707E 00	0.20591E 00	0.14175E 00
0.70		0.68128E 00	0.34595E 00	0.24869E 00
0.75		0.10641E 01	0.57581E 00	0.42910E 00
0.80		0.16929E 01	0.96734E 00	0.74293E 00
0.85		0.28181E 01	0.16876E 01	0.13295E 01
0.90		0.51899E 01	0.32369E 01	0.26058E 01
0.95		0.12559E 02	0.81156E 01	0.66557E 01
0.98		0.34979E 02	0.23041E 02	0.19084E 02
0.99		0.72451E 02	0.48015E 02	0.39893E 02

	m:	4	9
RHO			
0.10		0.17498E-09	0.42175E-13
0.20		0.19995E-05	0.40782E-06
0.30		0.13486E-03	0.20312E-04
0.40		0.20656E-02	0.63459E-03
0.50		0.13924E-01	0.63450E-02
0.55		0.30122E-01	0.15653E-01
0.60		0.60069E-01	0.34581E-01
0.65		0.11289E 00	0.70456E-01
0.70		0.20379E 00	0.13565E 00
0.75		0.35994E 00	0.25237E 00
0.80		0.63536E 00	0.46471E 00
0.85		0.11555E 01	0.87500E 00
0.90		0.22957E 01	0.17892E 01
0.95		0.59315E 01	0.47357E 01
0.98		0.17111E 02	0.13835E 02
0.99		0.35837E 02	0.29069E 02

EXPECTED LENGTH OF QUEUE FOR $Rm/F^2/S$

RHO	m:	1	2	3
0.10		0.20720E-06	0.31724E-09	0.45127E-09
0.20		0.58932E-04	0.78139E-06	0.48759E-07
0.30		0.12969E-02	0.80099E-04	0.15007E-04
0.40		0.10290E-01	0.15248E-02	0.49172E-03
0.50		0.48125E-01	0.12292E-01	0.54948E-02
0.55		0.92126E-01	0.28616E-01	0.14248E-01
0.60		0.16697E 00	0.60817E-01	0.32857E-01
0.65		0.29083E 00	0.12073E 00	0.69306E-01
0.70		0.49410E 00	0.22842E 00	0.13712E 00
0.75		0.83088E 00	0.42027E 00	0.26069E 00
0.80		0.14090E 01	0.76818E 00	0.47106E 00
0.85		0.24789E 01	0.14396E 01	0.10923E 01
0.90		0.47915E 01	0.29353E 01	0.23037E 01
0.95		0.12097E 02	0.77561E 01	0.62776E 01
0.98		0.34478E 02	0.22645E 02	0.18654E 02
0.99		0.71937E 02	0.47607E 02	0.39445E 02

EXPECTED LENGTH OF QUEUE FOR $E_m/E_3/1$

	m:	1	2	3
RHO				
0.10		0.74074E-02	0.12772E-02	0.34128E-03
0.20		0.33333E-01	0.94825E-02	0.40820E-02
0.30		0.85714E-01	0.31288E-01	0.16777E-01
0.40		0.17778E 00	0.75834E-01	0.46211E-01
0.50		0.33333E 00	0.15852E 00	0.10506E 00
0.55		0.44815E 00	0.22254E 00	0.15230E 00
0.60		0.60000E 00	0.30944E 00	0.21766E 00
0.65		0.80476E 00	0.42917E 00	0.30911E 00
0.70		0.10889E 01	0.59828E 00	0.43993E 00
0.75		0.15000E 01	0.84656E 00	0.63394E 00
0.80		0.21333E 01	0.12335E 01	0.93880E 00
0.85		0.32111E 01	0.18981E 01	0.14656E 01
0.90		0.54000E 01	0.32570E 01	0.25478E 01
0.95		0.12033E 02	0.73935E 01	0.58520E 01
0.98		0.32013E 02	0.19875E 02	0.15834E 02
0.99		0.65340E 02	0.40703E 02	0.32495E 02

	m:	4	9	16
RHO				
0.10		0.11470E-03	0.26905E-05	0.12502E-06
0.20		0.21473E-02	0.31519E-03	0.85477E-04
0.30		0.10723E-01	0.32099E-02	0.15637E-02
0.40		0.32887E-01	0.14054E-01	0.88622E-02
0.50		0.79986E-01	0.41987E-01	0.30301E-01
0.55		0.11888E 00	0.67085E-01	0.50615E-01
0.60		0.17350E 00	0.10385E 00	0.81149E-01
0.65		0.25083E 00	0.15765E 00	0.12671E 00
0.70		0.36249E 00	0.23738E 00	0.19524E 00
0.75		0.52936E 00	0.35896E 00	0.30093E 00
0.80		0.79314E 00	0.55419E 00	0.47212E 00
0.85		0.12511E 01	0.89718E 00	0.77484E 00
0.90		0.21948E 01	0.16102E 01	0.14070E 01
0.95		0.50828E 01	0.38044E 01	0.33583E 01
0.98		0.13816E 02	0.10454E 02	0.92790E 01
0.99		0.28393E 02	0.21560E 02	0.19169E 02

EXPECTED LENGTH OF QUEUE FOR $E_m/E_3/2$

	m:	1	2	3
RHO				
0.10		0.14829E-02	0.93348E-04	0.11756E-04
0.20		0.11975E-01	0.19994E-02	0.60371E-03
0.30		0.41923E-01	0.11116E-01	0.49141E-02
0.40		0.10620E 00	0.37023E-01	0.20174E-01
0.50		0.22975E 00	0.95965E-01	0.59511E-01
0.55		0.32724E 00	0.14646E 00	0.95216E-01
0.60		0.46099E 00	0.21886E 00	0.14798E 00
0.65		0.64696E 00	0.32320E 00	0.22585E 00
0.70		0.91162E 00	0.47609E 00	0.34218E 00
0.75		0.13027E 01	0.70739E 00	0.52088E 00
0.80		0.19155E 01	0.10767E 01	0.80965E 00
0.85		0.29722E 01	0.17230E 01	0.13197E 01
0.90		0.51395E 01	0.30629E 01	0.23844E 01
0.95		0.11751E 02	0.71799E 01	0.56704E 01
0.98		0.31717E 02	0.19650E 02	0.15642E 02
0.99		0.65040E 02	0.40473E 02	0.32299E 02

	m:	4	9
RHO			
0.10		0.21720E-05	0.81438E-08
0.20		0.24545E-03	0.18387E-04
0.30		0.27571E-02	0.58204E-03
0.40		0.13380E-01	0.46014E-02
0.50		0.43557E-01	0.18832E-01
0.55		0.72162E-01	0.33155E-01
0.60		0.11538E 00	0.54917E-01
0.65		0.18029E 00	0.87101E-01
0.70		0.27859E 00	0.13446E 00
0.75		0.43121E 00	0.20571E 00
0.80		0.67993E 00	0.31973E 00
0.85		0.11220E 01	0.52573E 00
0.90		0.20493E 01	0.99238E 00
0.95		0.49201E 01	0.26912E 01
0.98		0.13642E 02	0.87554E 01
0.99		0.28216E 02	0.19566E 02

EXPECTED LENGTH OF QUEUE FOR $E_m/E_4/1$

RHO	m:	1	2	3	4
0.10		0.69444E-02	0.10980E-02	0.26500E-03	0.79737E-04
0.20		0.31250E-01	0.82465E-02	0.32770E-02	0.15896E-02
0.30		0.80357E-01	0.27431E-01	0.13777E-01	0.82755E-02
0.40		0.16667E 00	0.66897E-01	0.38573E-01	0.26126E-01
0.50		0.31250E 00	0.14052E 00	0.88791E-01	0.64896E-01
0.55		0.42014E 00	0.19769E 00	0.12938E 00	0.97284E-01
0.60		0.56250E 00	0.27542E 00	0.18576E 00	0.14305E 00
0.65		0.75446E 00	0.38265E 00	0.26491E 00	0.20820E 00
0.70		0.10208E 01	0.53431E 00	0.37844E 00	0.30270E 00
0.75		0.14062E 01	0.75718E 00	0.54721E 00	0.44445E 00
0.80		0.20000E 01	0.11049E 01	0.81293E 00	0.66918E 00
0.85		0.30104E 01	0.17024E 01	0.12728E 01	0.10603E 01
0.90		0.50625E 01	0.29247E 01	0.22186E 01	0.18677E 01
0.95		0.11281E 02	0.66469E 01	0.51086E 01	0.43416E 01
0.98		0.30012E 02	0.17880E 02	0.13842E 02	0.11826E 02
0.99		0.61256E 02	0.36625E 02	0.28420E 02	0.24321E 02

E2/E2/1 COF OF NUMBER IN STATE

Table with columns: STATE, P(R=1), P(R=2), STATE, P(R=1), P(R=2), STATE, P(R=1), P(R=2). Rows are grouped by 'RHO' values (e.g., RHO=10, RHO=20, RHO=30, RHO=40, RHO=50, RHO=60, RHO=70, RHO=80, RHO=90, RHO=100). Each row contains numerical data for different states and rho values.

E9/E2/1 COF OF NUMBER IN SYSTEM

Table with columns: STATE, P(0-1), P(0-2), P(0-3), P(0-4). Rows include state codes like 0.000000, 1.000000, 2.000000, etc., and their corresponding values.

Table with columns: STATE, P(0-1), P(0-2), P(0-3), P(0-4). Rows include state codes like 0.250000, 1.250000, 2.250000, etc., and their corresponding values.

Table with columns: STATE, P(0-1), P(0-2), P(0-3), P(0-4). Rows include state codes like 0.500000, 1.500000, 2.500000, etc., and their corresponding values.

E3/E2/2 CDF OF NUMBER IN SYSTEM

Table with 5 columns: STATE, P(=1), P(=2), STATE, P(=1), P(=2). Rows are grouped by STATE (10, 75, 90, 95, 99, 99.5, 99.9, 99.95, 99.99, 99.995, 99.999).

Table with 5 columns: STATE, P(=1), P(=2), STATE, P(=1), P(=2). Rows are grouped by STATE (10, 75, 90, 95, 99, 99.5, 99.9, 99.95, 99.99, 99.995, 99.999).

Table with 5 columns: STATE, P(=1), P(=2), STATE, P(=1), P(=2). Rows are grouped by STATE (10, 75, 90, 95, 99, 99.5, 99.9, 99.95, 99.99, 99.995, 99.999).

E5/E2/2 CDF OF NUMBER IN SYSTEM

Table with 4 main columns: STAFF (I, P, R, F), STAFF (I, P, R, F), STAFF (I, P, R, F), and STAFF (I, P, R, F). Rows are grouped by STAFF ID (e.g., 0, 1, 2, 3) and include numerical values for I, P, R, and F. Sub-headers like E5, E2, and R2 are used to denote specific staff categories.

E8/E2/2 COF OF NUMBER IN SYSTEM

STAFF T	P(=1)	P(=2)	P(=3)	P(=4)	P(=5)	STAFF T	P(=1)	P(=2)	P(=3)	P(=4)	P(=5)	STAFF T	P(=1)	P(=2)	P(=3)	P(=4)	P(=5)	
BRO=10					BRO=14					BRO=18								
1	0.00000	0.00000	1	0.00000	1	0.00000	1	0.00000	1	0.00000	1	0.00000	1	0.00000	1	0.00000	1	0.00000
2	0.00000	0.00000	2	0.00000	2	0.00000	2	0.00000	2	0.00000	2	0.00000	2	0.00000	2	0.00000	2	0.00000

E2/E2/3 CDF OF NUMBER IN SYSTEM

STATE	P(B=1)	P(B=2)	STATE	P(B=1)	P(B=2)	STATE	P(B=1)	P(B=2)	STATE	P(B=1)	P(B=2)
BRO-10											
1	0.920216	0.722216	6	0.232227	0.000000	11	0.000000	0.000000	16	0.000000	0.000000
2	0.079784	0.277784	7	0.767773	0.000000	12	0.000000	0.000000	17	0.000000	0.000000
3	0.000000	0.000000	8	0.232227	0.000000	13	0.000000	0.000000	18	0.000000	0.000000
4	0.000000	0.000000	9	0.767773	0.000000	14	0.000000	0.000000	19	0.000000	0.000000
5	0.000000	0.000000	10	0.232227	0.000000	15	0.000000	0.000000	20	0.000000	0.000000
BRO-20											
1	0.956611	0.506611	7	0.211111	0.000000	12	0.000000	0.000000	17	0.000000	0.000000
2	0.043389	0.493389	8	0.788889	0.000000	13	0.000000	0.000000	18	0.000000	0.000000
3	0.000000	0.000000	9	0.211111	0.000000	14	0.000000	0.000000	19	0.000000	0.000000
4	0.000000	0.000000	10	0.788889	0.000000	15	0.000000	0.000000	20	0.000000	0.000000
5	0.000000	0.000000	11	0.211111	0.000000	16	0.000000	0.000000	21	0.000000	0.000000
BRO-30											
1	0.987777	0.187777	8	0.003333	0.000000	13	0.000000	0.000000	18	0.000000	0.000000
2	0.012223	0.812223	9	0.996667	0.000000	14	0.000000	0.000000	19	0.000000	0.000000
3	0.000000	0.000000	10	0.003333	0.000000	15	0.000000	0.000000	20	0.000000	0.000000
4	0.000000	0.000000	11	0.996667	0.000000	16	0.000000	0.000000	21	0.000000	0.000000
5	0.000000	0.000000	12	0.003333	0.000000	17	0.000000	0.000000	22	0.000000	0.000000
BRO-40											
1	0.997777	0.007777	8	0.000000	0.000000	13	0.000000	0.000000	18	0.000000	0.000000
2	0.002223	0.992223	9	0.999999	0.000000	14	0.000000	0.000000	19	0.000000	0.000000
3	0.000000	0.000000	10	0.000000	0.000000	15	0.000000	0.000000	20	0.000000	0.000000
4	0.000000	0.000000	11	0.999999	0.000000	16	0.000000	0.000000	21	0.000000	0.000000
5	0.000000	0.000000	12	0.000000	0.000000	17	0.000000	0.000000	22	0.000000	0.000000
BRO-50											
1	0.999999	0.000000	8	0.000000	0.000000	13	0.000000	0.000000	18	0.000000	0.000000
2	0.000001	0.999999	9	0.999999	0.000000	14	0.000000	0.000000	19	0.000000	0.000000
3	0.000000	0.000000	10	0.000000	0.000000	15	0.000000	0.000000	20	0.000000	0.000000
4	0.000000	0.000000	11	0.999999	0.000000	16	0.000000	0.000000	21	0.000000	0.000000
5	0.000000	0.000000	12	0.000000	0.000000	17	0.000000	0.000000	22	0.000000	0.000000

E9/E2/3 COF OF NUMBER IN SYSTEM.

STAFF P(=1) P(=4) STAFF P(=1) P(=4)

0 271110-01 0.973113 16 488018-05 0.879997 1 281358-02 0.972014 56 161972-01 0.976191

000-10

1 195874 0.972117 15 164415-05 0.999998 1 272116-01 0.973121 56 161972-01 0.976191

000-20

1 182624 0.974711 8 174554-14 0.999999 1 182624 0.974711 8 174554-14 0.999999

000-30

1 176181 0.976181 13 464167-11 1.000000 1 176181 0.976181 13 464167-11 1.000000

000-40

1 106782 0.976282 11 367865-09 1.000000 1 106782 0.976282 11 367865-09 1.000000

000-50

1 820666-01 0.976788 11 761611-08 0.999999 1 820666-01 0.976788 11 761611-08 0.999999

000-60

1 128588 0.976888 10 525278-08 1.000000 1 128588 0.976888 10 525278-08 1.000000

000-70

1 128588 0.976888 10 525278-08 1.000000 1 128588 0.976888 10 525278-08 1.000000

000-80

1 128588 0.976888 10 525278-08 1.000000 1 128588 0.976888 10 525278-08 1.000000

000-90

1 128588 0.976888 10 525278-08 1.000000 1 128588 0.976888 10 525278-08 1.000000

STAFF P(=1) P(=4) STAFF P(=1) P(=4)

1 195874 0.972117 15 164415-05 0.999998 1 272116-01 0.973121 56 161972-01 0.976191

000-10

1 182624 0.974711 8 174554-14 0.999999 1 182624 0.974711 8 174554-14 0.999999

000-20

1 176181 0.976181 13 464167-11 1.000000 1 176181 0.976181 13 464167-11 1.000000

000-30

1 106782 0.976282 11 367865-09 1.000000 1 106782 0.976282 11 367865-09 1.000000

000-40

1 820666-01 0.976788 11 761611-08 0.999999 1 820666-01 0.976788 11 761611-08 0.999999

000-50

1 128588 0.976888 10 525278-08 1.000000 1 128588 0.976888 10 525278-08 1.000000

000-60

1 128588 0.976888 10 525278-08 1.000000 1 128588 0.976888 10 525278-08 1.000000

000-70

1 128588 0.976888 10 525278-08 1.000000 1 128588 0.976888 10 525278-08 1.000000

000-80

1 128588 0.976888 10 525278-08 1.000000 1 128588 0.976888 10 525278-08 1.000000

000-90

1 128588 0.976888 10 525278-08 1.000000 1 128588 0.976888 10 525278-08 1.000000

STAFF P(=1) P(=4) STAFF P(=1) P(=4)

1 271358-02 0.972014 56 161972-01 0.976191 1 271358-02 0.972014 56 161972-01 0.976191

000-10

1 182624 0.974711 8 174554-14 0.999999 1 182624 0.974711 8 174554-14 0.999999

000-20

1 176181 0.976181 13 464167-11 1.000000 1 176181 0.976181 13 464167-11 1.000000

000-30

1 106782 0.976282 11 367865-09 1.000000 1 106782 0.976282 11 367865-09 1.000000

000-40

1 820666-01 0.976788 11 761611-08 0.999999 1 820666-01 0.976788 11 761611-08 0.999999

000-50

1 128588 0.976888 10 525278-08 1.000000 1 128588 0.976888 10 525278-08 1.000000

000-60

1 128588 0.976888 10 525278-08 1.000000 1 128588 0.976888 10 525278-08 1.000000

000-70

1 128588 0.976888 10 525278-08 1.000000 1 128588 0.976888 10 525278-08 1.000000

000-80

1 128588 0.976888 10 525278-08 1.000000 1 128588 0.976888 10 525278-08 1.000000

000-90

1 128588 0.976888 10 525278-08 1.000000 1 128588 0.976888 10 525278-08 1.000000

STAFF P(=1) P(=4) STAFF P(=1) P(=4)

1 271358-02 0.972014 56 161972-01 0.976191 1 271358-02 0.972014 56 161972-01 0.976191

000-10

1 182624 0.974711 8 174554-14 0.999999 1 182624 0.974711 8 174554-14 0.999999

000-20

1 176181 0.976181 13 464167-11 1.000000 1 176181 0.976181 13 464167-11 1.000000

000-30

1 106782 0.976282 11 367865-09 1.000000 1 106782 0.976282 11 367865-09 1.000000

000-40

1 820666-01 0.976788 11 761611-08 0.999999 1 820666-01 0.976788 11 761611-08 0.999999

000-50

1 128588 0.976888 10 525278-08 1.000000 1 128588 0.976888 10 525278-08 1.000000

000-60

1 128588 0.976888 10 525278-08 1.000000 1 128588 0.976888 10 525278-08 1.000000

000-70

1 128588 0.976888 10 525278-08 1.000000 1 128588 0.976888 10 525278-08 1.000000

000-80

1 128588 0.976888 10 525278-08 1.000000 1 128588 0.976888 10 525278-08 1.000000

000-90

1 128588 0.976888 10 525278-08 1.000000 1 128588 0.976888 10 525278-08 1.000000

E3/E2/4 CDF OF NUMBER IN SYSTEM.

Table with multiple columns for different scenarios (PROB. 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95) showing CDF values for various parameters. Each scenario has a header row with 'PROB.' and 'C(%)' labels, followed by rows of numerical data.

E2/E2/5 CDF OF NUMBER IN SYSTEM.

STATE 1					STATE 2					STATE 3				
STATE	P(N=1)	P(N=2)	P(N=3)	P(N=4)	STATE	P(N=1)	P(N=2)	P(N=3)	P(N=4)	STATE	P(N=1)	P(N=2)	P(N=3)	P(N=4)
RHO= .10														
0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000
RHO= .20														
0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000
RHO= .30														
0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000
RHO= .40														
0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000
RHO= .50														
0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000
RHO= .60														
0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000
RHO= .70														
0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000
RHO= .80														
0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000
RHO= .90														
0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000	0.100000

E4/E2/5 COF OF NUMBER IN SYSTEM.

STAFF 10				STAFF 20				STAFF 30				STAFF 40				STAFF 50				STAFF 60				STAFF 70				STAFF 80			
P(=1)	P(=2)	P(=3)	P(=4)	P(=1)	P(=2)	P(=3)	P(=4)	P(=1)	P(=2)	P(=3)	P(=4)	P(=1)	P(=2)	P(=3)	P(=4)	P(=1)	P(=2)	P(=3)	P(=4)	P(=1)	P(=2)	P(=3)	P(=4)	P(=1)	P(=2)	P(=3)	P(=4)	P(=1)	P(=2)	P(=3)	P(=4)
1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000

E4/E3/1 CDF OF NUMBER IN SYSTEM

Table with 12 columns: STAFF, P(R=1), P(R=2), P(R=3), P(R=4), STAFF, P(R=1), P(R=2), P(R=3), P(R=4), STAFF, P(R=1), P(R=2), P(R=3), P(R=4). Rows are grouped by STAFF numbers (e.g., STAFF 10, 20, 30, 40, 50, 60, 70, 80, 90, 100).

E9/E3/1 COF OF NUMBER IN SYSTEM

STAFF				STAFF				STAFF				STAFF			
I	P	P(C-1)	P(C-2)	I	P	P(C-1)	P(C-2)	I	P	P(C-1)	P(C-2)	I	P	P(C-1)	P(C-2)
BRO-10															
0.000000	0.000000	4.50671E-23	1.000000	0.250000	0.250000	18.24416E-07	1.000000	0.200000	0.200000	56.579605E-03	0.000000	0.000000	0.000000	0.000000	
BRO-20															
0.000000	0.000000	4.50671E-23	1.000000	0.250000	0.250000	18.24416E-07	1.000000	0.200000	0.200000	56.579605E-03	0.000000	0.000000	0.000000	0.000000	
BRO-30															
0.000000	0.000000	4.50671E-23	1.000000	0.250000	0.250000	18.24416E-07	1.000000	0.200000	0.200000	56.579605E-03	0.000000	0.000000	0.000000	0.000000	
BRO-40															
0.000000	0.000000	4.50671E-23	1.000000	0.250000	0.250000	18.24416E-07	1.000000	0.200000	0.200000	56.579605E-03	0.000000	0.000000	0.000000	0.000000	
BRO-50															
0.000000	0.000000	4.50671E-23	1.000000	0.250000	0.250000	18.24416E-07	1.000000	0.200000	0.200000	56.579605E-03	0.000000	0.000000	0.000000	0.000000	
BRO-55															
0.000000	0.000000	4.50671E-23	1.000000	0.250000	0.250000	18.24416E-07	1.000000	0.200000	0.200000	56.579605E-03	0.000000	0.000000	0.000000	0.000000	
BRO-60															
0.000000	0.000000	4.50671E-23	1.000000	0.250000	0.250000	18.24416E-07	1.000000	0.200000	0.200000	56.579605E-03	0.000000	0.000000	0.000000	0.000000	
BRO-70															
0.000000	0.000000	4.50671E-23	1.000000	0.250000	0.250000	18.24416E-07	1.000000	0.200000	0.200000	56.579605E-03	0.000000	0.000000	0.000000	0.000000	
BRO-80															
0.000000	0.000000	4.50671E-23	1.000000	0.250000	0.250000	18.24416E-07	1.000000	0.200000	0.200000	56.579605E-03	0.000000	0.000000	0.000000	0.000000	
BRO-90															
0.000000	0.000000	4.50671E-23	1.000000	0.250000	0.250000	18.24416E-07	1.000000	0.200000	0.200000	56.579605E-03	0.000000	0.000000	0.000000	0.000000	

E16/E3/1 COF OF NUMBER IN SYSTEM

Table with columns for STAFF I, P(=I), P(=I-1), STAFF II, P(=II), P(=II-1), STAFF III, P(=III), P(=III-1), STAFF IV, P(=IV), P(=IV-1), STAFF V, P(=V), P(=V-1). Rows are grouped by STAFF I (0-5), STAFF II (6-11), STAFF III (12-17), STAFF IV (18-23), STAFF V (24-29).

E2/E3/2 CDF OF NUMBER IN SYSTEM

Table with columns: STATE I, P(I=1), P(I<=I), STATE I, P(I=1), P(I<=I), STATE I, P(I=1), P(I<=I), STATE I, P(I=1), P(I<=I). Rows are grouped by STATE I from E2 to E7.

E3/E3/2 COF OF NUMBER IN SYSTEM

STAFF 1					STAFF 2					STAFF 3					STAFF 4																																															
P(0-1)	P(1-2)	P(2-3)	P(3-4)	P(4-5)	P(0-1)	P(1-2)	P(2-3)	P(3-4)	P(4-5)	P(0-1)	P(1-2)	P(2-3)	P(3-4)	P(4-5)	P(0-1)	P(1-2)	P(2-3)	P(3-4)	P(4-5)																																											
BRO-10																																																														
0	0.00200	0.00200	6	7515958-13	0.99999	1	1.94035	0.99717	7	1042100-10	0.99999	2	2.97069	0.99997	8	1322310-10	0.99999	3	1.97011	0.99999																																										
3	1.97011	0.99999	9	1636731-21	0.99999	4	2.72153	0.99999	10	1913851-26	0.99999	5	4.68704	0.99999	11	2164023-27	0.99999	6																																												
BRO-20																																																														
6	0.25490	0.02549	7	9040090-11	1.00000	1	1.74613	0.97410	8	0.82785	0.13000	2	2.50907	0.99996	9	7100020-15	1.00000	3	4.86209	0.99999	10	5906400-17	1.00000																																							
4	0.87919	0.10000	10	4830410-19	1.00000	5	0.96610	0.10000	12	3919300-21	1.00000	6	10.11628	0.10000	13	3198270-23	1.00000	7																																												
BRO-30																																																														
0	0.37727	0.07727	8	1502690-09	1.00000	1	1.88990	0.92270	9	0.22070	0.10000	2	2.72112	0.99999	10	1490220-12	1.00000	3	4.52177	0.99999	11	3110120-14	1.00000	12	1063200-03	0.99999	13	0.60394	0.10000	14	6.12373	0.99999	15	1632100-19	1.00000	16	1533920-20	1.00000	17	0.55304	0.10000	18	1633920-20	1.00000																		
BRO-40																																																														
0	0.15720	0.05720	10	1250930-09	1.00000	1	1.48957	0.04759	11	0.00709	0.10000	2	1.93752	0.98151	12	5128370-12	1.00000	3	1.62272	0.10000	13	3279630-13	1.00000	4	1.04808	0.02000	14	2.09870	0.10000	15	1.03990	0.03000	16	1.13011	0.05000	17	1.09583	0.05000	18	0.99999	0.10000	19	0.99999	0.10000	20	0.99999	0.10000	21	0.99999	0.10000	22	0.99999	0.10000	23	0.99999	0.10000	24	0.99999	0.10000	25	0.99999	0.10000
BRO-50																																																														
0	0.26055	0.06055	11	3517350-00	1.00000	1	1.79810	0.13960	12	1.39610	0.00000	2	2.07871	0.94280	13	5495710-10	1.00000	3	1.31610	0.01000	14	0.99200	0.10000	15	0.65730	0.02000	16	0.99999	0.10000	17	0.99999	0.10000	18	0.99999	0.10000	19	0.99999	0.10000	20	0.99999	0.10000	21	0.99999	0.10000	22	0.99999	0.10000	23	0.99999	0.10000	24	0.99999	0.10000	25	0.99999	0.10000						
BRO-60																																																														
0	1.03007	0.10307	13	2292710-07	1.00000	1	1.97990	0.04990	14	1.03007	0.10307	2	2.70070	0.04707	15	1071160-00	1.00000	3	1.04690	0.00000	16	0.92750	0.10000	17	1.18680	0.01000	18	0.99999	0.10000	19	0.99999	0.10000	20	0.99999	0.10000	21	0.99999	0.10000	22	0.99999	0.10000	23	0.99999	0.10000	24	0.99999	0.10000	25	0.99999	0.10000												
BRO-70																																																														
0	1.02010	0.10201	14	2100020-06	0.99999	1	1.99230	0.04990	15	1.02010	0.10201	2	2.90607	0.04707	16	0.99999	0.10000	3	1.11000	0.01000	17	0.99999	0.10000	18	0.99999	0.10000	19	0.99999	0.10000	20	0.99999	0.10000	21	0.99999	0.10000	22	0.99999	0.10000	23	0.99999	0.10000	24	0.99999	0.10000	25	0.99999	0.10000															
BRO-80																																																														
0	1.02010	0.10201	15	2000000-05	0.99999	1	1.99230	0.04990	16	1.02010	0.10201	2	2.90607	0.04707	17	0.99999	0.10000	3	1.11000	0.01000	18	0.99999	0.10000	19	0.99999	0.10000	20	0.99999	0.10000	21	0.99999	0.10000	22	0.99999	0.10000	23	0.99999	0.10000	24	0.99999	0.10000	25	0.99999	0.10000																		
BRO-90																																																														
0	1.02010	0.10201	16	1900000-04	0.99999	1	1.99230	0.04990	17	1.02010	0.10201	2	2.90607	0.04707	18	0.99999	0.10000	3	1.11000	0.01000	19	0.99999	0.10000	20	0.99999	0.10000	21	0.99999	0.10000	22	0.99999	0.10000	23	0.99999	0.10000	24	0.99999	0.10000	25	0.99999	0.10000																					
BRO-95																																																														
0	1.02010	0.10201	17	1800000-03	0.99999	1	1.99230	0.04990	18	1.02010	0.10201	2	2.90607	0.04707	19	0.99999	0.10000	3	1.11000	0.01000	20	0.99999	0.10000	21	0.99999	0.10000	22	0.99999	0.10000	23	0.99999	0.10000	24	0.99999	0.10000	25	0.99999	0.10000																								
BRO-98																																																														
0	1.02010	0.10201	18	1700000-02	0.99999	1	1.99230	0.04990	19	1.02010	0.10201	2	2.90607	0.04707	20	0.99999	0.10000	3	1.11000	0.01000	21	0.99999	0.10000	22	0.99999	0.10000	23	0.99999	0.10000	24	0.99999	0.10000	25	0.99999	0.10000																											
BRO-99																																																														
0	1.02010	0.10201	19	1600000-01	0.99999	1	1.99230	0.04990	20	1.02010	0.10201	2	2.90607	0.04707	21	0.99999	0.10000	3	1.11000	0.01000	22	0.99999	0.10000	23	0.99999	0.10000	24	0.99999	0.10000	25	0.99999	0.10000																														

E4/E3/2 COF OF NUMBER IN SYSTEM

Table with multiple columns labeled STAFF, P(=), P(R=), STAFF, P(=), P(R=), STAFF, P(=), P(R=), STAFF, P(=), P(R=). It contains a grid of numerical data organized into sub-sections (e.g., BR04-10, BR04-20, BR04-30, BR04-40, BR04-50, BR04-60, BR04-70, BR04-80, BR04-90, BR04-95, BR04-99) and a final summary row at the bottom.

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F/G 12/2

TABLES OF QUEUE SIZE DISTRIBUTION FOR QUEUEING SYSTEMS WITH ERL--ETC(U)

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E4/E4/1 COF OF NUMBER IN SYSTEM

Table with columns: STAFF, P(=1), P(=2), STAFF, P(=1), P(=2), STAFF, P(=1), P(=2), STAFF, P(=1), P(=2). Rows are grouped by STAFF numbers (e.g., 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100).

E2/E4/2 CDF OF NUMBER IN SYSTEM

Table with 12 columns: STATE I, P(K=1), P(K=2), STATE I, P(K=1), P(K=2), STATE I, P(K=1), P(K=2), STATE I, P(K=1), P(K=2). Rows are grouped by STATE I values (e.g., 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12) and labeled with sub-headers like R00=10, R00=75, R00=90, etc.

Tables for $E_m/D/c$ Queueing Systems

The Model: The time between arrivals of consecutive customers has an Erlang distribution with shape parameter m ;
service times are constant;
 c servers operate in parallel.

Notation: See Section 1.2.

Tables Included: $P(N = I)$ and $P(N \leq I)$ for $c = 1$ and $m = 2, 3, \dots, 10, 12, 15,$
 $c = 2$ and $m = 2, 3, 4, 5, 6,$
 $c = 3$ and $m = 2, 3, 4, 5,$
 $c = 4$ and $m = 2, 3,$
 $c = 5$ and $m = 2, 3,$
 $c = 6$ and $m = 2.$

E2/O/1 CDF OF NUMBER IN SYSTEM

Table with 12 columns: STATE, F(N=1), P(NC=1), STATE, F(N=1), P(NC=1), STATE, F(N=1), P(NC=1), STATE, F(N=1), P(NC=1), STATE, F(N=1), P(NC=1). Rows contain numerical data for various states and probabilities.

E2/O/2 CDF OF NUMBER IN SYSTEM

Table with 12 columns: STATE, F(N=1), P(NC=1), STATE, F(N=1), P(NC=1), STATE, F(N=1), P(NC=1), STATE, F(N=1), P(NC=1), STATE, F(N=1), P(NC=1). Rows contain numerical data for various states and probabilities.

E2/D/3 CDF OF NUMBER IN SYSTEM

Table with 12 columns: STATE, F(0-1), P(0-1), STATE, F(0-1), P(0-1), STATE, F(0-1), P(0-1), STATE, F(0-1), P(0-1), STATE, F(0-1), P(0-1). Rows contain numerical data for various states and categories.

E2/D/4 CDF OF NUMBER IN SYSTEM

Table with 12 columns: STATE, F(0-1), P(0-1), STATE, F(0-1), P(0-1), STATE, F(0-1), P(0-1), STATE, F(0-1), P(0-1), STATE, F(0-1), P(0-1). Rows contain numerical data for various states and categories.

E2/D/5 COF OF NUMBER IN SYSTEM

Table with 12 columns: STAFF, P(B=1), P(B<=1), STAFF, P(B=1), P(B<=1), STAFF, P(B=1), P(B<=1), STAFF, P(B=1), P(B<=1), STAFF, P(B=1), P(B<=1). Rows are grouped by STAFF numbers (e.g., BRN-10, BRN-50, BRN-65, BRN-90, BRN-95, BRN-70, BRN-40, BRN-45, BRN-55, BRN-60, BRN-65, BRN-70, BRN-75, BRN-80, BRN-85, BRN-90, BRN-95).

E2/D/6 COF OF NUMBER IN SYSTEM

Table with 12 columns: STAFF, P(B=1), P(B<=1), STAFF, P(B=1), P(B<=1), STAFF, P(B=1), P(B<=1), STAFF, P(B=1), P(B<=1), STAFF, P(B=1), P(B<=1). Rows are grouped by STAFF numbers (e.g., BRN-10, BRN-50, BRN-65, BRN-90, BRN-95, BRN-70, BRN-40, BRN-45, BRN-55, BRN-60, BRN-65, BRN-70, BRN-75, BRN-80, BRN-85, BRN-90, BRN-95).

E3/D/1 COF OF NUMBER IN SYSTEM

Table with 16 columns: STATE, F(R=1), P(RC=1), STATE, F(R=1), P(RC=1), STATE, F(R=1), P(RC=1), STATE, F(R=1), P(RC=1), STATE, F(R=1), P(RC=1), STATE, F(R=1), P(RC=1). Rows are grouped by RHO values (e.g., RHO=10, RHO=20, RHO=30, RHO=40, RHO=50, RHO=60, RHO=70, RHO=80, RHO=90, RHO=95, RHO=99).

E3/D/2 COF OF NUMBER IN SYSTEM

Table with 16 columns: STATE, F(R=1), P(RC=1), STATE, F(R=1), P(RC=1), STATE, F(R=1), P(RC=1), STATE, F(R=1), P(RC=1), STATE, F(R=1), P(RC=1), STATE, F(R=1), P(RC=1). Rows are grouped by RHO values (e.g., RHO=10, RHO=20, RHO=30, RHO=40, RHO=50, RHO=60, RHO=70, RHO=80, RHO=85, RHO=90, RHO=95, RHO=99).

E4/D/1 COF OF NUMBER IN SYSTEM

Table with 16 columns: STAT# I, P(H=I), P(H<=I), STAT# I, P(H=I), P(H<=I), STAT# I, P(H=I), P(H<=I), STATE I, P(H=I), P(H<=I), STAT# I, P(H=I), P(H<=I), STATE I, P(H=I), P(H<=I). Rows are grouped by RHO values from 10 to 99.

E4/D/2 COF OF NUMBER IN SYSTEM

Table with 16 columns: STAT# I, P(H=I), P(H<=I), STAT# I, P(H=I), P(H<=I), STAT# I, P(H=I), P(H<=I), STATE I, P(H=I), P(H<=I), STAT# I, P(H=I), P(H<=I), STATE I, P(H=I), P(H<=I). Rows are grouped by RHO values from 65 to 99.

E4/D/3 COF OF NUMBER IN SYSTEM

Table with 16 columns: STAT# I, P(H=I), P(H<=I), STAT# I, P(H=I), P(H<=I), STAT# I, P(H=I), P(H<=I), STATE I, P(H=I), P(H<=I), STAT# I, P(H=I), P(H<=I), STATE I, P(H=I), P(H<=I). Rows are grouped by RHO values from 10 to 94.

E5/D/1 CDF OF NUMBER IN SYSTEM

STATE	F(N=1)	P(N<=1)	STATE	F(N=1)	P(N<=1)	STATE	F(N=1)	P(N<=1)	STATE	F(N=1)	P(N<=1)	STATE	F(N=1)	P(N<=1)
0 .600000	0.600000	0.600000	0 .600000	0.600000	0.600000	0 .600000	0.600000	0.600000	0 .600000	0.600000	0.600000	0 .600000	0.600000	0.600000
1 .999999	0.999999	0.999999	1 .999999	0.999999	0.999999	1 .999999	0.999999	0.999999	1 .999999	0.999999	0.999999	1 .999999	0.999999	0.999999
[...]														

E5/D/2 CDF OF NUMBER IN SYSTEM

STATE	F(N=1)	P(N<=1)	STATE	F(N=1)	P(N<=1)	STATE	F(N=1)	P(N<=1)	STATE	F(N=1)	P(N<=1)	STATE	F(N=1)	P(N<=1)
0 .800137	0.800137	0.800137	0 .800137	0.800137	0.800137	0 .800137	0.800137	0.800137	0 .800137	0.800137	0.800137	0 .800137	0.800137	0.800137
1 .197226	0.997226	0.997226	1 .197226	0.997226	0.997226	1 .197226	0.997226	0.997226	1 .197226	0.997226	0.997226	1 .197226	0.997226	0.997226
[...]														

E5/D/3 CDF OF NUMBER IN SYSTEM

STATE	F(N=1)	P(N<=1)	STATE	F(N=1)	P(N<=1)	STATE	F(N=1)	P(N<=1)	STATE	F(N=1)	P(N<=1)	STATE	F(N=1)	P(N<=1)
0 .701115	0.701115	0.701115	0 .701115	0.701115	0.701115	0 .701115	0.701115	0.701115	0 .701115	0.701115	0.701115	0 .701115	0.701115	0.701115
1 .297706	0.998821	0.998821	1 .297706	0.998821	0.998821	1 .297706	0.998821	0.998821	1 .297706	0.998821	0.998821	1 .297706	0.998821	0.998821
[...]														

E6/D/1 COF OF NUMBER IN SYSTEM

Table with 10 columns of data for E6/D/1, showing COF of number in system for various states and parameters.

E6/D/2 COF OF NUMBER IN SYSTEM

Table with 10 columns of data for E6/D/2, showing COF of number in system for various states and parameters.

E7/D/1 COF OF NUMBER IN SYSTEM

Table with 10 columns of data for E7/D/1, showing COF of number in system for various states and parameters.

E8/D/1 COF OF NUMBER IN SYSTEM

Table with 10 columns of data for E8/D/1, showing COF of number in system for various states and parameters.

E9/D/1 COF OF NUMBER IN SYSTEM

STAFF	P(B=1)	P(B<=1)	STAFF	P(B=1)	P(B<=1)	STAFF	P(B=1)	P(B<=1)	STAFF	P(B=1)	P(B<=1)	STAFF	P(B=1)	P(B<=1)
0 .800000	0.800000	0.800000	0 .800000	0.800000	0.800000	0 .300000	0.300000	0.300000	0 .100000	0.100000	0.100000	0 .900000	0.900000	0.900000
1 .000173E-02	0.930040		1 .496698	0.956696		1 .629227	0.970226		1 .699706	0.899705		1 .693521	0.703521	
0 .700000	0.700000	0.700000	0 .800000	0.800000	0.800000	0 .200000	0.200000	0.200000	0 .150000	0.150000	0.150000	0 .400000	0.400000	0.400000
1 .700000	0.900002		1 .503564	0.971562		1 .666515	0.866516		1 .679604	0.929604		1 .416277	0.866277	
0 .600000	0.600000	0.600000	0 .300000	0.300000	0.300000	0 .200000	0.200000	0.200000	2 .160071	0.960071		2 .319610	0.760071	
1 .200000	0.900121		1 .500103	0.900102		1 .690291	0.760290		1 .672071E-02	0.999397		1 .120099	0.911000	
0 .500000	0.500000	0.500000	0 .200000	0.200000	0.200000	0 .200000	0.200000	0.200000	2 .592102E-01	0.999506		0 .400000	0.400000	0.400000
1 .300000	0.999336											0 .400000	0.400000	0.400000

E10/D/1 COF OF NUMBER IN SYSTEM

STAFF	P(B=1)	P(B<=1)	STAFF	P(B=1)	P(B<=1)	STAFF	P(B=1)	P(B<=1)	STAFF	P(B=1)	P(B<=1)	STAFF	P(B=1)	P(B<=1)
0 .800000	0.800000	0.800000	0 .800000	0.800000	0.800000	0 .300000	0.300000	0.300000	0 .100000	0.100000	0.100000	0 .900000	0.900000	0.900000
1 .100750E-01	0.910072		1 .497626	0.907622		1 .633304	0.943303		1 .711036	0.911033		1 .620732	0.720732	
0 .700000	0.700000	0.700000	0 .800000	0.800000	0.800000	0 .200000	0.200000	0.200000	0 .100000	0.100000	0.100000	0 .400000	0.400000	0.400000
1 .100750E-01	0.910074		1 .505161	0.905159		1 .670730	0.970729		1 .699202	0.969201		1 .403620	0.803620	
0 .600000	0.600000	0.600000	0 .300000	0.300000	0.300000	0 .200000	0.200000	0.200000	2 .100019	0.900019		2 .321955	0.815543	
1 .100750E-01	0.910072		1 .500706	0.900706		1 .699599	0.909598		1 .630904E-02	0.900700		1 .117720	0.931311	
0 .500000	0.500000	0.500000	0 .200000	0.200000	0.200000	0 .200000	0.200000	0.200000	2 .501500E-01	0.900752		0 .400000	0.400000	0.400000
1 .1009575	0.909573											0 .400000	0.400000	0.400000

E12/D/1 COF OF NUMBER IN SYSTEM

STAFF	P(B=1)	P(B<=1)	STAFF	P(B=1)	P(B<=1)	STAFF	P(B=1)	P(B<=1)	STAFF	P(B=1)	P(B<=1)	STAFF	P(B=1)	P(B<=1)
0 .800000	0.800000	0.800000	0 .800000	0.800000	0.800000	0 .300000	0.300000	0.300000	0 .100000	0.100000	0.100000	0 .900000	0.900000	0.900000
1 .102660E-01	0.919263		1 .490723	0.900721		1 .630015	0.900014		1 .733705	0.913704		1 .671004	0.771004	
0 .700000	0.700000	0.700000	0 .800000	0.800000	0.800000	0 .200000	0.200000	0.200000	0 .100000	0.100000	0.100000	0 .400000	0.400000	0.400000
1 .102660E-01	0.919264		1 .507160	0.907158		1 .674101	0.974100		1 .727700	0.977700		1 .492094	0.892094	
0 .600000	0.600000	0.600000	0 .300000	0.300000	0.300000	0 .200000	0.200000	0.200000	2 .117105	0.907132		2 .321056	0.863950	
1 .102660E-01	0.919260		1 .500100	0.900100		1 .712956	0.962953					2 .157321	0.807321	
0 .500000	0.500000	0.500000	0 .200000	0.200000	0.200000	0 .200000	0.200000	0.200000				0 .400000	0.400000	0.400000
1 .102660E-01	0.919264											0 .400000	0.400000	0.400000

E15/D/1 COF OF NUMBER IN SYSTEM

STAFF	P(B=1)	P(B<=1)	STAFF	P(B=1)	P(B<=1)	STAFF	P(B=1)	P(B<=1)	STAFF	P(B=1)	P(B<=1)	STAFF	P(B=1)	P(B<=1)
0 .800000	0.800000	0.800000	0 .800000	0.800000	0.800000	0 .300000	0.300000	0.300000	0 .100000	0.100000	0.100000	0 .900000	0.900000	0.900000
1 .225100E-02	0.902206		1 .225100E-02	0.902200		1 .225100E-02	0.702200		1 .753310	0.953310		1 .720076	0.820075	
0 .700000	0.700000	0.700000	0 .800000	0.800000	0.800000	0 .200000	0.200000	0.200000	0 .100000	0.100000	0.100000	0 .400000	0.400000	0.400000
1 .225100E-02	0.902209		1 .225100E-02	0.902200		1 .225100E-02	0.802200		1 .760003	0.910002		1 .553757	0.803757	
0 .600000	0.600000	0.600000	0 .300000	0.300000	0.300000	0 .200000	0.200000	0.200000				0 .400000	0.400000	0.400000
1 .225100E-02	0.902207		1 .225100E-02	0.902200		1 .725229	0.975227					1 .100000	0.100000	0.100000
0 .500000	0.500000	0.500000	0 .200000	0.200000	0.200000	0 .200000	0.200000	0.200000				0 .400000	0.400000	0.400000
1 .225100E-02	0.902200											1 .100000	0.100000	0.100000

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REPORT NO. 91

This report provides a relatively comprehensive set of tables describing the steady-state behavior of $E_m/M/c$, $E_m/E_k/c$, and $E_m/D/c$ queueing systems. The results given are the expected number of customers in the queue (excluding those being served) for $E_m/M/c$ and $E_m/E_k/c$, and the probability distribution of the number of customers in the system (including those being served) for all three classes of systems. The cases considered for $E_m/M/c$ are all combinations of $m = 2, 3, 4, 9, 16$ and $c = 1, 2, 3, 4, 5, 8, 10$, with the exception of $m = 16$ and $c = 10$ together. The computationally feasible subset of these combinations also are included for $E_m/E_k/c$ (with $k = 2, 3, 4$) and for $E_m/D/c$, along with some more values of m between 4 and 16 for certain small values of c . For each case, the results are tabulated for 16 values of the traffic intensity ranging from 0.10 to 0.99. These data represent one portion of the output from a large-scale project of theoretical research, algorithmic development, and computational effort to generate the obtainable numerical results for various classes of GI/G/c systems.

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