InfoPlus

Traffic Study

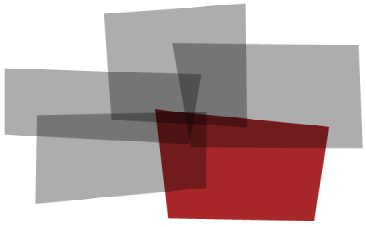
"How well is my PBX performing?"

Produced For

ABC Company

Customer Number: **12345**

Reflecting PBX Information from: **9/8/2003 - 9/12/2003**



Inventory
Configuration
Performance
Security
Backup

DISCLAIMER

The information contained in this document is based upon data retrieved remotely from a PBX system. Some of the information presented may be derived, in whole or in part, from this data. Inconsistent and/or incorrect programming of the PBX may cause these derivations to be inaccurate. For the sake of consistency in these reports, there may be cases in which a best-effort attempt is made to derive particular information based upon related data in the PBX. As the reporting facilities of the PBX's hardware and software improve, the enhanced data will lead to more accurate InfoPlus reports. Technical errors encountered during the remote transfer of data from the PBX may cause spurious results in the report. Bristol Capital, Inc. does not guarantee the accuracy of the information presented, although reasonable attempts have been and will continue to be made to ensure InfoPlus reports are as accurate as possible.

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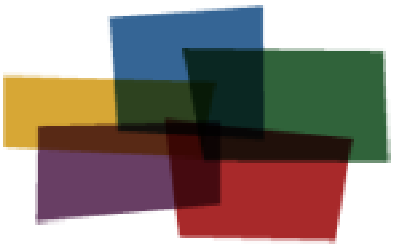
Communications Management with InfoPlus

Regardless of the size or type of organization, there are a few basic concerns of every communications manager. InfoPlus services help address those various concerns through its integrated suite of reports and analyses.



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Performance – The InfoPlus Traffic Study consists of analyses and recommendations that address the dynamic aspects of a communications system. Presented as a consultative report (as opposed to a "data dump") the Traffic Study addresses system resources, networks, trunks, processors and even operator consoles. Internal blockages and excessive costly outside facilities are identified and recommendations are made to reduce costs and improve service. Annual Traffic Studies are an important ingredient to consistent high quality and cost effective communications.

While the InfoPlus Traffic Study will improve the cost effectiveness of your communications, you may recognize the need for additional system information, answering questions such as, "Which of my three T-1's really is Trunk Group 3?". The InfoPlus SourceBook defines all the system programming that makes your communications system uniquely yours. Graphics of each set, identification of each software group (Call Pick-up, Intercom, etc.), Trunk Groups, call routing and even service improving Action Items are assembled uniquely for your system.

Other services in the InfoPlus suite include:

Inventory – InfoPlus Site Survey
- Inventory of the major PBX hardware and software components
- "End-of-Life" analysis pinpoints unsupported equipment
- Access to database for enterprise customers

Configuration – InfoPlus SourceBook
- Details a PBX system's programming
- Graphics of each set and each button's feature or line assignment
- Lists of each defined group (Intercom, Call Pick-up, etc.)
- Clearly defines trunking, call routing and even calling privileges
- Service-improving Action Items are uniquely determined for your system

Security – InfoPlus Security Audit
- Detailed, computerized review of the system's programming
- Analyses of 83 separate features with security implications
- Each analysis consists of a feature description, the security concerns and recommended changes in programming
- One hour of personal consultation is included

Backup – InfoPlus Backup Service
- Off-site backup of your PBX's configuration
- Available at any time for restoration through the internet

Should you order an additional InfoPlus report or analysis within 30 days of this document, you will be eligible for significant financial incentives. Perhaps best of all, these services are delivered through a common web portal, www.infoplusonline.com. All reports are available 24x7 with any web browser.

An InfoPlus Traffic Report for :

ABC Company

Date Study Began: 9/8/2003

Number of Days in Study: 5

Beginning Hour: 7:00 AM

Hours per day: 12

Study Methodology:

The Siemens 9006 PBX system has the ability to record the call traffic associated with each of the trunk groups and console groups defined in the switch. This data, if accumulated over an appropriate period of time, can be analyzed to help determine the sufficiency of the trunking facilities connected to the PBX and the quality of service provided by the console workforce.

Once each day during the study period, a call was made to the PBX system to extract traffic data reflecting activity experienced during the previous day. This data has been accumulated during the study period and processed after to yield the following report.

While we have tried to keep jargon out of the report, the use of some technical terms is necessary. For your convenience, we've included a glossary of terms in the back of the report.

Sections:	**Reports:**
Captured Data	
Overall Trunk Traffic -	1. Bouncing Busy Hour Traffic
Overall Trunk Traffic -	2. Average Hourly Traffic
Trunking -	3. Trunk Group Traffic
Trunking -	4. Trunking Worksheet
Console Activity -	5. Peg Counts of Calls
Console Activity -	6. Time Spent on Calls
Console Performance -	7. Delayed Calls
Appendix 1 -	Typical Console Attendant Performance
Appendix 2 -	Viewing your Traffic Study on the World Wide Web
Traffic Engineering Hints	
Glossary	

Due to technical difficulties or inaccessibility to the PBX, some individual days or hours of information may have been unobtainable. The following page lists the dates and the hours for which the information was collected and processed.

Captured Data

The following report shows the days and hours of traffic data which were collected for the production of this traffic study. An underlined date indicates a weekend day, and depending on the configuration of the study, there may be no data collected. A bullet (•) indicates all data was retrieved successfully from the PBX for that hour, while an upper-case letter indicates missed data. (see Legend below) Up to five attempts per hour are made to retrieve the data, and the last trouble encountered is reported.

Captured Data Legend

• - All Data Captured
B - Modem was Busy
C - Communications Failure
I - Incomplete Data
N - Modem Didn't Answer
U - Unknown Failure

Collected Data Report for: ABC Company

Day	8	9	10	11	12	13	14	15	16	17	18	19
9/8/03	•	•	•	•	•	•	•	•	•	•	•	•
9/9/03	•	•	•	•	•	•	•	•	•	•	•	•
9/10/03	•	•	•	•	•	•	•	•	•	•	•	•
9/11/03	•	•	•	•	•	•	•	•	•	•	•	•
9/12/03	•	•	•	•	•	•	•	•	•	•	•	•

Overall Trunk Traffic

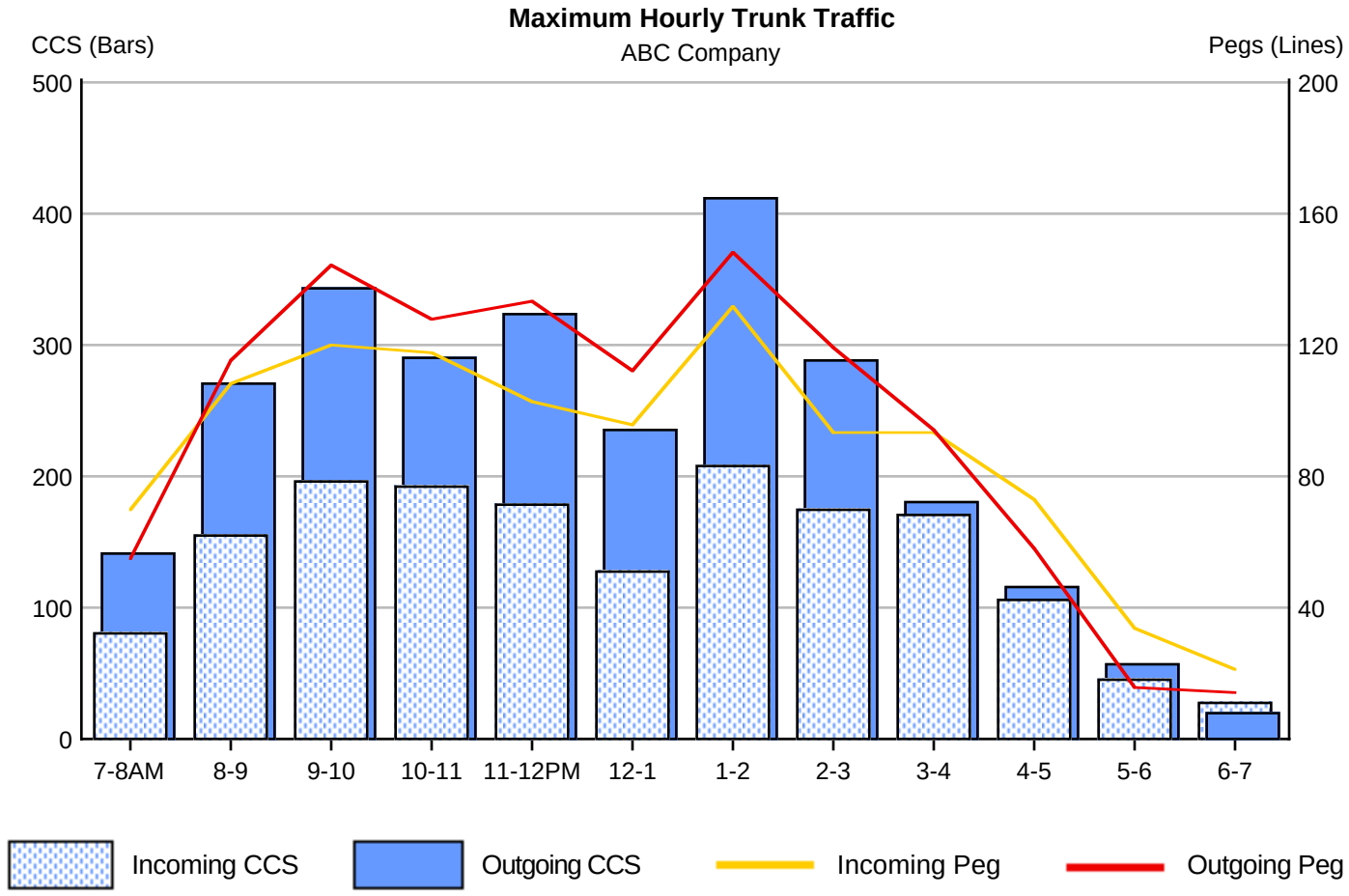
1. Bouncing Busy Hour Trunk Traffic

The following graph displays four separate sets of data. The columns represent the heaviest hourly volume of incoming and outgoing trunk traffic (expressed in CCS) experienced during the study period. Incoming trunk traffic is shown in the speckled pattern, while outgoing trunk traffic is shown as solid blue. The scale for the volume of traffic is given in CCS on the left hand side of the graph. For total trunk traffic in any one hour, the two columns should be added together.

Similarly, the two line graphs display hourly peg count information for the number of incoming and outgoing trunk calls. Incoming peg count information is shown by the yellow line while outgoing peg count information is shown by the red line. The scale for the number of trunk calls (pegs) is on the right hand side of the graph and they too may be added together to determine the total number of trunk calls within an hour.

Overall, this graph will allow you to identify your busiest hours of trunk traffic, as it presents the busiest hour of trunk traffic for each hourly period, regardless of which day of the study that traffic was generated.

Note: These measurements are for trunk traffic only. Internal calls, such as from one station to another, are not included in these measurements.



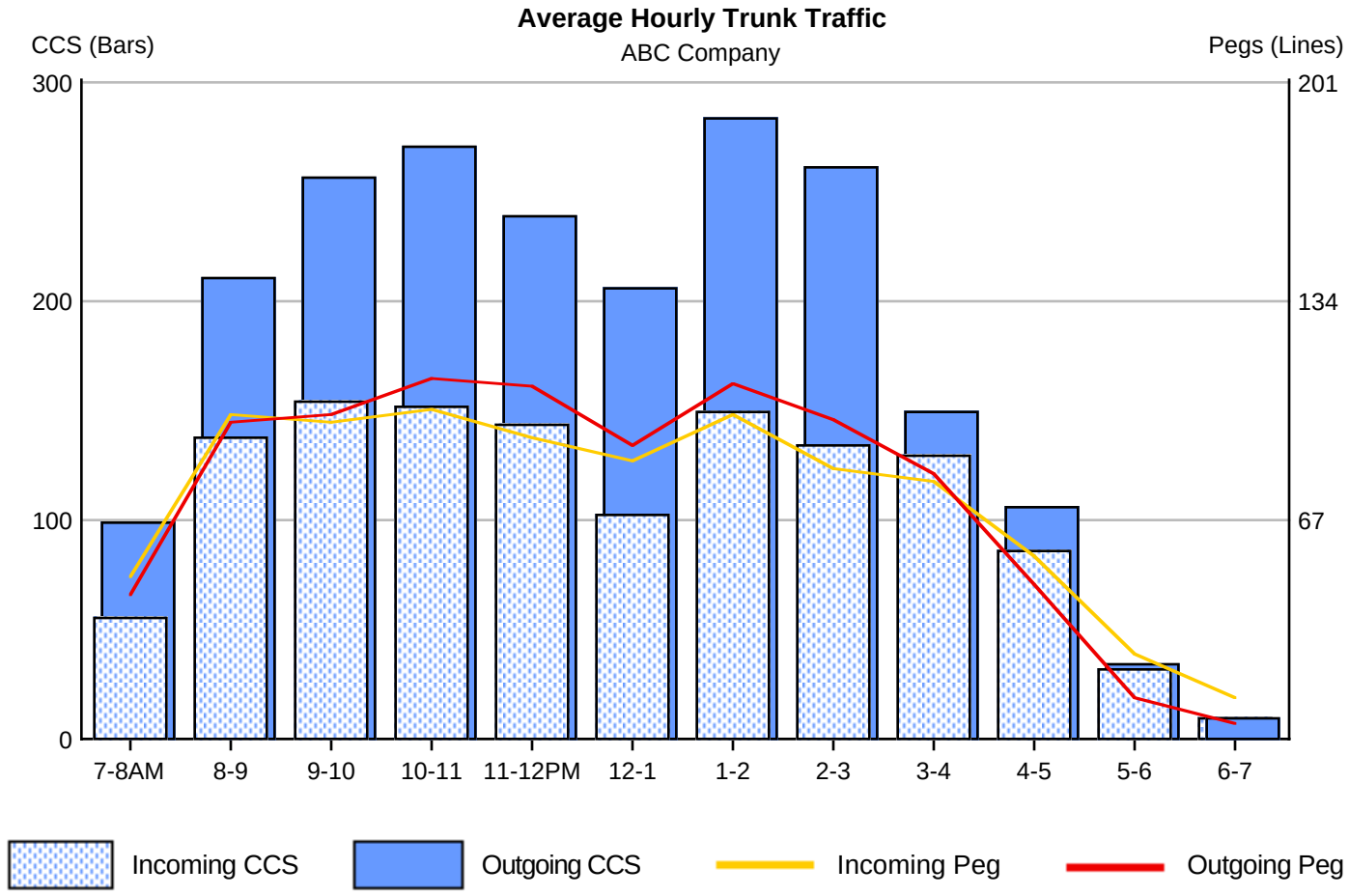
2. Average Hourly Trunk Traffic

If we were to take all of the trunk traffic generated over the course of the study and obtain averages for each hour of the day, we would obtain the results below. Again, four sets of data are displayed using the same conventions as stated previously, i.e. columns represent volume of trunk traffic using the scale on the left, with the speckled pattern reflecting incoming traffic and the solid column reflecting outgoing traffic; and lines represent number of calls using the scale on the right, with the yellow line reflecting incoming calls and the red line outgoing calls.

For total trunk traffic in any one hour, the values of the two columns or lines should be added together.

A comparison between this graph and the one preceding will give an indication of "peakedness" of traffic, or the difference between the maximum (shown previously) and the average, (shown here).

Note: These measurements are for trunk traffic only. Internal calls, such as from one station to another, are not included in these measurements.



Trunking

3. Trunk Group Traffic

The following pages provide information on the usage of the trunk groups in your system. A traffic engineering analysis has been performed for each group to help assess the need to add or remove trunks, based strictly upon the levels of service for each trunk group. Since the decision to add or remove trunks is an economic decision as well, analyses for six different service levels were calculated.

The data near the top of each page (labeled Maximum Busy Hour Traffic) highlights the busiest hour encountered during the study period. The data in the middle of each page (labeled Average Bouncing Busy Hour Traffic) is calculated by averaging together each daily busy hour for the trunk group. Three levels of service (P.01, P.02, and P.05) are calculated for both the maximum busy hour and the average busy hour. A P.01 level of service indicates a probability that 1 out of every 100 calls will receive a busy due to all trunking facilities being occupied.

An aggressive approach to service would use the maximum busy hour data for traffic engineering purposes while a more conservative approach would use the average busy hour data. The aggressive approach will yield better service, requiring more trunks.

Note: Care must be exercised when addressing outgoing trunk groups whose analysis indicates a need for additional trunks. This group's traffic may overflow to another trunk group if all of the trunks in the first group are in use. Any adjustments in trunking should be based on the traffic analysis of the last trunk group in an outgoing routing pattern.

The graphs at the bottom of the page present the average daily traffic experienced by the trunk group for each hour of the day. Using similar conventions as in previous graphs, solid columns represent outgoing usage (expressed in CCS); speckled columns represent incoming usage; the red line represents outgoing peg counts, and the yellow line represents incoming peg counts.

Trunk Group: 2 Name: TIE GROUP Number of Trunks: 16

Maximum Busy Hour Traffic

All Trunks Busy: 0 seconds (0 times)

Date: 9/11/2003 Hour: 12-1PM

	Usage (in CCS)	Percent	Peg Count	Percent	Average Call Duration
Incoming Calls	28.5	8.7	15	20.8	6.2 min.
Outgoing Calls	297.4	91.3	57	79.2	9.6 min.
Totals	325.9	100.0	72	100.0	8.9 min.

Engineering Method: Erlang C

Service Objective:	P.01	P.02	P.05
Trunks Needed:	18	17	16

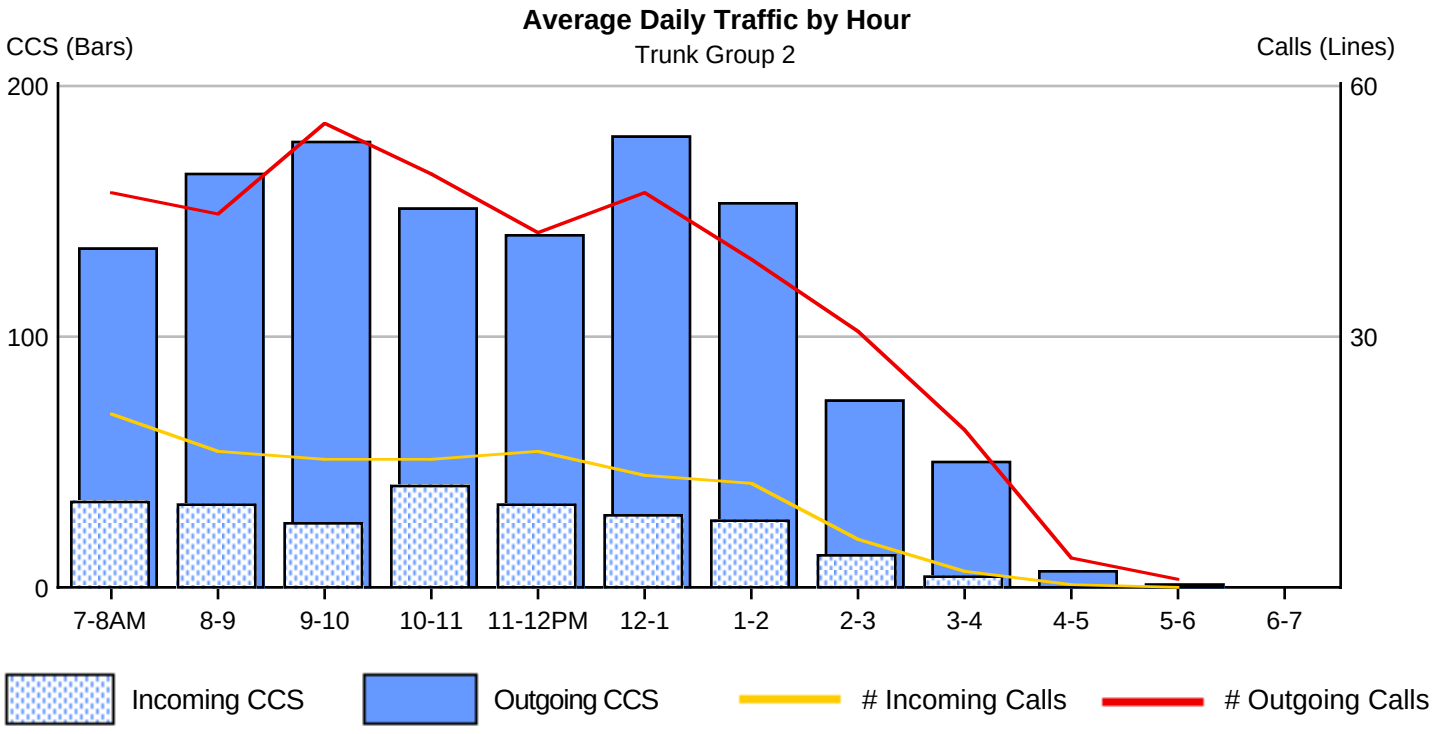
Average Bouncing Busy Hour Traffic

All Trunks Busy: 0.0 seconds (0.0 times)

	Usage (in CCS)	Percent	Peg Count	Percent	Average Call Duration
Incoming Calls	36.8	14.0	16.8	22.9	3.5 min.
Outgoing Calls	225.3	86.0	56.6	77.1	5.7 min.
Totals	262.1	100.0	73.4	100.0	5.2 min.

Engineering Method: Erlang C

Service Objective:	P.01	P.02	P.05
Trunks Needed:	15	14	13



Trunk Group: 3 Name: WATS GROUP Number of Trunks: 8

Maximum Busy Hour Traffic

All Trunks Busy: 0 seconds (0 times)

Date: 9/12/2003 Hour: 10-11AM

	Usage (in CCS)	Percent	Peg Count	Percent	Average Call Duration
Incoming Calls	41.1	98.3	11	91.7	8.2 min.
Outgoing Calls	0.7	1.7	1	8.3	1.2 min.
Totals	41.8	100.0	12	100.0	7.6 min.

Engineering Method: Erlang C

Service Objective:	P.01	P.02	P.05
Trunks Needed:	5	5	4

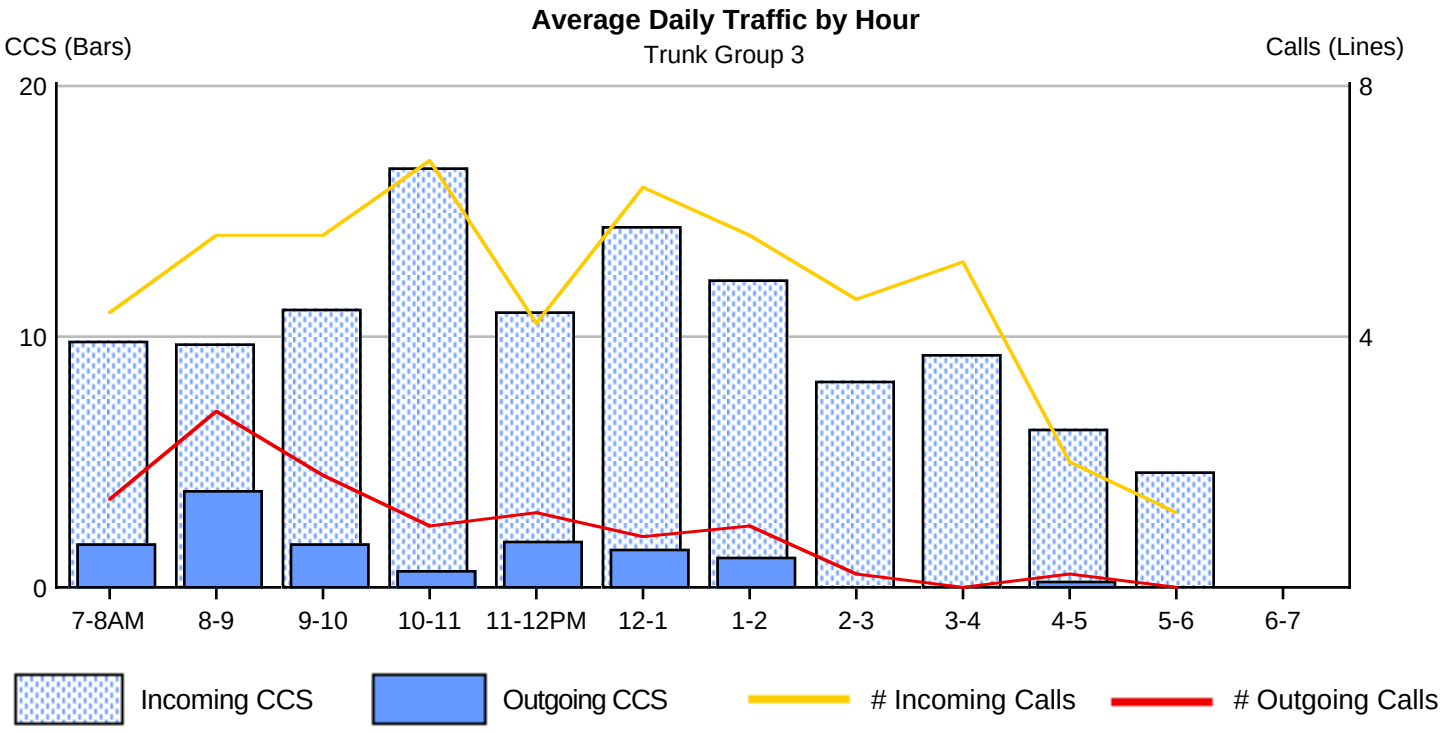
Average Bouncing Busy Hour Traffic

All Trunks Busy: 0.0 seconds (0.0 times)

	Usage (in CCS)	Percent	Peg Count	Percent	Average Call Duration
Incoming Calls	23.9	92.6	8.0	87.0	5.7 min.
Outgoing Calls	1.9	7.4	1.2	13.0	2.7 min.
Totals	25.8	100.0	9.2	100.0	5.3 min.

Engineering Method: Erlang C

Service Objective:	P.01	P.02	P.05
Trunks Needed:	4	4	3



Trunk Group: 4 Name: LONG DISTANCE 1 Number of Trunks: 2

Maximum Busy Hour Traffic

All Trunks Busy: 621 seconds (5 times)

Date: 9/8/2003 Hour: 1-2PM

	Usage (in CCS)	Percent	Peg Count	Percent	Average Call Duration
Incoming Calls	37.1	100.0	8	100.0	10.4 min.
Outgoing Calls	0.0	0.0	0	0.0	0.0 min.
Totals	37.1	100.0	8	100.0	10.4 min.

Engineering Method: Erlang C

Service Objective:	P.01	P.02	P.05
Trunks Needed:	5	5	4

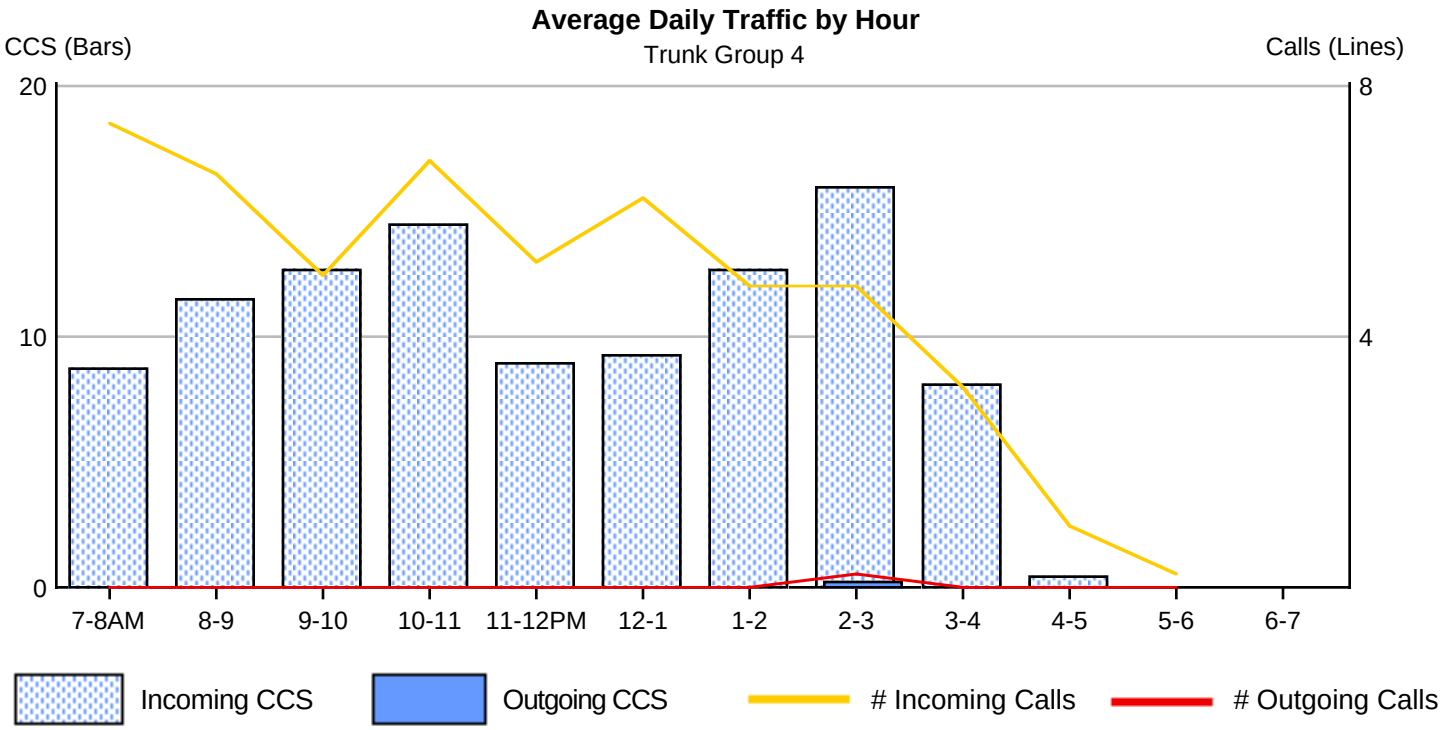
Average Bouncing Busy Hour Traffic

All Trunks Busy: 377.6 seconds (3.6 times)

	Usage (in CCS)	Percent	Peg Count	Percent	Average Call Duration
Incoming Calls	26.2	100.0	7.6	100.0	6.7 min.
Outgoing Calls	0.0	0.0	0.0	0.0	0.0 min.
Totals	26.2	100.0	7.6	100.0	6.7 min.

Engineering Method: Erlang C

Service Objective:	P.01	P.02	P.05
Trunks Needed:	4	4	3



Comments: As the majority of this Trunk Group's traffic is incoming, there may be additional demand due to incoming calls currently receiving busies from the network. This is hinted by the number of All Trunks Busy as indicated above.

Trunk Group: 5 Name: LONG DISTANCE 2 Number of Trunks: 23

Maximum Busy Hour Traffic

All Trunks Busy: 0 seconds (0 times)

Date: 9/9/2003 Hour: 1-2PM

	Usage (in CCS)	Percent	Peg Count	Percent	Average Call Duration
Incoming Calls	95.7	39.4	64	57.7	4.2 min.
Outgoing Calls	147.4	60.6	47	42.3	3.3 min.
Totals	243.1	100.0	111	100.0	3.8 min.

Engineering Method: Erlang C

Service Objective:	P.01	P.02	P.05
Trunks Needed:	15	14	12

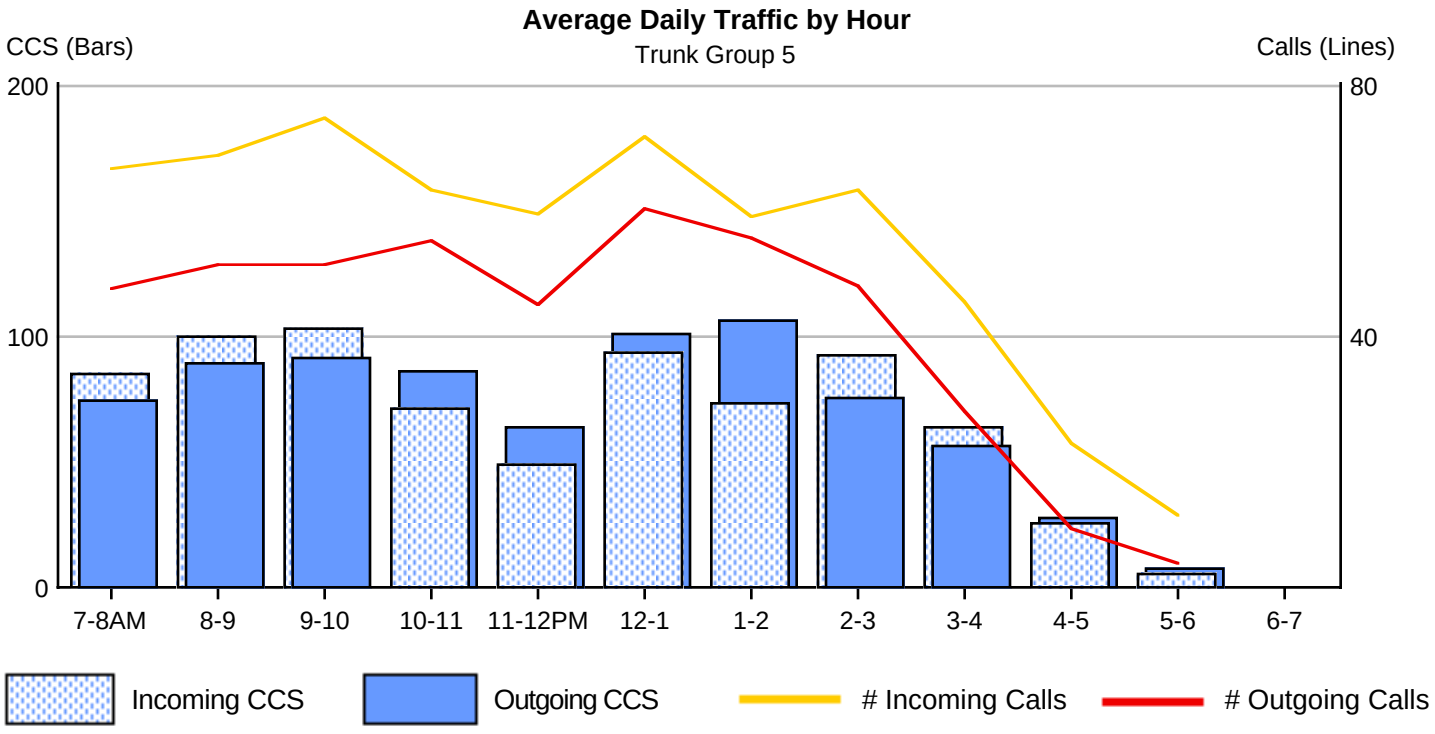
Average Bouncing Busy Hour Traffic

All Trunks Busy: 0.0 seconds (0.0 times)

	Usage (in CCS)	Percent	Peg Count	Percent	Average Call Duration
Incoming Calls	106.5	48.9	61.8	53.2	3.1 min.
Outgoing Calls	111.5	51.1	54.4	46.8	3.1 min.
Totals	218.0	100.0	116.2	100.0	3.1 min.

Engineering Method: Erlang C

Service Objective:	P.01	P.02	P.05
Trunks Needed:	14	13	12



Trunk Group: 60 Name: PAGING Number of Trunks: 1

Maximum Busy Hour Traffic

All Trunks Busy: 160 seconds (5 times)

Date: 9/12/2003 Hour: 10-11AM

	Usage (in CCS)	Percent	Peg Count	Percent	Average Call Duration
Incoming Calls	0.0	0.0	0	0.0	0.0 min.
Outgoing Calls	1.6	100.0	5	100.0	0.5 min.
Totals	1.6	100.0	5	100.0	0.5 min.

Engineering Method: Erlang B

Service Objective:	P.01	P.02	P.05
Trunks Needed:	2	2	1

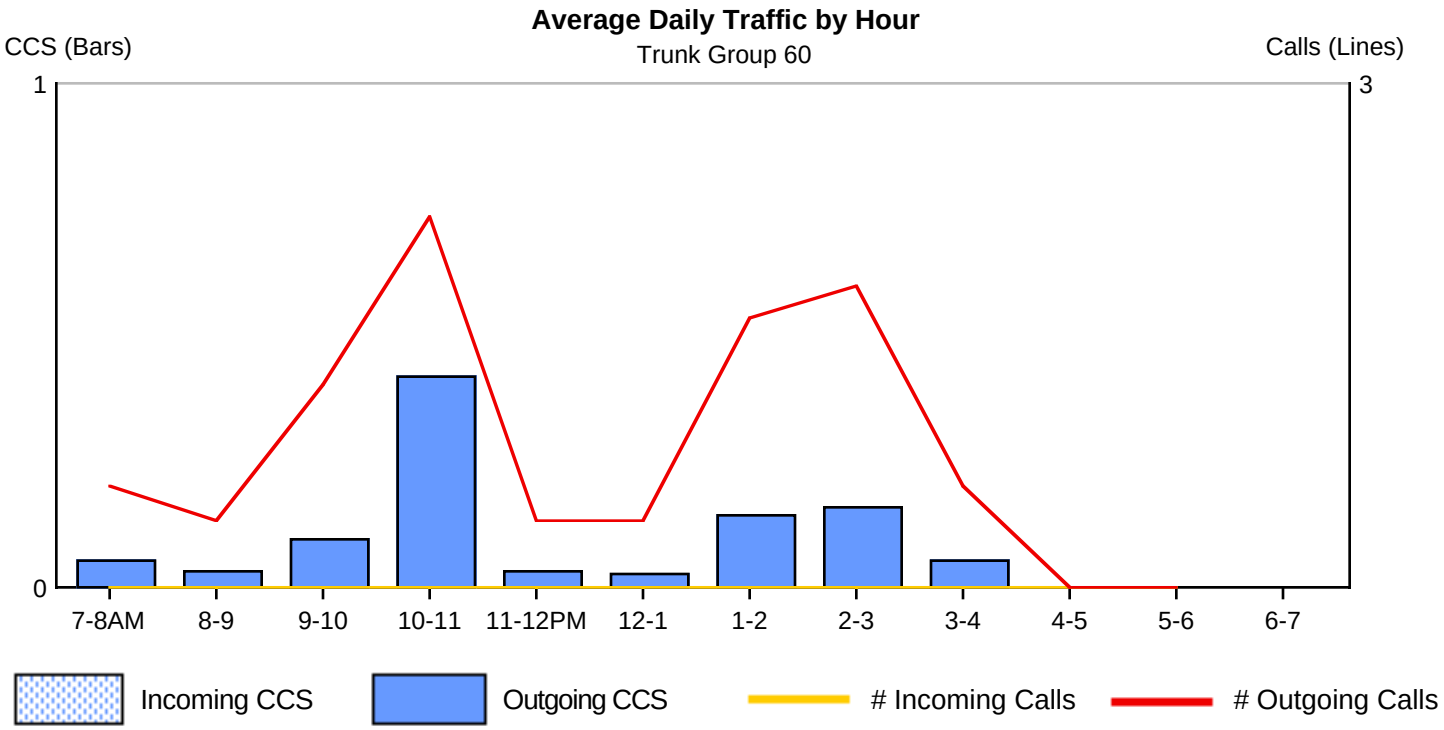
Average Bouncing Busy Hour Traffic

All Trunks Busy: 53.6 seconds (3.4 times)

	Usage (in CCS)	Percent	Peg Count	Percent	Average Call Duration
Incoming Calls	0.0	0.0	0.0	0.0	0.0 min.
Outgoing Calls	0.5	100.0	3.4	100.0	0.3 min.
Totals	0.5	100.0	3.4	100.0	0.3 min.

Engineering Method: Erlang B

Service Objective:	P.01	P.02	P.05
Trunks Needed:	2	1	1



Comments: The Route List should be checked to determine if this Trunk Group overflows to another. If not, additional trunks are needed to improve service.

Trunk Group: 71 Name: LOCAL CO Number of Trunks: 6

Maximum Busy Hour Traffic

All Trunks Busy: 0 seconds (0 times)

Date: 9/9/2003 Hour: 1-2PM

	Usage (in CCS)	Percent	Peg Count	Percent	Average Call Duration
Incoming Calls	35.5	100.0	0	0.0	0.0 min.
Outgoing Calls	0.0	0.0	0	0.0	0.0 min.
Totals	35.5	100.0	0	100.0	0.0 min.

Engineering Method: Erlang C

Service Objective:	P.01	P.02	P.05
Trunks Needed:	5	4	4

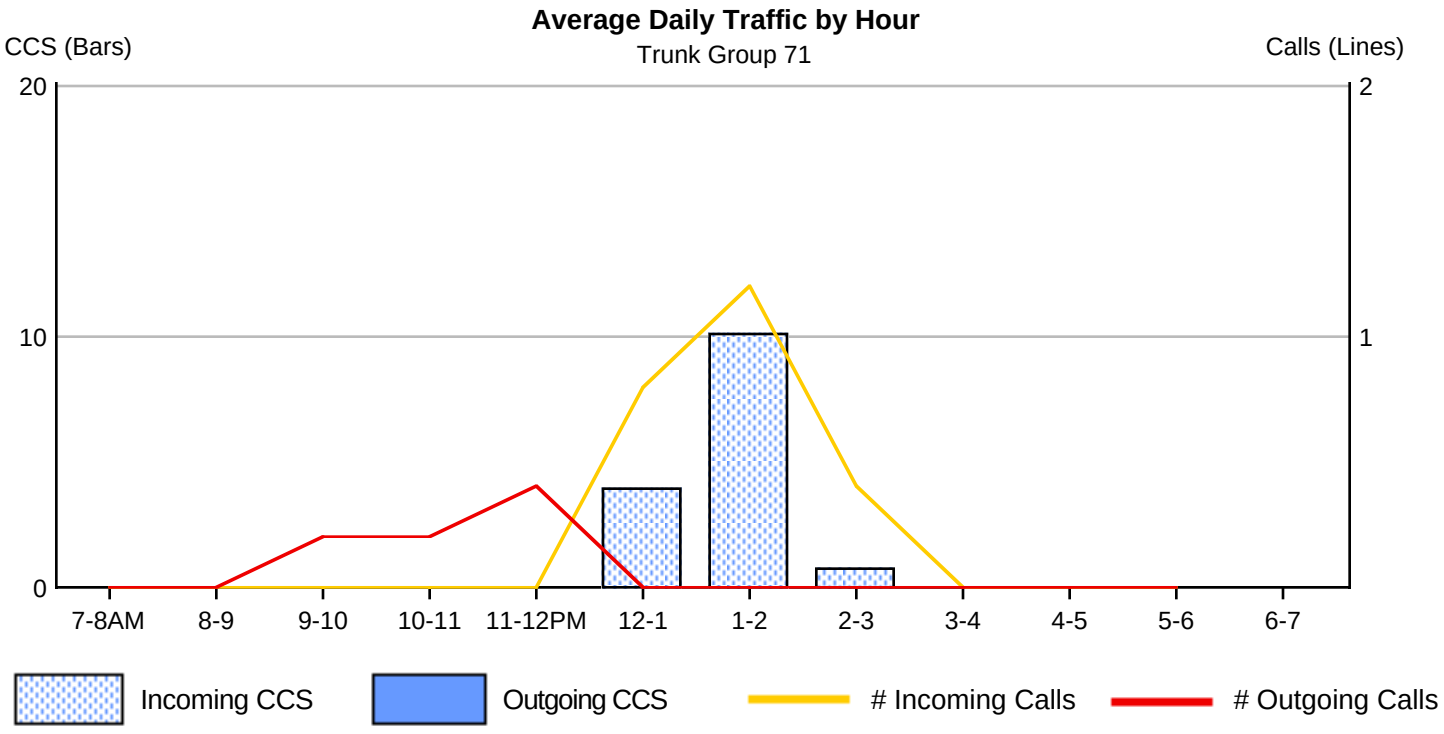
Average Bouncing Busy Hour Traffic

All Trunks Busy: 49.6 seconds (0.2 times)

	Usage (in CCS)	Percent	Peg Count	Percent	Average Call Duration
Incoming Calls	10.1	100.0	1.2	85.7	4.2 min.
Outgoing Calls	0.0	0.0	0.2	14.3	0.1 min.
Totals	10.1	100.0	1.4	100.0	3.6 min.

Engineering Method: Erlang C

Service Objective:	P.01	P.02	P.05
Trunks Needed:	3	3	2



Trunking Worksheet

4. Trunking Worksheet

To make it convenient for you to note changes in your trunking that you may wish to make, we have provided a synopsis of each of the trunking reports. Determining the proper number and type of trunks for outgoing calls is usually an economic decision and not one based strictly on service objectives. This would be particularly true if the trunk group in question is at the beginning of the selection order.

In the worksheet below, the "Dir" column indicates the direction of the usage, whether incoming, outgoing or both-way. Service objective levels of P.01, P.02 and P.05 have been calculated for both the maximum busy hour and for the average of each day's busy hour. The service objective is the statistical probability that calls will be blocked during the hour.

			#	|--Max Bsy Hr--|		|--Avg Bsy Hr--|		
Grp	**Name**	**Dir**	**Trunks**	**P.01**	**P.02**	**P.05**	**P.01**	**P.02**	**P.05**	**Add/Delete**
2	TIE GROUP	Both	16	18	17	16	15	14	13	
3	WATS GROUP	Both	8	5	5	4	4	4	3	
4	LONG DISTANCE 1	In	2	5	5	4	4	4	3	
5	LONG DISTANCE 2	Both	23	15	14	12	14	13	12	
60	PAGING	Out	1	2	2	1	2	1	1	
71	LOCAL CO	Out	6	5	4	4	3	3	2	

Console Activity

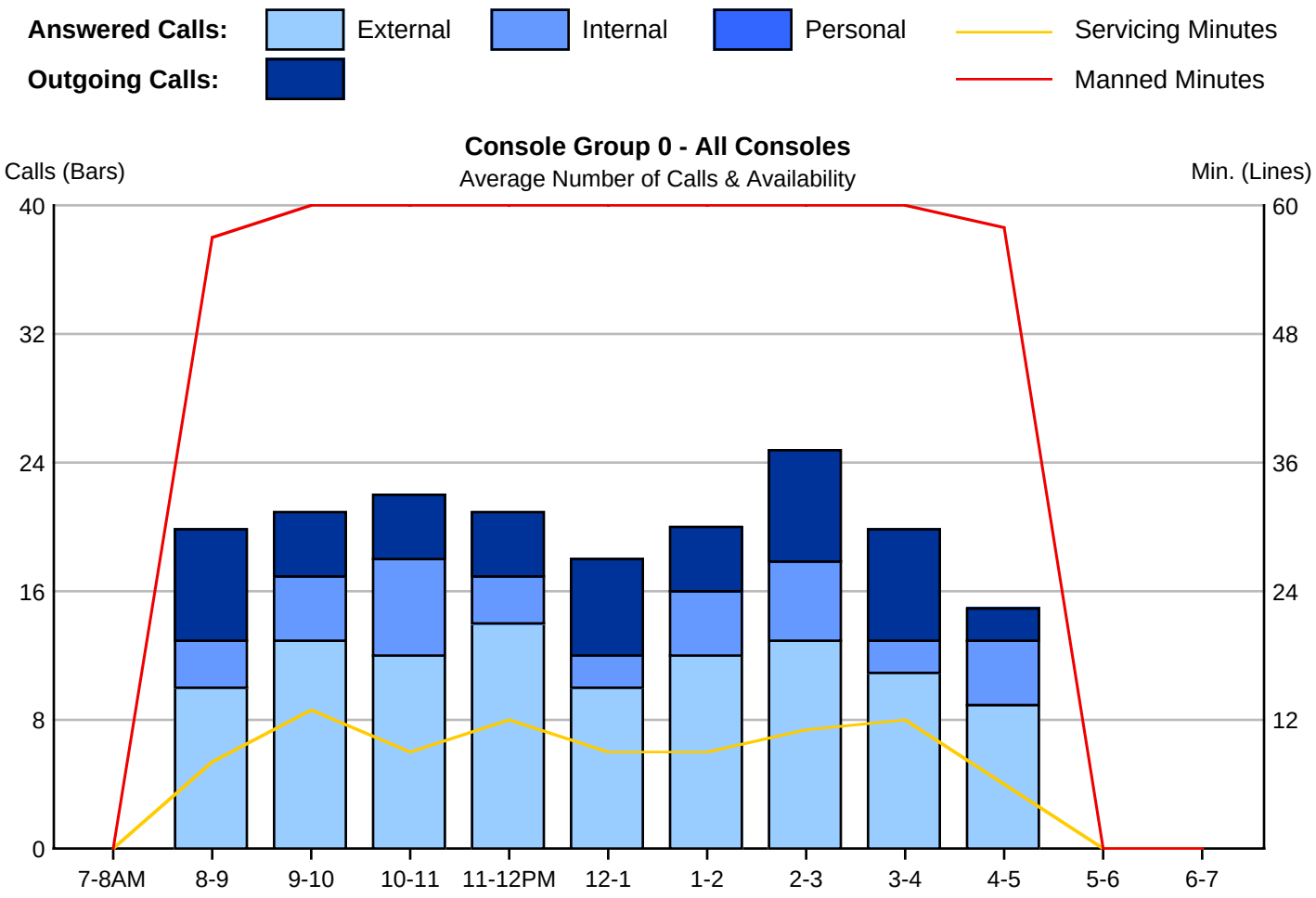
5. Console Work Load - Peg Counts of Calls

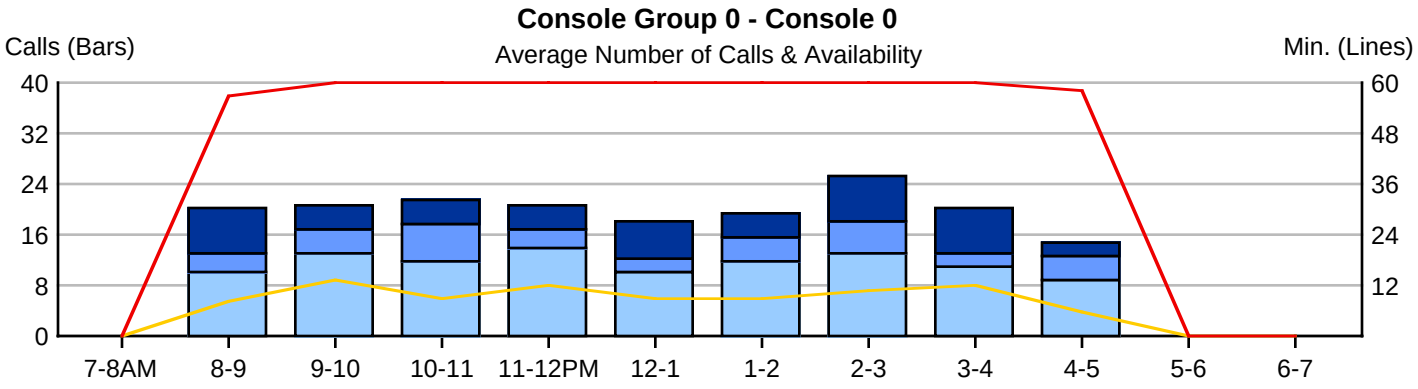
The following graphs depict an hourly view of the number and types of calls that were handled by the console workforce. In addition, they show the amount of time within each hour that the consoles were available for handling calls, and the amount of time actually spent on the phone.

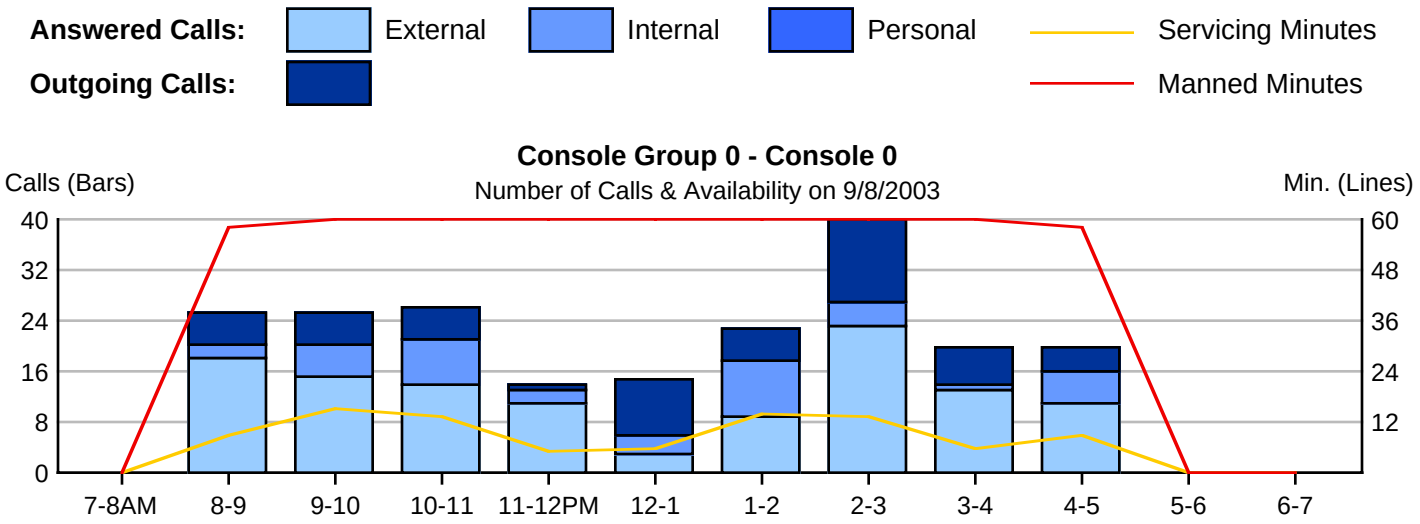
For each of the graphs in this section, the columns represent the number of calls handled within an hour. The scale on the left side of the graph is used to read the value of the columns. There are four different call types presented - External, Internal, Personal, and Outgoing. 'External' refers to calls that originated from outside the organization, entered the console's incoming queue, and were eventually answered by the console workforce. 'Internal' refers to calls that originated from inside the organization, entered the console's incoming queue, and were eventually answered by the console workforce. 'Personal' refers to calls that were answered by a console attendant, but which were directed directly to the particular attendant without entering the console's incoming queue. 'Outgoing' refers to calls originated by an attendant. Each call type is presented in a different color, and the columns are stacked to show the total number of calls handled during the hour. Within any hour, the relative heights of the different colored columns reflect the relative distribution of the types of calls handled (based upon the number of calls, not the amount of time spent.)

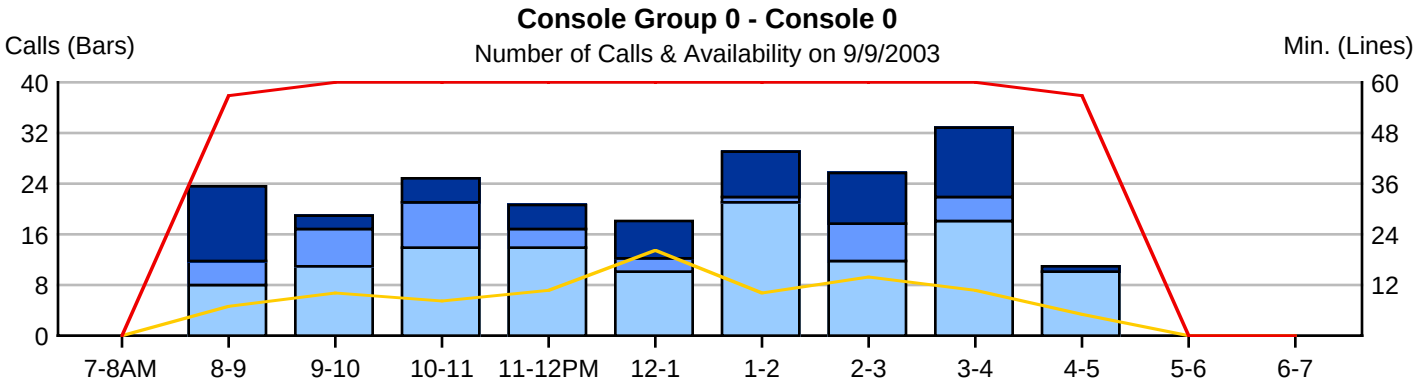
Each graph also has two lines which depict an amount of time within the hour. The scale on the right side of the graph is used to read the value of the lines in minutes. The red line shows the amount of time the console was manned, or ready to receive calls, and the yellow line shows the amount of time that was spent servicing calls (of any type). A more detailed view of the servicing time by type of call is presented in the next section.

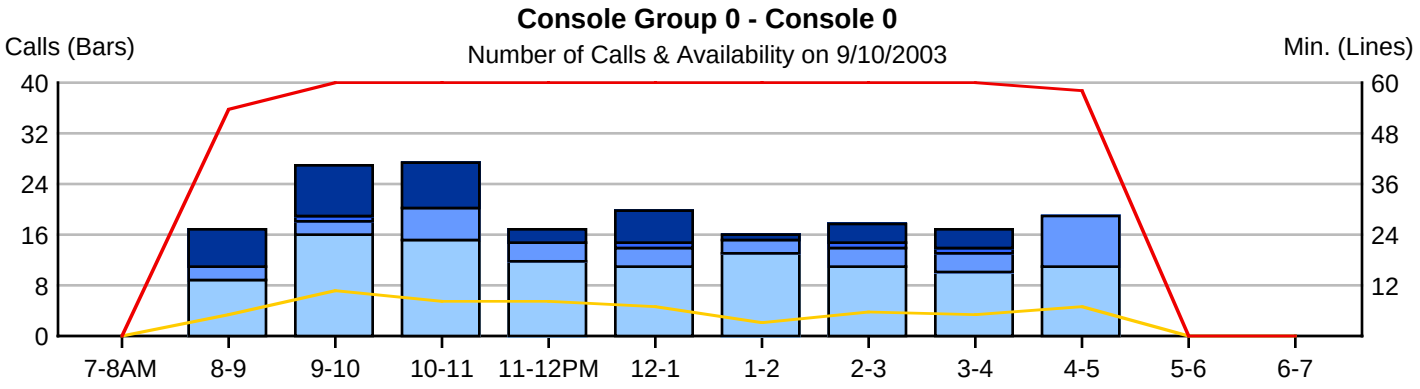
The graphs within this section are presented in the following order - Each console group starts with an average for the entire group over the entire study duration. This is followed by an average for each console within the group over the entire study duration. Finally, individual daily data is presented for each console in the group. This organization allows you to view how the group performed as a whole, how a particular attendant performed relative to other attendants, and how any attendant performed on any day. The same conventions described above are used in each of the graphs.

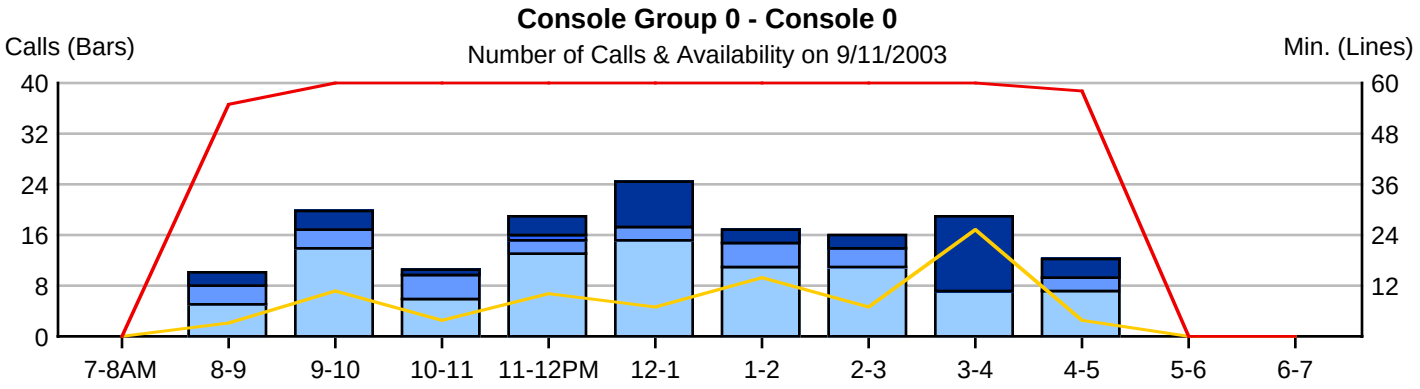

Answered Calls:
External
Internal
Personal
Servicing Minutes
Outgoing Calls:
Manned Minutes
Console Group 0 - All Consoles
Average Number of Calls & Availability
Calls (Bars)
Min. (Lines)
40
32
24
16
8
0
60
48
36
24
12
7-8AM
8-9
9-10
10-11
11-12PM
12-1
1-2
2-3
3-4
4-5
5-6
6-7

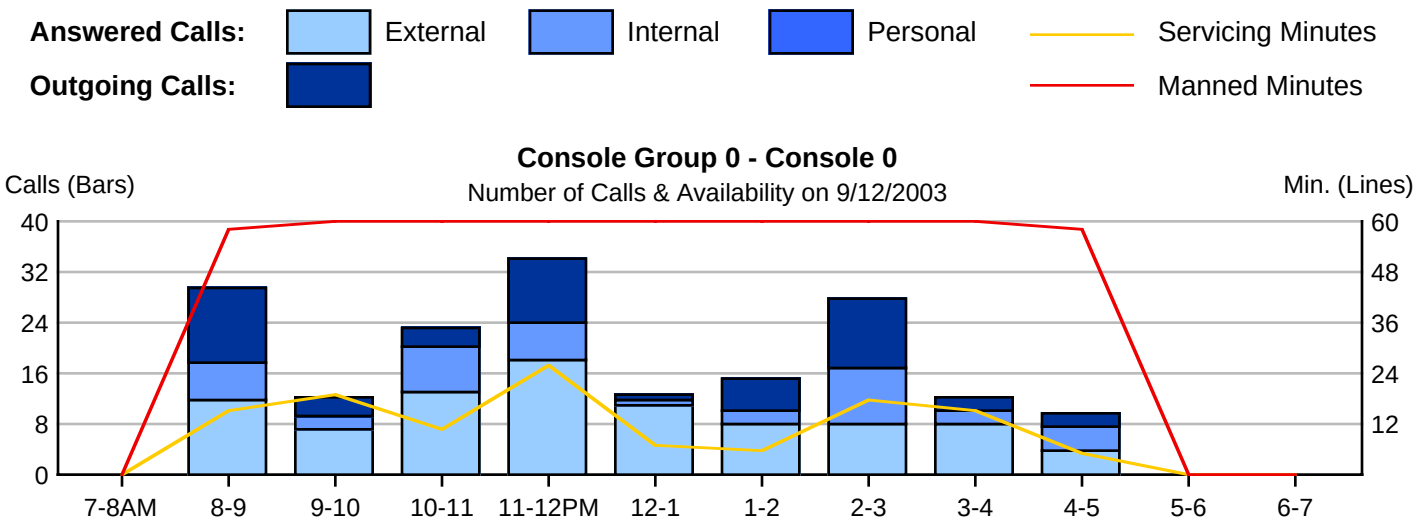

Console Group 0 - Console 0
Average Number of Calls & Availability
Calls (Bars)
Min. (Lines)
40
32
24
16
8
0
60
48
36
24
12
7-8AM
8-9
9-10
10-11
11-12PM
12-1
1-2
2-3
3-4
4-5
5-6
6-7


Answered Calls:
External
Internal
Personal
Servicing Minutes
Outgoing Calls:
Manned Minutes
Console Group 0 - Console 0
Number of Calls & Availability on 9/8/2003
Calls (Bars)
Min. (Lines)
40
32
24
16
8
0
60
48
36
24
12
7-8AM
8-9
9-10
10-11
11-12PM
12-1
1-2
2-3
3-4
4-5
5-6
6-7


Console Group 0 - Console 0
Number of Calls & Availability on 9/9/2003
Calls (Bars)
Min. (Lines)
40
32
24
16
8
0
60
48
36
24
12
7-8AM
8-9
9-10
10-11
11-12PM
12-1
1-2
2-3
3-4
4-5
5-6
6-7


Console Group 0 - Console 0
Number of Calls & Availability on 9/10/2003
Calls (Bars)
Min. (Lines)
40
32
24
16
8
0
60
48
36
24
12
7-8AM
8-9
9-10
10-11
11-12PM
12-1
1-2
2-3
3-4
4-5
5-6
6-7


Console Group 0 - Console 0
Number of Calls & Availability on 9/11/2003
Calls (Bars)
Min. (Lines)
40
32
24
16
8
0
60
48
36
24
12
7-8AM
8-9
9-10
10-11
11-12PM
12-1
1-2
2-3
3-4
4-5
5-6
6-7


Answered Calls:
External
Internal
Personal
Servicing Minutes
Outgoing Calls:
Manned Minutes
Console Group 0 - Console 0
Number of Calls & Availability on 9/12/2003
Calls (Bars)
Min. (Lines)
40
32
24
16
8
0
60
48
36
24
12
7-8AM
8-9
9-10
10-11
11-12PM
12-1
1-2
2-3
3-4
4-5
5-6
6-7

6. Console Work Load - Time Spent in the Processing of Calls

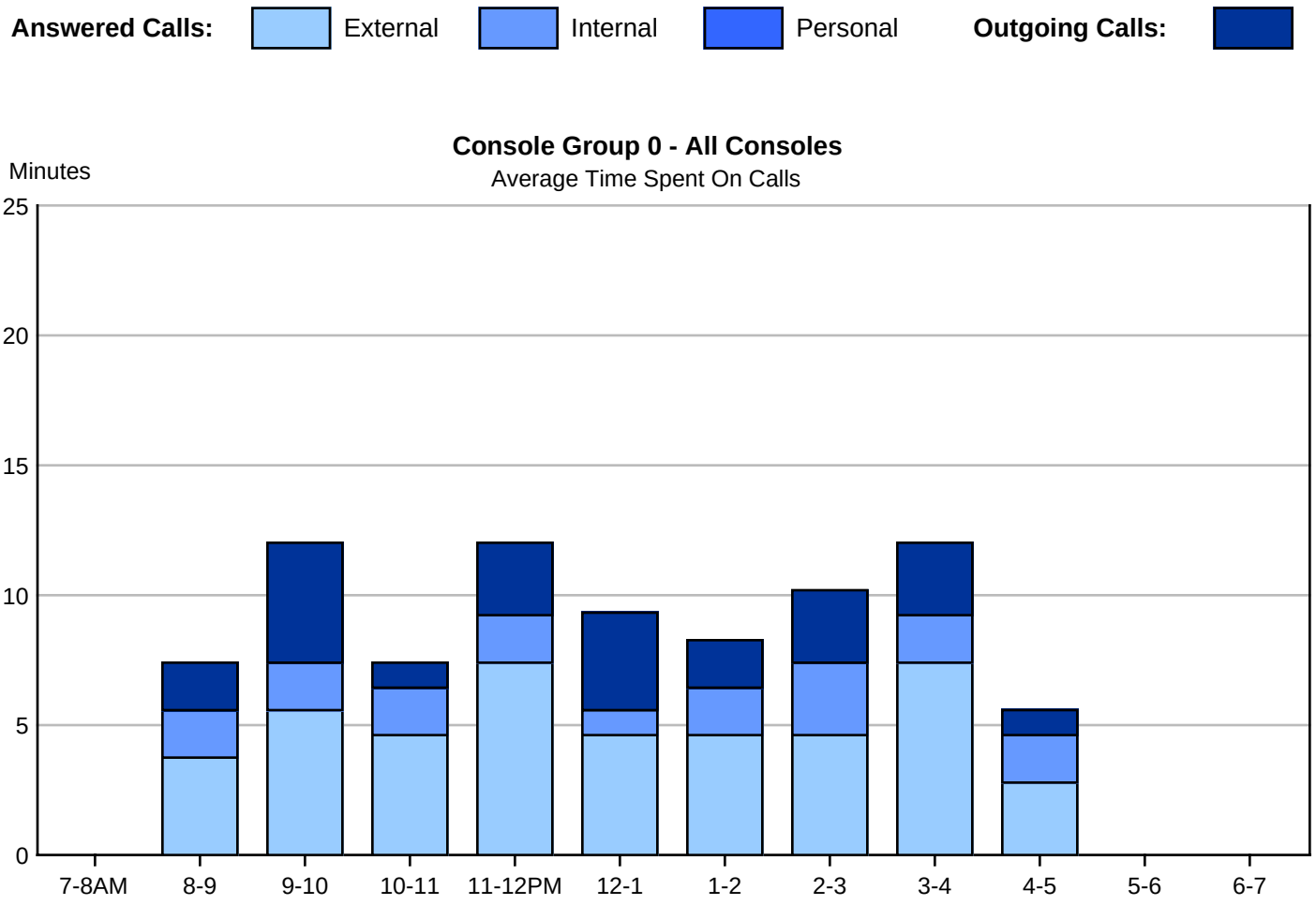
The following graphs depict an hourly view of the amount of time spent by the console workforce handling different types of calls, and the average duration for a single call of each type. These two sets of data are presented as a pair of graphs for each analysis within the section.

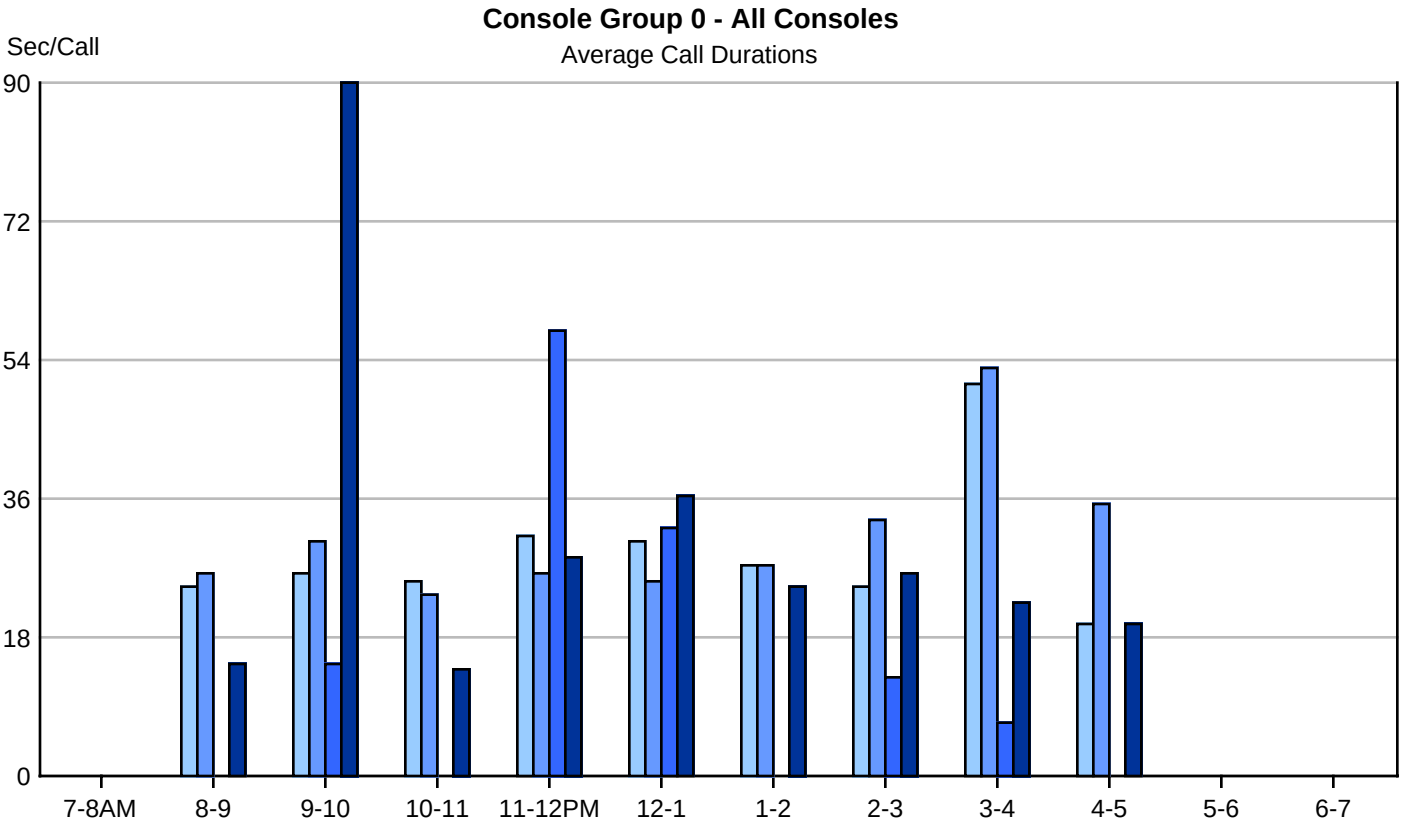
For all of the graphs in this section, the different colored columns represent different types of calls. There are four different call types presented - External, Internal, Personal, and Outgoing. 'External' refers to calls that originated from outside the organization, entered the console's incoming queue, and were eventually answered by the console workforce. 'Internal' refers to calls that originated from inside the organization, entered the console's incoming queue, and were eventually answered by the console workforce. 'Personal' refers to calls that were answered by a console attendant, but which were directed directly to the particular attendant without entering the console's incoming queue. 'Outgoing' refers to calls originated by an attendant.

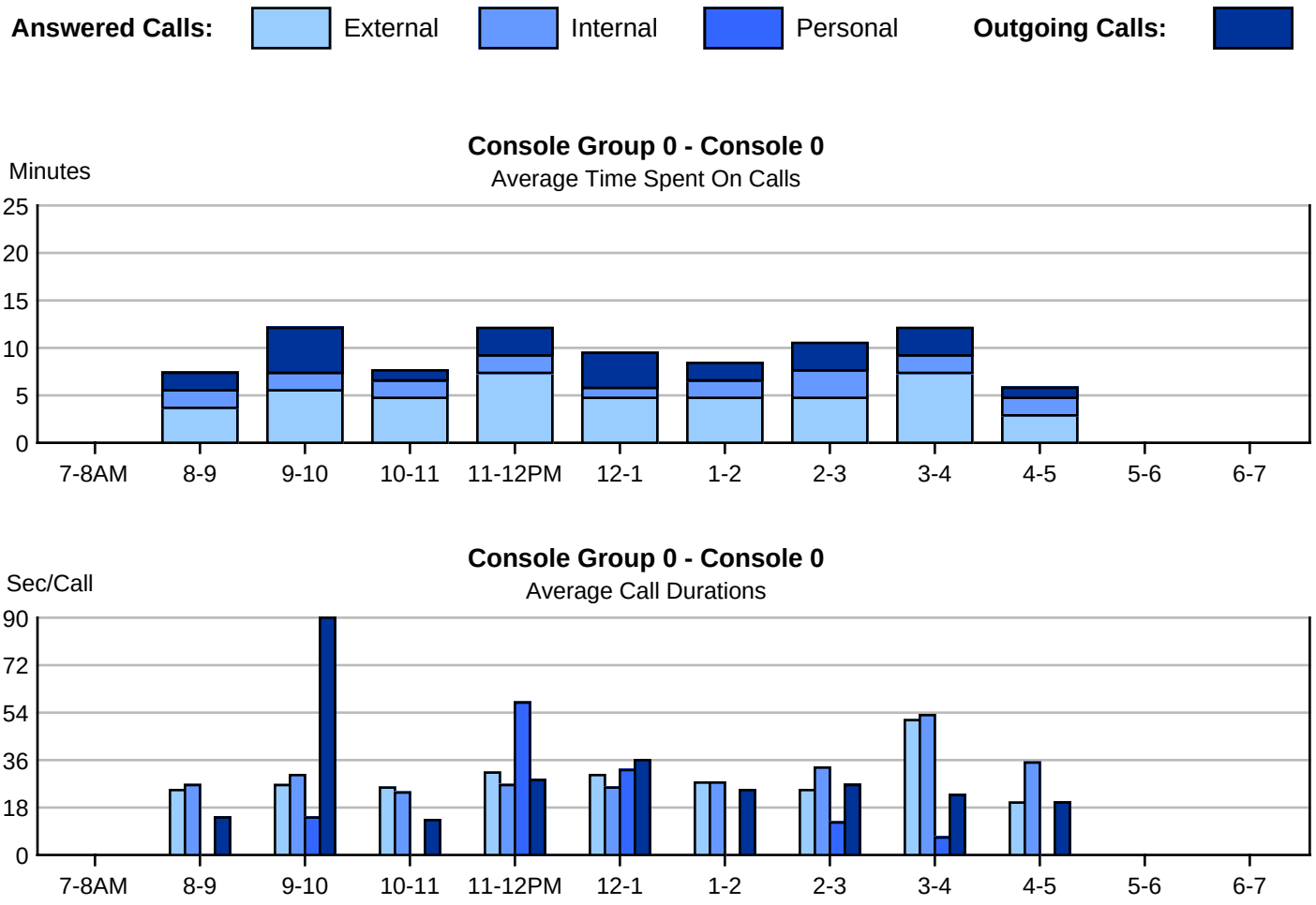
The first graph of each pair is a stacked column graph that shows the amount of time spent on each type of call within an hour. The columns are stacked on top of each other to show the total amount of time spent handling calls during the hour. Within any hour, the relative heights of the different colored columns reflect the relative amount of time spent handling each of the different call types. The scale for this graph uses 'Minutes' as a unit of measurement.

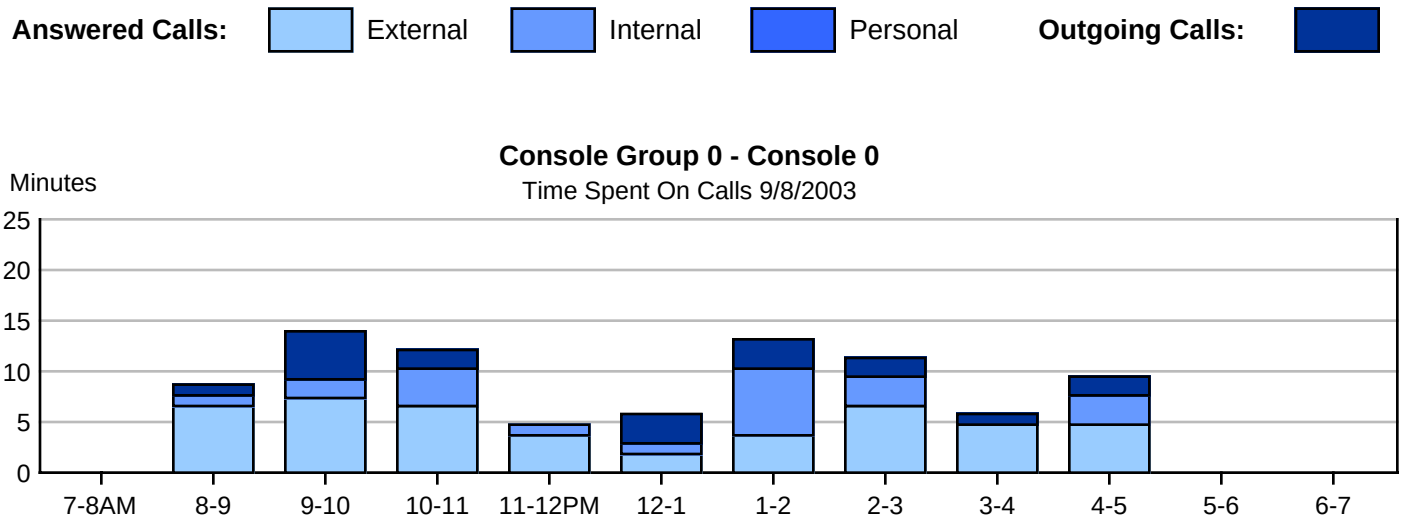
The second graph of each pair depicts the duration of a single average call for each call type. The columns for each type of call are adjacent to one another, allowing a comparison of one type to another. The scale for this graph uses 'Seconds per Call' as a unit of measurement.

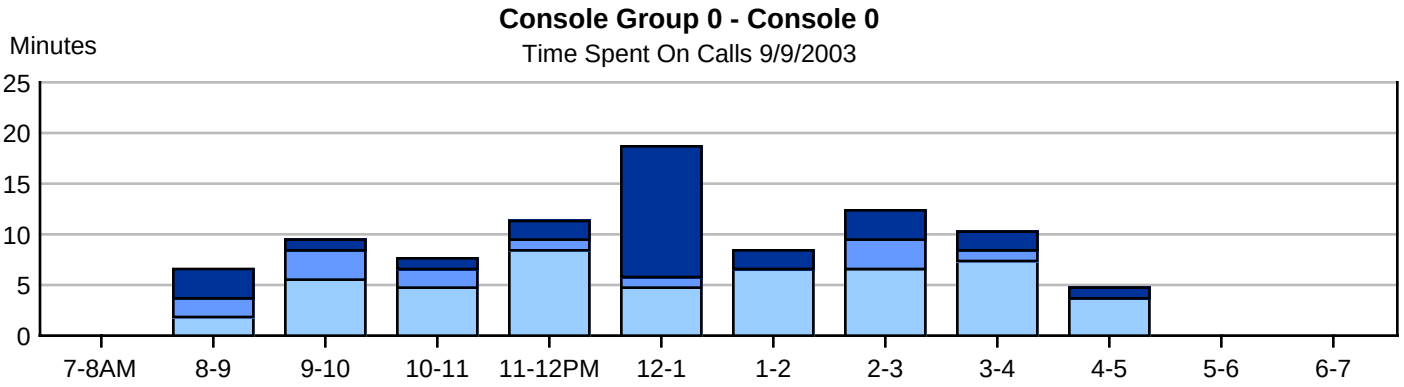
The pairs of graphs within this section are presented in the following order - Each console group starts with an average for the entire group over the entire study duration. This is followed by an average for each console within the group over the entire study duration. Finally, individual daily data is presented for each console in the group. This organization allows you to view how the group performed as a whole, how a particular attendant performed relative to other attendants, and how any attendant performed on any day. The same conventions described above are used in each of the graphs. To achieve the best scaling, the call durations are only presented for the group and console averages.

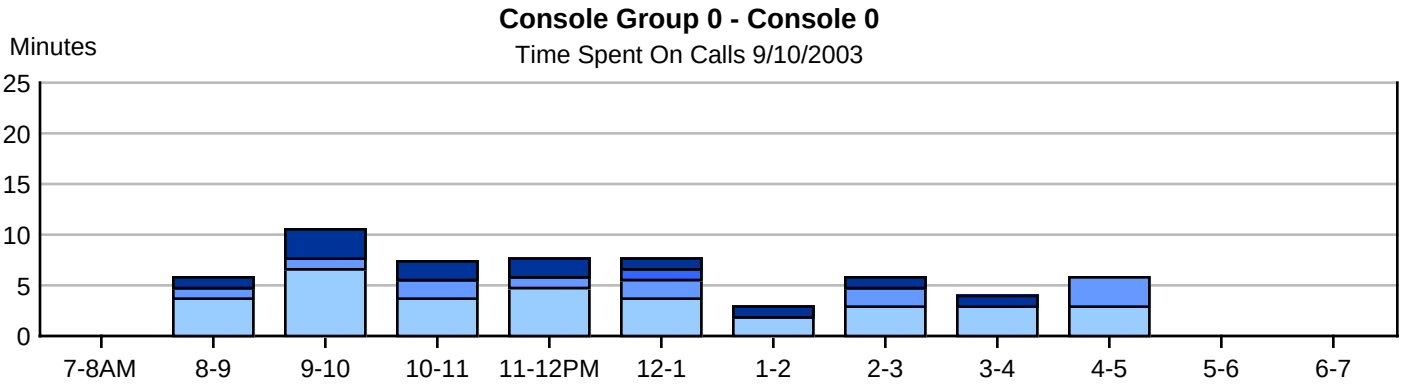

Answered Calls:
External
Internal
Personal
Outgoing Calls:
Console Group 0 - All Consoles
Average Time Spent On Calls
Minutes
25
20
15
10
5
0
7-8AM
8-9
9-10
10-11
11-12PM
12-1
1-2
2-3
3-4
4-5
5-6
6-7

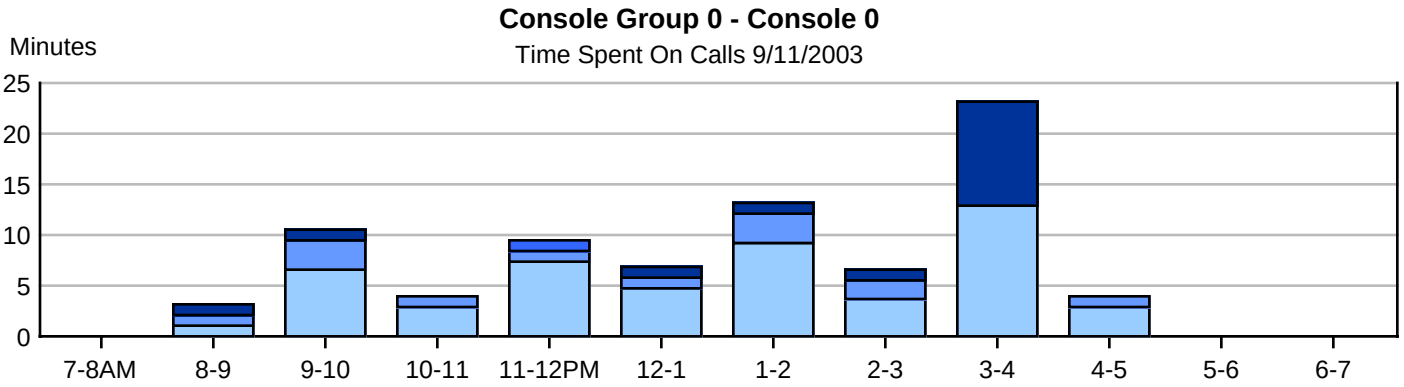

Console Group 0 - All Consoles
Average Call Durations
Sec/Call
90
72
54
36
18
0
7-8AM
8-9
9-10
10-11
11-12PM
12-1
1-2
2-3
3-4
4-5
5-6
6-7

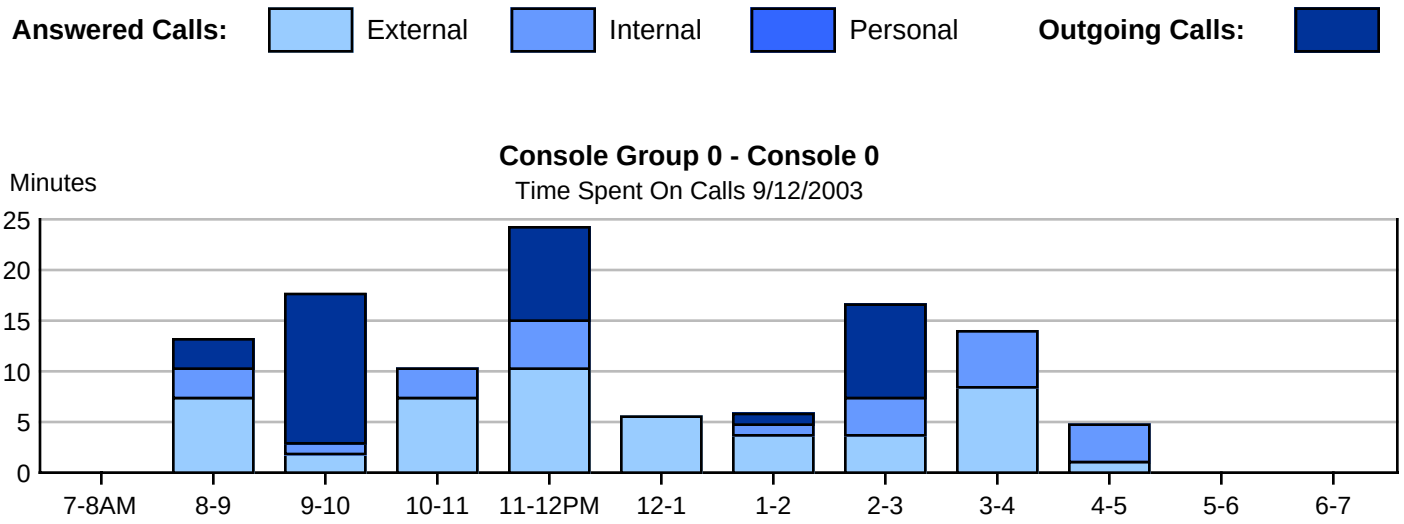

Answered Calls:
External
Internal
Personal
Outgoing Calls:
Console Group 0 - Console 0
Average Time Spent On Calls
Minutes
25
20
15
10
5
0
7-8AM
8-9
9-10
10-11
11-12PM
12-1
1-2
2-3
3-4
4-5
5-6
6-7
Console Group 0 - Console 0
Average Call Durations
Sec/Call
90
72
54
36
18
0
7-8AM
8-9
9-10
10-11
11-12PM
12-1
1-2
2-3
3-4
4-5
5-6
6-7


Answered Calls:
External
Internal
Personal
Outgoing Calls:
Console Group 0 - Console 0
Time Spent On Calls 9/8/2003
Minutes
25
20
15
10
5
0
7-8AM
8-9
9-10
10-11
11-12PM
12-1
1-2
2-3
3-4
4-5
5-6
6-7


Console Group 0 - Console 0
Time Spent On Calls 9/9/2003
Minutes
25
20
15
10
5
0
7-8AM
8-9
9-10
10-11
11-12PM
12-1
1-2
2-3
3-4
4-5
5-6
6-7


Console Group 0 - Console 0
Time Spent On Calls 9/10/2003
Minutes
25
20
15
10
5
0
7-8AM
8-9
9-10
10-11
11-12PM
12-1
1-2
2-3
3-4
4-5
5-6
6-7


Console Group 0 - Console 0
Time Spent On Calls 9/11/2003
Minutes
25
20
15
10
5
0
7-8AM
8-9
9-10
10-11
11-12PM
12-1
1-2
2-3
3-4
4-5
5-6
6-7


Answered Calls:
External
Internal
Personal
Outgoing Calls:
Console Group 0 - Console 0
Time Spent On Calls 9/12/2003
Minutes
25
20
15
10
5
0
7-8AM
8-9
9-10
10-11
11-12PM
12-1
1-2
2-3
3-4
4-5
5-6
6-7

Console Performance

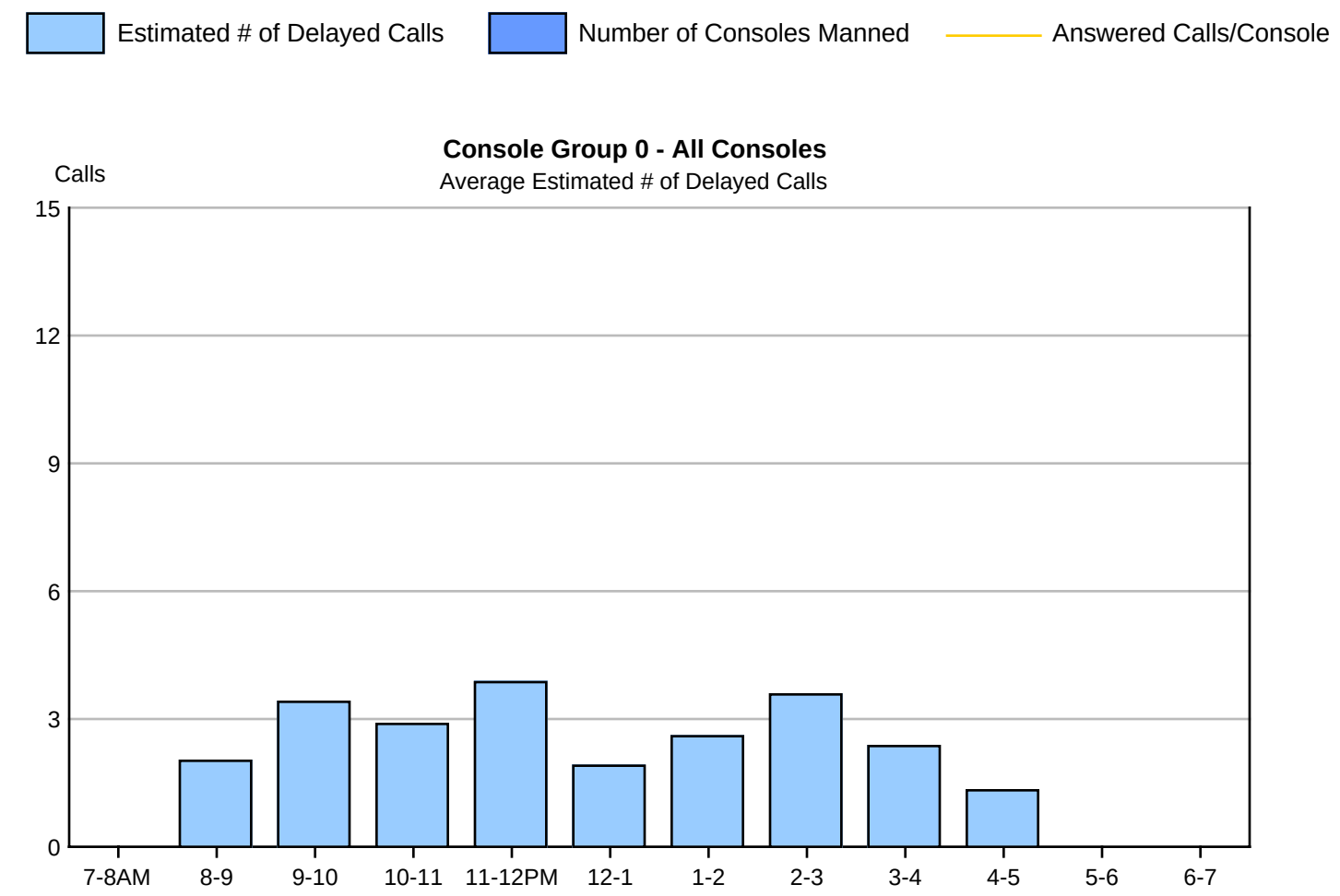
7. Delayed Calls

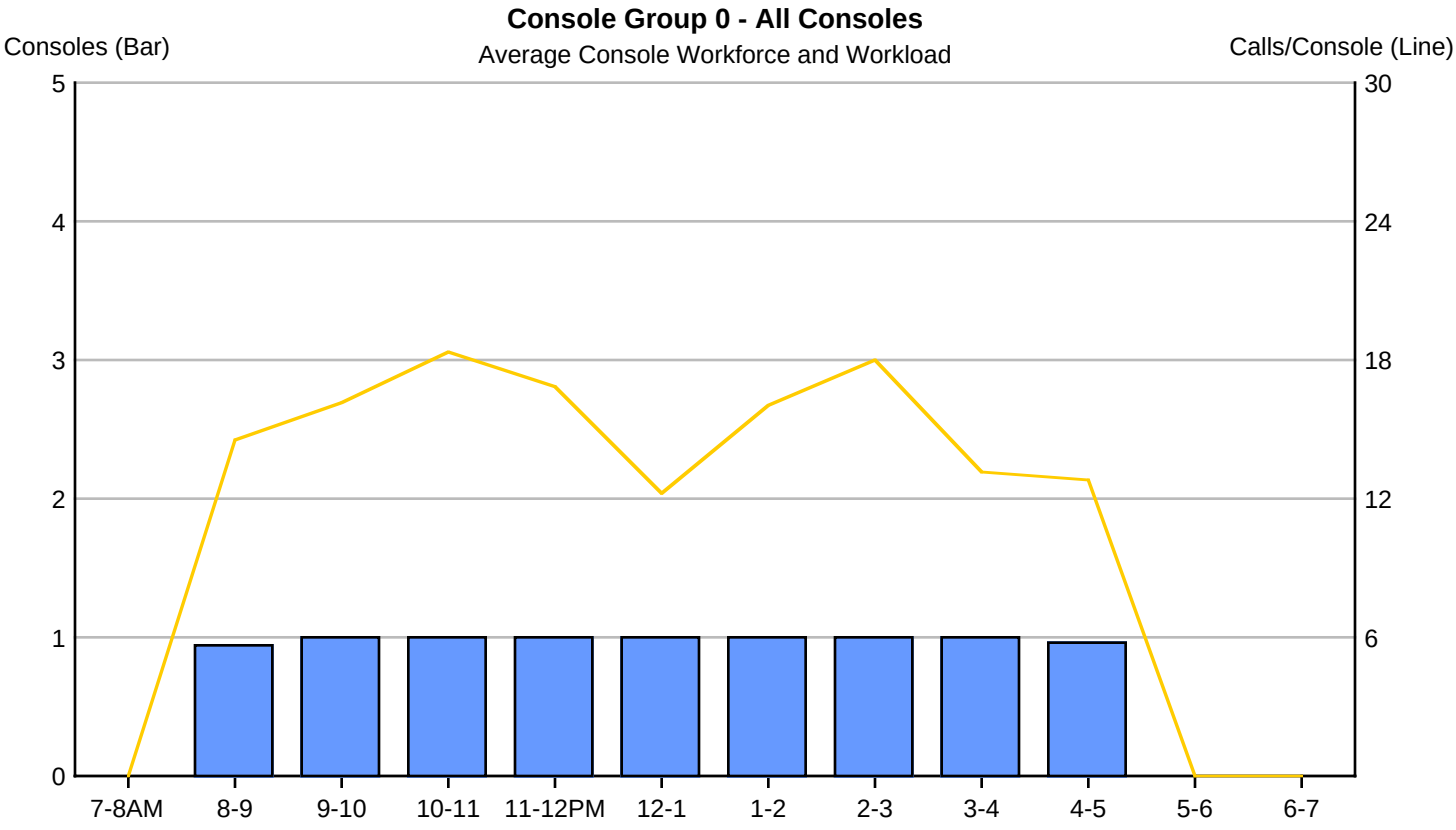
The following graphs depict a calculated statistical estimate of how many calls per hour were delayed before being answered by a console attendant. To help present the conditions under which calls were delayed, a companion graph is also provided that shows the number of consoles available and an average number of calls answered by each console. Each analysis within the section is therefore presented with a pair of graphs.

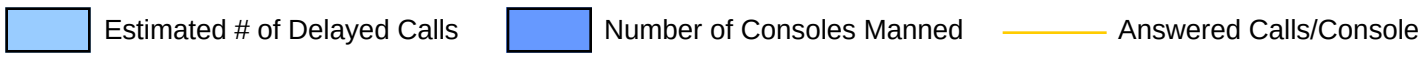
The first graph in each pair simply presents an hourly estimate of the number of delayed calls. This value is calculated based upon the total usage for the console group during the hour, the number of incoming queue calls, and the amount of time the consoles were manned during the hour. Standard Erlang C traffic engineering methods are employed in this calculation.

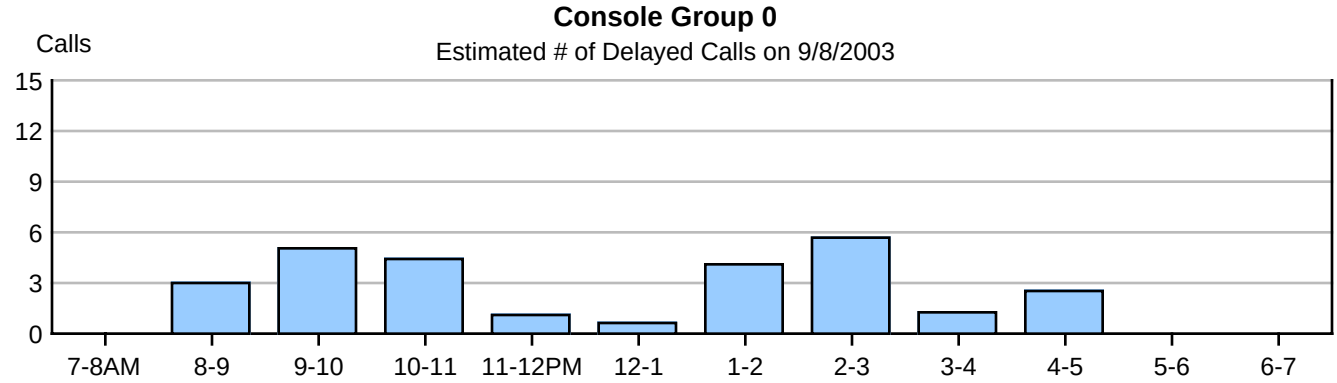
The second graph in each pair helps determine the cause of the delayed calls presented in the first graph. The columns represent the number of console-hours that were available. One console hour is the equivalent of 60 minutes worth of manned-time on a single console, but could also be two consoles each manned for 30 minutes, or any other combination. It's an indication of the amount of console workforce that was available for answering calls, and will vary throughout the day as attendants take breaks or shifts change. The line on the second graph presents the average number of calls answered per console. This will allow you compare the attendants' workload against industry averages to determine the quality of their performance. In summary, the second graph will allow you to decide which action to take when the number of delayed calls is high - add more attendants or improve their performance.

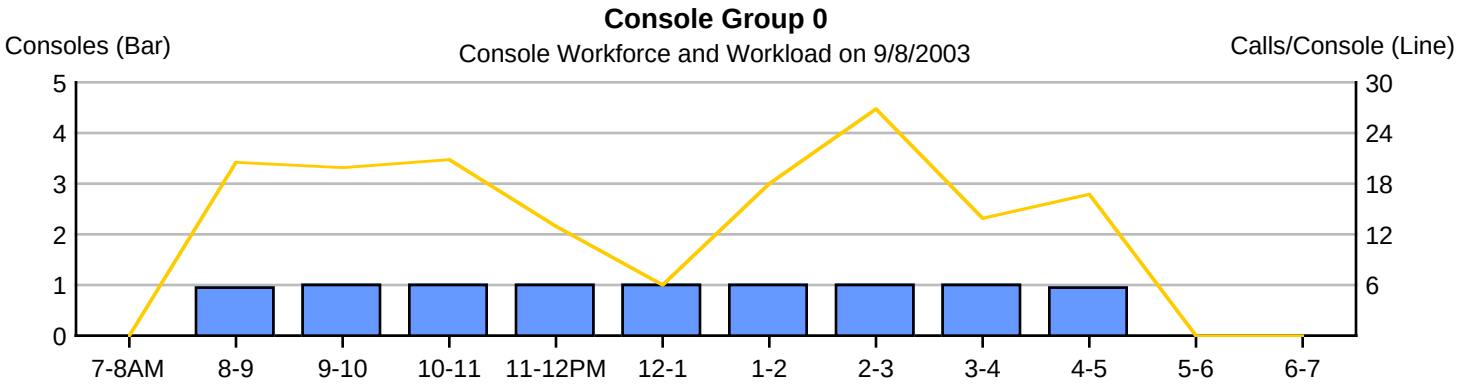
The pairs of graphs within this section are presented in the following order - Each console group starts with an average for the entire group over the entire study duration. This is followed by separate graphs for each day of the study. This organization allows you to view how the group performed as a whole during the study, or on any given day. Individual console data is not presented because delayed calls are an incoming queue phenomenon, not related to any single console. The same conventions described above are used in each of the graphs.

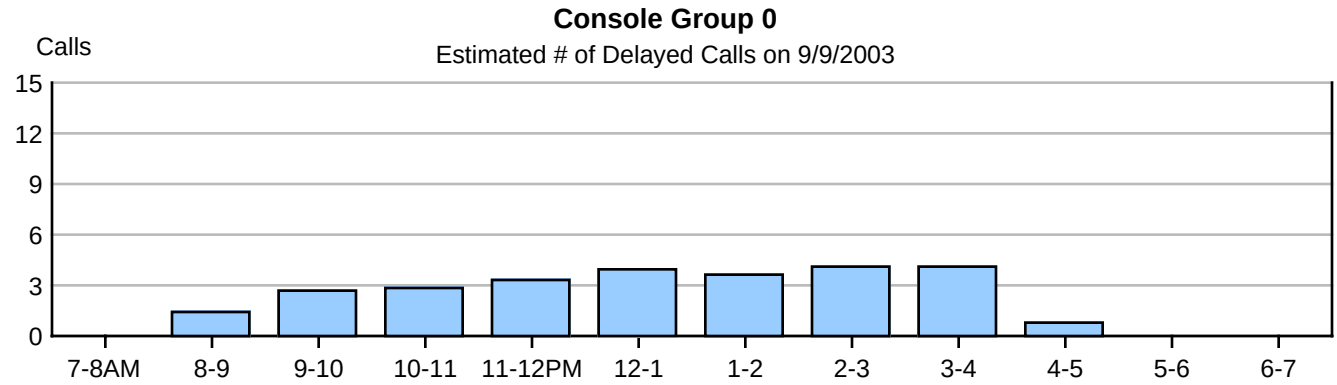

Estimated # of Delayed Calls
Number of Consoles Manned
Answered Calls/Console
Console Group 0 - All Consoles
Average Estimated # of Delayed Calls
Calls
15
12
9
6
3
0
7-8AM
8-9
9-10
10-11
11-12PM
12-1
1-2
2-3
3-4
4-5
5-6
6-7

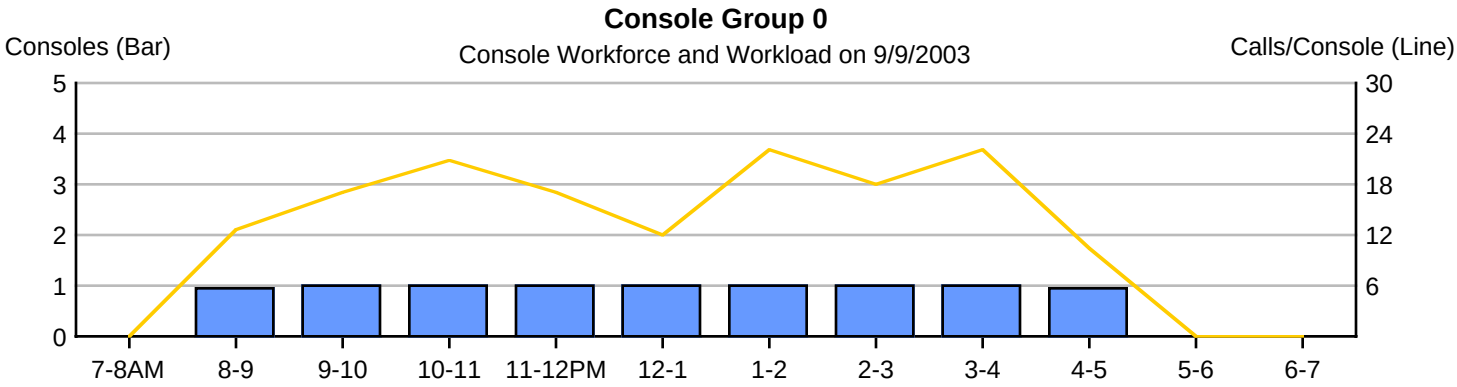

Console Group 0 - All Consoles
Average Console Workforce and Workload
Consoles (Bar)
Calls/Console (Line)
5
4
3
2
1
0
30
24
18
12
6
7-8AM
8-9
9-10
10-11
11-12PM
12-1
1-2
2-3
3-4
4-5
5-6
6-7

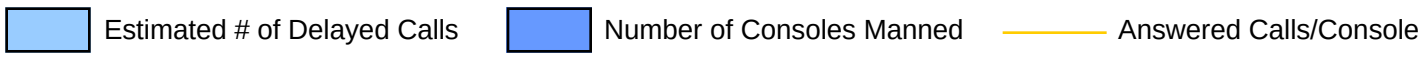

Estimated # of Delayed Calls
Number of Consoles Manned
Answered Calls/Console

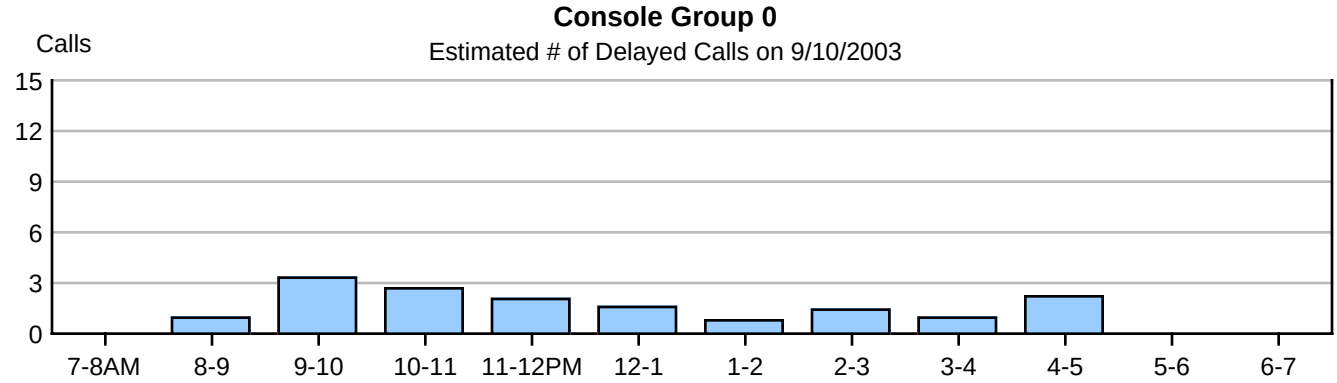

Console Group 0
Estimated # of Delayed Calls on 9/8/2003
Calls
15
12
9
6
3
0
7-8AM
8-9
9-10
10-11
11-12PM
12-1
1-2
2-3
3-4
4-5
5-6
6-7

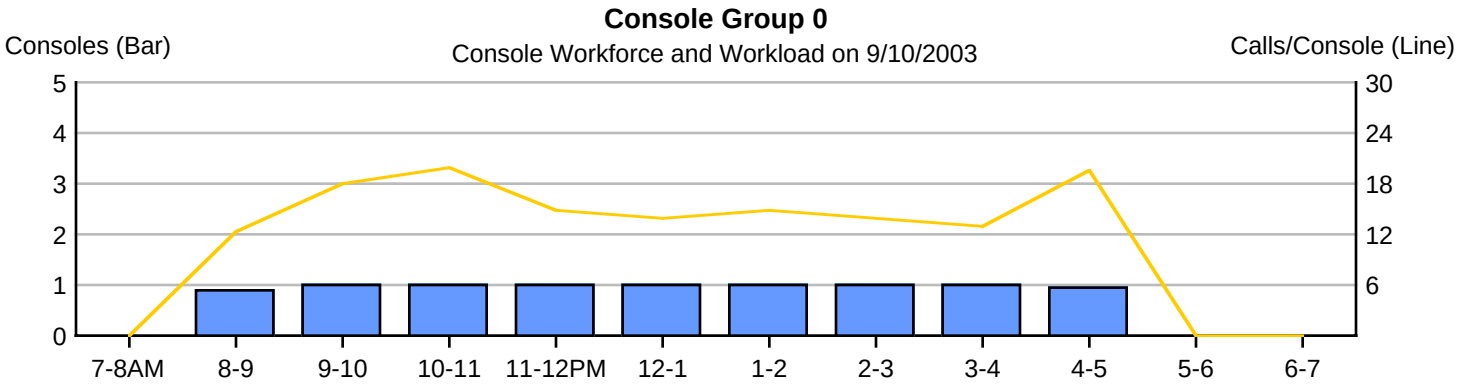

Console Group 0
Console Workforce and Workload on 9/8/2003
Consoles (Bar)
Calls/Console (Line)
5
4
3
2
1
0
30
24
18
12
6
7-8AM
8-9
9-10
10-11
11-12PM
12-1
1-2
2-3
3-4
4-5
5-6
6-7

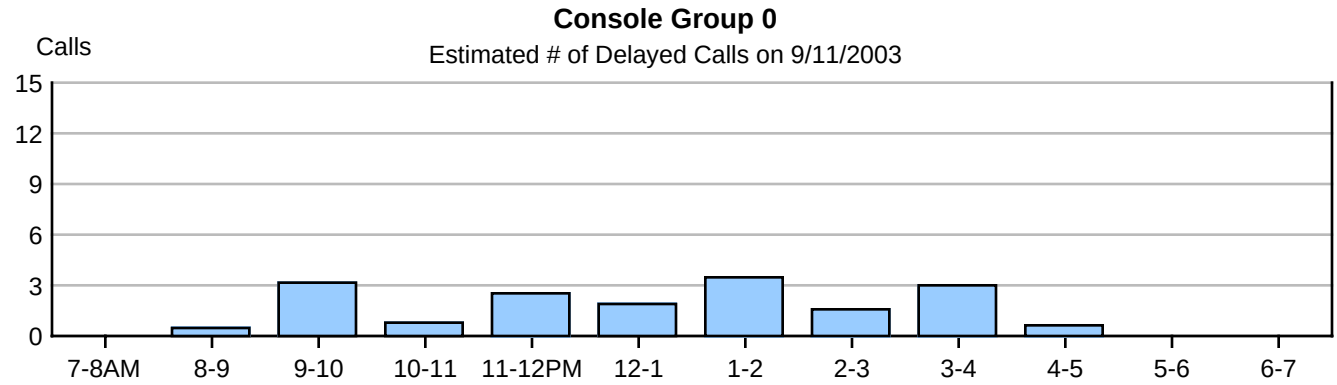

Console Group 0
Estimated # of Delayed Calls on 9/9/2003
Calls
15
12
9
6
3
0
7-8AM
8-9
9-10
10-11
11-12PM
12-1
1-2
2-3
3-4
4-5
5-6
6-7

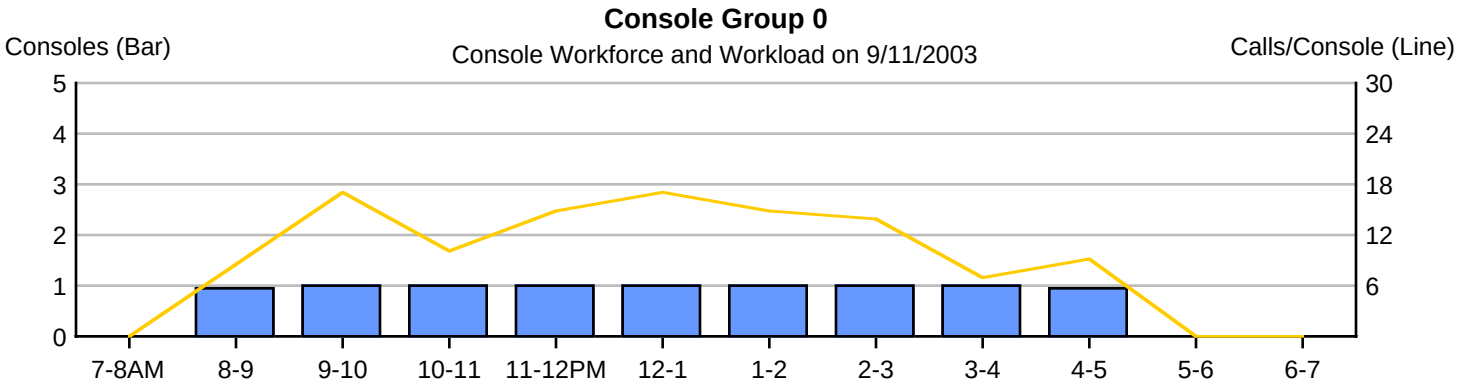

Console Group 0
Console Workforce and Workload on 9/9/2003
Consoles (Bar)
Calls/Console (Line)
5
4
3
2
1
0
30
24
18
12
6
7-8AM
8-9
9-10
10-11
11-12PM
12-1
1-2
2-3
3-4
4-5
5-6
6-7

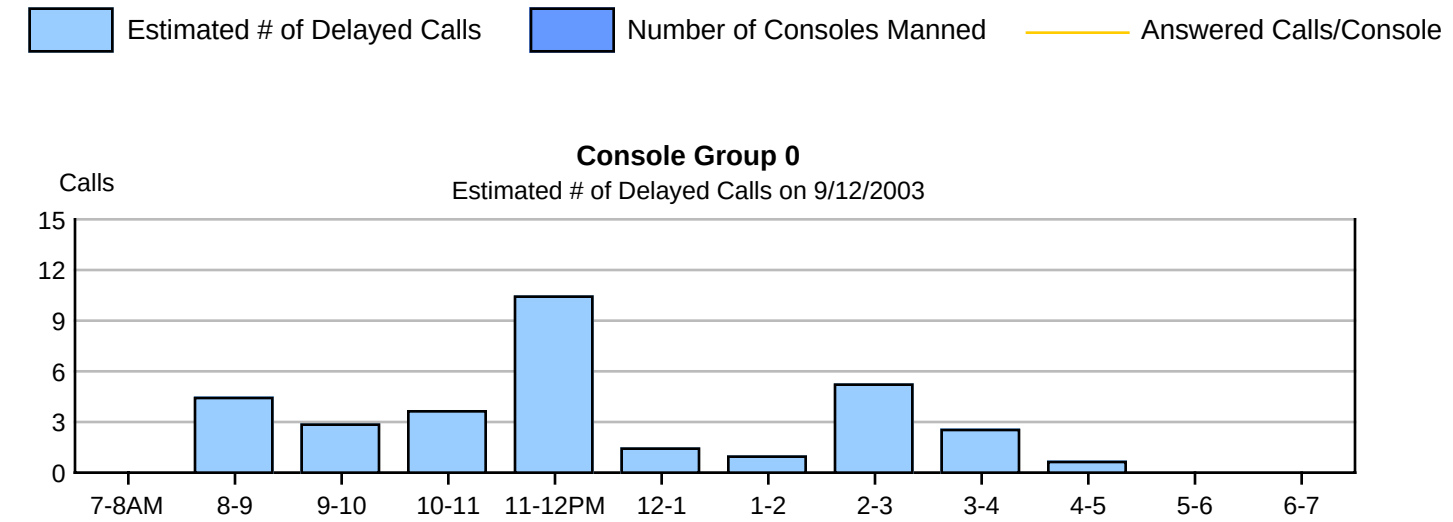

Estimated # of Delayed Calls
Number of Consoles Manned
Answered Calls/Console

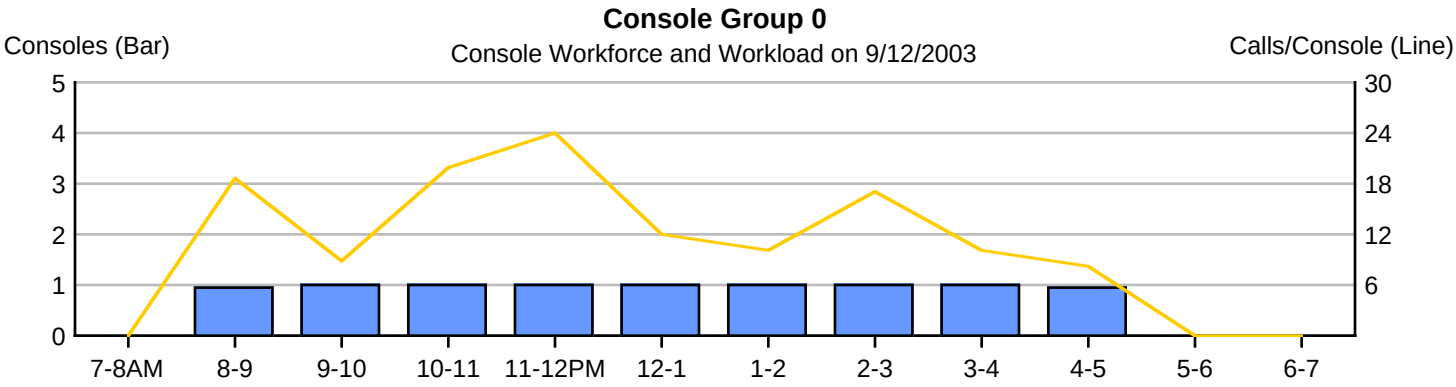

Console Group 0
Estimated # of Delayed Calls on 9/10/2003
Calls
15
12
9
6
3
0
7-8AM
8-9
9-10
10-11
11-12PM
12-1
1-2
2-3
3-4
4-5
5-6
6-7


Console Group 0
Console Workforce and Workload on 9/10/2003
Consoles (Bar)
Calls/Console (Line)
5
4
3
2
1
0
30
24
18
12
6
7-8AM
8-9
9-10
10-11
11-12PM
12-1
1-2
2-3
3-4
4-5
5-6
6-7


Console Group 0
Estimated # of Delayed Calls on 9/11/2003
Calls
15
12
9
6
3
0
7-8AM
8-9
9-10
10-11
11-12PM
12-1
1-2
2-3
3-4
4-5
5-6
6-7


Console Group 0
Console Workforce and Workload on 9/11/2003
Consoles (Bar)
Calls/Console (Line)
5
4
3
2
1
0
30
24
18
12
6
7-8AM
8-9
9-10
10-11
11-12PM
12-1
1-2
2-3
3-4
4-5
5-6
6-7


Estimated # of Delayed Calls
Number of Consoles Manned
Answered Calls/Console
Console Group 0
Estimated # of Delayed Calls on 9/12/2003
Calls
15
12
9
6
3
0
7-8AM
8-9
9-10
10-11
11-12PM
12-1
1-2
2-3
3-4
4-5
5-6
6-7


Console Group 0
Console Workforce and Workload on 9/12/2003
Consoles (Bar)
Calls/Console (Line)
5
4
3
2
1
0
30
24
18
12
6
7-8AM
8-9
9-10
10-11
11-12PM
12-1
1-2
2-3
3-4
4-5
5-6
6-7

Console Statistics

Statistics for Console Group 0

Call Type	# of Calls	% of Calls	Time Spent on Calls	% of Time Spent on Calls	Average Call Duration
Mon Sep 8 7-8AM (0 manned Consoles)			(HH:MM:SS)		(HH:MM:SS)
External	0	--	00:00:00	--	--
Internal	0	--	00:00:00	--	--
Personal	0	--	00:00:00	--	--
Outgoing	0	--	00:00:00	--	--
Totals	0	100%	00:00:00	100%	--
Est. Delayed	0	--	--	--	--
Mon Sep 8 8-9AM (1 manned Console)					
External	18	72%	00:07:08	81.2%	00:00:27
Internal	2	8%	00:00:33	6.3%	00:00:16
Personal	0	0%	00:00:00	0%	--
Outgoing	5	20%	00:01:06	12.5%	00:00:13
Totals	25	100%	00:08:47	100%	00:00:23
Est. Delayed	2.9	14.6%	--	--	--
Mon Sep 8 9-10AM (1 manned Console)					
External	15	60%	00:08:26	55.2%	00:00:30
Internal	5	20%	00:01:38	10.7%	00:00:20
Personal	0	0%	00:00:00	0%	--
Outgoing	5	20%	00:05:12	34.1%	00:01:02
Totals	25	100%	00:15:16	100%	00:00:35
Est. Delayed	5.1	25.4%	--	--	--
Mon Sep 8 10-11AM (1 manned Console)					
External	14	53.8%	00:06:41	52.3%	00:00:29
Internal	7	26.9%	00:04:05	31.9%	00:00:35
Personal	0	0%	00:00:00	0%	--
Outgoing	5	19.2%	00:02:01	15.8%	00:00:24
Totals	26	100%	00:12:47	100%	00:00:30
Est. Delayed	4.5	21.3%	--	--	--
Mon Sep 8 11-12PM (1 manned Console)					
External	11	78.6%	00:04:09	83.3%	00:00:22
Internal	2	14.3%	00:00:44	14.7%	00:00:22
Personal	0	0%	00:00:00	0%	--
Outgoing	1	7.1%	00:00:06	2%	00:00:06
Totals	14	100%	00:04:59	100%	00:00:21
Est. Delayed	1.1	8.3%	--	--	--
Mon Sep 8 12-1PM (1 manned Console)					
External	3	20%	00:02:18	40.5%	00:00:46
Internal	3	20%	00:00:40	11.7%	00:00:13
Personal	0	0%	00:00:00	0%	--
Outgoing	9	60%	00:02:43	47.8%	00:00:18
Totals	15	100%	00:05:41	100%	00:00:23
Est. Delayed	0.6	9.5%	--	--	--

Statistics for Console Group 0

Call Type	# of Calls	% of Calls	Time Spent on Calls	% of Time Spent on Calls	Average Call Duration
Mon Sep 8 1-2PM (1 manned Console)			(HH:MM:SS)		(HH:MM:SS)
External	9	39.1%	00:03:50	28.3%	00:00:26
Internal	9	39.1%	00:06:41	49.4%	00:00:45
Personal	0	0%	00:00:00	0%	--
Outgoing	5	21.7%	00:03:01	22.3%	00:00:36
Totals	23	100%	00:13:32	100%	00:00:35
Est. Delayed	4.1	22.6%	--	--	--
Mon Sep 8 2-3PM (1 manned Console)					
External	23	57.5%	00:07:23	58.8%	00:00:20
Internal	4	10%	00:02:45	21.9%	00:00:41
Personal	0	0%	00:00:00	0%	--
Outgoing	13	32.5%	00:02:26	19.4%	00:00:11
Totals	40	100%	00:12:34	100%	00:00:19
Est. Delayed	5.7	20.9%	--	--	--
Mon Sep 8 3-4PM (1 manned Console)					
External	13	65%	00:04:38	81.5%	00:00:24
Internal	1	5%	00:00:09	2.6%	00:00:09
Personal	0	0%	00:00:00	0%	--
Outgoing	6	30%	00:00:54	15.8%	00:00:09
Totals	20	100%	00:05:41	100%	00:00:19
Est. Delayed	1.3	9.5%	--	--	--
Mon Sep 8 4-5PM (1 manned Console)					
External	11	55%	00:04:50	52.2%	00:00:22
Internal	5	25%	00:02:47	30%	00:00:33
Personal	0	0%	00:00:00	0%	--
Outgoing	4	20%	00:01:39	17.8%	00:00:25
Totals	20	100%	00:09:16	100%	00:00:26
Est. Delayed	2.5	15.4%	--	--	--
Mon Sep 8 5-6PM (0 manned Consoles)					
External	0	--	00:00:00	--	--
Internal	0	--	00:00:00	--	--
Personal	0	--	00:00:00	--	--
Outgoing	0	--	00:00:00	--	--
Totals	0	100%	00:00:00	100%	--
Est. Delayed	0	--	--	--	--
Mon Sep 8 6-7PM (0 manned Consoles)					
External	0	--	00:00:00	--	--
Internal	0	--	00:00:00	--	--
Personal	0	--	00:00:00	--	--
Outgoing	0	--	00:00:00	--	--
Totals	0	100%	00:00:00	100%	--
Est. Delayed	0	--	--	--	--

Statistics for Console Group 0

Call Type	# of Calls	% of Calls	Time Spent on Calls	% of Time Spent on Calls	Average Call Duration
Mon Sep 8 - Daily Totals			(HH:MM:SS)		(HH:MM:SS)
External	117	56.2%	00:49:23	55.8%	00:00:25
Internal	38	18.3%	00:20:02	22.6%	00:00:32
Personal	0	0%	00:00:00	0%	--
Outgoing	53	25.5%	00:19:08	21.6%	00:00:22
Totals	208	100%	01:28:33	100%	00:00:26
Est. Delayed	27.7	17.8%	--	--	--
Tue Sep 9 7-8AM (0 manned Consoles)					
External	0	--	00:00:00	--	--
Internal	0	--	00:00:00	--	--
Personal	0	--	00:00:00	--	--
Outgoing	0	--	00:00:00	--	--
Totals	0	100%	00:00:00	100%	--
Est. Delayed	0	--	--	--	--
Tue Sep 9 8-9AM (1 manned Console)					
External	8	33.3%	00:02:21	32.1%	00:00:18
Internal	4	16.7%	00:01:59	27.1%	00:00:30
Personal	0	0%	00:00:00	0%	--
Outgoing	12	50%	00:02:59	40.8%	00:00:15
Totals	24	100%	00:07:19	100%	00:00:18
Est. Delayed	1.5	12.2%	--	--	--
Tue Sep 9 9-10AM (1 manned Console)					
External	11	57.9%	00:05:35	57.7%	00:00:32
Internal	6	31.6%	00:02:49	29.1%	00:00:28
Personal	0	0%	00:00:00	0%	--
Outgoing	2	10.5%	00:01:17	13.3%	00:00:38
Totals	19	100%	00:09:41	100%	00:00:31
Est. Delayed	2.7	16.1%	--	--	--
Tue Sep 9 10-11AM (1 manned Console)					
External	14	56%	00:04:55	59.6%	00:00:20
Internal	7	28%	00:02:14	27.1%	00:00:19
Personal	0	0%	00:00:00	0%	--
Outgoing	4	16%	00:01:06	13.3%	00:00:18
Totals	25	100%	00:08:15	100%	00:00:19
Est. Delayed	2.9	13.8%	--	--	--
Tue Sep 9 11-12PM (1 manned Console)					
External	14	66.7%	00:08:59	78.2%	00:00:38
Internal	3	14.3%	00:00:49	7.1%	00:00:16
Personal	0	0%	00:00:00	0%	--
Outgoing	4	19%	00:01:41	14.7%	00:00:23
Totals	21	100%	00:11:29	100%	00:00:32
Est. Delayed	3.3	19.1%	--	--	--

Statistics for Console Group 0

Call Type	# of Calls	% of Calls	Time Spent on Calls	% of Time Spent on Calls	Average Call Duration
Tue Sep 9 12-1PM (1 manned Console)			(HH:MM:SS)		(HH:MM:SS)
External	10	55.6%	00:05:22	27.2%	00:00:32
Internal	2	11.1%	00:00:33	2.8%	00:00:16
Personal	0	0%	00:00:00	0%	--
Outgoing	6	33.3%	00:13:47	70%	00:02:18
Totals	18	100%	00:19:42	100%	00:01:06
Est. Delayed	3.9	32.8%	--	--	--
Tue Sep 9 1-2PM (1 manned Console)					
External	21	72.4%	00:07:14	72.6%	00:00:21
Internal	1	3.4%	00:00:14	2.3%	00:00:14
Personal	0	0%	00:00:00	0%	--
Outgoing	7	24.1%	00:02:30	25.1%	00:00:21
Totals	29	100%	00:09:58	100%	00:00:21
Est. Delayed	3.7	16.6%	--	--	--
Tue Sep 9 2-3PM (1 manned Console)					
External	12	46.2%	00:07:01	51%	00:00:35
Internal	6	23.1%	00:03:16	23.8%	00:00:33
Personal	0	0%	00:00:00	0%	--
Outgoing	8	30.8%	00:03:28	25.2%	00:00:26
Totals	26	100%	00:13:45	100%	00:00:32
Est. Delayed	4.1	22.9%	--	--	--
Tue Sep 9 3-4PM (1 manned Console)					
External	18	54.5%	00:07:42	69.1%	00:00:26
Internal	4	12.1%	00:00:59	8.8%	00:00:15
Personal	0	0%	00:00:00	0%	--
Outgoing	11	33.3%	00:02:28	22.1%	00:00:13
Totals	33	100%	00:11:09	100%	00:00:20
Est. Delayed	4.1	18.6%	--	--	--
Tue Sep 9 4-5PM (1 manned Console)					
External	10	90.9%	00:03:59	86%	00:00:24
Internal	0	0%	00:00:00	0%	--
Personal	0	0%	00:00:00	0%	--
Outgoing	1	9.1%	00:00:39	14%	00:00:39
Totals	11	100%	00:04:38	100%	00:00:25
Est. Delayed	0.8	7.7%	--	--	--
Tue Sep 9 5-6PM (0 manned Consoles)					
External	0	--	00:00:00	--	--
Internal	0	--	00:00:00	--	--
Personal	0	--	00:00:00	--	--
Outgoing	0	--	00:00:00	--	--
Totals	0	100%	00:00:00	100%	--
Est. Delayed	0	--	--	--	--

Statistics for Console Group 0

Call Type	# of Calls	% of Calls	Time Spent on Calls	% of Time Spent on Calls	Average Call Duration
Tue Sep 9 6-7PM (0 manned Consoles)			(HH:MM:SS)		(HH:MM:SS)
External	0	--	00:00:00	--	--
Internal	0	--	00:00:00	--	--
Personal	0	--	00:00:00	--	--
Outgoing	0	--	00:00:00	--	--
Totals	0	100%	00:00:00	100%	--
Est. Delayed	0	--	--	--	--
Tue Sep 9 - Daily Totals					
External	118	57.3%	00:53:08	55.4%	00:00:27
Internal	33	16%	00:12:53	13.4%	00:00:23
Personal	0	0%	00:00:00	0%	--
Outgoing	55	26.7%	00:29:55	31.2%	00:00:33
Totals	206	100%	01:35:56	100%	00:00:28
Est. Delayed	26.9	17.8%	--	--	--
Wed Sep 10 7-8AM (0 manned Consoles)					
External	0	--	00:00:00	--	--
Internal	0	--	00:00:00	--	--
Personal	0	--	00:00:00	--	--
Outgoing	0	--	00:00:00	--	--
Totals	0	100%	00:00:00	100%	--
Est. Delayed	0	--	--	--	--
Wed Sep 10 8-9AM (0.9 manned Consoles)					
External	9	52.9%	00:03:41	69.1%	00:00:25
Internal	2	11.8%	00:01:01	19.1%	00:00:30
Personal	0	0%	00:00:00	0%	--
Outgoing	6	35.3%	00:00:38	11.9%	00:00:06
Totals	17	100%	00:05:20	100%	00:00:19
Est. Delayed	1	8.9%	--	--	--
Wed Sep 10 9-10AM (1 manned Console)					
External	16	59.3%	00:07:03	62.5%	00:00:27
Internal	2	7.4%	00:01:07	9.9%	00:00:34
Personal	1	3.7%	00:00:15	2.2%	00:00:15
Outgoing	8	29.6%	00:02:52	25.4%	00:00:22
Totals	27	100%	00:11:17	100%	00:00:25
Est. Delayed	3.4	18.8%	--	--	--
Wed Sep 10 10-11AM (1 manned Console)					
External	15	55.6%	00:04:03	49.1%	00:00:16
Internal	5	18.5%	00:02:05	25.3%	00:00:25
Personal	0	0%	00:00:00	0%	--
Outgoing	7	25.9%	00:02:07	25.7%	00:00:18
Totals	27	100%	00:08:15	100%	00:00:18
Est. Delayed	2.8	13.8%	--	--	--

Statistics for Console Group 0

Call Type	# of Calls	% of Calls	Time Spent on Calls	% of Time Spent on Calls	Average Call Duration
Wed Sep 10 11-12PM (1 manned Console)			(HH:MM:SS)		(HH:MM:SS)
External	12	70.6%	00:05:07	62.1%	00:00:26
Internal	3	17.6%	00:01:29	18%	00:00:30
Personal	0	0%	00:00:00	0%	--
Outgoing	2	11.8%	00:01:38	19.8%	00:00:49
Totals	17	100%	00:08:14	100%	00:00:29
Est. Delayed	2.1	13.7%	--	--	--
Wed Sep 10 12-1PM (1 manned Console)					
External	11	55%	00:03:46	54.1%	00:00:21
Internal	3	15%	00:01:37	23.2%	00:00:32
Personal	1	5%	00:00:33	7.9%	00:00:33
Outgoing	5	25%	00:01:02	14.8%	00:00:12
Totals	20	100%	00:06:58	100%	00:00:21
Est. Delayed	1.6	11.6%	--	--	--
Wed Sep 10 1-2PM (1 manned Console)					
External	13	81.2%	00:02:12	68.8%	00:00:10
Internal	2	12.5%	00:00:22	11.5%	00:00:11
Personal	0	0%	00:00:00	0%	--
Outgoing	1	6.2%	00:00:38	19.8%	00:00:38
Totals	16	100%	00:03:12	100%	00:00:12
Est. Delayed	0.8	5.3%	--	--	--
Wed Sep 10 2-3PM (1 manned Console)					
External	11	61.1%	00:02:52	49.3%	00:00:16
Internal	3	16.7%	00:01:33	26.6%	00:00:31
Personal	1	5.6%	00:00:13	3.7%	00:00:13
Outgoing	3	16.7%	00:01:11	20.3%	00:00:24
Totals	18	100%	00:05:49	100%	00:00:19
Est. Delayed	1.4	9.7%	--	--	--
Wed Sep 10 3-4PM (1 manned Console)					
External	10	58.8%	00:02:39	56.2%	00:00:16
Internal	3	17.6%	00:00:30	10.6%	00:00:10
Personal	1	5.9%	00:00:07	2.5%	00:00:07
Outgoing	3	17.6%	00:01:27	30.7%	00:00:29
Totals	17	100%	00:04:43	100%	00:00:17
Est. Delayed	1	7.9%	--	--	--
Wed Sep 10 4-5PM (1 manned Console)					
External	11	57.9%	00:03:24	49.9%	00:00:19
Internal	8	42.1%	00:03:25	50.1%	00:00:26
Personal	0	0%	00:00:00	0%	--
Outgoing	0	0%	00:00:00	0%	--
Totals	19	100%	00:06:49	100%	00:00:22
Est. Delayed	2.2	11.4%	--	--	--

Statistics for Console Group 0

Call Type	# of Calls	% of Calls	Time Spent on Calls	% of Time Spent on Calls	Average Call Duration
Wed Sep 10 5-6PM (0 manned Consoles)			(HH:MM:SS)		(HH:MM:SS)
External	0	--	00:00:00	--	--
Internal	0	--	00:00:00	--	--
Personal	0	--	00:00:00	--	--
Outgoing	0	--	00:00:00	--	--
Totals	0	100%	00:00:00	100%	--
Est. Delayed	0	--	--	--	--
Wed Sep 10 6-7PM (0 manned Consoles)					
External	0	--	00:00:00	--	--
Internal	0	--	00:00:00	--	--
Personal	0	--	00:00:00	--	--
Outgoing	0	--	00:00:00	--	--
Totals	0	100%	00:00:00	100%	--
Est. Delayed	0	--	--	--	--
Wed Sep 10 - Daily Totals					
External	108	60.7%	00:34:47	57.4%	00:00:19
Internal	31	17.4%	00:13:09	21.7%	00:00:25
Personal	4	2.2%	00:01:08	1.9%	00:00:17
Outgoing	35	19.7%	00:11:33	19.1%	00:00:20
Totals	178	100%	01:00:37	100%	00:00:20
Est. Delayed	16.1	11.6%	--	--	--
Thu Sep 11 7-8AM (0 manned Consoles)					
External	0	--	00:00:00	--	--
Internal	0	--	00:00:00	--	--
Personal	0	--	00:00:00	--	--
Outgoing	0	--	00:00:00	--	--
Totals	0	100%	00:00:00	100%	--
Est. Delayed	0	--	--	--	--
Thu Sep 11 8-9AM (0.9 manned Consoles)					
External	5	50%	00:01:23	41.3%	00:00:17
Internal	3	30%	00:01:08	33.8%	00:00:23
Personal	0	0%	00:00:00	0%	--
Outgoing	2	20%	00:00:50	24.9%	00:00:25
Totals	10	100%	00:03:21	100%	00:00:20
Est. Delayed	0.4	5.6%	--	--	--
Thu Sep 11 9-10AM (1 manned Console)					
External	14	70%	00:07:28	67.8%	00:00:32
Internal	3	15%	00:02:35	23.4%	00:00:52
Personal	0	0%	00:00:00	0%	--
Outgoing	3	15%	00:00:58	8.8%	00:00:19
Totals	20	100%	00:11:01	100%	00:00:33
Est. Delayed	3.1	18.4%	--	--	--

Statistics for Console Group 0

Call Type	# of Calls	% of Calls	Time Spent on Calls	% of Time Spent on Calls	Average Call Duration
Thu Sep 11 10-11AM (1 manned Console)			(HH:MM:SS)		(HH:MM:SS)
External	6	54.5%	00:02:59	69.4%	00:00:30
Internal	4	36.4%	00:01:14	28.7%	00:00:18
Personal	0	0%	00:00:00	0%	--
Outgoing	1	9.1%	00:00:05	1.9%	00:00:05
Totals	11	100%	00:04:18	100%	00:00:23
Est. Delayed	0.7	7.2%	--	--	--
Thu Sep 11 11-12PM (1 manned Console)					
External	13	68.4%	00:08:09	80.6%	00:00:38
Internal	2	10.5%	00:00:41	6.8%	00:00:20
Personal	1	5.3%	00:00:59	9.7%	00:00:59
Outgoing	3	15.8%	00:00:18	3%	00:00:06
Totals	19	100%	00:10:07	100%	00:00:32
Est. Delayed	2.5	16.9%	--	--	--
Thu Sep 11 12-1PM (1 manned Console)					
External	15	62.5%	00:04:57	74.6%	00:00:20
Internal	2	8.3%	00:01:03	15.8%	00:00:36
Personal	0	0%	00:00:00	0%	--
Outgoing	7	29.2%	00:00:38	9.5%	00:00:05
Totals	24	100%	00:06:38	100%	00:00:17
Est. Delayed	1.9	11.1%	--	--	--
Thu Sep 11 1-2PM (1 manned Console)					
External	11	64.7%	00:09:56	72.4%	00:00:54
Internal	4	23.5%	00:03:08	22.8%	00:00:44
Personal	0	0%	00:00:00	0%	--
Outgoing	2	11.8%	00:00:39	4.7%	00:00:20
Totals	17	100%	00:13:43	100%	00:00:48
Est. Delayed	3.4	22.9%	--	--	--
Thu Sep 11 2-3PM (1 manned Console)					
External	11	68.8%	00:03:57	60.5%	00:00:22
Internal	3	18.8%	00:01:48	27.6%	00:00:36
Personal	0	0%	00:00:00	0%	--
Outgoing	2	12.5%	00:00:47	12%	00:00:24
Totals	16	100%	00:06:32	100%	00:00:24
Est. Delayed	1.5	10.9%	--	--	--
Thu Sep 11 3-4PM (1 manned Console)					
External	7	36.8%	00:13:56	55.3%	00:02:04
Internal	0	0%	00:00:00	0%	--
Personal	0	0%	00:00:00	0%	--
Outgoing	12	63.2%	00:11:16	44.7%	00:00:56
Totals	19	100%	00:25:12	100%	00:01:21
Est. Delayed	2.9	42%	--	--	--

Statistics for Console Group 0

Call Type	# of Calls	% of Calls	Time Spent on Calls	% of Time Spent on Calls	Average Call Duration
Thu Sep 11 4-5PM (1 manned Console)			(HH:MM:SS)		(HH:MM:SS)
External	7	58.3%	00:02:58	66.2%	00:00:21
Internal	2	16.7%	00:01:01	22.7%	00:00:30
Personal	0	0%	00:00:00	0%	--
Outgoing	3	25%	00:00:30	11.2%	00:00:10
Totals	12	100%	00:04:29	100%	00:00:20
Est. Delayed	0.7	7.5%	--	--	--
Thu Sep 11 5-6PM (0 manned Consoles)					
External	0	--	00:00:00	--	--
Internal	0	--	00:00:00	--	--
Personal	0	--	00:00:00	--	--
Outgoing	0	--	00:00:00	--	--
Totals	0	100%	00:00:00	100%	--
Est. Delayed	0	--	--	--	--
Thu Sep 11 6-7PM (0 manned Consoles)					
External	0	--	00:00:00	--	--
Internal	0	--	00:00:00	--	--
Personal	0	--	00:00:00	--	--
Outgoing	0	--	00:00:00	--	--
Totals	0	100%	00:00:00	100%	--
Est. Delayed	0	--	--	--	--
Thu Sep 11 - Daily Totals					
External	89	60.1%	00:55:43	65.3%	00:00:38
Internal	23	15.5%	00:12:38	14.8%	00:00:33
Personal	1	0.7%	00:00:59	1.2%	00:00:59
Outgoing	35	23.6%	00:16:01	18.8%	00:00:27
Totals	148	100%	01:25:21	100%	00:00:35
Est. Delayed	17.3	15.4%	--	--	--
Fri Sep 12 7-8AM (0 manned Consoles)					
External	0	--	00:00:00	--	--
Internal	0	--	00:00:00	--	--
Personal	0	--	00:00:00	--	--
Outgoing	0	--	00:00:00	--	--
Totals	0	100%	00:00:00	100%	--
Est. Delayed	0	--	--	--	--
Fri Sep 12 8-9AM (1 manned Console)					
External	12	40%	00:07:57	54%	00:00:40
Internal	6	20%	00:03:24	23.1%	00:00:36
Personal	0	0%	00:00:00	0%	--
Outgoing	12	40%	00:03:23	23%	00:00:17
Totals	30	100%	00:14:44	100%	00:00:30
Est. Delayed	4.4	24.6%	--	--	--

Statistics for Console Group 0

Call Type	# of Calls	% of Calls	Time Spent on Calls	% of Time Spent on Calls	Average Call Duration
Fri Sep 12 9-10AM (1 manned Console)			(HH:MM:SS)		(HH:MM:SS)
External	7	58.3%	00:01:53	10.1%	00:00:16
Internal	2	16.7%	00:00:54	4.8%	00:00:22
Personal	0	0%	00:00:00	0%	--
Outgoing	3	25%	00:15:54	85.1%	00:05:18
Totals	12	100%	00:18:41	100%	00:01:33
Est. Delayed	2.8	31.1%	--	--	--
Fri Sep 12 10-11AM (1 manned Console)					
External	13	56.5%	00:07:51	72.9%	00:00:36
Internal	7	30.4%	00:02:42	25.1%	00:00:23
Personal	0	0%	00:00:00	0%	--
Outgoing	3	13%	00:00:13	2%	00:00:04
Totals	23	100%	00:10:46	100%	00:00:28
Est. Delayed	3.6	17.9%	--	--	--
Fri Sep 12 11-12PM (1 manned Console)					
External	18	52.9%	00:11:28	43.8%	00:00:38
Internal	6	17.6%	00:04:41	17.9%	00:00:47
Personal	0	0%	00:00:00	0%	--
Outgoing	10	29.4%	00:10:03	38.4%	00:01:00
Totals	34	100%	00:26:12	100%	00:00:46
Est. Delayed	10.5	43.7%	--	--	--
Fri Sep 12 12-1PM (1 manned Console)					
External	11	84.6%	00:06:16	90.8%	00:00:34
Internal	1	7.7%	00:00:29	7%	00:00:29
Personal	0	0%	00:00:00	0%	--
Outgoing	1	7.7%	00:00:09	2.2%	00:00:09
Totals	13	100%	00:06:54	100%	00:00:32
Est. Delayed	1.4	11.5%	--	--	--
Fri Sep 12 1-2PM (1 manned Console)					
External	8	53.3%	00:04:06	71.3%	00:00:31
Internal	2	13.3%	00:00:47	13.6%	00:00:24
Personal	0	0%	00:00:00	0%	--
Outgoing	5	33.3%	00:00:52	15.1%	00:00:10
Totals	15	100%	00:05:45	100%	00:00:23
Est. Delayed	1	9.6%	--	--	--
Fri Sep 12 2-3PM (1 manned Console)					
External	8	28.6%	00:04:17	23.5%	00:00:32
Internal	9	32.1%	00:04:22	24%	00:00:29
Personal	0	0%	00:00:00	0%	--
Outgoing	11	39.3%	00:09:34	52.5%	00:00:52
Totals	28	100%	00:18:13	100%	00:00:39
Est. Delayed	5.2	30.4%	--	--	--

Statistics for Console Group 0

Call Type	# of Calls	% of Calls	Time Spent on Calls	% of Time Spent on Calls	Average Call Duration
Fri Sep 12 3-4PM (1 manned Console)			(HH:MM:SS)		(HH:MM:SS)
External	8	66.7%	00:09:05	58.9%	00:01:08
Internal	2	16.7%	00:06:02	39.1%	00:03:01
Personal	0	0%	00:00:00	0%	--
Outgoing	2	16.7%	00:00:19	2.1%	00:00:10
Totals	12	100%	00:15:26	100%	00:01:17
Est. Delayed	2.6	25.7%	--	--	--
Fri Sep 12 4-5PM (1 manned Console)					
External	4	40%	00:00:55	19.6%	00:00:14
Internal	4	40%	00:03:34	76.2%	00:00:54
Personal	0	0%	00:00:00	0%	--
Outgoing	2	20%	00:00:12	4.3%	00:00:06
Totals	10	100%	00:04:41	100%	00:00:28
Est. Delayed	0.6	7.8%	--	--	--
Fri Sep 12 5-6PM (0 manned Consoles)					
External	0	--	00:00:00	--	--
Internal	0	--	00:00:00	--	--
Personal	0	--	00:00:00	--	--
Outgoing	0	--	00:00:00	--	--
Totals	0	100%	00:00:00	100%	--
Est. Delayed	0	--	--	--	--
Fri Sep 12 6-7PM (0 manned Consoles)					
External	0	--	00:00:00	--	--
Internal	0	--	00:00:00	--	--
Personal	0	--	00:00:00	--	--
Outgoing	0	--	00:00:00	--	--
Totals	0	100%	00:00:00	100%	--
Est. Delayed	0	--	--	--	--
Fri Sep 12 - Daily Totals					
External	89	50.3%	00:53:48	44.3%	00:00:36
Internal	39	22%	00:26:55	22.2%	00:00:41
Personal	0	0%	00:00:00	0%	--
Outgoing	49	27.7%	00:40:39	33.5%	00:00:50
Totals	177	100%	02:01:22	100%	00:00:41
Est. Delayed	32	25%	--	--	--

Appendix 1:
Typical Busy Hour Data for Attendant Consoles

(as published by Northern Telecom)

	Very Efficient Attd In Non DID system	Avg Attendant In Non DID system	Avg Attendant In DID system
Average Speed of Answer (seconds)	8	10 - 12	12 - 15
Attendant Response Times (seconds)	1 - 2	2 - 3	3 - 5
Calls Delayed	25 - 35 %	25 - 35 %	25 - 35 %
Avg Wait time of Calls in Queue & Abandoned Calls (seconds)	8 - 10	10 - 12	12 - 15
Abandoned Calls	1 - 2 %	1 - 2 %	3 - 5 %
# Calls per Attendant	175 - 200	150 - 175	125 - 150
% Time Manned	95 - 100 %	> 85 %	> 85 %
Work Time per Call (seconds)	7 - 8	10 - 12	12 - 16

Appendix 2:
Viewing your Traffic Study on the World Wide Web

Introduction

Every InfoPlus Traffic Study that is run will be automatically archived and uploaded to our web site for secure online viewing. Each account is assigned a unique Web Code, and entering this code on our web site provides a list of all the studies archived for that account, and the dates they were run. We will store every traffic study for at least three years, allowing comparison of current statistics with those from previous InfoPlus studies run for that account. Also, this technology allows any number of your people, across town or across the country, to view the data simultaneously and discuss its implications.

Suggested Software

The Traffic Studies will be stored in Portable Document Format™, commonly known as PDF or Adobe Acrobat™ format. You will need Adobe's Acrobat Reader (version 4.0 or later) and any web browser to view the PDF files. Acrobat Reader is free to download from Adobe's web site (www.adobe.com).

Instructions

Go to the InfoPlus web site located at **www.infoplusonline.com**. You'll need to enter the Web Code found below in the form on the home page. The code is case-sensitive, and may contain both numbers and letters. Once a correct code is entered, you will be presented with a list of all archived Traffic Studies for that account, and the date each study was started. Select the study you wish to view, and it will either be presented directly in your browser window, or the Adobe Acrobat Reader™ will be launched, and will display your study. Use the navigation bar at the top of the window to flip through the study, or use the index at the left to access a particular report. The online study is an exact duplicate of the paper copy, right down to the page numbers.

Web Code: DEMO

Some Hints for Easier Traffic Management

1) If you suspect you have too many trunks in a trunk group (either incoming or outgoing) and want to reduce your costs, don't disconnect the trunks at first, but just busy them out. This way, you can wait to see if you receive any complaints. If you receive complaints (or other indications of busies), its very simple to reactivate one or more trunks without delay or Telco expense. After you are comfortable with the reduced number of trunks, you can then disconnect them without risk.

2) Use the Trunk Group Busy lamps on the console to monitor your trunk groups. They will give your operators realtime indications of busy conditions. Make sure they are labeled so that the operators can associate a lamp with a specific trunk group. You might ask the operators to keep a simple stroke count every time they notice a Trunk Group Busy lamp lite. This will give you an early warning of busy conditions.

3) Outgoing trunk groups having more than 2 trunks could be split up into 2 trunk groups. The second group would consist of only one trunk, and the first group would overflow to the second. This way, we have the same total number of trunks but we can get a better picture of your traffic from the traffic reports. Also, if both trunk groups have busy lamps, as recommended above, the busy lamp on the first trunk group serves as a warning lamp. If you use CDR, make sure you reflect these changes in your CDR system.

Glossary...

Abandoned Call - An incoming call where the caller voluntarily hangs-up before the call is answered.

All Trunks Busy - The number of times during a given hour that all of the Trunks in a Trunk Group were busy; also the total duration of that condition during the hour.

Bouncing Busy Hour/Day - To project the heaviest traffic for a given period, the Bouncing Busy Hour/Day concept would seek out the heaviest traffic within any given hour regardless of the day in which that hour occurred. For example, in attempting to show the heaviest traffic by hour of the day over a 5 day study, the first hour might be from day 2, while the second hour might be from day 1.

CCS - A unit of measurement of time equal to units of 100 seconds. To convert CCSs to minutes, multiply by 100, then divide by 60.

Console-Hour - One console hour is the equivalent of 60 minutes worth of manned-time on a single console, but could also be two consoles each manned for 30 minutes, or any other combination. It's an indication of the amount of console workforce that was available for answering calls, and will vary throughout the day as attendants take breaks or shifts change.

Delayed Call - An incoming call to a console group that was not answered immediately because all consoles in the group were either busy or unmanned.

Erlang B - A probability formula used for determining trunking requirements for outgoing trunk groups.

Erlang C - A probability formula used for determining trunking requirements for incoming trunk groups.

'External' Call - When discussing consoles, refers to calls that originated from outside the organization, entered the console's incoming queue, and were eventually answered by the console workforce.

'Internal' Call - When discussing consoles, refers to calls that originated from inside the organization, entered the console's incoming queue, and were eventually answered by the console workforce.

'Outgoing' Call - When discussing consoles, refers to calls originated by an attendant.

P.0x - A written abbreviation indicating a specific service objective. (see Service Objective) P.02 would indicate a service objective of no more than 2 of every 100 calls receiving a busy.

Peg - A simple stroke count of events; in most cases those events are calls.

'Personal' Call - When discussing consoles, refers to calls that were answered by a console attendant, but which were directed directly to the particular attendant without entering the console's incoming queue.

Poisson - A probability formula used for determining trunking requirements for incoming and outgoing trunk groups which have no overflow routes.

Service Objective - The statistical probability of receiving a busy signal for a given volume of traffic, presented to a given number of trunks. For example, a Service Objective of .02 would indicate a sufficient number of trunks such that no more than 2 busys out of a theoretical 100 call attempts would be incurred during a given hour.

Terminal - Any port within the system, usually meant to refer to a station or a trunk.

Trunk Group - Trunks of similar nature and purpose defined in the system.