Histogram on Recent Runs by EMPv5

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1   Description

This document presents histograms based on the most recent runs of a program under test, called *INC*, over its increasing task lengths.

2   Experiment Notes

Table 1 provides a short description of our experimental runs, on which the following histograms are based.

Machine	Task Length (sec)	Description	Experiment Period
sodb9	INC1~INC1024	Each run with 300 samples	2017-02-09 ~ 2017-02-10 / 2017-02-12 ~ 2017-02-19
sodb10	INC2048	A run of 300 samples	2017-02-12 ~ 2017-02-20
sodb12	INC4096	A run of 300 samples	2017-02-12 ~ 2017-02-27
sodb12	INC8192	Two runs, each with 40 samples	2017-01-16 ~ 2017-01-20 / 2017-01-25 ~ 2017-01-29
sodb12	INC16384	Two runs, each with 40 samples	2017-01-05 ~ 2017-01-13 / 2017-01-29 ~ 2017-02-06

Table 1: Notes on experiment runs used for histograms

Now we show histograms of elapsed time (ET) and process time (PT) of INC.

3 Histograms

This section exhibits histograms on the EMPv5 data obtained when the task length of INC increases from 1 second to 2048 seconds. The detailed description of the base data is from Table 1.

3.1 ET

(a) ET frequency on INC1

(b) ET frequency on INC2
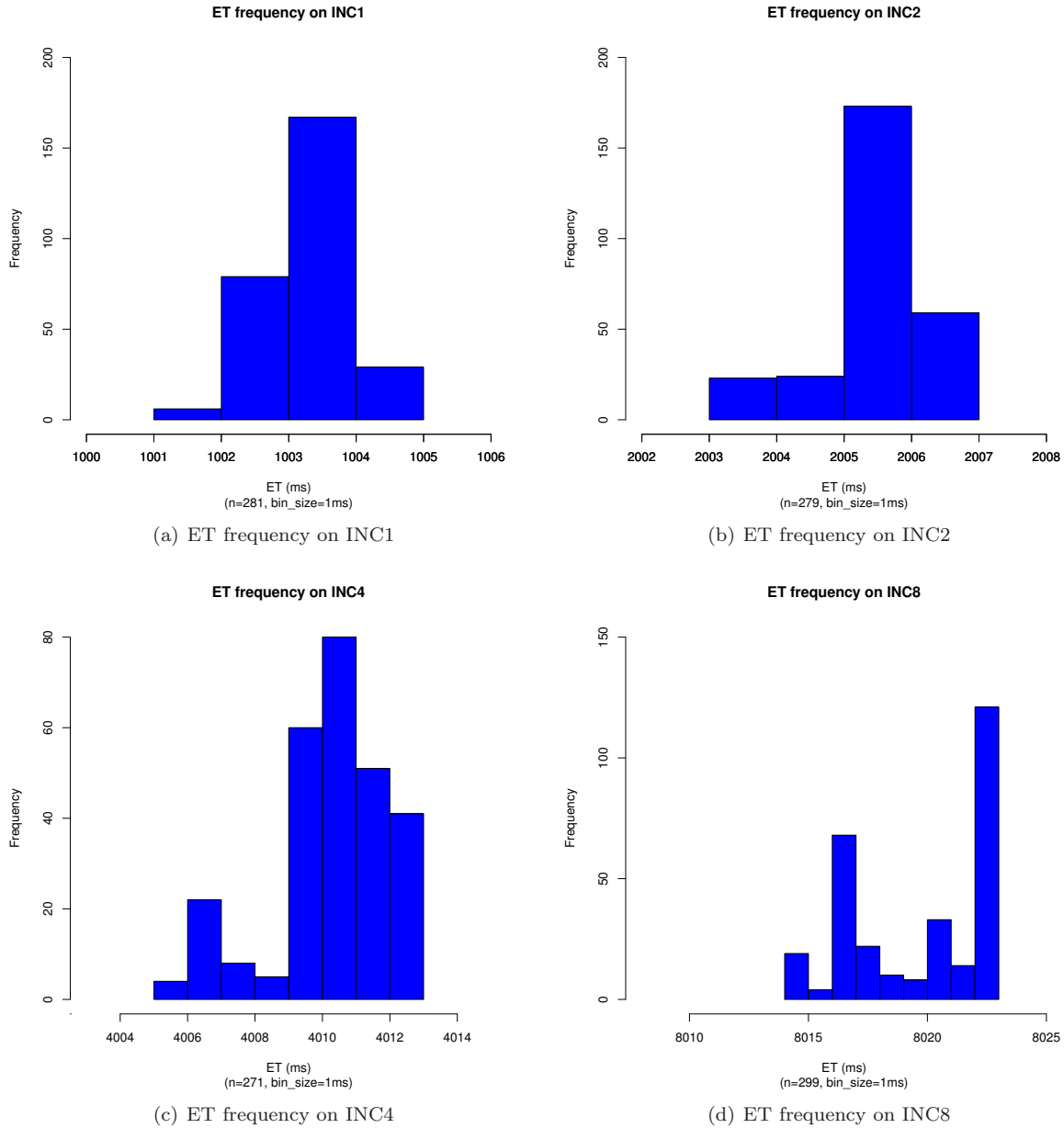

(c) ET frequency on INC4
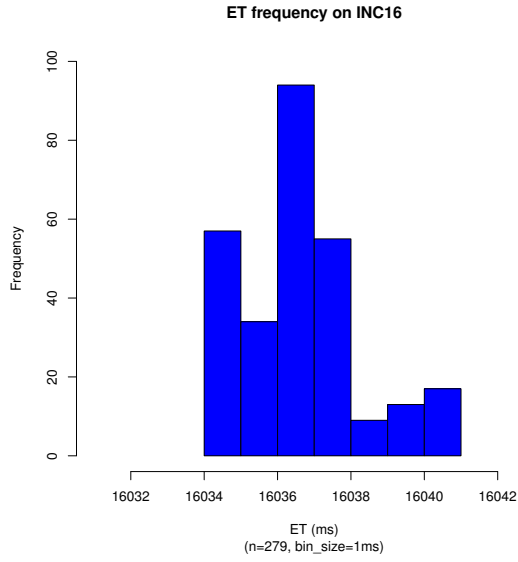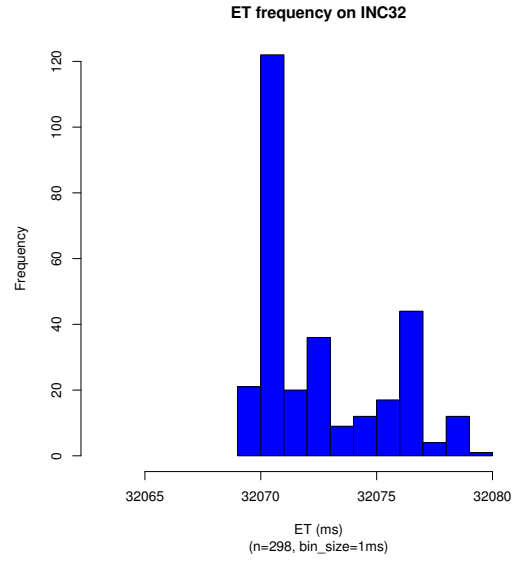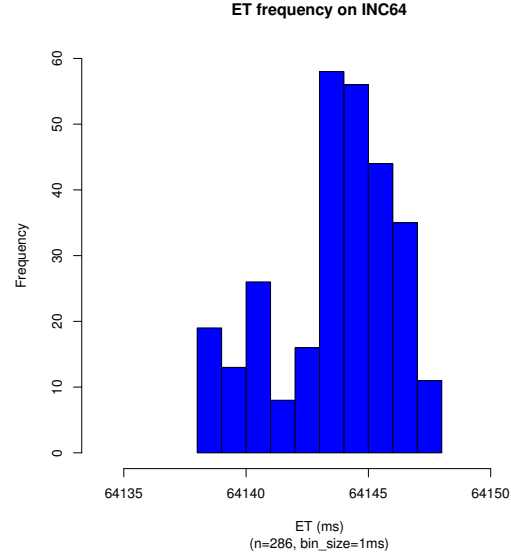

(d) ET frequency on INC8

Figure 1: ET Histograms of INC1 ... INC8

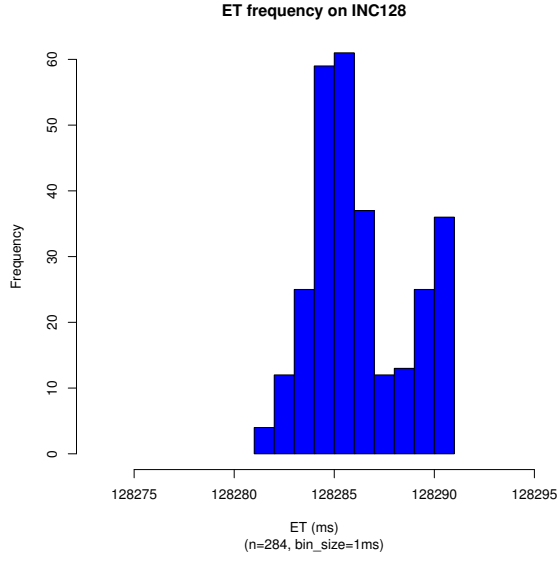(a) ET frequency on INC16
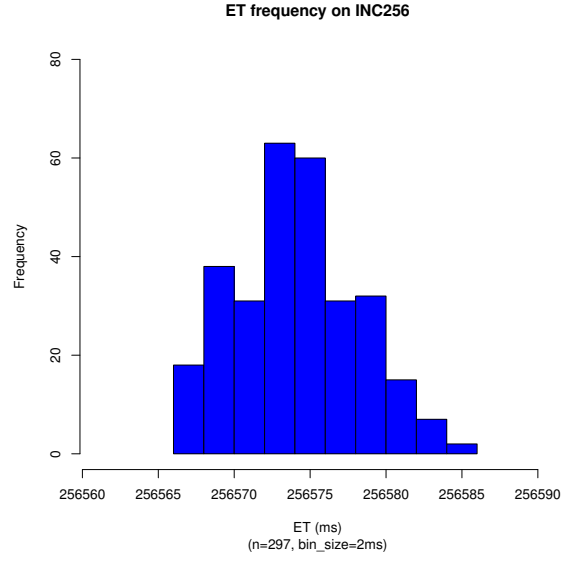

(b) ET frequency on INC32

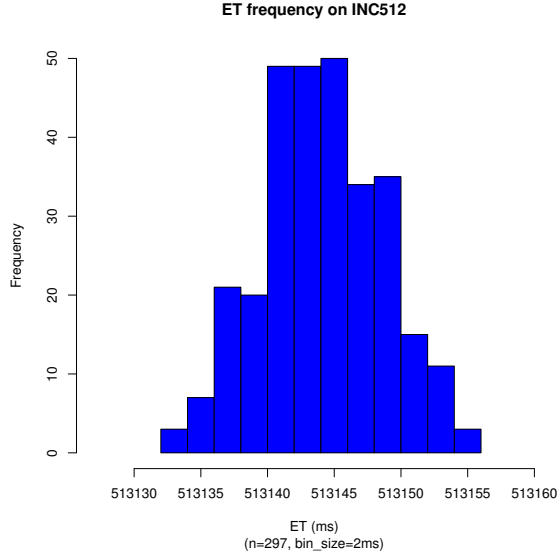(c) ET frequency on INC64

Figure 2: ET Histograms of INC16 ... INC64

(a) ET frequency on INC128

(b) ET frequency on INC256

(c) ET frequency on INC512

(d) ET frequency on INC1024

Figure 3: ET Histograms of INC128 ... INC1024

(a) ET frequency on INC2048

(b) ET frequency on INC4096

(c) ET frequency on INC8192

(d) ET frequency on INC16384

Figure 4: ET Histograms of INC2048 ... INC16384

3.2 PT

(a) PT frequency on INC1

(b) PT frequency on INC2

(c) PT frequency on INC4

(d) PT frequency on INC8

Figure 5: PT Histograms of INC1 ... INC8

PT frequency on INC16

(a) PT frequency on INC16

PT frequency on INC32

(b) PT frequency on INC32

PT frequency on INC64

(c) PT frequency on INC64

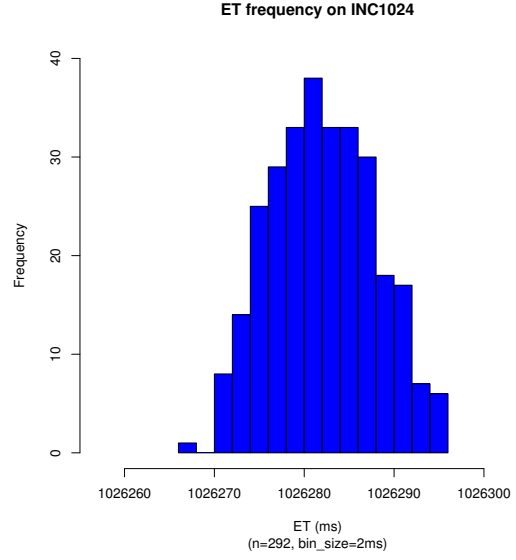Figure 6: PT Histograms of INC16 ... INC64

(a) PT frequency on INC128
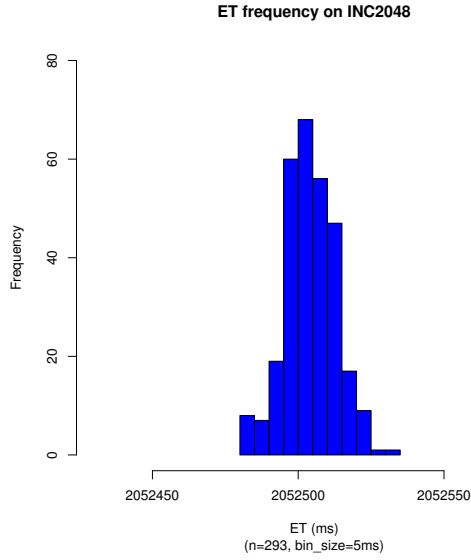
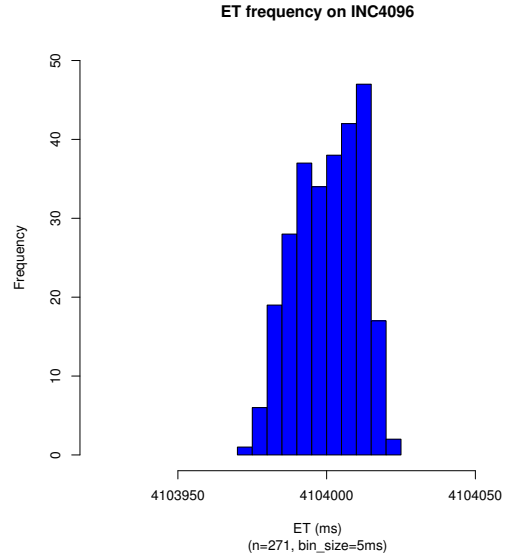(b) PT frequency on INC256

(c) PT frequency on INC512
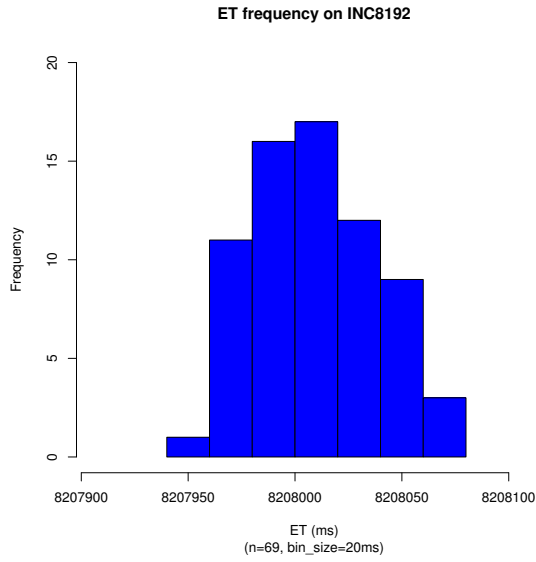
(d) PT frequency on INC1024
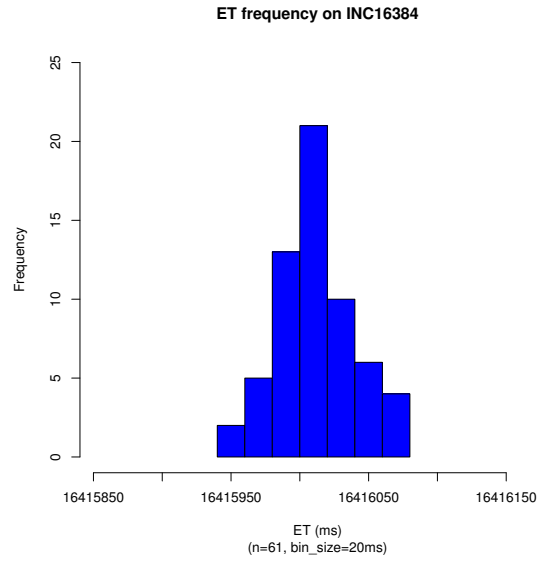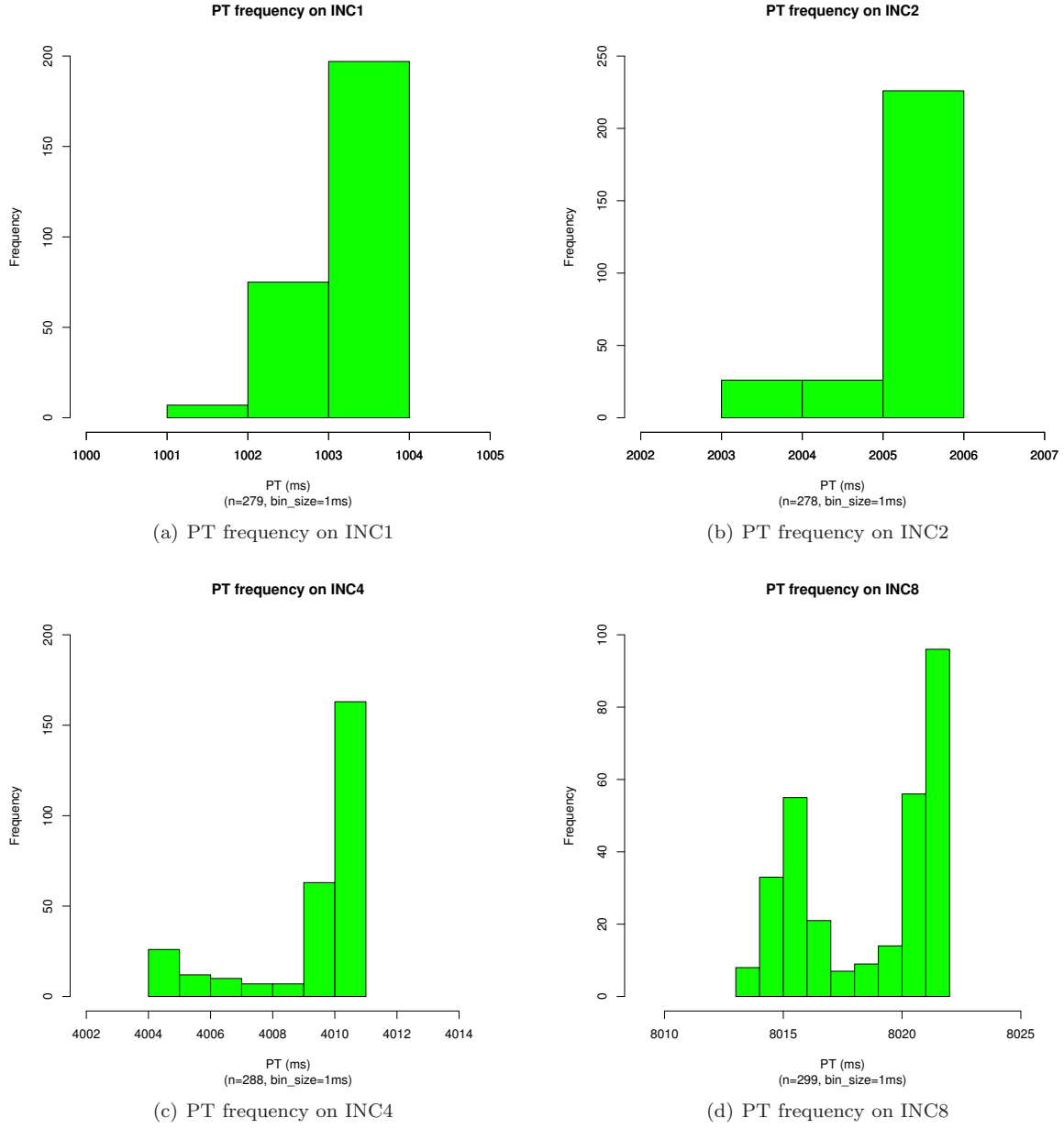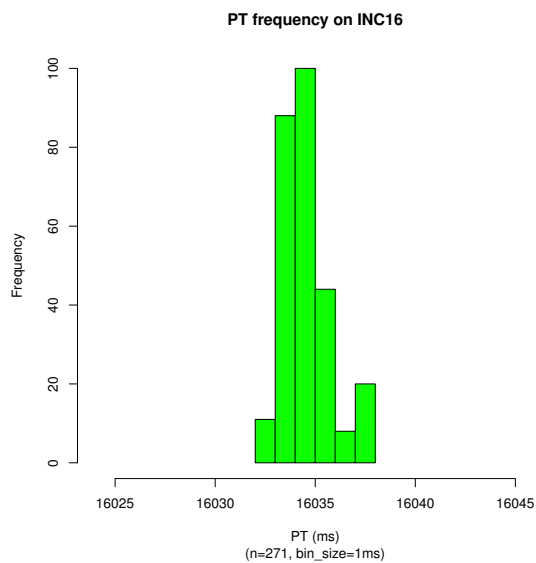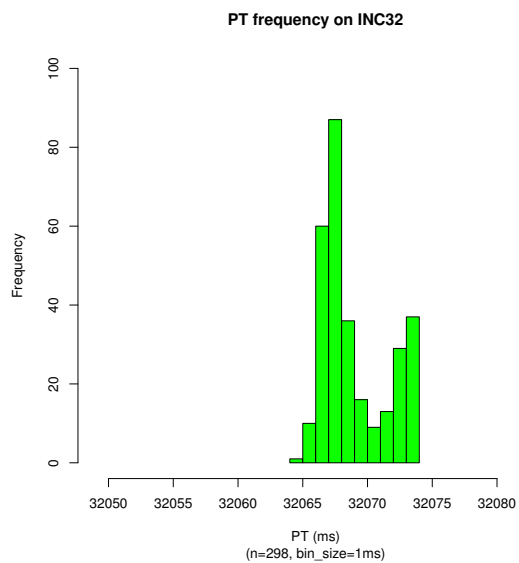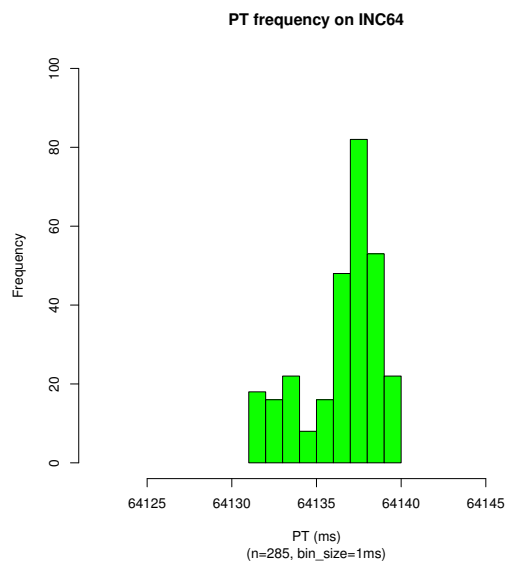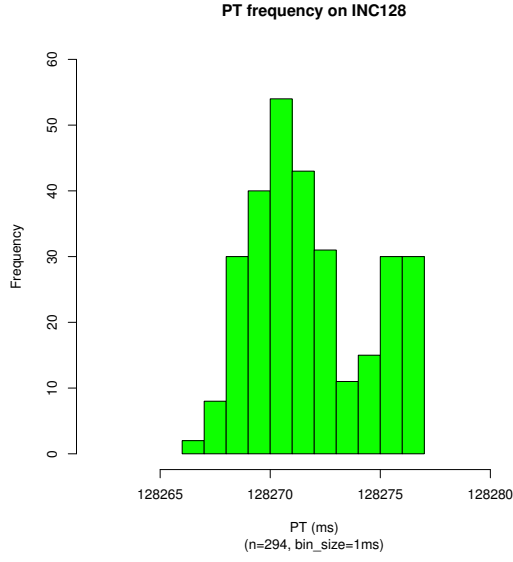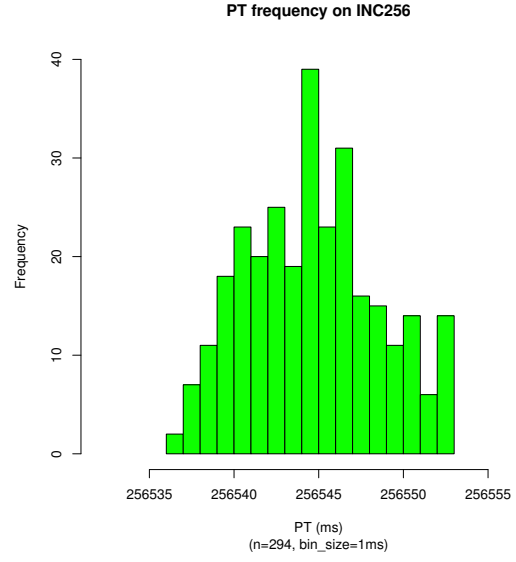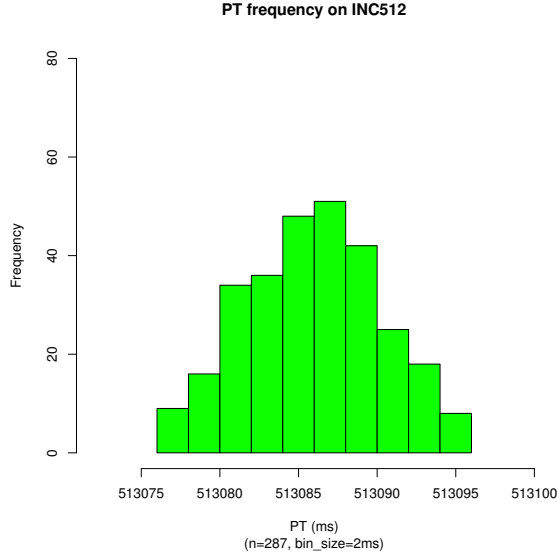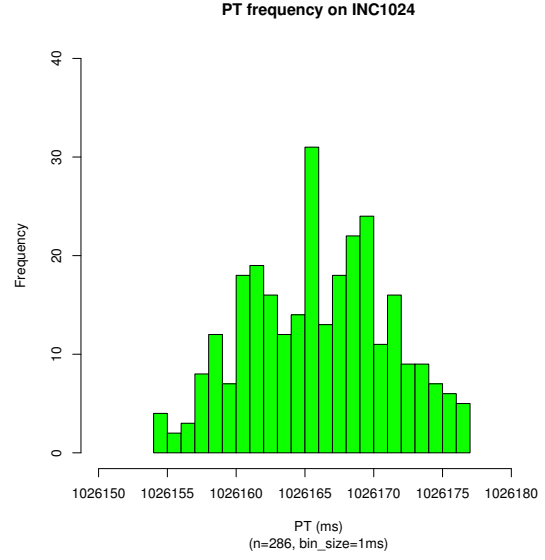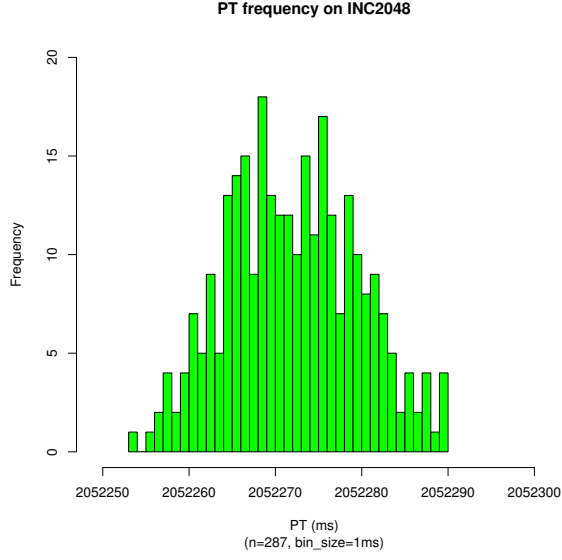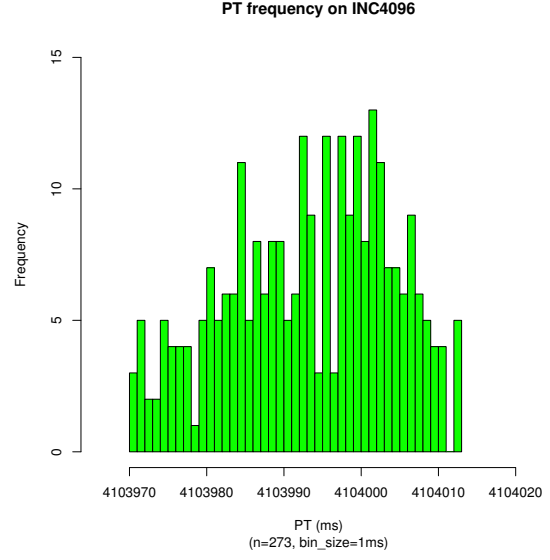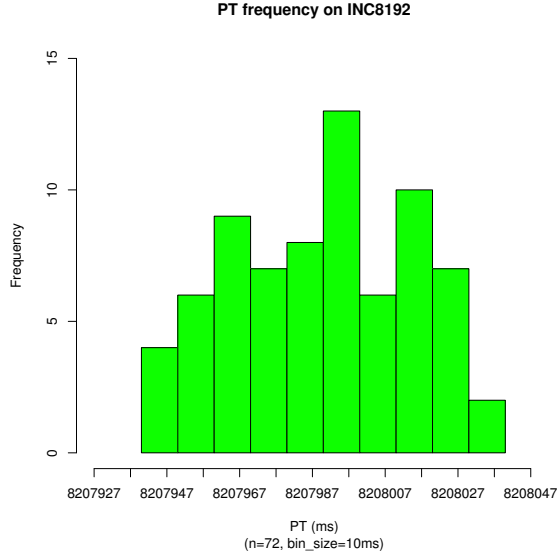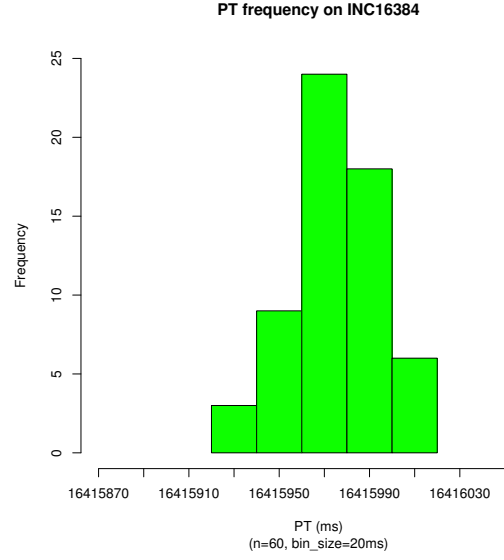
Figure 7: PT Histograms of INC256 ... INC1024

(a) PT frequency on INC2048

(b) PT frequency on INC4096

(c) PT frequency on INC8192

(d) PT frequency on INC16384

Figure 8: PT Histograms of INC2048 and INC16384

4 Analysis

In this section we gather all daemons observed and their statistics like minimum PT, maximum PT, average PT, and standard deviation of PT for each bin in Figures 1(d) and 2(a).

4.1 INC8

TASK_LEN	BIN (ET)	DAEMON	MIN_PT	MAX_PT	AVG_PT	STD_PT	Counts
INC8	8014	jbd2/md0-8	1	1	1	0	1
INC8	8014	kslowd000	1	1	1	0	1
INC8	8014	md0_raid1	1	1	1	0	5
INC8	8014	proc_monitor	195	200	197.05	1.43	19
INC8	8015	jbd2/md0-8	1	1	1	0	1
INC8	8015	kslowd001	1	1	1	0	1
INC8	8015	md0_raid1	1	1	1	0	1
INC8	8015	proc_monitor	198	198	198	0	4
INC8	8016	jbd2/md0-8	1	1	1	0	1
INC8	8016	kblockd/0	1	1	1	0	1
INC8	8016	kslowd000	1	1	1	0	31
INC8	8016	kslowd001	1	1	1	0	36
INC8	8016	md0_raid1	1	1	1	0	19
INC8	8016	proc_monitor	196	198	196.72	.93	68
INC8	8017	kslowd000	1	1	1	0	13
INC8	8017	kslowd001	1	1	1	0	8
INC8	8017	md0_raid1	1	1	1	0	6
INC8	8017	proc_monitor	196	198	197.55	.86	22
INC8	8018	kslowd000	1	1	1	0	4
INC8	8018	kslowd001	1	1	1	0	6
INC8	8018	md0_raid1	1	1	1	0	5
INC8	8018	proc_monitor	196	198	197.4	.97	10
INC8	8019	kslowd000	1	1	1	0	1
INC8	8019	kslowd001	1	1	1	0	5
INC8	8019	md0_raid1	1	1	1	0	3
INC8	8019	proc_monitor	196	198	197	1.07	8
INC8	8020	jbd2/md0-8	1	1	1	0	1
INC8	8020	kslowd000	1	1	1	0	3
INC8	8020	kslowd001	1	1	1	0	1
INC8	8020	md0_raid1	1	1	1	0	8
INC8	8020	proc_monitor	196	198	196.73	.98	33
INC8	8021	kslowd000	1	1	1	0	6
INC8	8021	kslowd001	1	1	1	0	4
INC8	8021	md0_raid1	1	1	1	0	4
INC8	8021	proc_monitor	196	200	197.71	1.07	14
INC8	8022	cifsd	1	1	1	0	1
INC8	8022	java	3	14	8.5	7.78	2
INC8	8022	jbd2/md0-8	1	1	1	0	1
INC8	8022	kslowd000	1	1	1	0	54
INC8	8022	kslowd001	1	1	1	0	52
INC8	8022	md0_raid1	1	1	1	0	23
INC8	8022	proc_monitor	194	198	196.94	1	106
INC8	8023	kslowd000	1	1	1	0	6
INC8	8023	kslowd001	1	1	1	0	9
INC8	8023	md0_raid1	1	1	1	0	10
INC8	8023	proc_monitor	196	198	197.87	.52	15
INC8	8046	bash	7	7	7	0	1
INC8	8046	jbd2/md0-8	1	1	1	0	1
INC8	8046	kslowd000	1	1	1	0	1
INC8	8046	proc_monitor	198	198	198	0	1
INC8	8046	sshd	1	14	5.33	7.51	3

Table 2: Daemons observed from the INC8 run

4.2   INC16

TASK_LEN	BIN (ET)	DAEMON	MIN_PT	MAX_PT	AVG_PT	STD_PT	Counts
INC16	16034	jbd2/md0-8	1	1	1	0	1
INC16	16034	kslowd000	1	1	1	0	30
INC16	16034	kslowd001	1	1	1	0	28
INC16	16034	md0_raid1	1	1	1	0	13
INC16	16034	proc_monitor	196	198	196.58	.89	57
INC16	16035	java	2	3	2.75	.5	4
INC16	16035	kslowd000	1	1	1	0	15
INC16	16035	kslowd001	1	1	1	0	19
INC16	16035	md0_raid1	1	1	1	0	7
INC16	16035	proc_monitor	196	200	197.47	1.13	34
INC16	16036	java	2	3	2.5	.71	2
INC16	16036	jbd2/md0-8	1	1	1	0	3
INC16	16036	kslowd000	1	2	1.01	.11	90
INC16	16036	kslowd001	1	2	1.01	.11	90
INC16	16036	md0_raid1	1	1	1	0	23
INC16	16036	proc_monitor	196	200	196.81	1.1	94
INC16	16037	cifsd	1	1	1	0	1
INC16	16037	jbd2/md0-8	1	1	1	0	1
INC16	16037	kslowd000	1	2	1.02	.13	55
INC16	16037	kslowd001	1	1	1	0	54
INC16	16037	md0_raid1	1	1	1	0	16
INC16	16037	proc_monitor	196	198	197.53	.86	55
INC16	16038	cifsd	1	1	1	0	1
INC16	16038	khugepaged	1	2	1.5	.71	2
INC16	16038	kslowd000	1	1	1	0	9
INC16	16038	kslowd001	1	1	1	0	8
INC16	16038	proc_monitor	196	198	197.56	.88	9
INC16	16039	kslowd000	1	1	1	0	9
INC16	16039	kslowd001	1	1	1	0	10
INC16	16039	md0_raid1	1	1	1	0	7
INC16	16039	proc_monitor	196	200	197.31	1.38	13
INC16	16040	khugepaged	1	1	1	0	1
INC16	16040	kslowd000	1	1	1	0	8
INC16	16040	kslowd001	1	1	1	0	8
INC16	16040	md0_raid1	1	1	1	0	1
INC16	16040	proc_monitor	195	198	196.64	1.12	11
INC16	16041	kslowd000	1	1	1	0	5
INC16	16041	kslowd001	1	1	1	0	3
INC16	16041	md0_raid1	1	1	1	0	1
INC16	16041	proc_monitor	198	198	198	0	6
INC16	16042	java	3	16	9.5	9.19	2
INC16	16042	kblockd/0	1	1	1	0	1
INC16	16042	kslowd000	1	1	1	0	17
INC16	16042	kslowd001	1	1	1	0	17
INC16	16042	md0_raid1	1	1	1	0	5
INC16	16042	proc_monitor	196	200	197.06	1.39	17
INC16	16043	jbd2/md0-8	1	1	1	0	1
INC16	16043	kslowd000	1	1	1	0	4
INC16	16043	kslowd001	1	1	1	0	4
INC16	16043	md0_raid1	1	1	1	0	1
INC16	16043	proc_monitor	196	198	197.5	1	4

Table 3: Daemons observed from the INC16 run