we furthermore employed an iterated version of the saturation algorithm with 100 iterations per coloring run. Thus, especially for GFF, we can expect slightly better results than given in [5].

Furthermore, we computed the following values:

- O_{TS}: oversupply, in number of services, employed by TS to achieve the best result. (In the moment we take the oversupply used by TS, when it first generates the best result in a TS iteration.) So, if for the best ensemble assignment achieved by TS, TS_v is defined as the set of broadcasted, but not required services for vertex $v \in V$, then we have:

$$O_{TS} = \sum_{v \in V} |TS_v|.$$

- O_{GFF}: oversupply, in number of services, employed by GFF. So, if for a GFF ensemble assignment, GFF_v is defined as the set of broadcasted, but not required services for vertex $v \in V$, then we have:

$$O_{GFF} = \sum_{v \in V} |GFF_v|.$$

- R: number of required services. We have:

$$R = \sum_{v \in V} |R_v|.$$

- $STEP$: number of iteration steps for TS to achieve the best result.

- $TIME$: time, in seconds, for TS to achieve the best result – on a Pentium III 500MHz.

We have not explicitly figured out the time necessary to compute the values SFF and GFF, for even the iterated version of the saturation algorithm with 100 iterations per coloring run took usually less than a second, at maximum 2 seconds, to be computed on a Pentium III 500MHz, even for the largest problem instances in our test. Calculating S, on the other hand, could take up to 5 to 20 minutes on the same machine, depending on the problem instance size, and would have taken even longer if we hadn't introduced these problem size dependent time limits.

In the following tables 1 and 2 we have listed the average "performance ratios" $BEST/S$, TS/S, GFF/S and SFF/S for the two test series. Thus, all plotted values are ≥ 1, and a value of 1 indicates that only optimal solutions were computed for the given parameter combination. We have furthermore listed the "oversupply ratios" $(R + O_{TS})/R$ and $(R + O_{GFF})/R$, but not $(R+O_{SFF})/R$, because, by design, SFF does not work with the technique of broadcasting non-required services, so $(R + O_{SFF})/R$ always equals 1. In the following tables 1 and 2, we denote $(R + O_{TS})/R$ with TS/R and $(R + O_{GFF})/R$ with GFF/R. And finally, we also list $STEP$ and $TIME$, so to give an impression on the amount of effort it takes TS to achieve its best result.

In table 3, for a better understanding of the test results, we will give an overview of the percentage of instances ("hits") for which the $BEST$ value was obtained.