

**COMPUTER REQUIREMENTS, RECOMMENDATIONS AND ADVICE
FOR URBAWIND USERS**

2015

SUMMARY

This brief guide will help you to configure your computer in order to better use *UrbaWind*.

Three main parameters are considered: the RAM of the computer, the “bit” version and the number of cores.

It is recommended to have an adaptable computer configuration (add more RAM, new hard disk, etc.) in case of bigger projects size.

1. CPU REQUIREMENTS AND RAM.....	2
1.1 Frequency requirements.....	2
1.2 Some typical examples	2
2. 32 AND 64-BIT VERSIONS	2
2.1 Processor	2
2.2 Operating system	2
2.3 Performances.....	3
3. GRAPHICAL CARD	3
4. MULTI CORE OPTION	3
4.1 Description.....	3
4.2 Workload management	3
4.3 Multi core management	3
4.4 RAM management	4
4.5 Multi Cores comparisons and performances (Urbawind 64 bit 2.2.2 version).....	4

1. CPU REQUIREMENTS AND RAM

1.1 Frequency requirements

There are no specific requirements about the frequency of the processor used. However, the faster the computer is, the less computation time it will take.

1.2 Some typical examples

Cases run with an Intel Xeon CPU E5-2609 2.4 GHz and 32 GB RAM (*UrbaWind* 2.2 version):

DOMAIN SIZE	Radius	CELL NUMBER	RAM	COMPUTATION LAST
20 detached buildings	100 m	300 000	0.4 Go	5 minutes
Suburbs	200 m	1 300 000	1.6 Go	25 minutes
Suburbs	350 m	3 500 000	4.2 Go	160 minutes
Downtown 100 m	500 m	13 000 000	16 Go	1200 minutes

2. 32 AND 64-BIT VERSIONS

UrbaWind 32-bit and 64-bit versions are available in your customer area.

2.1 Processor

For 64-bit versions, please note that *UrbaWind* has been compiled for AMD64 and EM64T processors. It cannot be executed on a computer with an Itanium processor.

2.2 Operating system

UrbaWind 64 bit must be installed on a 64-bit Microsoft Operating System. The software has been validated under Microsoft Windows VISTA 64-bit edition, Windows 7 64-bit edition and Windows 8 64-bit edition.

UrbaWind 64 bit cannot be installed on a 32-bit Microsoft Operating System.

2.3 Performances

A mesh with a number of cells greater than 1.6 million cannot be computed with a 32-bit OS.

3. GRAPHICAL CARD

We recommend a dedicated graphical card with a minimum of 512 MB (1 Go would be better). *UrbaWind* runs on most of the graphic cards recently released by NVIDIA and ATI.

Integrated graphic cards such as Intel HD Graphics are not advised.

4. MULTI CORE OPTION

4.1 Description

The multi core option is designed to run many directional computations at the same time. To use it, at least 1 physical CPU with 4 cores is needed.

As *UrbaWind* software takes into account the number of cores but not the number of processors, no need to have 4 physical CPUs to run the 4-core option. For instance, 2 physical CPUs with 4 cores each are considered as 8 cores by the software.

4.2 Workload management

Windows spreads the workload between the existing cores to fully use the processor capacity and avoids the saturation.

For example, with 1 CPU Quad Core:

- when running 4 computations, each core will compute 1 direction.
- when running 2 computations, the load will be equally split between the 4 cores of the CPU.

4.3 Multi core management

While directional computations are running, keeping free cores avoids the processor saturation and ensures the proper functioning of Windows.

For example, with 2 CPUs Quad-Core, you can run 8 computations at the same time, but we recommend running up to 6 directions only, keeping 2 cores for Windows.

4.4 RAM management

The total quantity of RAM needed to run several computations is the sum of RAM needed for each computation. For instance, 4 GB are needed to run 4 directions that needs 1 GB each (*650 thousands cells*).

While directional computations are running, keeping free available RAM ensures the proper functioning of Windows.

We recommend tuning your computer with 16 GB of RAM for a full use of [UrbaWind 64 bit Multi core version](#).

4.5 Multi core comparisons and performances ([UrbaWind 64 bit 2.2.2 version](#))

Multi core version computes at the same time several directions according to your licence and the number of cores in your computer.

For a project with a total 8 directions to compute (45° step), for 3 different CPUs speed up ratio are computed here:

Number of cores activated	1	2	4	8
$\text{Speed up} = \frac{\text{Time to compute for X cores}}{\text{Time to compute for 1 core}}$	Reference	2.0	3.2 - 3.5	5.0 – 7.0

The speed-up depends on your computer configurations. Those numbers can drop significantly once OS or other applications are running in background.

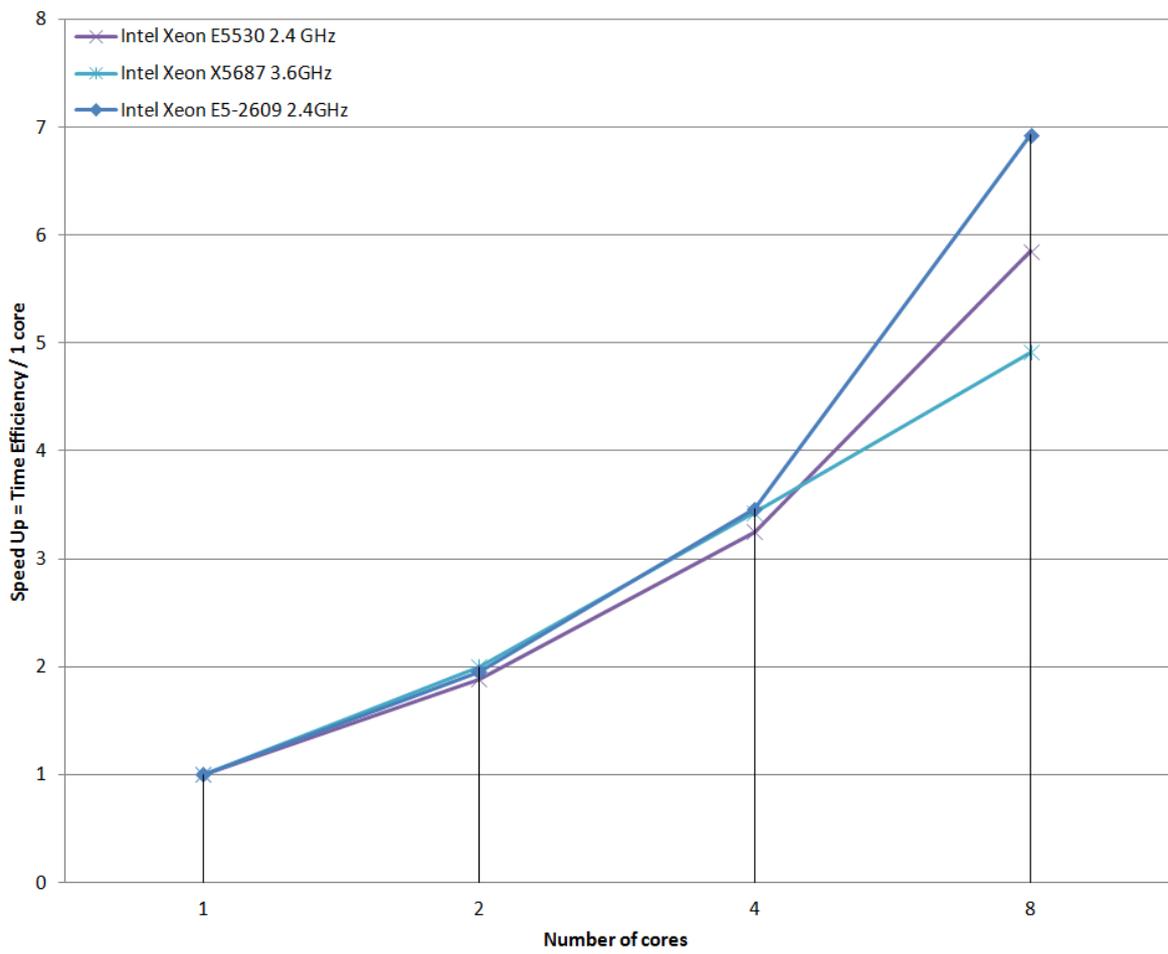


Figure 1 – Speed Up computational time according to the number of cores activated