

8.8 Capacity for CDMA system

When starting a simulation involving one or more CDMA systems SEAMCAT will begin by checking if any of the CDMA systems have the “Simulate non interfered capacity” feature enabled (this is the default setting). The purpose of the “Simulate non interfered capacity” feature is to find the non interfered capacity system (i.e. how many mobiles per cell should be generated in the system before the introduction of an external interference) with the current configuration.

For each CDMA system needing to have its optimal capacity simulated the screen shown in Figure 197 and Figure 198 will appear for uplink and for downlink systems respectively.

- [8.8.1 CDMA Uplink capacity finding](#)
- [8.8.2 CDMA Downlink capacity finding](#)

8.8.1 CDMA Uplink capacity finding

In CDMA uplink, the capacity is found by gradually filling system with users until a certain average noise rise with the specified threshold noise rise is reached. The Noise rise is measured as the linear average of dB values – across all 19/57 base-stations. After every trial SEAMCAT calculates the average noise rise over the total number of trials and if this value is above the threshold restarts the simulation with a lower value of users per cell.

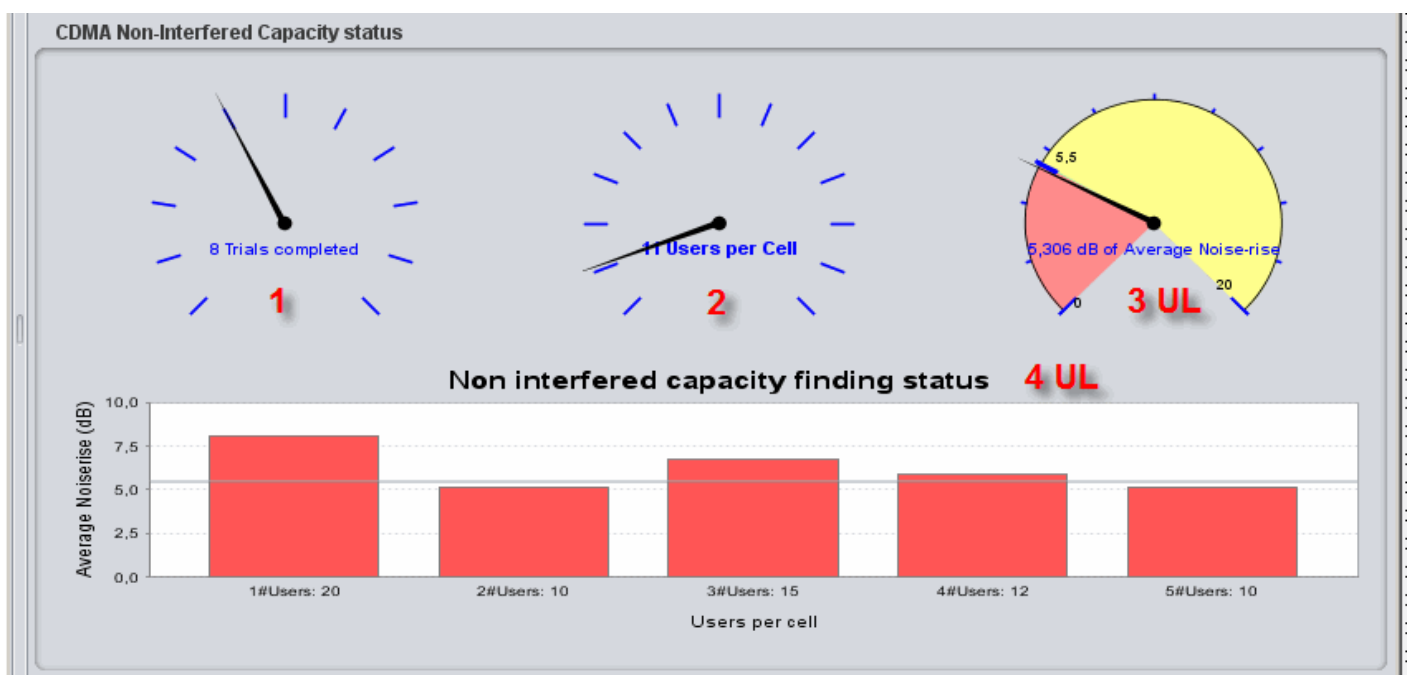


Figure 197: Uplink non-interfered capacity finding

Table 32: Elements of the uplink non-interfered capacity finding screen

ID	Description
1	This dial indicates the number of trials completed with the current capacity. This dial will range from 0 to the number of trials entered as value "4" on Figure 191.
2	This dial indicates the current number of users being tested. Range is dynamic and the dial is mainly intended as an easy visual indicator of values being tested.

3 UL	The needle shows the current value of average noise rise across the trials run. The red area indicates the noise rise is too low (too few users in the system) - the green area is the target noise rise (plus/minus) the tolerance specified. The yellow area indicates the average noise rise is too high (too many users in the system).
4 UL	The bar chart gives information on previous values tested. The Y axis is the average noise rise and the X axis is the number of users per cell being tested.

8.8.2 CDMA Downlink capacity finding

In CDMA downlink, the capacity is found by gradually filling system with users while measuring system outage. For every number of users a certain number of trials are run and then the number of “successful” trials is compared to a predefined success criterion. Only the number of trials is configurable by user - success criterion is fixed at 80%. This means that optimal capacity of a downlink system is defined as the capacity which the system is able serve without any outage in 80% of trials. This step can be quite time consuming. See ANNEX 15: to get a detailed description on how SEAMCAT determines “optimal capacity” for DL CDMA- using the values from Figure 192.

SEAMCAT tries to detect when no more trials with a tested value is needed to adjust to the next value. As an example, if 40 users per cell are being tested for 20 trials and the first 5 trials are unsuccessful it is not possible to reach 80% success rate and there is no need to simulate the last 15 trials. Regardless of the result of the last 15 trials SEAMCAT will conclude that fewer users per cell are needed. If more than 80% success rate is reached before all trials are simulated, there is no need to simulate the rest of the trials.

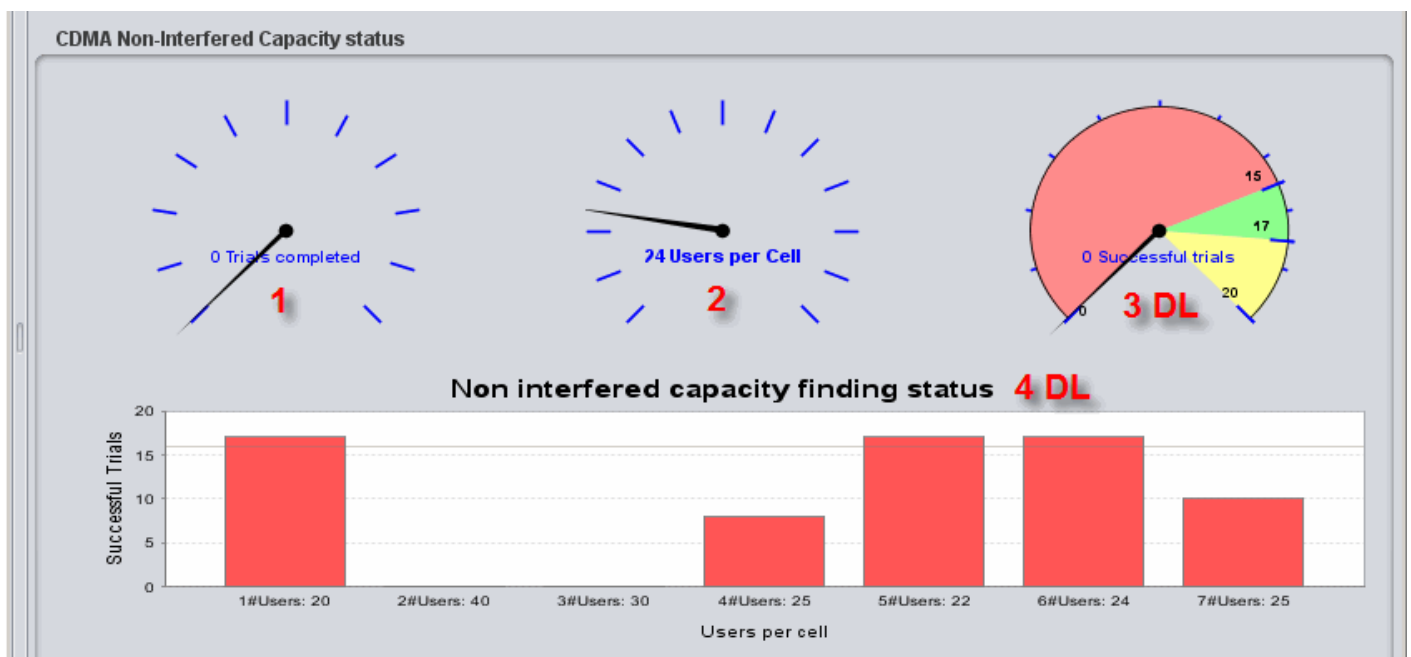


Figure 198: Downlink non-interfered capacity finding

Table 33: Elements of the downlink non-interfered capacity finding screen

ID	Description
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<p>1</p>	<p>This dial indicates the number of trials completed with the current capacity. This dial will range from 0 to the number of trials entered as value “4” on Figure 194. SEAMCAT does not always simulate all the trials – target is 80% success and if for example 5 out of 20 have already failed – SEAMCAT does not simulate the rest of the trials.</p>
<p>2</p>	<p>This dial indicates the current number of users being tested. Range is dynamic and the dial is mainly intended as an easy visual indicator of values being tested.</p>
<p>3 DL</p>	<p>The red area indicates that less than 80% has been reached (i.e. too many users in the system – or not all trials yet complete) – the green area is 80% (16 trials with the default settings). The yellow area indicates that more than 80% of the trials are successful (too few users in the system). SEAMCAT stops when this dial stops in the green area after all trials completed.</p>
<p>4 DL</p>	<p>The bar chart gives information on previous values tested. The Y axis is the number of successful trials and the X axis is the number of users per cell being tested.</p>