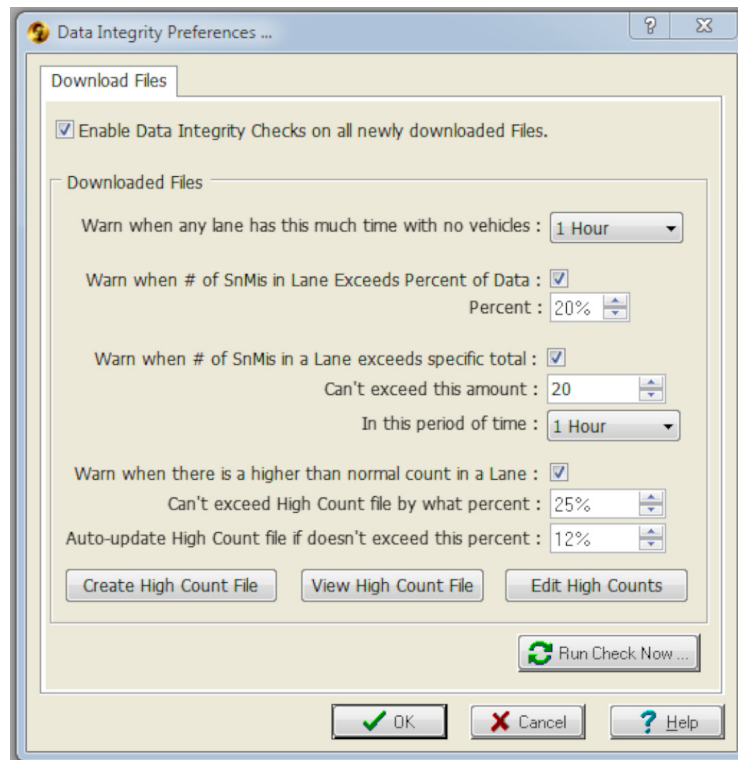


10.c Data Integrity Checking

Starting with Centurion V1.42 Build #0013, Centurion has the ability to perform Data Integrity Checking on downloaded data files. In addition, you can also manually perform the Data Integrity Check on any binary file that already exists on your computer (such as on files that have been downloaded by someone else and then transferred to your computer).

Data Integrity Checking refers to a set of data checks that can be done on any binary file. This includes PerVehicle (Raw), Classification (Binned), Volume (Count), and TimeStamp data. To enable and set the specifics of what Data Integrity checks will be done, go to the Preferences option “Data Integrity Checking ...” by clicking on the **File** menu option, selecting **Preferences**, and then select **Data Integrity Checking ...** to view the following dialog (note: specific features will vary according to your current Centurion version - V1.44 Build #0010 shown below):



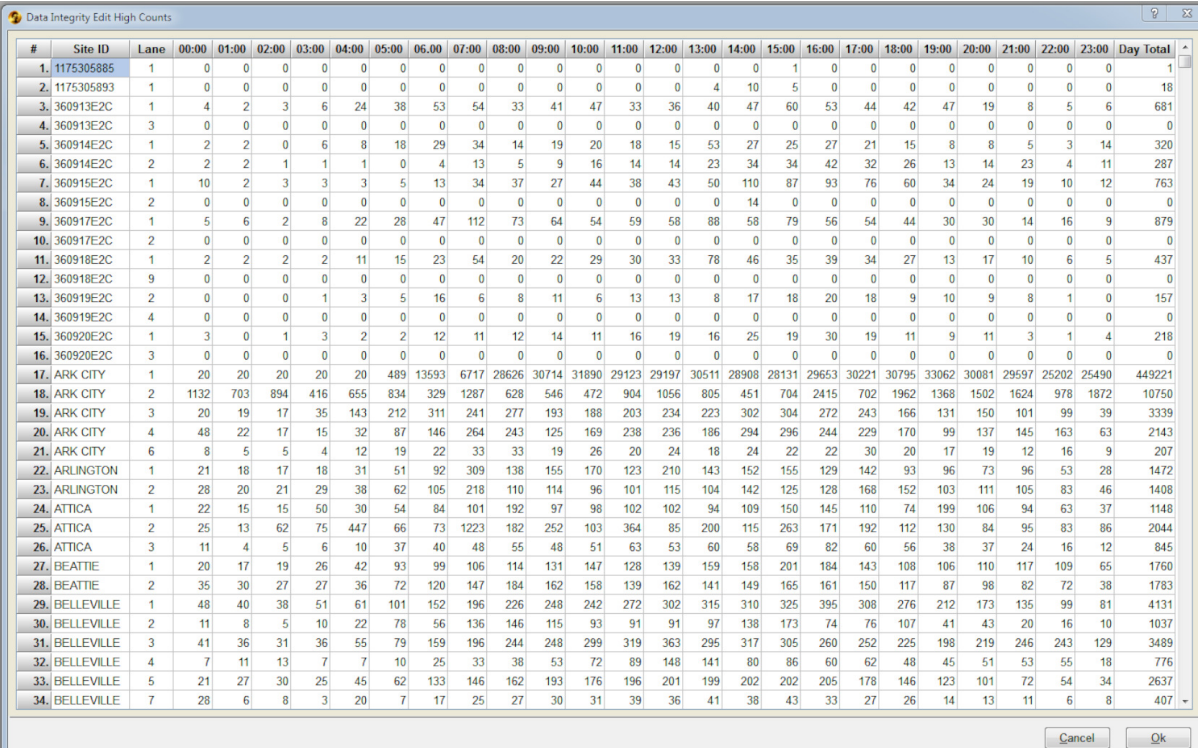
Enable Data Integrity Checks on all newly downloaded files.	When checked, Centurion will automatically run every file it downloads from any kind of traffic counter through a Data Integrity Check. Any warnings or errors that are found during the check will automatically be displayed in a popup window which gives the file name and all details of the issue.
Warn when any lane has this much time with no vehicles.	Select the length of time any single lane can go without a single vehicle, volume count, or TimeStamp activation. Centurion will automatically adjust for variable record interval lengths. For example, if you select “1 Hour”, then Centurion will correctly find sites that have four 15 minute intervals in a row without any count, and will correctly find sites that have a single 1 hour interval without any counts.
Warn when # of SnMis in Lane Exceeds Percent of Data	Check this box if you want to check the total vehicle count in each lane of a file against the total number of SnMis in each lane. If this box is checked, then the next option “Percent” is used. Note that this check only applies to PerVehicle (Raw) and Classification (Binned) data files (does not apply to Volume data).
Percent	When the above option is selected, this sets the percentage SnMis must exceed the total count for a warning to be issued. For example, if you had a file with 1000 total vehicles in Lane #1 and also saw 200 SnMis in that lane, then Centurion will determine that there was a 20% SnMis rate. If your Percent Setting was “20%” or less, Centurion will issue a warning for the file.

Warn when # of SnMis in Lane exceeds specific total	Check this box to enable checking to see if a particular lane has more than a set amount of SnMis occur in a specific period of time (the amount and the period of time are set by the next two options).
Can't exceed this amount	The amount of SnMis that Centurion should check for.
In this period of time	The amount of time that the above SnMis can't occur in. For example, if you enable this warning and set the amount to "100" and the period to "1 hour", then if any lane has 100 SnMis or more in any hour long period, a warning will be displayed for the file.

Warn when there is a higher than normal count in a Lane	<p>Check this box to enable checking for unusual high counts inside of a data file. There are always two checks done – Hourly & Daily. The hourly check is to see if the number of vehicles in any single hour exceeds a preset amount for the site by the percentage defined next. The day check does the same for the entire daily total.</p> <p>Because sites can vary greatly, this data integrity check is more complicated than the others. You must pre-define for each site the maximum allowable count for all 24 hours of the day as well as for the daily total. Centurion has several function buttons to help you do this – Create High Count File, View High Count File, and Edit High Counts. See below for more information on what these buttons do.</p>
Can't exceed High Count file by what percent	Sets the amount a given hour or day count from a file can exceed the preset hour or day maximum before a warning will be issued. For example, if you defined the midnight hour (00:00) as having a maximum of 100 counts, and set this percent to 25%, you would get a warning with any file that had 125 counts or more from 00:00 to 00:59.
Auto-update High Count file if doesn't exceed this percent	<p>The maximum hourly and day totals are predefined in what is called the "HighCounts.txt" file. This text file is stored in the main program directory of Centurion and holds all the maximum count information.</p> <p>If you set this auto-update value to anything above 0%, then Centurion will automatically increase the predefined values in the HighCounts.txt file for a site as long as they don't exceed the percentage value set here.</p> <p>For example, suppose you set the Can't exceed value to 25% and the Auto-update value to 10%. In this case, any hour or day counts that are over 25% of the predefined value will generate a warning message, but any value that is from 1% to 10% more than the predefined value will instead change the stored number in HighCounts.txt.</p>
Create High Count File	Click this button to automatically create a new HighCounts.txt file based on the existing data inside your database. This is a good way to start your HighCounts.txt file as it analyzes your existing dataset and posts all the high hours and days it finds for every site and lane. Note that when this finishes you should immediately review it by clicking the Edit High Counts button because any data in your database which is in error will show up in the file created. This should just be your starting point, do not rely on it without post review. NOTE: This button is not available with Centurion-Field.
View High Count File	Opens a simple text editor of the HighCounts.txt file. You can edit the file this way if desired, or save/copy it to other computers, but it is easier to edit using the Edit High Counts button.

Edit High Counts

Click this button to call up a High Count editor window that lets you simply review and change the high counts. This is the preferred way to edit the file, although you can also edit it with any text editor. A window such as this will appear:



The screenshot shows a window titled "Data Integrity Edit High Counts". It contains a table with columns for Site ID, Lane, and hourly counts from 00:00 to 23:00, plus a Day Total column. The table lists 34 rows of data for various sites including 1175305885, 1175305893, 360913E2C, 360914E2C, 360915E2C, 360917E2C, 360918E2C, 360919E2C, 360920E2C, ARK CITY, ARLINGTON, ATTICA, BEATTIE, BELLEVILLE, and BELLEVILLE. The data shows counts for each lane (1, 2, 3, 4) across the 24-hour period.

#	Site ID	Lane	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	Day Total
1.	1175305885	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
2.	1175305893	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	10	5	0	0	0	0	0	0	0	18
3.	360913E2C	1	4	2	3	6	24	38	53	54	33	41	47	33	36	40	47	60	53	44	42	47	19	8	5	6	681
4.	360913E2C	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5.	360914E2C	1	2	2	0	6	8	18	29	34	14	19	20	18	15	53	27	25	27	21	15	8	8	5	3	14	320
6.	360914E2C	2	2	2	1	1	1	0	4	13	5	9	16	14	14	23	34	34	42	32	26	13	14	23	4	11	287
7.	360915E2C	1	10	2	3	3	3	5	13	34	37	27	44	38	43	50	110	87	93	76	60	34	24	19	10	12	763
8.	360915E2C	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	0	0	0	0	0	0	0	0	0	0
9.	360917E2C	1	5	6	2	8	22	28	47	112	73	64	54	59	58	88	58	79	56	54	44	30	30	14	16	9	879
10.	360917E2C	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11.	360918E2C	1	2	2	2	2	11	15	23	54	20	22	29	30	33	78	46	35	39	34	27	13	17	10	6	5	437
12.	360918E2C	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13.	360919E2C	2	0	0	0	1	3	5	16	6	8	11	6	13	13	8	17	18	20	18	9	10	9	8	1	0	157
14.	360919E2C	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15.	360920E2C	1	3	0	1	3	2	2	12	11	12	14	11	16	19	16	25	19	30	19	11	9	11	3	1	4	218
16.	360920E2C	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17.	ARK CITY	1	20	20	20	20	20	489	13593	6717	28626	30714	31890	29123	29197	30511	28908	28131	29653	30221	30795	33062	30081	29597	25202	25490	449221
18.	ARK CITY	2	1132	703	894	416	655	834	329	1287	628	546	472	904	1056	805	451	704	2415	702	1962	1368	1502	1624	978	1872	10750
19.	ARK CITY	3	20	19	17	35	143	212	311	241	277	193	188	203	234	223	302	304	272	243	166	131	150	101	99	39	3339
20.	ARK CITY	4	48	22	17	15	32	87	146	264	243	125	169	238	236	186	294	296	244	229	170	99	137	145	163	63	2143
21.	ARK CITY	6	8	5	5	4	12	19	22	33	33	19	26	20	24	18	24	22	22	30	20	17	19	12	16	9	207
22.	ARLINGTON	1	21	18	17	18	31	51	92	309	138	155	170	123	210	143	152	155	129	142	93	96	73	96	53	28	1472
23.	ARLINGTON	2	28	20	21	29	38	62	105	218	110	114	96	101	115	104	142	125	128	168	152	103	111	105	83	46	1408
24.	ATTICA	1	22	15	15	50	30	54	84	101	192	97	98	102	102	94	109	150	145	110	74	199	106	94	63	37	1148
25.	ATTICA	2	25	13	62	75	447	66	73	1223	182	252	103	364	85	200	115	263	171	192	112	130	84	95	83	86	2044
26.	ATTICA	3	11	4	5	6	10	37	40	48	55	48	51	63	53	60	58	69	82	60	56	38	37	24	16	12	845
27.	BEATTIE	1	20	17	19	26	42	93	99	106	114	131	147	128	139	159	158	201	184	143	108	106	110	117	109	65	1760
28.	BEATTIE	2	35	30	27	27	36	72	120	147	184	162	158	139	162	141	149	165	161	150	117	87	98	82	72	38	1783
29.	BELLEVILLE	1	48	40	38	51	61	101	152	196	226	248	242	272	302	315	310	325	395	308	276	212	173	135	99	81	4131
30.	BELLEVILLE	2	11	8	5	10	22	78	56	136	146	115	93	91	91	97	138	173	74	76	107	41	43	20	16	10	1037
31.	BELLEVILLE	3	41	36	31	36	55	79	159	196	244	248	299	319	363	295	317	305	260	252	225	198	219	246	243	129	3489
32.	BELLEVILLE	4	7	11	13	7	7	10	25	33	38	53	72	89	148	141	80	86	60	62	48	45	51	53	55	18	776
33.	BELLEVILLE	5	21	27	30	25	45	62	133	146	162	193	176	196	201	199	202	202	205	178	146	123	101	72	54	34	2637
34.	BELLEVILLE	7	28	6	8	3	20	7	17	25	27	30	31	39	36	41	38	43	33	27	26	14	13	11	6	8	407

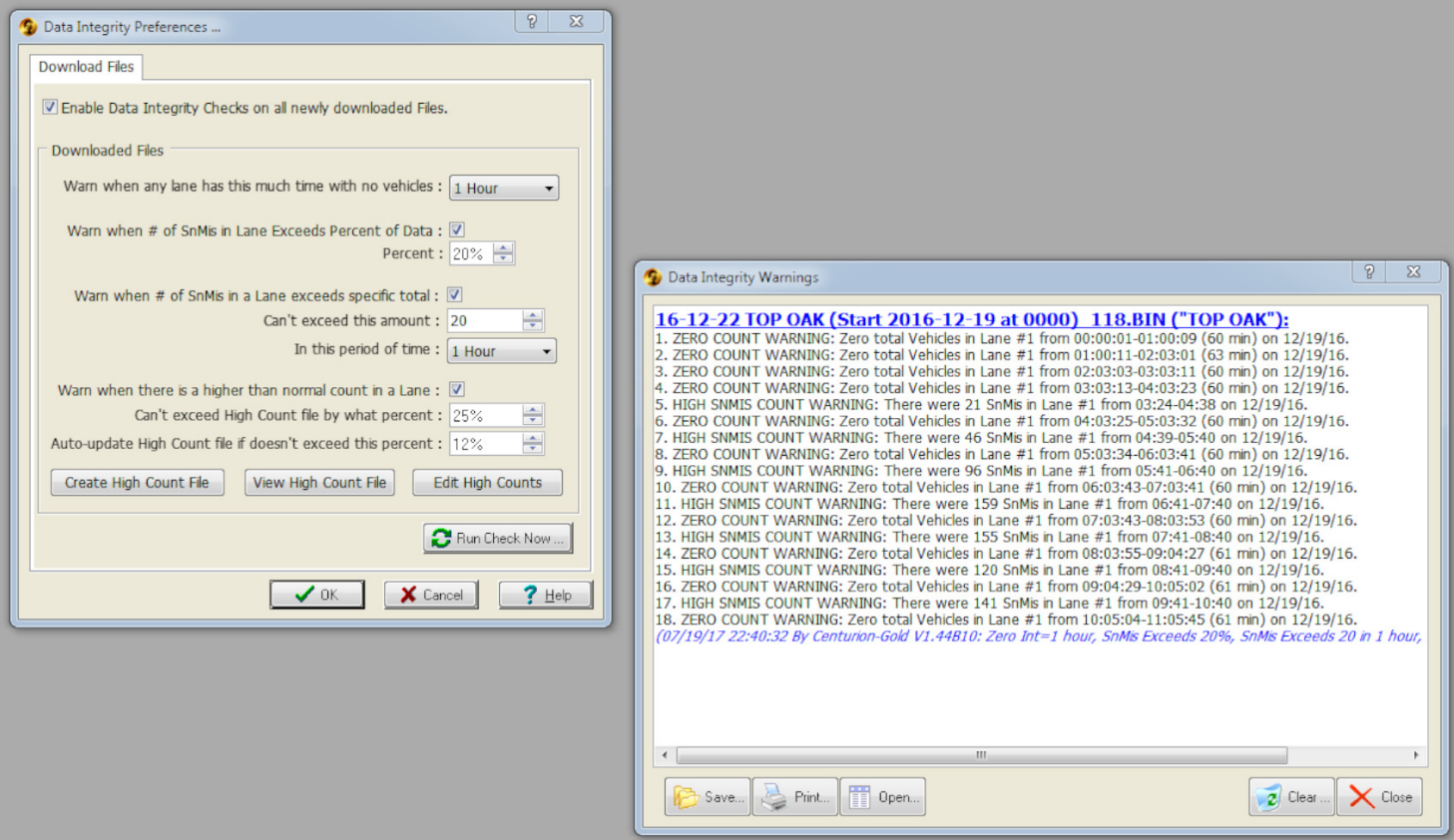
Edit the counts as needed and then click OK to save the HighCounts.txt file back to your main Centurion program directory.

NOTE: It is best to create your HighCounts.txt file on a single master machine, carefully editing it and insuring that the counts are accurate and best reflections of the actual site data. Once you have it set, then copy the master HighCounts.txt file to other computers for use in checking their downloaded data files.

Some users will want to allow new data that is slightly above the existing high counts to automatically update their HighCounts.txt file. This is easy to do by setting the "Auto-update High Count File if doesn't exceed this percent" to a number greater than zero. Other users will ONLY want to do this on a single master machine, while still others may prefer to manually adjust high counts as warnings are seen. Centurion allows you to tailor your approach to high count calculation to your particular state needs.

Run Check Now	Click this button to run a Data Integrity Check immediately. Centurion allows you to select one or more files to run the check on.
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Data Integrity Checking will automatically display a window whenever it detects any errors or warnings. This window is resizeable and allows you to scroll through all detected messages. For example:



This shows running a Data Integrity Check on a PerVehicle (Raw) file named “TOP OAK (Start 2016-12-19 at 0000) 118.BIN” which had 18 different warnings appear.