

**EXHIBIT 5: Verizon NW's Motion to Amend the  
Procedural Schedule**

CD No.	File Name	
CD_1	CA77_Circuits.zip	
	CA77_Circuits_TXT.zip	
	CA77_Circuits_TXT-HM_Geocode.zip	
	ca77term1.zip	
	ca77term1and2_txt.zip	
	ca77term2.zip	
	CA_000_BulkTNs.zip	
	CA_Bulk_CustomerID.zip	
	CD_2	Bulk Service Types.xls
		CA_Bulk_CustomerID_txt_01.zip
CA_Bulk_CustomerID_txt_02.zip		
CA_Bulk_CustomerID_txt_03.zip		
Circuit Data Service Types.xls		
CD_3	DS and OC Services Types.xls	
	CA_Bulk_CustomerID_txt_04.zip	
	CA_Bulk_CustomerID_txt-HM_Geocode.zip	
	CA_DSL_CustomerID.zip	
	DS_AND_OC_NONAMES.zip	
	DS_AND_OC_NONAMES_csv.zip	
	DS_AND_OC_NONAMES_csv-HM_Geocode.zip	
	WireCenterToCLLICode_Table Added.zip	
	WireCenterToCLLICode_Table.zip	
	WireCenterToCLLICode_Table_txt.zip	

directory.txt

Directory of \Cluster

```
[.]                [..]
batch01.bat        batch02.bat
batch03.bat        batch04.bat
batch05.bat        batch06.bat
batch07.bat        batch08.bat
batch09.bat        batch10.bat
batch11.bat        batch12.bat
batch13.bat        batch14.bat
batch15.bat        batch16.bat
batch17.bat        batch18.bat
batch19.bat        batch20.bat
build_dsl_cluster_table_3.prg Cluster.exe
[Clustout]         [Complete]
[input]            NewConfig.INI
runClust.bat       24 File(s)          373,868 bytes
```

Directory of \Cluster\Clustout\Process

```
[.]                [..]
build_dsl_cluster_table.prg clust_in_struct2.CDX
clust_in_struct2.dbf       clust_process.prg
import_points.prg         input_struct.dbf
olist.dbf                 Outliers to Rename.xls
[Output]                 point_struct.CDX
point_struct.dbf         rename_outlier_hicap_to_main.prg
wc_neca.dbf              12 File(s)          2,888,233 bytes
```

Directory of \Cluster\Clustout\Process\Output

```
[.]                [..]                CAVZ_cdat.CDX
CAVZ_cdat.DBF        CAVZ_clus.DBF        cavz_clus_b.dbf
cavz_clus_b_working.dbf CAVZ_out.DBF        ca_pts.CDX
ca_pts.dbf           clusmap.dbf          clusmap_manmod.ZIP
clus_translate.dbf   dsl_distr.dbf        query.htm
13 File(s)          330,154,928 bytes
```

Directory of \Cluster\Complete\checked

```
[.]                [..]
ClustOut_001.out     ClustOut_001.out.CLCBG.SUM
ClustOut_001.out.CLUS.SUM ClustOut_001.out.LOG
ClustOut_002.out     ClustOut_002.out.CLCBG.SUM
ClustOut_002.out.CLUS.SUM ClustOut_002.out.LOG
ClustOut_003.out     ClustOut_003.out.CLCBG.SUM
ClustOut_003.out.CLUS.SUM ClustOut_003.out.LOG
ClustOut_004.out     ClustOut_004.out.CLCBG.SUM
ClustOut_004.out.CLUS.SUM ClustOut_004.out.LOG
ClustOut_005.out     ClustOut_005.out.CLCBG.SUM
ClustOut_005.out.CLUS.SUM ClustOut_005.out.LOG
ClustOut_006.out     ClustOut_006.out.CLCBG.SUM
ClustOut_006.out.CLUS.SUM ClustOut_006.out.LOG
ClustOut_007.out     ClustOut_007.out.CLCBG.SUM
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	directory.txt
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ClustOut_135.out	ClustOut_135.out.CLCBG.SUM

	directory.txt
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ClustOut_157.out.CLUS.SUM	ClustOut_157.out.LOG
ClustOut_158.out	ClustOut_158.out.CLCBG.SUM
ClustOut_158.out.CLUS.SUM	ClustOut_158.out.LOG
ClustOut_159.out	ClustOut_159.out.CLCBG.SUM
ClustOut_159.out.CLUS.SUM	ClustOut_159.out.LOG
ClustOut_160.out	ClustOut_160.out.CLCBG.SUM
ClustOut_160.out.CLUS.SUM	ClustOut_160.out.LOG
ClustOut_161.out	ClustOut_161.out.CLCBG.SUM
ClustOut_161.out.CLUS.SUM	ClustOut_161.out.LOG
ClustOut_162.out	ClustOut_162.out.CLCBG.SUM
ClustOut_162.out.CLUS.SUM	ClustOut_162.out.LOG
ClustOut_163.out	ClustOut_163.out.CLCBG.SUM
ClustOut_163.out.CLUS.SUM	ClustOut_163.out.LOG
ClustOut_164.out	ClustOut_164.out.CLCBG.SUM
ClustOut_164.out.CLUS.SUM	ClustOut_164.out.LOG
ClustOut_165.out	ClustOut_165.out.CLCBG.SUM
ClustOut_165.out.CLUS.SUM	ClustOut_165.out.LOG
ClustOut_166.out	ClustOut_166.out.CLCBG.SUM
ClustOut_166.out.CLUS.SUM	ClustOut_166.out.LOG
ClustOut_167.out	ClustOut_167.out.CLCBG.SUM

	directory.txt
ClustOut_167.out.CLUS.SUM	ClustOut_167.out.LOG
ClustOut_168.out	ClustOut_168.out.CLCBG.SUM
ClustOut_168.out.CLUS.SUM	ClustOut_168.out.LOG
ClustOut_169.out	ClustOut_169.out.CLCBG.SUM
ClustOut_169.out.CLUS.SUM	ClustOut_169.out.LOG
ClustOut_170.out	ClustOut_170.out.CLCBG.SUM
ClustOut_170.out.CLUS.SUM	ClustOut_170.out.LOG
ClustOut_171.out	ClustOut_171.out.CLCBG.SUM
ClustOut_171.out.CLUS.SUM	ClustOut_171.out.LOG
ClustOut_172.out	ClustOut_172.out.CLCBG.SUM
ClustOut_172.out.CLUS.SUM	ClustOut_172.out.LOG
ClustOut_173.out	ClustOut_173.out.CLCBG.SUM
ClustOut_173.out.CLUS.SUM	ClustOut_173.out.LOG
ClustOut_174.out	ClustOut_174.out.CLCBG.SUM
ClustOut_174.out.CLUS.SUM	ClustOut_174.out.LOG
ClustOut_175.out	ClustOut_175.out.CLCBG.SUM
ClustOut_175.out.CLUS.SUM	ClustOut_175.out.LOG
ClustOut_176.out	ClustOut_176.out.CLCBG.SUM
ClustOut_176.out.CLUS.SUM	ClustOut_176.out.LOG
ClustOut_177.out	ClustOut_177.out.CLCBG.SUM
ClustOut_177.out.CLUS.SUM	ClustOut_177.out.LOG
ClustOut_178.out	ClustOut_178.out.CLCBG.SUM
ClustOut_178.out.CLUS.SUM	ClustOut_178.out.LOG
ClustOut_179.out	ClustOut_179.out.CLCBG.SUM
ClustOut_179.out.CLUS.SUM	ClustOut_179.out.LOG
ClustOut_180.out	ClustOut_180.out.CLCBG.SUM
ClustOut_180.out.CLUS.SUM	ClustOut_180.out.LOG
ClustOut_181.out	ClustOut_181.out.CLCBG.SUM
ClustOut_181.out.CLUS.SUM	ClustOut_181.out.LOG
ClustOut_182.out	ClustOut_182.out.CLCBG.SUM
ClustOut_182.out.CLUS.SUM	ClustOut_182.out.LOG
ClustOut_183.out	ClustOut_183.out.CLCBG.SUM
ClustOut_183.out.CLUS.SUM	ClustOut_183.out.LOG
ClustOut_184.out	ClustOut_184.out.CLCBG.SUM
ClustOut_184.out.CLUS.SUM	ClustOut_184.out.LOG
ClustOut_185.out	ClustOut_185.out.CLCBG.SUM
ClustOut_185.out.CLUS.SUM	ClustOut_185.out.LOG
ClustOut_186.out	ClustOut_186.out.CLCBG.SUM
ClustOut_186.out.CLUS.SUM	ClustOut_186.out.LOG
ClustOut_187.out	ClustOut_187.out.CLCBG.SUM
ClustOut_187.out.CLUS.SUM	ClustOut_187.out.LOG
ClustOut_188.out	ClustOut_188.out.CLCBG.SUM
ClustOut_188.out.CLUS.SUM	ClustOut_188.out.LOG
ClustOut_189.out	ClustOut_189.out.CLCBG.SUM
ClustOut_189.out.CLUS.SUM	ClustOut_189.out.LOG
ClustOut_190.out	ClustOut_190.out.CLCBG.SUM
ClustOut_190.out.CLUS.SUM	ClustOut_190.out.LOG
ClustOut_191.out	ClustOut_191.out.CLCBG.SUM
ClustOut_191.out.CLUS.SUM	ClustOut_191.out.LOG
ClustOut_192.out	ClustOut_192.out.CLCBG.SUM
ClustOut_192.out.CLUS.SUM	ClustOut_192.out.LOG
ClustOut_193.out	ClustOut_193.out.CLCBG.SUM
ClustOut_193.out.CLUS.SUM	ClustOut_193.out.LOG
ClustOut_194.out	ClustOut_194.out.CLCBG.SUM
ClustOut_194.out.CLUS.SUM	ClustOut_194.out.LOG
ClustOut_195.out	ClustOut_195.out.CLCBG.SUM
ClustOut_195.out.CLUS.SUM	ClustOut_195.out.LOG
ClustOut_196.out	ClustOut_196.out.CLCBG.SUM
ClustOut_196.out.CLUS.SUM	ClustOut_196.out.LOG
ClustOut_197.out	ClustOut_197.out.CLCBG.SUM
ClustOut_197.out.CLUS.SUM	ClustOut_197.out.LOG
ClustOut_198.out	ClustOut_198.out.CLCBG.SUM
ClustOut_198.out.CLUS.SUM	ClustOut_198.out.LOG
ClustOut_199.out	ClustOut_199.out.CLCBG.SUM



ClustOut\_199.out.CLUS.SUM  
ClustOut\_200.out  
ClustOut\_200.out.CLUS.SUM  
ClustOut\_201.out  
ClustOut\_201.out.CLUS.SUM  
ClustOut\_202.out  
ClustOut\_202.out.CLUS.SUM  
ClustOut\_203.out  
ClustOut\_203.out.CLUS.SUM  
ClustOut\_204.out  
ClustOut\_204.out.CLUS.SUM  
ClustOut\_205.out  
ClustOut\_205.out.CLUS.SUM  
ClustOut\_206.out  
ClustOut\_206.out.CLUS.SUM  
ClustOut\_207.out  
ClustOut\_207.out.CLUS.SUM  
ClustOut\_208.out  
ClustOut\_208.out.CLUS.SUM  
ClustOut\_209.out  
ClustOut\_209.out.CLUS.SUM  
ClustOut\_210.out  
ClustOut\_210.out.CLUS.SUM  
ClustOut\_211.out  
ClustOut\_211.out.CLUS.SUM  
ClustOut\_212.out  
ClustOut\_212.out.CLUS.SUM  
ClustOut\_213.out  
ClustOut\_213.out.CLUS.SUM  
ClustOut\_214.out  
ClustOut\_214.out.CLUS.SUM  
ClustOut\_215.out  
ClustOut\_215.out.CLUS.SUM  
ClustOut\_216.out  
ClustOut\_216.out.CLUS.SUM  
ClustOut\_217.out  
ClustOut\_217.out.CLUS.SUM  
ClustOut\_218.out  
ClustOut\_218.out.CLUS.SUM  
ClustOut\_219.out  
ClustOut\_219.out.CLUS.SUM  
ClustOut\_220.out  
ClustOut\_220.out.CLUS.SUM  
ClustOut\_221.out  
ClustOut\_221.out.CLUS.SUM  
ClustOut\_222.out  
ClustOut\_222.out.CLUS.SUM  
ClustOut\_223.out  
ClustOut\_223.out.CLUS.SUM  
ClustOut\_224.out  
ClustOut\_224.out.CLUS.SUM  
ClustOut\_225.out  
ClustOut\_225.out.CLUS.SUM  
ClustOut\_226.out  
ClustOut\_226.out.CLUS.SUM  
ClustOut\_227.out  
ClustOut\_227.out.CLUS.SUM  
ClustOut\_228.out  
ClustOut\_228.out.CLUS.SUM  
ClustOut\_229.out  
ClustOut\_229.out.CLUS.SUM  
ClustOut\_230.out  
ClustOut\_230.out.CLUS.SUM  
ClustOut\_231.out

directory.txt

ClustOut\_199.out.LOG  
ClustOut\_200.out.CLCBG.SUM  
ClustOut\_200.out.LOG  
ClustOut\_201.out.CLCBG.SUM  
ClustOut\_201.out.LOG  
ClustOut\_202.out.CLCBG.SUM  
ClustOut\_202.out.LOG  
ClustOut\_203.out.CLCBG.SUM  
ClustOut\_203.out.LOG  
ClustOut\_204.out.CLCBG.SUM  
ClustOut\_204.out.LOG  
ClustOut\_205.out.CLCBG.SUM  
ClustOut\_205.out.LOG  
ClustOut\_206.out.CLCBG.SUM  
ClustOut\_206.out.LOG  
ClustOut\_207.out.CLCBG.SUM  
ClustOut\_207.out.LOG  
ClustOut\_208.out.CLCBG.SUM  
ClustOut\_208.out.LOG  
ClustOut\_209.out.CLCBG.SUM  
ClustOut\_209.out.LOG  
ClustOut\_210.out.CLCBG.SUM  
ClustOut\_210.out.LOG  
ClustOut\_211.out.CLCBG.SUM  
ClustOut\_211.out.LOG  
ClustOut\_212.out.CLCBG.SUM  
ClustOut\_212.out.LOG  
ClustOut\_213.out.CLCBG.SUM  
ClustOut\_213.out.LOG  
ClustOut\_214.out.CLCBG.SUM  
ClustOut\_214.out.LOG  
ClustOut\_215.out.CLCBG.SUM  
ClustOut\_215.out.LOG  
ClustOut\_216.out.CLCBG.SUM  
ClustOut\_216.out.LOG  
ClustOut\_217.out.CLCBG.SUM  
ClustOut\_217.out.LOG  
ClustOut\_218.out.CLCBG.SUM  
ClustOut\_218.out.LOG  
ClustOut\_219.out.CLCBG.SUM  
ClustOut\_219.out.LOG  
ClustOut\_220.out.CLCBG.SUM  
ClustOut\_220.out.LOG  
ClustOut\_221.out.CLCBG.SUM  
ClustOut\_221.out.LOG  
ClustOut\_222.out.CLCBG.SUM  
ClustOut\_222.out.LOG  
ClustOut\_223.out.CLCBG.SUM  
ClustOut\_223.out.LOG  
ClustOut\_224.out.CLCBG.SUM  
ClustOut\_224.out.LOG  
ClustOut\_225.out.CLCBG.SUM  
ClustOut\_225.out.LOG  
ClustOut\_226.out.CLCBG.SUM  
ClustOut\_226.out.LOG  
ClustOut\_227.out.CLCBG.SUM  
ClustOut\_227.out.LOG  
ClustOut\_228.out.CLCBG.SUM  
ClustOut\_228.out.LOG  
ClustOut\_229.out.CLCBG.SUM  
ClustOut\_229.out.LOG  
ClustOut\_230.out.CLCBG.SUM  
ClustOut\_230.out.LOG  
ClustOut\_231.out.CLCBG.SUM

	directory.txt
ClustOut_231.out.CLUS.SUM	ClustOut_231.out.LOG
ClustOut_232.out	ClustOut_232.out.CLCBG.SUM
ClustOut_232.out.CLUS.SUM	ClustOut_232.out.LOG
ClustOut_233.out	ClustOut_233.out.CLCBG.SUM
ClustOut_233.out.CLUS.SUM	ClustOut_233.out.LOG
ClustOut_234.out	ClustOut_234.out.CLCBG.SUM
ClustOut_234.out.CLUS.SUM	ClustOut_234.out.LOG
ClustOut_235.out	ClustOut_235.out.CLCBG.SUM
ClustOut_235.out.CLUS.SUM	ClustOut_235.out.LOG
ClustOut_236.out	ClustOut_236.out.CLCBG.SUM
ClustOut_236.out.CLUS.SUM	ClustOut_236.out.LOG
ClustOut_237.out	ClustOut_237.out.CLCBG.SUM
ClustOut_237.out.CLUS.SUM	ClustOut_237.out.LOG
ClustOut_238.out	ClustOut_238.out.CLCBG.SUM
ClustOut_238.out.CLUS.SUM	ClustOut_238.out.LOG
ClustOut_239.out	ClustOut_239.out.CLCBG.SUM
ClustOut_239.out.CLUS.SUM	ClustOut_239.out.LOG
ClustOut_240.out	ClustOut_240.out.CLCBG.SUM
ClustOut_240.out.CLUS.SUM	ClustOut_240.out.LOG
ClustOut_241.out	ClustOut_241.out.CLCBG.SUM
ClustOut_241.out.CLUS.SUM	ClustOut_241.out.LOG
ClustOut_242.out	ClustOut_242.out.CLCBG.SUM
ClustOut_242.out.CLUS.SUM	ClustOut_242.out.LOG
ClustOut_243.out	ClustOut_243.out.CLCBG.SUM
ClustOut_243.out.CLUS.SUM	ClustOut_243.out.LOG
ClustOut_244.out	ClustOut_244.out.CLCBG.SUM
ClustOut_244.out.CLUS.SUM	ClustOut_244.out.LOG
ClustOut_245.out	ClustOut_245.out.CLCBG.SUM
ClustOut_245.out.CLUS.SUM	ClustOut_245.out.LOG
ClustOut_246.out	ClustOut_246.out.CLCBG.SUM
ClustOut_246.out.CLUS.SUM	ClustOut_246.out.LOG
ClustOut_247.out	ClustOut_247.out.CLCBG.SUM
ClustOut_247.out.CLUS.SUM	ClustOut_247.out.LOG
ClustOut_248.out	ClustOut_248.out.CLCBG.SUM
ClustOut_248.out.CLUS.SUM	ClustOut_248.out.LOG
ClustOut_249.out	ClustOut_249.out.CLCBG.SUM
ClustOut_249.out.CLUS.SUM	ClustOut_249.out.LOG
ClustOut_250.out	ClustOut_250.out.CLCBG.SUM
ClustOut_250.out.CLUS.SUM	ClustOut_250.out.LOG
ClustOut_251.out	ClustOut_251.out.CLCBG.SUM
ClustOut_251.out.CLUS.SUM	ClustOut_251.out.LOG
ClustOut_252.out	ClustOut_252.out.CLCBG.SUM
ClustOut_252.out.CLUS.SUM	ClustOut_252.out.LOG
ClustOut_253.out	ClustOut_253.out.CLCBG.SUM
ClustOut_253.out.CLUS.SUM	ClustOut_253.out.LOG
ClustOut_254.out	ClustOut_254.out.CLCBG.SUM
ClustOut_254.out.CLUS.SUM	ClustOut_254.out.LOG
ClustOut_255.out	ClustOut_255.out.CLCBG.SUM
ClustOut_255.out.CLUS.SUM	ClustOut_255.out.LOG
ClustOut_256.out	ClustOut_256.out.CLCBG.SUM
ClustOut_256.out.CLUS.SUM	ClustOut_256.out.LOG
ClustOut_257.out	ClustOut_257.out.CLCBG.SUM
ClustOut_257.out.CLUS.SUM	ClustOut_257.out.LOG
ClustOut_258.out	ClustOut_258.out.CLCBG.SUM
ClustOut_258.out.CLUS.SUM	ClustOut_258.out.LOG
ClustOut_259.out	ClustOut_259.out.CLCBG.SUM
ClustOut_259.out.CLUS.SUM	ClustOut_259.out.LOG
ClustOut_260.out	ClustOut_260.out.CLCBG.SUM
ClustOut_260.out.CLUS.SUM	ClustOut_260.out.LOG
ClustOut_261.out	ClustOut_261.out.CLCBG.SUM
ClustOut_261.out.CLUS.SUM	ClustOut_261.out.LOG
ClustOut_262.out	ClustOut_262.out.CLCBG.SUM
ClustOut_262.out.CLUS.SUM	ClustOut_262.out.LOG
ClustOut_263.out	ClustOut_263.out.CLCBG.SUM

	directory.txt
ClustOut_263.out.CLUS.SUM	ClustOut_263.out.LOG
ClustOut_264.out	ClustOut_264.out.CLCBG.SUM
ClustOut_264.out.CLUS.SUM	ClustOut_264.out.LOG
ClustOut_265.out	ClustOut_265.out.CLCBG.SUM
ClustOut_265.out.CLUS.SUM	ClustOut_265.out.LOG
ClustOut_266.out	ClustOut_266.out.CLCBG.SUM
ClustOut_266.out.CLUS.SUM	ClustOut_266.out.LOG
ClustOut_267.out	ClustOut_267.out.CLCBG.SUM
ClustOut_267.out.CLUS.SUM	ClustOut_267.out.LOG
ClustOut_268.out	ClustOut_268.out.CLCBG.SUM
ClustOut_268.out.CLUS.SUM	ClustOut_268.out.LOG
ClustOut_269.out	ClustOut_269.out.CLCBG.SUM
ClustOut_269.out.CLUS.SUM	ClustOut_269.out.LOG
ClustOut_270.out	ClustOut_270.out.CLCBG.SUM
ClustOut_270.out.CLUS.SUM	ClustOut_270.out.LOG
ClustOut_271.out	ClustOut_271.out.CLCBG.SUM
ClustOut_271.out.CLUS.SUM	ClustOut_271.out.LOG
ClustOut_272.out	ClustOut_272.out.CLCBG.SUM
ClustOut_272.out.CLUS.SUM	ClustOut_272.out.LOG
ClustOut_273.out	ClustOut_273.out.CLCBG.SUM
ClustOut_273.out.CLUS.SUM	ClustOut_273.out.LOG
ClustOut_274.out	ClustOut_274.out.CLCBG.SUM
ClustOut_274.out.CLUS.SUM	ClustOut_274.out.LOG
ClustOut_275.out	ClustOut_275.out.CLCBG.SUM
ClustOut_275.out.CLUS.SUM	ClustOut_275.out.LOG
[strand]	
1100 File(s)	205,605,641 bytes

Directory of \Cluster\Complete\checked\strand

[.]	[..]
ClustOut_001.out_strand.txt	ClustOut_002.out_strand.txt
ClustOut_003.out_strand.txt	ClustOut_004.out_strand.txt
ClustOut_005.out_strand.txt	ClustOut_006.out_strand.txt
ClustOut_007.out_strand.txt	ClustOut_008.out_strand.txt
ClustOut_009.out_strand.txt	ClustOut_010.out_strand.txt
ClustOut_011.out_strand.txt	ClustOut_012.out_strand.txt
ClustOut_013.out_strand.txt	ClustOut_014.out_strand.txt
ClustOut_015.out_strand.txt	ClustOut_016.out_strand.txt
ClustOut_017.out_strand.txt	ClustOut_018.out_strand.txt
ClustOut_019.out_strand.txt	ClustOut_020.out_strand.txt
ClustOut_021.out_strand.txt	ClustOut_022.out_strand.txt
ClustOut_023.out_strand.txt	ClustOut_024.out_strand.txt
ClustOut_025.out_strand.txt	ClustOut_026.out_strand.txt
ClustOut_027.out_strand.txt	ClustOut_028.out_strand.txt
ClustOut_029.out_strand.txt	ClustOut_030.out_strand.txt
ClustOut_031.out_strand.txt	ClustOut_032.out_strand.txt
ClustOut_033.out_strand.txt	ClustOut_034.out_strand.txt
ClustOut_035.out_strand.txt	ClustOut_036.out_strand.txt
ClustOut_037.out_strand.txt	ClustOut_038.out_strand.txt
ClustOut_039.out_strand.txt	ClustOut_040.out_strand.txt
ClustOut_041.out_strand.txt	ClustOut_042.out_strand.txt
ClustOut_043.out_strand.txt	ClustOut_044.out_strand.txt
ClustOut_045.out_strand.txt	ClustOut_046.out_strand.txt
ClustOut_047.out_strand.txt	ClustOut_048.out_strand.txt
ClustOut_049.out_strand.txt	ClustOut_050.out_strand.txt
ClustOut_051.out_strand.txt	ClustOut_052.out_strand.txt
ClustOut_053.out_strand.txt	ClustOut_054.out_strand.txt
ClustOut_055.out_strand.txt	ClustOut_056.out_strand.txt
ClustOut_057.out_strand.txt	ClustOut_058.out_strand.txt
ClustOut_059.out_strand.txt	ClustOut_060.out_strand.txt
ClustOut_061.out_strand.txt	ClustOut_062.out_strand.txt



```

                                directory.txt
ClustOut_191.out_strand.txt    ClustOut_192.out_strand.txt
ClustOut_193.out_strand.txt    ClustOut_194.out_strand.txt
ClustOut_195.out_strand.txt    ClustOut_196.out_strand.txt
ClustOut_197.out_strand.txt    ClustOut_198.out_strand.txt
ClustOut_199.out_strand.txt    ClustOut_200.out_strand.txt
ClustOut_201.out_strand.txt    ClustOut_202.out_strand.txt
ClustOut_203.out_strand.txt    ClustOut_204.out_strand.txt
ClustOut_205.out_strand.txt    ClustOut_206.out_strand.txt
ClustOut_207.out_strand.txt    ClustOut_208.out_strand.txt
ClustOut_209.out_strand.txt    ClustOut_210.out_strand.txt
ClustOut_211.out_strand.txt    ClustOut_212.out_strand.txt
ClustOut_213.out_strand.txt    ClustOut_214.out_strand.txt
ClustOut_215.out_strand.txt    ClustOut_216.out_strand.txt
ClustOut_217.out_strand.txt    ClustOut_218.out_strand.txt
ClustOut_219.out_strand.txt    ClustOut_220.out_strand.txt
ClustOut_221.out_strand.txt    ClustOut_222.out_strand.txt
ClustOut_223.out_strand.txt    ClustOut_224.out_strand.txt
ClustOut_225.out_strand.txt    ClustOut_226.out_strand.txt
ClustOut_227.out_strand.txt    ClustOut_228.out_strand.txt
ClustOut_229.out_strand.txt    ClustOut_230.out_strand.txt
ClustOut_231.out_strand.txt    ClustOut_232.out_strand.txt
ClustOut_233.out_strand.txt    ClustOut_234.out_strand.txt
ClustOut_235.out_strand.txt    ClustOut_236.out_strand.txt
ClustOut_237.out_strand.txt    ClustOut_238.out_strand.txt
ClustOut_239.out_strand.txt    ClustOut_240.out_strand.txt
ClustOut_241.out_strand.txt    ClustOut_242.out_strand.txt
ClustOut_243.out_strand.txt    ClustOut_244.out_strand.txt
ClustOut_245.out_strand.txt    ClustOut_246.out_strand.txt
ClustOut_247.out_strand.txt    ClustOut_248.out_strand.txt
ClustOut_249.out_strand.txt    ClustOut_250.out_strand.txt
ClustOut_251.out_strand.txt    ClustOut_252.out_strand.txt
ClustOut_253.out_strand.txt    ClustOut_254.out_strand.txt
ClustOut_255.out_strand.txt    ClustOut_256.out_strand.txt
ClustOut_257.out_strand.txt    ClustOut_258.out_strand.txt
ClustOut_259.out_strand.txt    ClustOut_260.out_strand.txt
ClustOut_261.out_strand.txt    ClustOut_262.out_strand.txt
ClustOut_263.out_strand.txt    ClustOut_264.out_strand.txt
ClustOut_265.out_strand.txt    ClustOut_266.out_strand.txt
ClustOut_267.out_strand.txt    ClustOut_268.out_strand.txt
ClustOut_269.out_strand.txt    ClustOut_270.out_strand.txt
ClustOut_271.out_strand.txt    ClustOut_272.out_strand.txt
ClustOut_273.out_strand.txt    ClustOut_274.out_strand.txt
ClustOut_275.out_strand.txt
275 File(s)                206,487,127 bytes

```

Directory of \Cluster\input

```

[.]                [..]
clustinput003.txt  clustinput004.txt  clustinput001.txt  clustinput002.txt
clustinput007.txt  clustinput008.txt  clustinput005.txt  clustinput006.txt
clustinput011.txt  clustinput012.txt  clustinput009.txt  clustinput010.txt
clustinput015.txt  clustinput016.txt  clustinput013.txt  clustinput014.txt
clustinput019.txt  clustinput020.txt  clustinput017.txt  clustinput018.txt
clustinput023.txt  clustinput024.txt  clustinput021.txt  clustinput022.txt
clustinput027.txt  clustinput028.txt  clustinput025.txt  clustinput026.txt
clustinput031.txt  clustinput032.txt  clustinput029.txt  clustinput030.txt
clustinput035.txt  clustinput036.txt  clustinput033.txt  clustinput034.txt
clustinput039.txt  clustinput040.txt  clustinput037.txt  clustinput038.txt
clustinput043.txt  clustinput044.txt  clustinput041.txt  clustinput042.txt
clustinput047.txt  clustinput048.txt  clustinput045.txt  clustinput046.txt
clustinput051.txt  clustinput049.txt  clustinput049.txt  clustinput050.txt
clustinput055.txt  clustinput052.txt  clustinput053.txt  clustinput054.txt
                   clustinput056.txt  clustinput057.txt  clustinput058.txt

```



directory.txt  
3 File(s) 12,961,976,416 bytes

Directory of \data\raw

```
[.]                [..]
CA77_Circuits_TXT-HM_Geocode.zip      CA_Bulk_CustomerID_txt-HM_Geocode.zip
DS_AND_OC_NONAMES_csv-HM_Geocode.zip
3 File(s)      305,072,298 bytes
```

Directory of \PointCode

```
[.]
[..]
1 Collect+clean PNR data.mdb
2 Pre Checks.mdb
3 POINTCODE_5.6.mdb
4 Post Checks.mdb
6 Append ClusterData to HAI Structure.mdb
7 Normalize Line Counts.mdb
8 Add HighCap Strand.mdb
CA GTE ClusterData with ADSL.mdb
cavz_v3.mdb
cavz_v3_ov.mdb
clus_v3X.dbf
dsl_dist.dbf
RUNNING POINT CODE.doc
13 File(s)      147,198,539 bytes
```

Directory of \Surrogate

```
[.]                [..]
clustinput.txt      clustinput3.txt
customers_miss_nozip.DBF  customers_miss_zip.DBF
dsl_cluster.DBF     dsl_cluster_data.txt
export_cluster.BAK  export_cluster.FXP
export_cluster.prg  export_cluster3.BAK
export_cluster3.FXP  export_cluster3.prg
export_dsl_cluster.BAK  export_dsl_cluster.prg
removed_dup_records_from_miss_zip.sql  split_cluster.pl
surrogate_all.FXP   surrogate_all.prg
surrogate_input.PJT  surrogate_input.pjx
surrogate_inputdata.DBC  surrogate_inputdata.DCT
surrogate_inputdata.DCX  surrogate_wc.BAK
surrogate_wc.FXP      surrogate_wc.prg
surrogate_wczip.BAK   surrogate_wczip.FXP
surrogate_wczip.prg   WCZIP_MISS.TXT
WC_MISS.TXT
31 File(s)      413,588,285 bytes
```

Directory of \WC

```
[.]                [..]
build_rseg_w_bounds.mb  build_wc_nodes.mb
gen_vz_comb_distance.sql  vz_wcs_combined2.DAT
vz_wcs_combined2.ID      vz_wcs_combined2.MAP
vz_wcs_combined2.TAB
```

7 File(s)                    directory.txt  
                              253,626 bytes

Total Files Listed:  
1756 File(s) 14,745,696,407 bytes



## **Installation**

The DVDs should be copied directly to a root directory of any drive (C, D, etc). If that is done, many of the processes will run without modification. There will be the need to modify code in a number of places related to the directory structures, network and SQL server, especially in the pre-cluster phase.

To use the SQL database, the delivered SQL database will need to be attached to a SQL server.

## **Third Party Requirements:**

- Data
  - Verizon Customer data and boundaries
  - GDT wire center boundaries from 2003, second quarter
  - 2000 TIGER roads from StreetCD 2000 v3.0 from GeoLytics, Inc.
- Software
  - Centrus Desktop 4.01 from Sagent Technology, Inc., September 2003.
  - FoxPro version 6.0 from Microsoft
  - MapInfo Professional version 7.0
  - Microsoft SQL Server 2000
  - Microsoft Access 2000
  - PERL Interpreter (free)

## **TNS Processes**

- Pre-cluster processing (includes surrogation)
- Clustering
- Post-clustering
- PointCode

## **Overview of all processes:**

- Pre-Clustering
  - Geocode customer locations
  - Build and clean wire center boundary file
  - Geographically assign wire centers based on locations and boundary files
  - Determine customers where delivered wire center assignment is invalid based on the geocoded location.
  - Assign locations using surrogation for records that failed to geocode
  - Remove all records that coincide with a switch location
  - Use translation table to assign HM line type codes
  - Format data for clustering and dump to flat files (1 per wire center)
- Run clustering on each wire center file creating
  - Cluster files where each record is a cluster along with descriptive information
  - Point files where each record is a customer location/line type. In addition to the input information, this also attaches the name of the cluster the point is now associated with.
- Run Post-Clustering, which takes cluster output and prepares the data for the PointCode process.
- Run PointCode process, which generates the HM input.

## Pre-Cluster process:

1. Load 3 customer tables into SQL Server database. The three tables are found in \Data\Raw in Access format, zipped up.
2. Geocode (use settings in \data\ geo\_fromsql.qmi) the customer tables in-place, adding the geocoding results as additional columns for the original tables:
  - 07\_Include\_Rec\_No\_Field\_geod
  - Final\_Circuit\_Data\_Removing\_DS1\_Dups\_and\_Rec\_No\_geod
  - CA\_Bulk\_Joined\_geod
3. Augment the Verizon boundaries with the GDT boundaries into \WC\ vz\_wcs\_combined2.tab
  - Added 'SNBRCAAXN', 'SNBRCAAXL', 'TMCLCAXG', 'TMVCLCAXH'
  - Replaced 'SNBRCAAXK'
  - Manually Modified 'TMCLCAXG'
  - Removed contained wire centers 'TMCLCAXG', 'TMVCLCAXH' from 'RNCACAXF'
4. Use vz\_wcs\_combined2 boundaries to geographically assign wire centers to each geocoded point, creating:
  - 07\_Include\_Rec\_No\_Field\_geod\_vzwc
  - Final\_Circuit\_Data\_Removing\_DS1\_Dups\_and\_Rec\_No\_geod\_vzwc
  - CA\_Bulk\_Joined\_geod\_vzwc
5. Create SQL table, bnode\_vz\_comb, of wire center boundary segments.
  - From vz\_wcs\_combined2 wire center boundaries, create a FoxPro table where each record represents one line segment of the boundary by running build\_wc\_nodes.mb.
  - Import the boundary segment into the table bnode\_vz\_comb in the SQL database
6. Dump raw MapInfo format road segments to FoxPro using Build\_rd.mb
7. Run build\_rseg\_w\_bounds.mb, creating:
  - rsegs\_wc.dbf
  - rsegs\_wczip.dbf
  - clli\_zips.DBF (imported into SQL database as valid\_wczip)
8. Produce a single table containing all needed input records.
  - Command: select \* into all\_records from vw\_all\_records
  - Input Tables:
    1. 07\_Include\_Rec\_No\_Field\_geod\_vzwc
    2. Final\_Circuit\_Data\_Removing\_DS1\_Dups\_and\_Rec\_No\_geod\_vzwc
    3. CA\_Bulk\_Joined\_geod\_vzwc
    4. DS\_and\_OC\_Services\_Types
    5. Circuit\_Data\_Service\_Types
    6. Bulk\_Service\_Types
    7. Type\_factors
  - Output Tables: all\_records

9. Generate a table of outlier records, where the geocoded wire center does not agree with the Verizon-assigned wire center
  - Command: `exec gen_vz_outlier_pts`
  - Input Tables: `all_records`
  - Output Tables: `vz_outlier_pts`
  
10. Generate a table of distances from the assigned wire center boundary for all records which are outliers and geocoded to the block level.
  - Command: Run the SQL code in the file `\wc\gen_vz_comb_distance.sql`
  - Input Tables:
    1. `vz_outlier_pts`
    2. `bnode_vz_comb`
  - Output Tables:
    1. `vz_distance_final` (distances from wire center boundaries)
    2. `vz_distance`
    3. `vz_distance_bins`
  
11. Generate a list of records that require wire center level surrogation.
  - Command: `select * into surrogate_wc_cand from vw_surrogate_wc_candi`
  - Input Tables:
    1. `all_records`
    2. `valid_wczip` (table of valid wire center + zip combinations)
  - Output Tables: `surrogate_wc_cand`
  - Other - some data types may require massaging for export to VFP tables.
  
12. Generate a list of records that require wire center and zip level surrogation.
  - Command: `select * into surrogate_wczip_cand from vw_surrogate_wczip_cand`
  - Input Tables:
    1. `all_records`
    2. `valid_wczip` (table of valid wire center + zip combinations)
  - Output Tables: `surrogate_wczip_cand`
  - Other – some data types may require massaging for export to VFP tables.
  
13. Export tables via Visual Foxpro for the surrogation process
  - Input Tables:
    1. `surrogate_wc_cand`
    2. `surrogate_wczip_cand`
  
14. Run the surrogation process in Visual Foxpro from the project `\Surrogate\surrogate_input.pjt`.
  - Run `Surrogate_all.prg`, creating
    1. `Customers_miss_zip.dbf`
    2. `Customers_miss_nozip.dbf`
  
15. Import the surrogation result tables back to SQL Server
  - Output Tables:
    1. `customers_miss_zip`
    2. `customers_miss_nozip`

16. Merge the surrogation results into a single table
  - Command: `select * into customers_miss from (select * from customers_miss_zip union select * from customers_miss_nozip) t1`
  - Input Tables:
    1. `customers_miss_zip`
    2. `customers_miss_nozip`
  - Output Tables: `customers_miss`
  
17. Generate a table of the raw data required for the clustering process
  - Command: `exec gen_cluster_data_raw`
  - Input Tables:
    1. `all_records`
    2. `customers_miss`
  - Output Tables: `cluster_data_raw`
  
18. Generate a table of DSL line counts (for later use)
  - Command: `exec gen_dsl_cluster_data`
  - Input Tables: `cluster_data_raw`
  - Output Tables: `dsl_cluster_data`
  
19. Generate a table of cluster data with additional expected fields, and filter out records that are coincident with a switch location.
  - Command: `exec gen_cluster_data_base`
  - Input Tables:
    1. `cluster_data_raw`
    2. `verizon_switch_filter` (table of Verizon wire center locations)
  - Output Tables: `cluster_data_base`
  
20. Aggregate the cluster data by wire center, longitude, latitude, and line type to reduce the number of unique records to be processed.
  - Command: `exec gen_cluster_data_aggr`
  - Input Tables: `cluster_data_base`
  - Output Tables: `cluster_data_aggr`
  
21. Export the resulting cluster data via Visual Foxpro for the clustering process.
  - From `\Surrogate`, run `export_cluster.prg`
  - Input Tables: `cluster_data_aggr`
  - Output file: `clustinput.txt`
  
22. Run `\surrogate\split_cluster.pl` to break `clustinput.txt` into per wire center input files, `clustinput001.txt` through `clustinput275` on the `\cluster\input` directory.

# Clustering Process:

## 1) Description of the Clustering Process

- a) The Clustering Process has its own files plus three subdirectories:
  - i) “Cluster” in addition to being the base directory, contains
    - (1) “Cluster.exe” is the program that runs the Clustering Process
    - (2) “NewConfig.ini” is the parameter file that contains the parameters used in the Clustering Process
    - (3) Batch Files (designated with filenames “\*.bat” in this directory) identify what files to run and where to run them
      - (a) “Batch01.bat” through “Batch20.bat” specify the input files to run. Each input file is a wire center and each Batch file specifies a list of inputs to run. This is done to allow processing on multiple machines.
      - (b) “RunClust.bat” contains the initialization code to run the files through the Clustering Process.
  - ii) “Cluster\Inputs” – This directory contains the inputs into the Clustering Process. The input files are broken down into multiple files to allow for processing on multiple machines to speed production times.
  - iii) “Cluster\ClustOut” – This directory contains the outputs of the Clustering Process. The outputs are placed in the subdirectory “Complete”. This directory also contains a subdirectory “Process” that contain the post-clustering procedures.

## 2) Running the Clustering Process

- a) The “NewConfig.ini” contains the current parameters for clustering. This file can be edited to change the parameters.
- b) There are 20 batch files, each runs a set of the 275 input files, each representing a wire center. The batch files are named Batch01.bat through batch20.bat. Clustering is performed by executing these batch files.
- c) When executing a batch file, a window opens up and remains open until the clustering is complete. This window does not refresh frequently and may appear to not be running but it is just processor intensive. When a wire center is complete, the window will close and a new one will open for the next wire center input file (unless it is the last one in the batch).
- d) Each file that selected, the process will generate five output files in the directory \cluster\complete. If it was a successful run, these files should be manually moved into the .checked directory.

## Post-Clustering Process:

- 1) From the \cluster\clustout\process directory, run process “clust\_process.prg” and “import\_points.prg” to gather cluster results into single files for Cluster and Point data. These files will be located in “\cluster\clustout\process\output”.
- 2) Run “build\_dsl\_cluster\_table.prg” to compute DSL distribution
- 3) Run “rename\_outlier\_hicap\_to\_main.prg” since HiCap should not be considered an outlier, (In this case, the rename failed due to a complex path so for 2 clusters, the tables were manually modified to resolve conflicting cluster names. If this situation occurs, it will show up in PointCode as duplicate clusters and can then be repaired manually by editing the cluster names.)
- 4) The resulting table is cavz\_clus\_b.dbf which is copied to PointCode directory for processing.

## PointCode process

- 1) Open Database 1
  - a) Import the cluster table (in this case, "cavz\_clus\_b.dbf"). Rename the table to "raw combined file".
  - b) Import the dsl\_distr.dbf table and rename it to "DSL".
  - c) Execute all #d queries through 8 (0a, 0b, 0c, 1, 2, 3, 4, 5, 6, 7, 8).
- 2) Open Database 2
  - a) Delete the old PNR501.
  - b) Import PNR501 from Database 1.
  - c) Run query #8 only. Look at Summary Check Table.
- 3) Open Database 3
  - a) Delete old PNR501
  - b) import new PNR501 from Database 2.
  - c) Go to Macros and run "Dataset Creation".
- 4) Open Database 4
  - a) Delete table Cluster Data.
  - b) Import Cluster Data from Database 3.
  - c) Run query "Make Summary Table" and Check summary table.
- 5) Open Database 6
  - a) Delete old Cluster Data
  - b) Import Cluster Data from Database 4.
  - c) Run both queries in order.
- 6) Open Database 7
  - a) Delete table ClusterData (prenormalized).
  - b) Import new ClusterData (prenormalized) from database 6
  - c) Run all queries through 9 (1, 3, 4, 5c, 6, 7a, 7b, 8, 9).
- 7) Create a new database
  - a) Import ClusterData Abbreviated Version and/or ClusterData Abbreviated with DS-3 strand from Database 7. Rename the tables to identify state, date, etc. One of these will be the file that to import and rename as ClusterData for use in the Hatfield Model.