XML Analysis Template

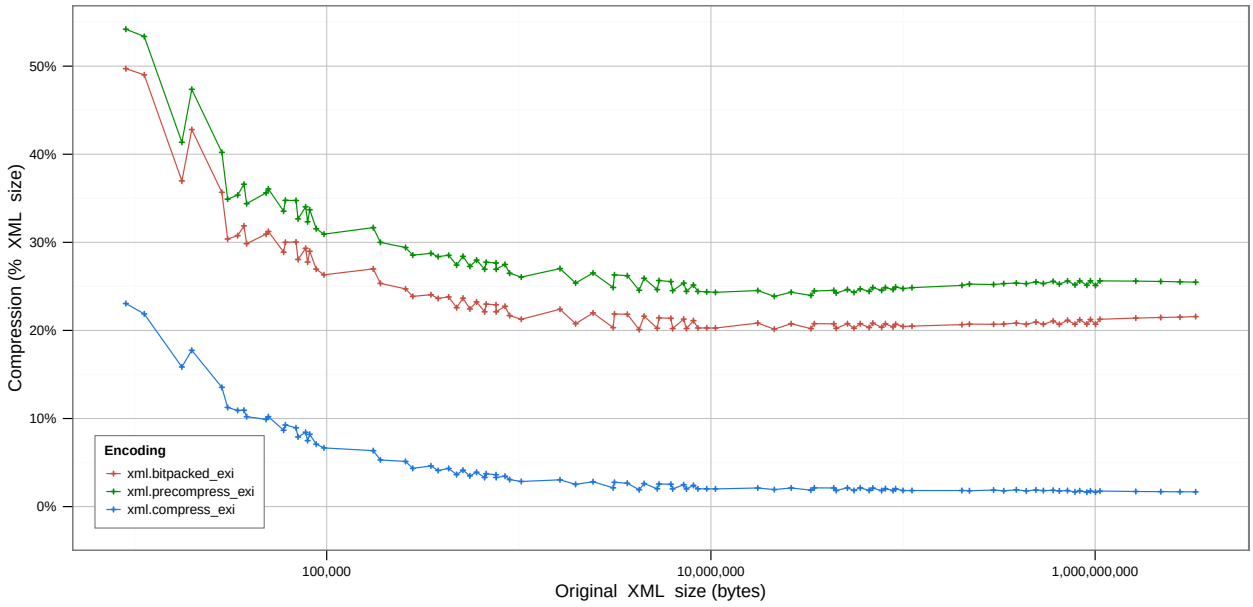
15 January, 2015

Results for Packet Details Markup Language (PDML) Use Case

EXI Exploratory

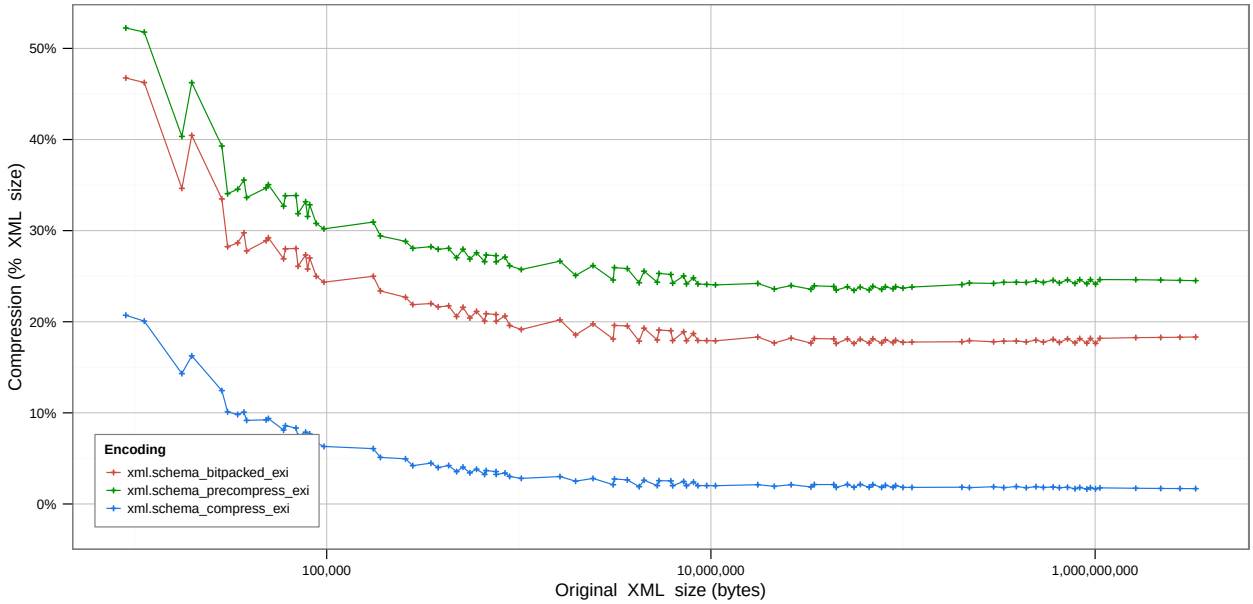
A. How do the primary EXI modes compare for schemaless encodings?

```
## [1] "Series:   xml.bitpacked_exi, xml.precompress_exi, xml.compress_exi"
## [1] "Baseline:  xml"
##  xml.bitpacked_exi xml.precompress_exi xml.compress_exi
##  Min.   :0.2010    Min.   :0.2387      Min.   :0.01635
##  1st Qu.:0.2071    1st Qu.:0.2487      1st Qu.:0.01844
##  Median :0.2137    Median :0.2561      Median :0.02410
##  Mean   :0.2383    Mean   :0.2825      Mean   :0.04380
##  3rd Qu.:0.2396    3rd Qu.:0.2865      3rd Qu.:0.04480
##  Max.   :0.4972    Max.   :0.5419      Max.   :0.23054
```



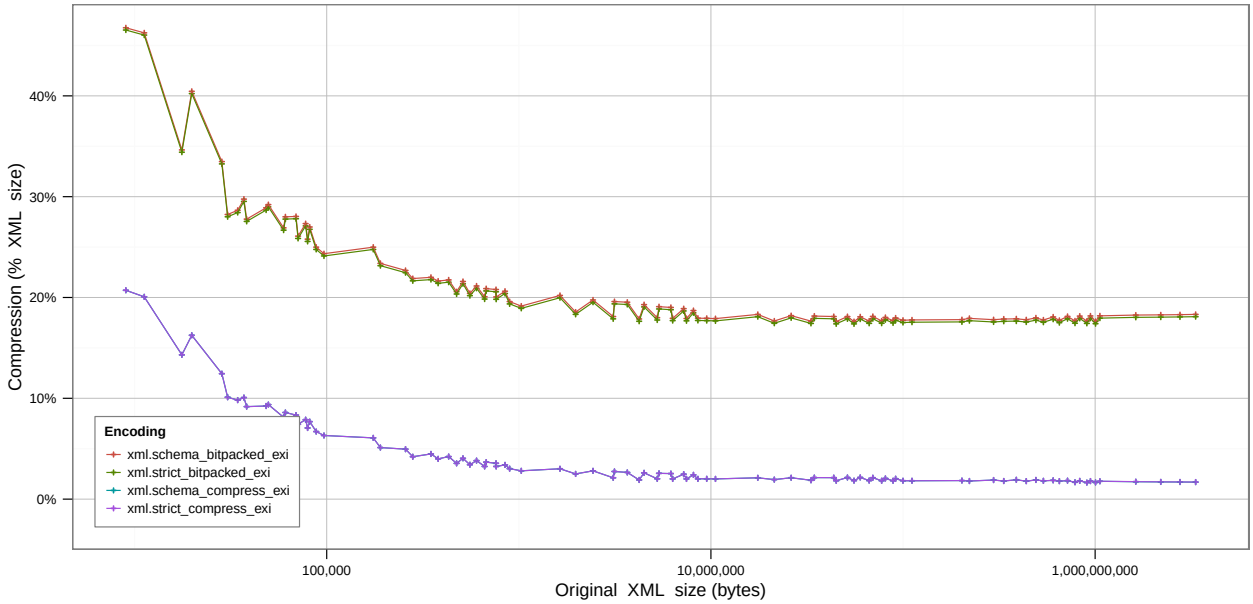
B. How do the primary EXI 'modes' compare for schema-informed encodings?

```
## [1] "Series:   xml.schema_bitpacked_exi, xml.schema_precompress_exi, xml.schema_compress_exi"
## [1] "Baseline:  xml"
##  xml.schema_bitpacked_exi xml.schema_precompress_exi
##  Min.   :0.1761           Min.   :0.2344
##  1st Qu.:0.1793           1st Qu.:0.2419
##  Median :0.1855           Median :0.2481
##  Mean   :0.2138           Mean   :0.2753
##  3rd Qu.:0.2194           3rd Qu.:0.2815
##  Max.   :0.4675           Max.   :0.5224
##  xml.schema_compress_exi
##  Min.   :0.01639
##  1st Qu.:0.01850
##  Median :0.02403
##  Mean   :0.04166
##  3rd Qu.:0.04350
##  Max.   :0.20711
```



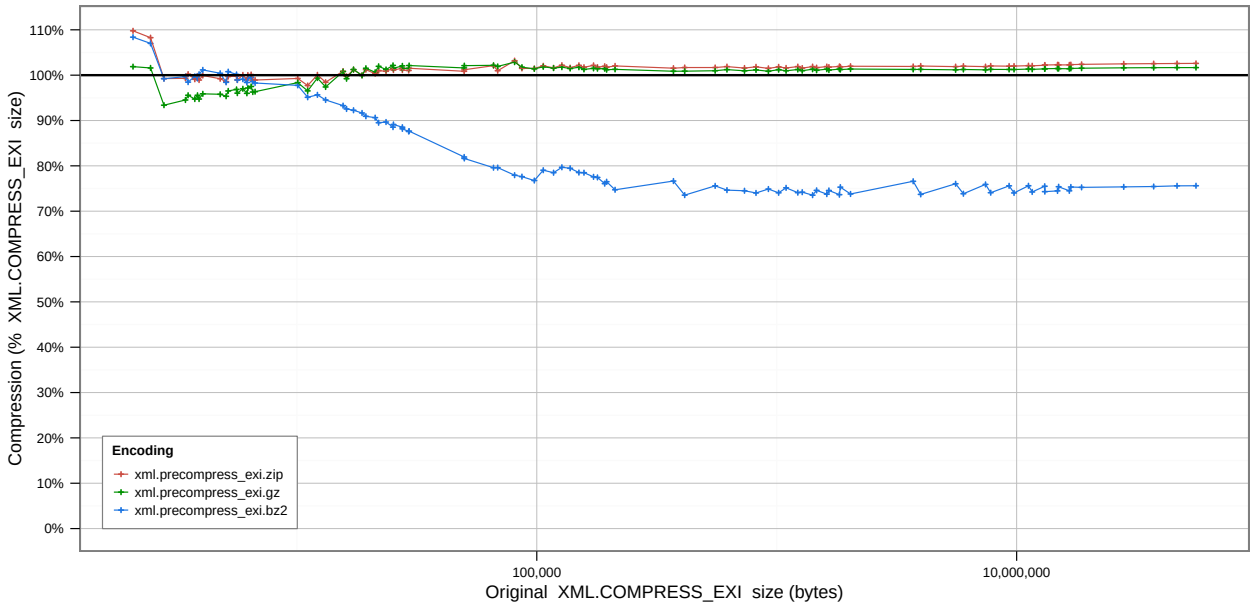
C. Does the 'strict' option significantly improve compaction for schema-informed encodings?

```
## [1] "Series:   xml.schema_bitpacked_exi, xml.strict_bitpacked_exi, xml.schema_compress_exi, xml.stric
## [1] "Baseline:  xml"
##  xml.schema_bitpacked_exi xml.strict_bitpacked_exi xml.schema_compress_exi
##  Min.   :0.1761           Min.   :0.1738           Min.   :0.01639
##  1st Qu.:0.1793           1st Qu.:0.1771           1st Qu.:0.01850
##  Median :0.1855           Median :0.1833           Median :0.02403
##  Mean   :0.2138           Mean   :0.2116           Mean   :0.04166
##  3rd Qu.:0.2194           3rd Qu.:0.2171           3rd Qu.:0.04350
##  Max.   :0.4675           Max.   :0.4653           Max.   :0.20711
##  xml.strict_compress_exi
##  Min.   :0.01641
##  1st Qu.:0.01852
##  Median :0.02405
##  Mean   :0.04167
##  3rd Qu.:0.04353
##  Max.   :0.20722
```



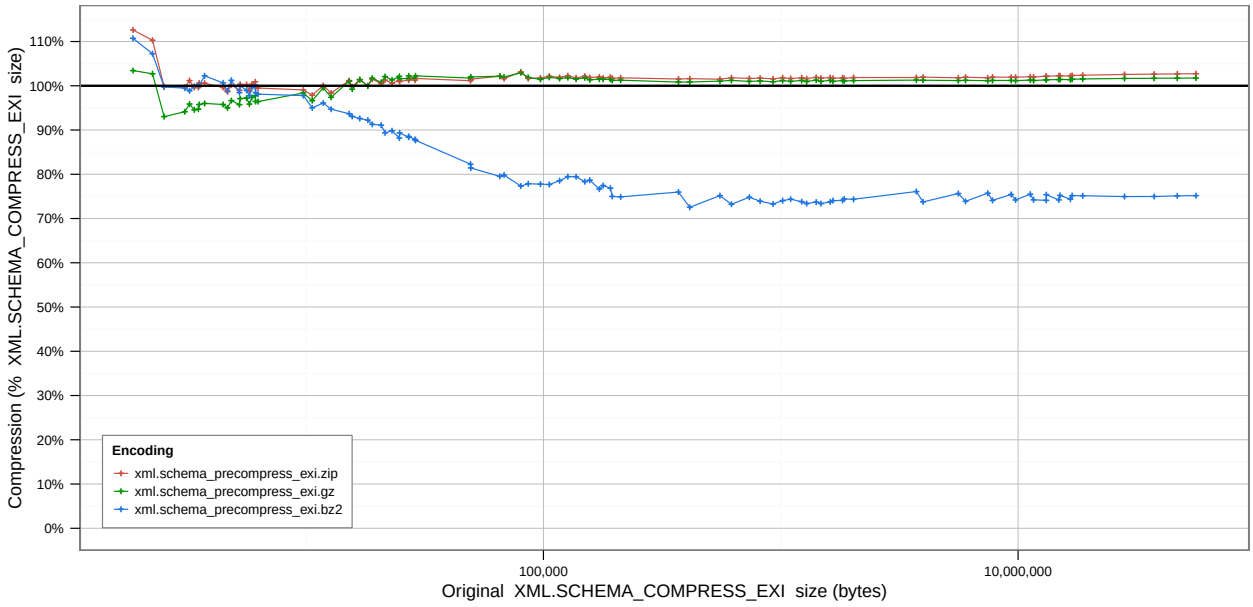
D. Do any of the tested compression algorithms perform better on a schemaless, precompress EXI document than the standard DEFLATE?

```
## [1] "Series:   xml.precompress_exi.zip, xml.precompress_exi.gz, xml.precompress_exi.bz2"
## [1] "Baseline:  xml.compress_exi"
##  xml.precompress_exi.zip xml.precompress_exi.gz xml.precompress_exi.bz2
##  Min.   :0.9771          Min.   :0.9338         Min.   :0.7354
##  1st Qu.:1.0028          1st Qu.:1.0029         1st Qu.:0.7520
##  Median :1.0166          Median :1.0125         Median :0.7848
##  Mean   :1.0133          Mean   :1.0018         Mean   :0.8396
##  3rd Qu.:1.0201          3rd Qu.:1.0150         3rd Qu.:0.9391
##  Max.   :1.0978          Max.   :1.0287         Max.   :1.0838
```



E. Do any of the tested compression algorithms perform better on a schema-informed, precompress EXI document than the standard DEFLATE?

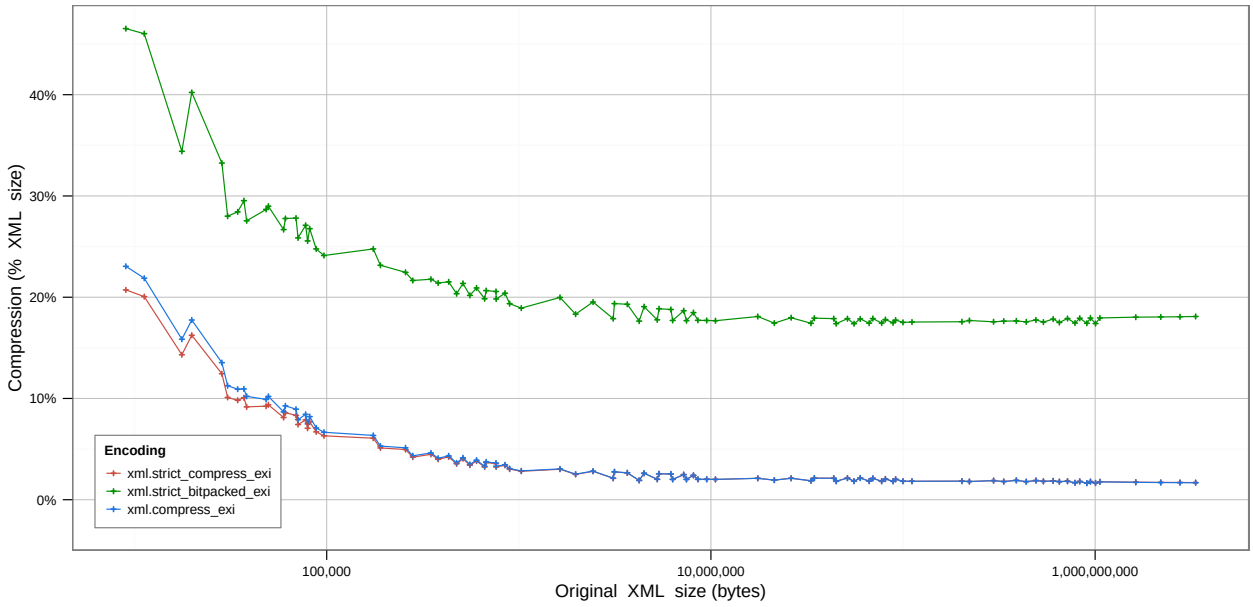
```
## [1] "Series:   xml.schema_precompress_exi.zip, xml.schema_precompress_exi.gz, xml.schema_precompress
## [1] "Baseline:  xml.schema_compress_exi"
##  xml.schema_precompress_exi.zip xml.schema_precompress_exi.gz
##  Min.   :0.9788                 Min.   :0.9302
##  1st Qu.:1.0075                 1st Qu.:1.0036
##  Median :1.0166                 Median :1.0122
##  Mean   :1.0149                 Mean   :1.0023
##  3rd Qu.:1.0195                 3rd Qu.:1.0156
##  Max.   :1.1260                 Max.   :1.0343
##  xml.schema_precompress_exi.bz2
##  Min.   :0.7254
##  1st Qu.:0.7486
##  Median :0.7786
##  Mean   :0.8391
##  3rd Qu.:0.9420
##  Max.   :1.1072
```



Binary-comparisons

F. Which EXI encoding is the most compact?

```
## [1] "Series:   xml.strict_compress_exi, xml.strict_bitpacked_exi, xml.compress_exi"
## [1] "Baseline:  xml"
##  xml.strict_compress_exi xml.strict_bitpacked_exi xml.compress_exi
##  Min.   :0.01641         Min.   :0.1738           Min.   :0.01635
##  1st Qu.:0.01852         1st Qu.:0.1771           1st Qu.:0.01844
##  Median :0.02405         Median :0.1833           Median :0.02410
##  Mean   :0.04167         Mean   :0.2116           Mean   :0.04380
##  3rd Qu.:0.04353         3rd Qu.:0.2171           3rd Qu.:0.04480
##  Max.   :0.20722         Max.   :0.4653           Max.   :0.23054
```



G. For a network already using gzip, do any of the EXI encodings offer improvements?

```
## [1] "Series:   xml.strict_compress_exi, xml.strict_bitpacked_exi, xml.compress_exi"
## [1] "Baseline:  xml.gz"
##  xml.strict_compress_exi xml.strict_bitpacked_exi xml.compress_exi
##  Min.   :0.3850          Min.   :1.961            Min.   :0.3847
##  1st Qu.:0.4454          1st Qu.:3.364            1st Qu.:0.4414
##  Median :0.4926          Median :3.713            Median :0.4939
##  Mean   :0.5828          Mean   :3.657            Mean   :0.6016
##  3rd Qu.:0.6978          3rd Qu.:3.973            3rd Qu.:0.7198
##  Max.   :1.0169          Max.   :4.714            Max.   :1.1262
```