

# Performance Management Report File Format

## INTERWORK DESCRIPTION

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# Contents

|          |  |           |
|----------|--|-----------|
| <b>1</b> | <b>Introduction</b>                          | <b>1</b>  |
| <b>2</b> | <b>Measurement Report File</b>               | <b>3</b>  |
| 2.1      | File Location                                | 3         |
| 2.2      | Filename Format                              | 4         |
| 2.3      | Time Format                                  | 5         |
| 2.4      | File Format                                  | 6         |
| <b>3</b> | <b>Supported XML Elements and Attributes</b> | <b>9</b>  |
| <b>4</b> | <b>Example File</b>                          | <b>13</b> |
| <b>5</b> | <b>Example File in UTC Format</b>            | <b>15</b> |





# 1 Introduction

This document describes the 3GPP® compliant Performance Management (PM) XML file format supported in the PM interfaces.

For information on supported functions, concepts, and types of operation, refer to [Performance Management](#).





## 2 Measurement Report File

A report file contains results of measurements collected from a single Managed Element (ME) during a single Granularity Period (GP) by all active measurement jobs.

The PM report file format is according to 3GPP TS 32.432 type A and is built on the example in 3GPP TS 32.435 Annex A.2. In addition, multi-value counters, also known as Probability Density Function (PDF) measurements, are supported but are not part of the 3GPP specification.

Job grouping is supported. This is indicated by attribute `jobGroupingSupport`, which default to `true`.

Report Output Period (ROP) files are written as follows:

- If attribute `jobGroup` is present, a separate report file is generated containing all measurements for each PM job containing this `jobGroup`. The `<UniqueId>` part of the filename is appended with “\_`<jobGroup>`”.
- If attribute `jobGroup` is absent, the default behavior is to include the measurement results for all such jobs in a single PM report file per GP, containing the results of those jobs for which no `jobGroup` tag was assigned.

If a `MeasurementType` instance (counter) is being measured in more than one PM job, the measurement result is reported separately for each job in a measurement report file.

The generation of PM ROP files in UTC format is supported. MO attributes `PmMeasurementCapabilities::producesUtcRopFiles` and `PmMeasurementCapabilities::ropFilenameTimestamp` are set based on tag `produceRopFilesInUtcFormat` in `libcom_pm.cfg`. If this tag is set to `true`, the PM report files are generated in UTC time with no offset. If tag `produceRopFilesInUtcFormat` is set to `false` or the tag does not exist, the PM report files are generated in local time with UTC offset.

**Note:** As a limitation, the value of the reporting period is identical with the value of the GP, as specified in the `granularityPeriod` attribute value, while the value of attribute `reportingPeriod` is ignored.

### 2.1 File Location

The measurement report files are generated in a directory, as specified in attribute `fileGroup` in Managed Object (MO) `PmMeasurementCapabilities`.



## 2.2 Filename Format

The report XML files are compliant with type “A” of 3GPP TS 32.432. That is, the file contains results of measurements collected from a single ME during a single GP. The filename format is as follows:

A<start\_date>.<start\_time>--<end\_time>\_<unique\_id>

The different parts of the filename are described in Table 1.

Table 1 Filename Format

| Filename Format | Description   |
|-----------------|---|
| start_date      | Coordinated Universal Time (UTC) date when the GP began.<br>Format: <YYYYMMDD>  |
| start_time      | UTC time when the GP began.<br>Format: <HHMMshmm>, where: <ul style="list-style-type: none"><li>• HH – Two-digit hour of the local time (00–23)</li><li>• MM – Two-digit minute of the local time (00–59)</li><li>• s – Sign of the local time differential from UTC (+ or -). If the time differential to UTC is 0, the sign can be arbitrarily set to + or -.</li><li>• hh – Two-digit hour of the local time differential from UTC (00–23)</li><li>• mm – Two-digit minute of the local time differential from UTC (00–59)</li></ul> |
| end_time        | UTC time when the GP ended.<br>Same format as start_time  |
| unique_id       | Unique name of the ME. This is appended by the value of attribute <code>jobGroup</code> if this attribute is set.   |

In Example 1, the GP ended 2014-09-01 at 09:00 in New York (EDT). This is 4 hours behind the UTC. The ME name is NewYork.

---

### Example 1 Filename Expressed in UTC Time with Offset

In Example 2, the GP ended 2014-09-01 at 11:55 in Stockholm. This is 1 hour ahead of the UTC. The ME name is Stockholm.

---

### Example 2 Filename Expressed in UTC Time with Offset





In Example 3, the GP ended 2014-09-01 at 11:55 in London. This is 1 hour ahead of the UTC. The ME name is London. The jobGroup for jobs included in this file is set to exampleJobGroup.

---

#### Example 3 Filename Including jobGroup

In Example 4, the GP ended 2014-09-01 at 11:55 in Paris. This is 2 hour ahead of the UTC. The ME name is Paris. The timestamp of the ROP filename is expressed in UTC time without offset, as attribute producesUtcRopFiles is set to true.

---

#### Example 4 Filename Expressed in UTC Time without Offset

ROP files are compressed if attribute compressionType is set. Only zip compression format is supported, that is, compressionType=GZIP. Gzip compressed ROP files have extension “.xml.gz”, as shown in Example 5. The ME name is Berlin.

---

#### Example 5 Gzip Compressed Report Filename

## 2.3 Time Format

Times in the measurement result files are expressed in local time. The time format is as follows:

<YYYYMMDDhhmmss.sTZ>

The time format is described in Table 2.

Table 2 Time Format

| Time Format | Description  |
|-------------|--|
| YYYY        | Four-digit year  |
| MM          | Two-digit month (01–12)  |
| DD          | Two-digit day of month (01–31)   |
| hh          | Two-digit hour (00–23)   |
| mm          | Two-digit minute (00–59)   |
| ss.s        | Two-digit second (00–59) and one digit representing the decimal fraction of a second |
| TZ          | Time zone designator<br>Format: +<hhmm> or -<hhmm>                                   |



---

#### Example 6 Time Value

If attribute `alignedReportingPeriod` is set to `true`, then the GP and reporting period are aligned to whole minutes. Measurement results are reported at 10:00, 10:10, 10:20, and so on, if the GP is 10 minutes.

## 2.4 File Format

The measurement report file is based on 3GPP TS 32.435 v10.0.0, PM XML File Format Definition.

Multi-value counters are supported. These are not defined by the 3GPP specifications. Thus, measurement reports files containing multi-value counters are not compliant with the 3GPP XML schema specification.

By the `measCollec.xsd` schema, the standard defines the structure, name, and number of XML elements allowed in the XML file, see Figure 1 (optional elements are indicated with dotted lines).

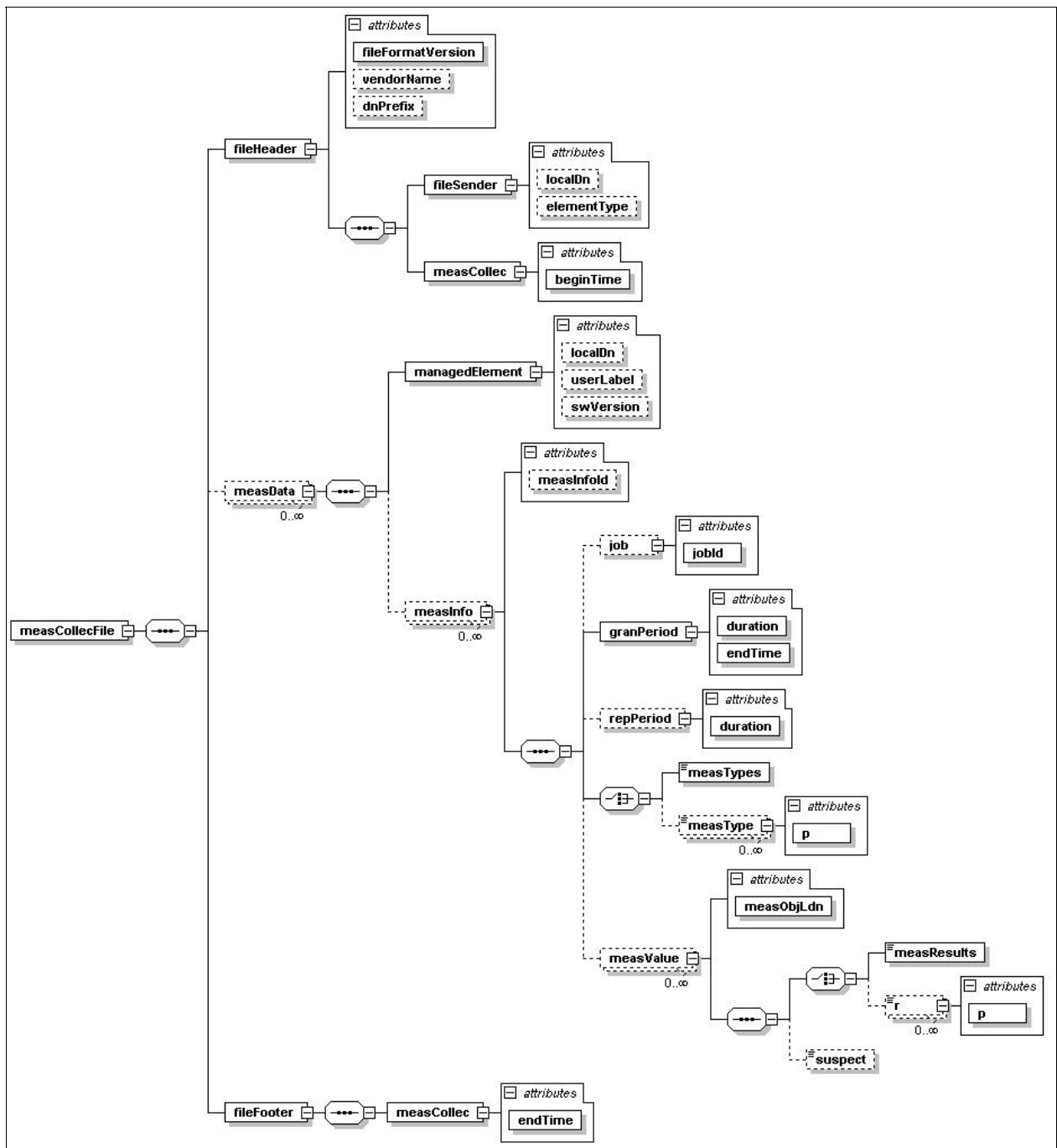


Figure 1 XML Schema Diagram

For details on support for the elements, see Section 3 on page 9.

For examples of a measurement report file, see Section 4 on page 13 and Section 5 on page 15.





### 3 Supported XML Elements and Attributes

The root element is measCollecFile.

The supported XML elements and attributes are described in Table 3, Table 4, and Table 5.

Table 3 Supported XML Elements or Attributes in Header of Report File

| XML Element or Attribute | Description  |
|--------------------------|--|
| beginTime                | Start time of the measurement data collection.<br>Example: 2014-05-17T20:25:00-02:00   |
| dnPrefix                 | Distinguished Name (DN) prefix, as specified in attribute dnPrefix.<br>Element dnPrefix is present in the report file if attribute dnPrefix is specified, that is, not an empty string.<br>Example: DC=ericsson.se,g3SubNetwork=Sweden                     |
| elementType              | The elementType is compiled from the structure member productName in attribute administrativeData in MO SwVersion referenced by attribute active in MO SwInventory.<br>elementType = "SwVersion:administrativeData:productName"<br>Example: CBA-OAM-system |
| fileFormatVersion        | Format version identifier, that is, 32.435 V10.0   |
| fileHeader               | Root element of the file header  |
| localDn                  | Local Distinguished Name (LDN) of ManagedElement.<br>Example: ManagedElement=Stockholm   |
| vendorName               | Vendor name, that is, Ericsson   |



Table 4 Supported XML Elements or Attributes in Measured Data Section of Report File

| XML Element or Attribute | Description   |
|--------------------------|---|
| duration in granPeriod   | <p>GP in the format PT&lt;n&gt;S, where n denotes seconds and can be 10, 30, 60, 300, 900, 1800, 3600, 43200, or 86400.</p> <p>Element duration can have value Unknown Time, which refers to an internal error. This value is specified by attribute granularityPeriod.</p> <p>Example: PT300S</p> <p>The PM functionality does not support creation of reports for jobs with a GP lower than 60 (that is, 10 or 30) even though these are possible values for a GP according to attribute granularityPeriod.</p> |
| duration in repPeriod    | <p>Reporting period in the format PT&lt;n&gt;S, where n denotes seconds and can be 10, 30, 60, 300, 900, 1800, 3600, 43200, or 86400.</p> <p>Element duration can have value Unknown Time, which refers to an internal error. This value is specified by attribute reportingPeriod.</p> <p>Example: PT60S</p>   |
| endTime in granPeriod    | <p>End time of the GP.</p> <p>Example: 2010-05-17T20:30:00-02:00</p>  |
| granPeriod               | <p>Container for elements duration and endTime.</p> <p>Example: PT300S</p>  |
| jobId                    | <p>Identifier of the measurement job, as specified in attribute pmJobId.</p> <p>Example: 42</p>   |
| localDn                  | <p>LDN of ManagedElement.</p> <p>Example: ManagedElement=Stockholm</p>  |
| managedElement           | <p>Container for the optional elements localDn, userLabel, and swVersion.</p>   |
| measData                 | <p>Root element of the measurement data.</p>  |
| measInfo                 | <p>Root element of the measurement information.</p>   |
| measInfoId               | <p>LDN of MO PmGroup to which these measurement types belong.</p> <p>Example: Pm=1, PmGroup=EDchResourcesPmGroup</p>  |
| measObjLdn               | <p>LDN of the measured object.</p> <p>Example: RncFunction=RF-1, UtranCell=Gbg-45</p>   |
| measType                 | <p>Name of the measurement type, as specified in attribute measurementName in MO MeasurementType.</p> <p>Example: counter5</p>  |



Table 4 Supported XML Elements or Attributes in Measured Data Section of Report File

| XML Element or Attribute | Description   |
|--------------------------|---|
| measValue                | Container element for the measured values. If no measurement value is available, it is an empty element (<measValue/>).   |
| p                        | Positioning element connecting the measurement type and value.  |
| r                        | <p>Measurement result as a decimal number in one of the following formats:</p> <ul style="list-style-type: none"> <li>• 64-bit signed integer. Range: -9,223,372,036,854,775,808–9,223,372,036,854,775,807</li> <li>• 64-bit floating point form with at least 5 digits after the decimal point.</li> <li>• An array of one of the other types represented as a comma-separated list. This format is used for PDF measurements.</li> </ul> <p>Element r is NIL when no measurement data is available for Discrete Event Registration (DER) measurement types.</p> <p>For other measurement types, element r is present only if measurement data is available for the measured object in the GP.</p> |
| repPeriod                | Optional container for element duration.  |
| suspect                  | Optional element. Value true indicates that the measurement result is suspected to be incomplete because of an internal error.  |
| swVersion                | <p>Software version, as specified by the concatenation of structure members <code>productNumber</code> and <code>productRevision</code> in attribute <code>administrativeData</code> in MO <code>SwVersion</code> referenced by attribute <code>active</code> in MO <code>SwInventory</code>.</p> <p>Element <code>swVersion</code> is present in the report file if structure members <code>productNumber</code> and <code>productRevision</code> are specified, that is, not an empty string.</p> <p><code>swVersion = " SwVersion:administrativeData:productNumber" + " " + " SwVersion:administrativeData:productRevision"</code></p> <p>Example: CXP9020355_2 R5A245</p>                       |
| userLabel                | <p>User-defined label, as specified in attribute <code>userLabel</code> of <code>ManagedElement</code>.</p> <p>Element <code>userLabel</code> is present in the report file if attribute <code>userLabel</code> is specified, that is, not an empty string.</p>   |



Table 5 Supported XML Elements or Attributes in Footer of Report File

| XML Element or Attribute | Description  |
|--------------------------|--|
| endTime                  | End time of the measurement data collection.<br>Example: 2012-09-28T20:30:00-02:00 |
| fileFooter               | Root element of the file footer.   |

**Note:** XML element measResults is not supported.





## 4 Example File

A measurement report file valid for the XML schema is shown in Example 7.

```
<?xml version="1.0" encoding="UTF-8"?>
<?xml-stylesheet type="text/xsl" href="MeasDataCollection.xsl"?>
<meas CollecFile xmlns="http://www.3gpp.org/ftp/specs/archive/32_series/32.435#meas Collec">
  <fileHeader fileFormatVersion="32.435 V10.0" vendorName="Ericsson" dnPrefix="localDnString">
    <fileSender localDn="ManagedElement=Stockholm" elementType="RNC"/>
    <meas Collec beginTime="2012-09-13T09:05:00Z"/>
  </fileHeader>
  <measData>
    <managedElement localDn="ManagedElement=Stockholm" swVersion="3.0"/>
    <measInfo measInfoId="Pm=1,PmGroup=EDchResourcesPmGroup">
      <job jobId="18"/>
      <granPeriod duration="PT300S" endTime="2012-09-13T09:10:00Z"/>
      <repPeriod duration="PT300S"/>
      <measType p="1">counter0</measType>
      <measType p="2">counter1</measType>
      <measType p="3">counter2</measType>
      <measType p="4">counter3</measType>
      <measType p="5">DERcounter</measType>
      <measValue measObjLdn="RncFunction=RF-1,UtranCell=Gbg-74">
        <r p="1">1112085071</r>
        <r p="2">2146690188</r>
        <r p="3">-1172923322</r>
        <r p="4">0.993486918695812</r>
        <r p="5">NIL</r>
      </measValue>
      <measValue measObjLdn="RncFunction=RF-1,UtranCell=Gbg-75">
        <r p="1">-2127992685</r>
        <r p="2">-1224586944</r>
        <r p="3">208233284</r>
        <r p="4">0.054777712404499</r>
        <r p="5">3412678214</r>
        <suspect>true</suspect>
      </measValue>
      <measValue measObjLdn="RncFunction=RF-1,UtranCell=Gbg-80">
        <r p="1">-267379297</r>
        <r p="2">846868841</r>
        <r p="3">1985356161</r>
        <r p="4">-0.117524608953742</r>
        <r p="5">NIL</r>
      </measValue>
    </measInfo>
    <measInfo measInfoId="Pm=1,PmGroup=EDchResourcesPmGroup">
      <job jobId="5"/>
      <granPeriod duration="PT300S" endTime="2012-09-13T09:10:00Z"/>
      <repPeriod duration="PT300S"/>
      <measType p="1">gauge0</measType>
      <measType p="2">gauge1</measType>
      <measValue measObjLdn="RncFunction=RF-1,UtranCell=Gbg-74">
        <r p="1">-1571763234</r>
        <r p="2">318908185</r>
      </measValue>
      <measValue measObjLdn="RncFunction=RF-1,UtranCell=Gbg-75">
        <r p="1">-1727546023</r>
        <r p="2">77341715</r>
      </measValue>
      <measValue measObjLdn="RncFunction=RF-1,UtranCell=Gbg-100">
        <r p="1">1254950829</r>
        <r p="2">-447563054</r>
      </measValue>
    </measInfo>
  </measData>
</meas Collec>
```

Example 7 Measurement Report File



```
<measInfo measInfoId="Pm=1,PmGroup=EDchResourcesPmGroup">
  <job jobId="23"/>
  <granPeriod duration="PT300S" endTime="2012-09-13T09:10:00Z"/>
  <repPeriod duration="PT300S"/>
  <measType p="1">pdf0</measType>
  <measType p="2">pdf1</measType>
  <measValue measObjLdn="RncFunction=RF-1,UtranCell=Gbg-74">
    <r p="1">-1.578,1.84,279,3.185</r>
    <r p="2">6794,7300,6901,7143,7297</r>
  </measValue>
  <measValue measObjLdn="RncFunction=RF-1,UtranCell=Gbg-75">
    <r p="1">6.894,7.142,6.901,7.009</r>
    <r p="2">8852,8309,9111,8934,7993</r>
  </measValue>
  <measValue measObjLdn="RncFunction=RF-1,UtranCell=Gbg-100">
    <r p="1">4.657,5.478,4.912,5.111</r>
    <r p="2">6345,6546,6901,6789,6698</r>
  </measValue>
</measInfo>
</measData>
<fileFooter>
  <measCollec endTime="2012-09-13T09:10:00Z"/>
</fileFooter>
</measCollecFile>
```



## 5 Example File in UTC Format

A measurement report file in UTC format is shown in Example 8.

```
<?xml version="1.0" encoding="UTF-8"?>
<?xml-stylesheet type="text/xsl" href="MeasDataCollection.xsl"?>
<measCollecFile xmlns="http://www.3gpp.org/ftp/specs/archive/32_series/32.435#measCollec">
  <fileHeader fileFormatVersion="32.435 V10.0" vendorName="Ericsson AB">
    <fileSender localDn="ManagedElement=1" elementType="ERIC-COREMW_RUNTIME"/>
    <measCollec beginTime="2015-06-15T11:06:00"/>
  </fileHeader>
  <measData>
    <managedElement localDn="ManagedElement=1" swVersion="CXP9020355_1 R6M01"/>
    <measInfo measInfoId="CcGroupMR1">
      <job jobId="job_one_min"/>
      <granPeriod duration="PT60S" endTime="2015-06-15T11:07:00"/>
      <repPeriod duration="PT60S"/>
      <measType p="1">CcMR-1</measType>
      <measValue measObjLdn="counter2">
        <r p="1">11505</r>
        <suspect>true</suspect>
      </measValue>
    </measInfo>
  </measData>
  <fileFooter>
    <measCollec endTime="2015-06-15T11:07:00"/>
  </fileFooter>
</measCollecFile>
```

Example 8 Measurement Report File in UTC Format