

# Performance Management Report File Format

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## INTERWORK DESCRIPTION

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# 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. Format: <YYYYMMDD>
start_time	UTC time when the GP began. Format: <HHMMshhmm>, 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. Same format as start_time
unique_id	Unique name of the ME. This is appended by the value of attribute <i>jobGroup</i> 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*.

`A20140901.0855-0400-0900-0400_NewYork.xml`

*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*.

`A20140901.1150+0100-1155+0100_Stockholm.xml`

*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`.

```
A20140901.1150+0100-1155+0100_London_exampleJobGroup.xml
```

#### *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.

```
A20140901.0950-0955_Paris.xml
```

#### *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.

```
A20140901.1150+0000-1155+0000_Berlin.xml.gz
```

#### *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 Format: +<hhmm> or -<hhmm>



```
20140901221510.1+0200
```

*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).

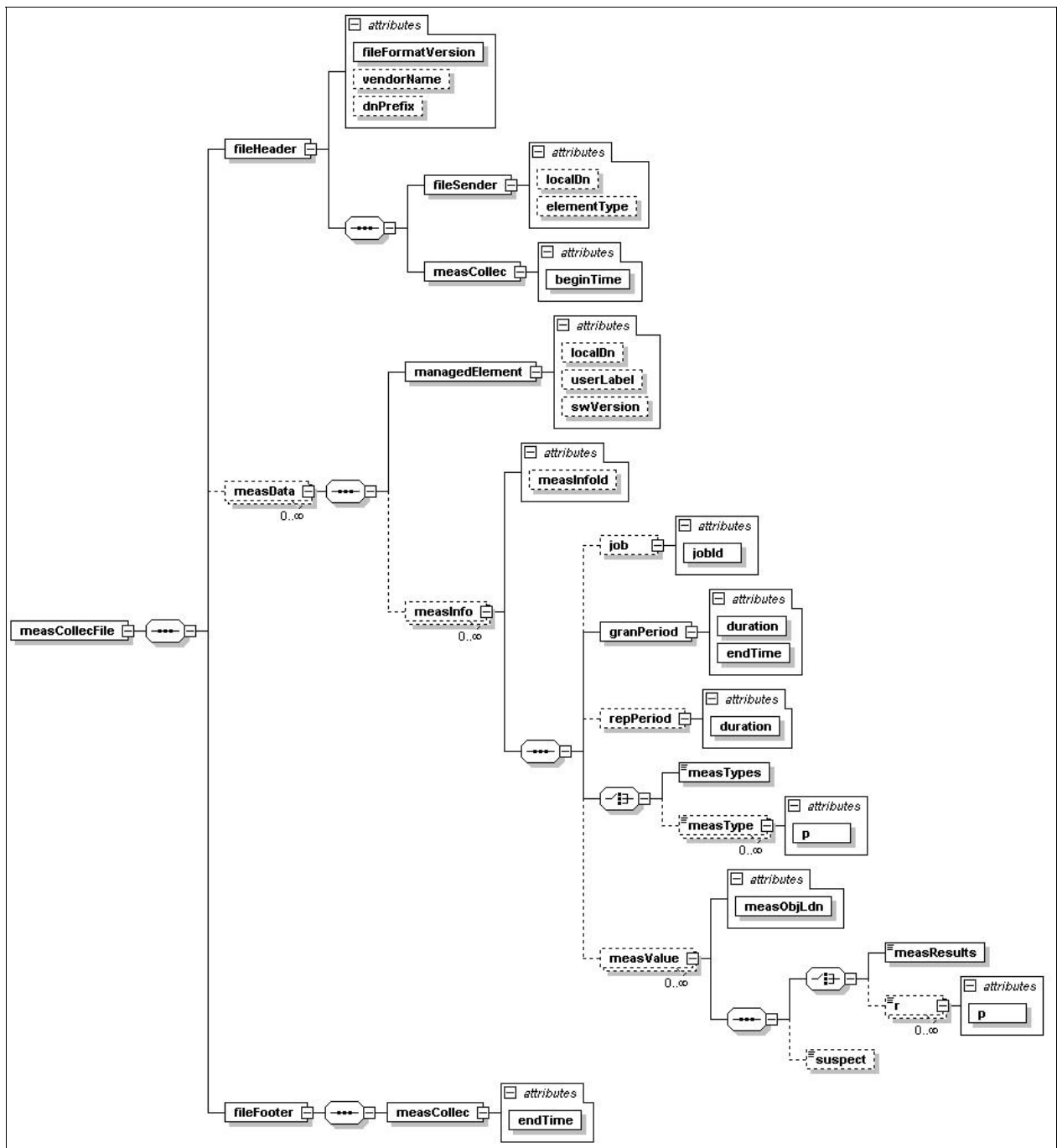


Figure 1 XML Schema Diagram

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
<code>beginTime</code>	Start time of the measurement data collection. Example: 2014-05-17T20:25:00-02:00
<code>dnPrefix</code>	Distinguished Name (DN) prefix, as specified in attribute <i>dnPrefix</i> . Element <code>dnPrefix</code> is present in the report file if attribute <i>dnPrefix</i> is specified, that is, not an empty string. Example: DC=ericsson.se,g3SubNetwork=Sweden
<code>elementType</code>	Attribute <i>swVersion</i> in MO <i>SwVersionMain</i> is compiled from MO <i>SwItem</i> referenced by attribute <i>active</i> in MO <i>SwInventory</i> as follows: <code>swVersion = "SwItem:administrativeData:productNumber" + "SwItem:administrativeData:productRevision"</code> Example: R7A
<code>fileFormatVersion</code>	Format version identifier, that is, 32.435 V10.0
<code>fileHeader</code>	Root element of the file header
<code>localDn</code>	Local Distinguished Name (LDN) of <i>ManagedElement</i> . Example: ManagedElement=Stockholm
<code>vendorName</code>	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>



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

XML Element or Attribute	Description
measType	Name of the measurement type, as specified in attribute <i>measurementName</i> in MO <i>MeasurementType</i> .  Example: counter5
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	Measurement result as a decimal number in one of the following formats: <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 <i>r</i> is NIL when no measurement data is available for Discrete Event Registration (DER) measurement types.</p> <p>For other measurement types, element <i>r</i> is present only if measurement data is available for the measured object in the GP.</p>
repPeriod	Optional container for element <i>duration</i> .
suspect	Optional element. Value <i>true</i> indicates that the measurement result is suspected to be incomplete because of an internal error.
swVersion	Software version, as specified by the concatenation of structure members <i>productNumber</i> and <i>productRevision</i> in attribute <i>administrativeData</i> in MO <i>SwItem</i> referenced by attribute <i>active</i> in MO <i>SwInventory</i> .  Element <i>swVersion</i> is present in the report file if structure members <i>productNumber</i> and <i>productRevision</i> are specified, that is, not an empty string.  Example: R7A
userLabel	User-defined label, as specified in attribute <i>userLabel</i> of <i>ManagedElement</i> .  Element <i>userLabel</i> is present in the report file if attribute <i>userLabel</i> is specified, that is, not an empty string.



*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. 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"?>
<measCollecFile xmlns="http://www.3gpp.org/ftp/specs/archive/32_series/32.435#measCollec">
  <fileHeader fileFormatVersion="32.435 V10.0" vendorName="Ericsson" dnPrefix="localDnString">
    <fileSender localDn="ManagedElement=Stockholm" elementType="RNC"/>
    <measCollec 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>
</measCollecFile>
```

**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