

Performance Management Report File Format

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: <HHMMshmm>, where: <ul style="list-style-type: none">• HH – Two-digit hour of the local time (00–23)• MM – Two-digit minute of the local time (00–59)• 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 -.• hh – Two-digit hour of the local time differential from UTC (00–23)• mm – Two-digit minute of the local time differential from UTC (00–59)
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 <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 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 `measCollect.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).

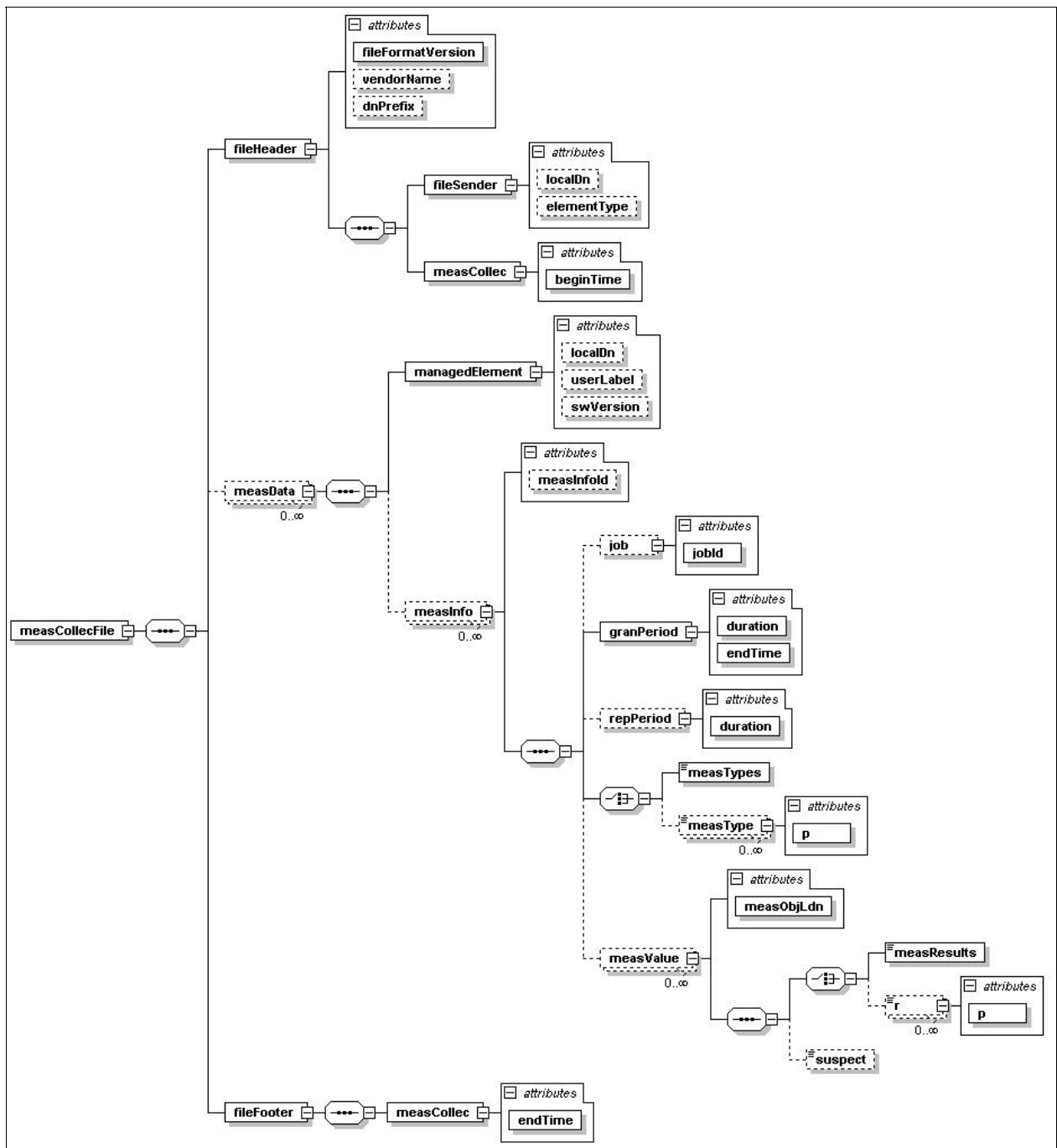


Figure 1 XML Schema Diagram

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. Example: 2014-05-17T20:25:00-02:00
dnPrefix	Distinguished Name (DN) prefix, as specified in attribute dnPrefix. Element dnPrefix is present in the report file if attribute dnPrefix is specified, that is, not an empty string. Example: DC=ericsson.se,g3SubNetwork=Sweden
elementType	Attribute swVersion in MO SwVersionMain is compiled from MO SwItem referenced by attribute active in MO SwInventory as follows: swVersion = "SwItem:administrativeData:productNumber" + "SwItem:administrativeData:productRevision" Example: R7A
fileFormatVersion	Format version identifier, that is, 32.435 V10.0
fileHeader	Root element of the file header
localDn	Local Distinguished Name (LDN) of ManagedElement. 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<n>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<n>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"> • 64-bit signed integer. Range: -9,223,372,036,854,775,808–9,223,372,036,854,775,807 • 64-bit floating point form with at least 5 digits after the decimal point. • An array of one of the other types represented as a comma-separated list. This format is used for PDF measurements. <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>SwItem</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>Example: R7A</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. 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