

QuEST Forum



**Data Submission
Receipt
Advisories
(Warnings)**



Presentation Objective



Improve consistency of TL 9000 measurements by:

- Communicating QuEST Forum expectations to Certification Body (CB) Auditors
- Review of CB Auditor Responsibilities in TL 9000 Measurements Assessment
- Presenting a method that CB Auditors may use in the evaluation of Data Submission Receipts (DSRs)
- Assuring data integrity once a TL 9000 measurement is flagged with an **ADVISORY**
- Communicating the deployment of the Advisor software application and the DSR advisories

Presentation Overview

- Evaluating TL 9000 Measurements Process
- Reminder of CB Auditor Responsibilities in Measurements Assessment
- Validating Scope, Specialty Area and Product Category
- The Content of a Data Submission Receipt (DSR)
- The Layout of a Data Submission Receipt (DSR)
- Items for an CB Auditor to evaluate on a Data Submission Receipt (DSR)
- The “Advisor” software application, overview and deployment
- Measurements **Advisories**
- Assuring data integrity for any measurement flagged with an **Advisory**
- Expanding deployment of the Advisor software application
- Where to submit questions on the Advisor application, Advisories or application deployment

Terminology



For simplicity and brevity the following terms are used consistently through this presentation

- “Organization” – the organization you are auditing
- “MRS” – the TL 9000 Measurements Repository System
- “DSR” – Data Submission Receipt
- “ADVISORY” – Notification included on the DSR issued by the TL 9000 Administrator, this is an indication that there is something in the data submission that requires investigation.
- “Pass” – Notification on the DSR that the measurements submission has passed.
- “EXEMPT” – indication that the organization will not be submitting the indicated measurement as justified in the TL 9000 Measurements Handbook under “Data Submissions and Exemptions”
- “CB” – Certification Body, also called a Registrar

Expectations of TL 9000 Stakeholders

It is essential that CB auditors examine the TL 9000 measurements collection, validation, analysis and reporting processes as a system. All the pieces must connect, and play their part in continual improvement.

CB auditors must keep in mind two 'communities' of TL 9000 stakeholders: the Organization's customers, and its competitors. For perhaps differing reasons, both communities expect the measurements to be fair, accurate and comparable.

TL 9000 stakeholders expect TL 9000 Certification to imply assurance of the following key factors:

- **The Organization's processes are repeatable and predictable, and contain no gaps that might compromise telecom service quality**
- **The TL 9000 measurements reported to the MRS by the Organization comply with the intent of the Counting Rules, are accurate, and are comparable with those reported by other Organizations in the same product category**
- **The Organization's management team and employees actively use the TL 9000 measurements to drive systematic continual improvement of performance**

This presentation speaks to one piece of the Measurements Process implemented in all TL 9000 certified firms. The analysis of Data Submission Receipts (DSRs) and the evaluation of data integrity ADVISORIES noted on DSRs.

CB auditors responsibility in measurements process assessment - review

As Documented in the QuEST Forums' Code of Practice for TL 9000 Registrars

1. The CBs shall verify that the organization has a documented system in place that covers:
 - a. Measurements collection: Much, if not all, of Measurements Handbook 5.0 Sections 3.5.2 subsections a, c-j, and the collection/submission portion of b, can be verified prior to going on-site.
 - b. Measurements validation, in accordance with Measurements Handbook 5.0 section 3.5.2. The CB shall audit to the depth necessary to assure effective implementation of TL 9000 requirements (see item 8 below).
 - c. Measurements reporting, in accordance with Requirements Handbook 5.5 section 5.4.1.c.1 and Measurements Handbook 5.0 sections 3.2 subsections a and b.
2. Ensure the TL 9000 measurements are used systemically by the organization. This includes reviews by management, quality/strategic objective setting for continual improvement, result/trend reviews, and corrective action plans for any performance deviating from the organization's defined quality/strategic objectives, in accordance with Requirements Handbook 5.5 section 8.5.2 and its associated notes and Measurements Handbook 5.0 sections 3.1.a, 3.5.2 subsections i and j.
3. If any measurements are identified as "EXEMPT", as defined in Measurements Handbook 5.0, sections 3.2.b and 4.2.8.b, the documented rationale for the exemption shall be reviewed and accepted as valid by the CB auditor. The CB auditor shall ensure this documentation has been available for review if requested by the organization's customers. The QuEST Forum requires the claimed exemption also be noted on the organization's registration profile.
4. The CB auditor shall verify that measurements are being used in customer/organization relationship, in accordance with Measurements Handbook 5.0 section 3.1.b.



CB auditors responsibility in measurements process assessment - review

As Documented in the QuEST Forums' Code of Practice for TL 9000 Registrars

5. The CB auditor shall verify that measurements are reported to the Measurements Administrator [UTD] in full accordance with the Measurements Handbook 5.0 sections 3.1.c, 3.2 subsections a and b, 3.5.2 subsections b - g, and 3.5.2.k. This would include a review of the Data Submission Reports for:
 - a. "Passed" designation
 - b. "EXEMPT" designations
 - c. Any notes or advisories on the Data Submission Reports; and
 - d. Probations
 - e. Any claimed exemptions are documented and valid
 - f. All items shown "EXEMPT" on the Data Submission Report are in full compliance with the Handbook and item 3 above
 - g. There is a Data Submission Receipt for every product category listed in the organization's scope for each month and each match the organization's registration options (Hardware, Software, and/or Services) as appropriate to the product category..
 6. If current performance shows an undesirable deviation from the organization's defined quality/strategic objectives for TL 9000 Measurements, the CB auditor shall verify that corrective action has/is being taken, is documented, and progress is being tracked, in accordance with Measurements Handbook 5.0 sections 3.1.a, 3.5.2 subsections i and j, and 3.5.5.c, and Requirements Handbook 5.0 section 8.5.2 and associated notes.
- The CB auditor shall verify that measurements collected are consistent with scope of registration, registration option [HSV], and product category, in accordance with Measurements Handbook 5.0 sections 3.2 subsections a and b, and 3.5.2.c. This can be done prior to the on-site activities.

CB auditors responsibility in measurements process assessment - review

As Documented in the QuEST Forums' Code of Practice for TL 9000 Registrars

CB auditors shall review the actual data submissions, verifying proper implementation of the counting rules for required measurements. This check would also review data consistency covering a minimum one-year period (an exception to this is when a certified organization and/or new product have been certified for less than one year. For this case, data shall be reviewed for at least as long as official submissions have been generated. Also note – the only other exception is for the initial registration audit. For this case, only the single pre-registration data submission needs to be verified). This shall be done to fulfill Measurements Handbook 5.0 requirement 3.3.1.a and in accordance with sections 3.5.2 subsections a and b.

- While the sample size for the above requirement is left up to the auditing organization, it is expected that the depth of assessment for the sampled measurements assures accurate and comprehensive calculation, counting rules, reporting mechanisms, and validation of the measurements.

CB auditors shall confirm that the registration information (i.e. scope and product category) contained in the RMS is current and accurate during each assessment, to support the verification of Measurements Handbook 5.0 sections

- 3.4.1 and 3.5.2.c. This can be started prior to the on-site activities.

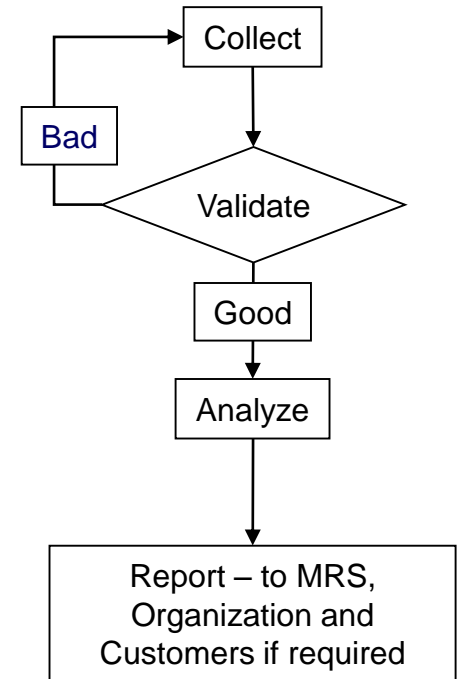
CB auditors shall confirm that the product categories chosen by the organization are correct for their products, in accordance with Measurements Handbook 5.0 section 3.5.2.c. This can be done prior to the on-site activities.



Evaluating the TL 9000 measurement process - review

Here are the considerations to keep in mind when auditing measurements processes:

- Does the organization have a systematic, repeatable process for collecting the data?
- Does the collection system (both automated and manual elements) include all applicable data, and all relevant counting rules?
- Although organizations work to make data collection error-proof, mistakes can still happen. What steps does the organization take to validate data? (Note that it might validate data after analysis, especially if the processes are automated and the chances of error small: there is no requirement to follow the process diagram literally, it's there just to illustrate the concept.)
- Are records of data validation maintained?
- How are data analyzed? How are trends identified and reported? How does the organization assure that reported trends are statistically significant – or at least, deserving of the investment in corrective action.
- How are results reported
 - To the MRS? On time? Accurate?
 - To the organization? To the people who have the authority and responsibility to take action?
 - To customers?



How to validate product category and scope - review

Begin detailed auditing of the Organization's TL 9000 measurements processes by validating its product category (or categories) against its Scope of Registration.

- Are all products and services produced within the scope of registration identified ?
- Are they mapped into the correct product categories?
- Does the organization, truly understand the product category descriptions? If not, double check with a subject matter expert.
- Where more than one product category might apply, has the organization chosen the category which is of primary concern to customers?
- Have the Hardware, Software and Service specializations been correctly identified?
- If software or services are excluded, yet part of the product, is the exclusion clear to customers from the wording of the scope of registration?
- For each product category:
 - Do the measurements reported include all products which fall within the category? (Aside from new products less than 6 months after GA.)
 - Is the customer base for measurements reporting established? The customer base will change over time: reporting must be consistent and systematic, with the customer base selected on criteria which include willingness to supply data, and which exclude consideration of the data (results) themselves.
- Further information on the correct selection of a product category may be found in the document "Product Category Selection and Validation Guidelines" available on the tl9000.org web site.

Example of a Data Submission Receipt

TL
9000
Data
Submission
Receipt



NOTICE

This report was created by the Measurements Repository System at the University of Texas at Dallas. It satisfies requirement of 3.5.2.d of the TL 9000 Quality Management System Measurements Handbook, Release 5.0

A handwritten signature in cursive script that reads "Richard F. Morrow".

Richard F. Morrow

/signed/

TL 9000 Administrator

Registration Information

Registration ID

Product Category Table

4.0

Product Category

3.3.1

Product Category Name

Base Station Equipment

Product/Location



**Click here
to see the entire DSR**



Items to evaluate on a DSR

It is important that the CB auditor evaluate DSRs for each product category that the organization is registered for. While sampling is considered an acceptable practice, looking at all of the DSRs for data submitted since the last audit will not take the CB auditor much time and it will give a more complete picture of the effectiveness of the data submission process.

Most organizations are certified to TL 9000 in only one or two product categories, hence looking at all the DSRs for the previous 6 months would require the review of 6-12 records, which is a small sample for evaluating most processes.

Look at:

1. Product Category
2. Product Category Table
3. Date of Submission
4. Exempted Measurements
5. Submission Status
6. Advisories

Look for:

- Match to the certificate of Registration
- Current at the time of submission
- On time submission
- Reasonable rational for exemption
- Pass
- Investigation, RCA, Data Resubmission if necessary



Not finding the expected results is reason for further investigation and possible non-conformity.

Measurements Advisories (page 1)

QuEST Forum strives to continually improve the value of the data provided through TL 9000 Performance Data Reports, which include industry statistic trends (Industry Average, Monthly Average, Best-in-Class, Worst-in-Class) as applicable for each product category and TL 9000 measurement. The more accurate and complete the data, the more useful it is to TL 9000 certified organizations and QuEST Forum members.

A QuEST Forum initiative to further enhance data entry checking to identify and correct potential data errors before inclusion in the Measurements Repository System maintained by The University of Texas at Dallas, was completed in 2009. The result of this initiative was an “Advisor” software application that notifies TL 9000 data submitters with “advisories” indicating a potential data integrity issue that should be investigated. The existence of an advisory does not prevent the data from being successfully submitted. However, Organizations are expected to review any advisories identified and verify integrity of the submitted data. If errors are found, the Organization’s data is required to be corrected and resubmitted. Also, during registration and surveillance audits, the Certification Body will be expected to follow-up with the organization to insure data integrity, as appropriate, for any measurement flagged with an advisory.



Measurements Advisories (page 2)

The “Advisor” checks look at data across measurements within submissions and across submissions over time to better validate the integrity of the organization’s submission. Advisories will be highlighted on the summary status of Data Submission Receipts (DSRs). Each advisory is assigned an integer identifier, and is briefly described at the end of the DSR. Some advisories may be common to all measurements , while others may apply to certain measurements. After investigation of a potential problem indicated by an advisory, it is very possible that the organization may find the data is indeed correct and no resubmission is required. For example, when multiple measurements in the same submission have the same Normalization Unit (NU) defined in Table A-3 of the Product Category Table, if the measurement submission includes differing values for the denominators (i.e. NU’s) for those measurements, an advisory will be generated. However, this difference may be legitimate (e.g. for NPR and SONE where in a particular product category customers don’t report outage data, but do report problems). In cases where advisory investigation does identify a problem, the organization will correct it, resubmit and maintain records of this process for review in registration and surveillance audits.

More detailed information on the Advisories can be found in the paper referenced on page:

http://tl9000.org/alerts/data_submissions.html



The Advisor software Application

Overview

The Advisor software application is managed by the TL 9000 Administrator under the direction of QuEST Forum Measurements SMEs. The objective of the application is to assist in ensuring the integrity of QuEST Forum Performance Data. It does so by indicating advisories against a particular measurement and making an indication on the DSR, which looks something like this:

NEOep Ok, **Ok- Advisory #11**

Each advisory indicates a situation in the submitted data that may or may not be correct. The advisories flag submitted data for a specific measurement that will need to be investigated. If in error it will need to be corrected and resubmitted. For example, Advisory #11 says “ the data submitted was 80% of the lowest value submitted in the last 11 months” for that specific measurement, indicating either that the data submitted was in error or that there has been some real cause for significant change in the data . A complete list of the DSR advisories and their meaning is included later in this presentation.



Measurements Advisories

Advisory # 1 - The calculated Measurement over the smoothed period is perfect – **no longer applied as of August 2011**

Advisory # 2 - This submission is the same as month, year

Advisory # 3 - Normalization Units differ across measurements that should be the same per Table A-2 – **no longer applied as of July 2014**

Advisory # 4 - Normalization Units changed greater than 25% from the prior month

Advisory # 5 - Data Element >150% of the highest value reported over the previous 11 months

Advisory # 6 - Data Element <50% of the lowest value reported over the previous 11 months

Advisory # 7 - Data Element >125% of the highest value reported over the previous 11 months

Advisory # 8 - Data Element <75% of the lowest value reported over the previous 11 months

Advisory # 9 - Not yet Assigned

Advisory # 10 - Data Element >120% of the highest value reported over the previous 11 months

Advisory # 11 - Data Element <80% of the lowest value reported over the previous 11 months

Advisory # 12 - Data Element >120% of the highest value reported over the previous 11 months and is 3x the average value in the same 11 months – **reduced from 4x as of August 2011**

Advisory # 13 - Data Element >125% of the highest value reported over the previous 11 months and is 3x the average value in the same 11 months – **reduced from 4x as of August 2011**

Advisory # 14 - Normalization Units are the same across measurements that should be different per Table A-2

Advisory # 15 - “Exempt” has been submitted for a measurement not listed as exempt on the organization’s TL 9000 profile - **added August 2011**

This list of advisories is current as of April 26, 2016

For the current list see DSR Advisories referenced on page: http://tl9000.org/alerts/data_submissions.html



Measurements Advisories – Added November 2014

Advisory # 16 – Downtime reported less than minimum expected

Advisory # 17 – Downtime reported less than minimum expected

Advisory # 18 – Outage frequency reported is less than minimum expected

Advisory # 19 – Outage frequency reported is less than minimum expected

Advisory # 20 – NPRs should normally be greater than NEOs

Advisory # 21 – NEOs and SOs should normally be equal

Advisory # 22 – Downtime reported less than minimum expected

Advisory # 23 – Outage frequency reported is less than minimum expected

Advisory # 24 – Input value greater than 95% of maximum value expected

This list of advisories is current as of April 26, 2016

For the current list see DSR Advisories referenced on page: http://tl9000.org/alerts/data_submissions.html



Measurements Advisories – Added April 2016

Advisory #25 – Problem report frequency is less than the minimum expected

Advisory #26 – Problem report frequency for the past six months is less than the minimum expected

Advisory #27 – Problem report frequency is less than the minimum expected

Advisory #28 – Problem report frequency for the past six months is less than the minimum expected

Advisory #29 – Software problem report frequency is less than the minimum expected

Advisory #30 – Software problem report frequency for the past six months is less than the minimum expected

Advisory #31 – Software problem report frequency is less than the minimum expected

Advisory #32 – Software problem report frequency for the past six months is less than the minimum expected

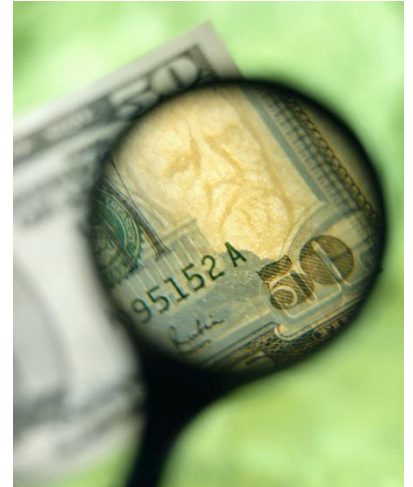
This list of advisories is current as of April 26, 2016

For the current list see DSR Advisories referenced on page: http://tl9000.org/alerts/data_submissions.html



What is expected of CB Auditors?

- ✓ Adhere to the QuEST Forum Code of Practice for TL 9000 Registrars
- ✓ Assure there is a documented system in place to collect, validate and report TL 9000 measurements
- ✓ Investigate and validate that the system in place is implemented and effective
- ✓ Ensure that the rationale for all measurements exceptions are valid
- ✓ Verify that Scope and Product Categories are appropriate for the Registration
- ✓ Ensure that measurements submissions are made for all product categories under the scope of registration
- ✓ Ensure that measurements submissions are made on time
- ✓ Understand measurements advisories
- ✓ Ensure that all measurements advisories are thoroughly investigated



DSR Advisory Details

Advisory # 1 - the calculated Measurement over the smoothed period is perfect

•**Note**, Advisory 1 applied to all product categories and all measurements prior to August 2011. It is no longer applied.

Advisory # 2 - This submission is the same as month, year

There is a possibility that this data has been submitted in error, since the data submitted was an exact duplicate of previous data submission within the last 11 months

Note, Advisory 2 applies to all product categories. It determines if the current submission is an exact copy of a prior submission for another month



DSR Advisory Details

Advisory # 3 - Normalization Units differ across measurements that should be the same per Table A-2

Using Problem Reports, Outage and Return Rates as an example:

- Considering Product Category 1.2.9.2 - “Edge Routers”
- Utilizing Table A-2 “Measurements Applicability Table (Normalized Units) to identify the normalization units for each measurements
- The same normalization unit is identified for each of the above measurements, network elements (or routers)
- This **advisory** against this measurement is asking the organization to evaluate if the data submitted is correct
- Is the normalization for the subject measurement truly different or has a measurements submission error been made?

Note, Advisory 3 checked NPRs and SOs in all product categories where they are reported to see if they are equal prior to July 2014.

Advisory # 4 - Normalization Units changed greater than 25% between consecutive months

Using Problem Reports (NPR) as an example:

- Considering Product Category 1.2.9.2 - “Edge Routers”
- NPRs is the normalization units for this measurement
- Table A-2 tells us the normalization unit for Problem Reports is a Network Element, or in this case a router
- This advisory against this measurement is asking the organization to evaluate if the data submitted is correct
- Did the number of routers deployed indeed increase more than 25% since the previous months data submission?

• **Note**, Advisory 4 applies to NPRs in all product categories.



DSR Advisory Details

Advisory # 5 - Data Element greater than 150% of the highest value reported over the previous 11 months

Using Problem Reports (NPR) as an example:

- Considering Product Category 1.2.9.2 - “Edge Routers”
- Np2 is the number of major problem reports in this calculation period
- This advisory against this measurement is asking the organization to evaluate if the data submitted is correct
- Is the number of major problem reports for this calculation period truly more than 150% higher than the highest value submitted in the past 11 months for this measurement?
- **Note**, Advisory 5 applies to NPR2, NPR3, and NPR4 in all product categories as appropriate

Advisory # 6 - Data Element less than 50% of the lowest value reported over the previous 11 months

Using Problem Reports (NPR) as an example:

- Considering Product Category 1.2.9.2 - “Edge Routers”
- Np2 is the number of major problem reports in this calculation period
- This **advisory** against this measurement is asking the organization to evaluate if the data submitted is correct
- Is the number of major problem reports for this calculation period truly less than 50% of the lowest value submitted in the past 11 months for this measurement?
- **Note**, Advisory 6 applies to NPR2, NPR3, and NPR4 in all product categories as appropriate



DSR Advisory Details

Advisory # 7 - Data Element greater than 125% of the highest value reported over the previous 11 months

Using Problem Reports (NPR) as an example:

- Considering Product Category 1.2.9.2 - “Edge Routers”
- Np3 is the number of minor problem reports in this calculation period
- This **advisory** against this measurement is asking the organization to evaluate if the data submitted is correct
- Is the number of minor problem reports for this calculation period truly more than 125% higher than the highest value submitted in the past 11 months for this measurement?

• **Note**, Advisory 7 applies to NPR3 and NPR4 in all product categories as appropriate.

Advisory # 8 - Data Element is less than 75% of the lowest value reported over the previous 11 months

Using Problem Reports (NPR) as an example:

- Considering Product Category 1.2.9.2 - “Edge Routers”
- Np3 is the number minor problem reports in the reporting period
- This **advisory** against this measurement is asking the organization to evaluate if the data submitted is correct
- Is the number of minor problem reports for this data submission period truly less than 75% of the lowest value submitted in the past 11 months for this measurement?

• **Note**, Advisory 8 applies to NPR3 and NPR4 in all product categories as appropriate.



DSR Advisory Details

Advisory # 10 - Data Element greater than 120% of the highest value reported over the previous 11 months

Using Field Replaceable Unit Returns (FR) as an example:

- Considering Product Category 1.2.9.2 - “Edge Routers”
- FRry is the number returns from they YRR basis shipping period.
- This **advisory** against this measurement is asking the organization to evaluate if the data submitted is correct
- Is the number of returns submitted for this calculation period truly greater than 120% of the highest value submitted in the past 11 months for this measurement?

• **Note**, Advisory 10 applies to DVd, ERI, FRry, LTR, YRR, and SQ in all product categories as appropriate.

Advisory # 11 - Data Element less than 80% of the lowest value reported over the previous 11 months

Using Service Impact Outage (SO) as an example:

- Considering Product Category 1.2.9.2 - “Edge Routers”
- SOep is the calculated outage frequency in events for product attributable causes
- This **advisory** against this measurement is asking the organization to evaluate if the data submitted is correct
- Is the number outage events submitted for this calculation period truly less than 80% of the lowest value submitted in the past 11 months for this measurement?

• **Note**, Advisory 11 applies to DVd, SOep, NEOep, ERI, FRry, LTR, YRR, and SQ in all product categories as appropriate.



DSR Advisory Details

Advisory # 12 - Data Element greater than 120% of the highest value reported over the previous 11 months AND is 3x the average value in the same 11 months

Using Network Element Impact Outage (SONE) as an example:

- Considering Product Category 1.2.9.2 - “Edge Routers”
- NEOep is the number of outages for product attributable causes
- This **advisory** against this measurement is asking the organization to evaluate if the data submitted is correct
- Is the number outages submitted for this calculation period truly greater than 120% of the highest value submitted in the past 11 months and 3 times the average in the same 11 months for this measurement?

•**Note**, Advisory 12 applies to SOep and NEOep in all product categories as appropriate. The value was 4 times average prior to August 2011

Advisory # 13 - Data Element greater than 125% of the highest value reported over the previous 11 months AND is 3x the average value in the same 11 months

Using Network Element Impact Outage (SONE) as an example:

- Considering Product Category 1.2.9.2 - “Edge Routers”
- NEOdp is the weighted outage duration in minutes for product attributable causes
- This **advisory** against this measurement is asking the organization to evaluate if the data submitted is correct
- Is the number weighted outage minutes submitted for this calculation period truly greater than 125% of the highest value submitted in the past 11 months and 3 times the average in the same 11 months for this measurement?

•**Note**, Advisory 13 applies to SOdp and NEOdp in all product categories as appropriate. The value was 4 times average prior to August 2011



DSR Advisory Details

Advisory # 14 - Normalization Units are the same across measurements that should be different per Table A-2

Using Number of Problem Reports (NPR) and Field Replaceable Unit Returns (FR) as an example:

- Considering Product Category 1.2.9.2 - “Edge Routers”
- NPRs is the normalization units for Problem Reports
- FRS is the of normalization unit for Field Returns

- According to Table A-2 the normalization unit for both NPR and FR should be network element, or in this case routers however NPR includes all in service product while FR includes on those network elements shipped 7 to 18 months prior to the report month.
- This **advisory** against this measurement is asking the organization to evaluate if the data submitted is correct
- Is there a good reason for the normalization units for NPR and FR to be the same. Normally they would be the different.
- **Note**, Advisory 14 compares NPRs to FRs in all product categories as appropriate. .

Advisory # 15 - Measurement submission exempted without declaring in registration profile measurement exemptions list

Using Number of Problem Reports (NPR) and Field Replaceable Unit Returns (FR) as an example:

- This **advisory** asking the organization to verify that the submission of “exempt” for a measurement for an exemption has not been noted on their TL 9000 profile meets rules for such exemptions per the latest edition of the TL 9000 Measurements Handbook.

- **Note**, Advisory 15 applies to all measurements



DSR Advisory Details

Advisory # 16 - Downtime reported less than minimum expected

If there were any outages to report in a month then NEO4, the product-attributable downtime should probably be > 0.05 minutes per network elements as 0.05 corresponds to an availability of 0.9999999. If outage downtime measures greater than 0.9999999 availability, the organization's denominator may be including some installed base from which it does not receive reliable outage data (see counting rule 6.14c2).

- This **advisory** against this measurement is asking the organization to evaluate if the data submitted is correct and to verify they are receiving outage data on all of the network elements being counted in their installed base

- **Note**, Advisory applies to all product categories reporting SONE if the value of NEOdp is greater than zero.

Advisory # 17 - Downtime reported less than minimum expected

It is rare for an organization to have zero downtime for even one month with an installed base of $> 120,000$. Perhaps no customers are reporting outages and the organization should apply for an exemption.

- This **advisory** is asking the organization to verify that they are receiving outage data from all of the customers they are including in their installed base.

- **Note**, Advisory 17 applies to all product categories reporting SONE if the value of NEOdp is zero and the number of network elements reported is greater than 120,000.

DSR Advisory Details

Advisory # 18 - Outage frequency reported is less than minimum expected

If outage frequency is less than .0002 outages/year (44,000,000 hours Mean Time Between Outages), then it is likely that all of the customers in the installed base are not providing reliable outage data to the organization, and the organization's denominator may be including some installed base from which it does not receive reliable outage data (see counting rule 6.14c2).

- This **advisory** against this measurement is asking the organization to evaluate if it is receiving outage data from every customer it is including in its installed base.

- **Note**, Advisory 18 applies if the value of NEOep is greater than zero and the outage frequency is less than 0.002. It applies to all product categories reporting SONE.

Advisory # 19 - Outage frequency reported is less than minimum expected

It is rare for an organization to have zero outages for even one month with an installed base of > 120,000. Perhaps no customers are reporting outages and the organization should apply for an exemption.

- This **advisory** is asking the organization to verify that they are receiving outage data from all of the customers they are including in their installed base.

- **Note**, Advisory 19 applies to all product categories reporting SONE if the value of NEOep is zero and the number of network elements reported is greater than 120,000.



DSR Advisory Details

Advisory # 20 - NPRs should normally be greater than NEOs

It is an unusual situation where all of the network elements that are in the problem report installed base also belong in the outage installed base. Usually there are some laboratory units that do not carry live traffic or some units installed by customers who do not routinely report outage data (see counting rule 6.14c2).

- This **advisory** against this measurement is asking the organization to evaluate its counts for NPRs and NEOs.

• **Note**, Advisory 20 applies to NPR when the normalization units are network elements and SONE is applicable to the product category

Advisory # 21 - NEOs and SOs should normally be equal for this product category

If the normalization unit for SO is network elements, then the installed base for SO should equal the installed base for SONE.

- This **advisory** is asking the organization to verify and be prepared to explain why their reported SOs is different from their reported NEOs.

• **Note**, Advisory 21 applies to all product categories reporting SONE if the value of SOs is not equal to the value for NEOs.



DSR Advisory Details

Advisory # 22 - Downtime reported less than minimum expected

It is rare for an organization to have zero downtime for twelve consecutive months with an installed base of > 10,000. Perhaps no customers are reporting outages and the organization should apply for an exemption.

- This **advisory** against this measurement is asking the organization to evaluate if it is receiving outage data from every customer it is including in its installed base.

• **Note**, Advisory 22 applies if $NEO_{dp}=0$ and $NEOs > 10,000$ during each of the past 12 months

Advisory # 23 - Outage frequency reported less than minimum expected

It is rare for an organization to have zero outages for twelve consecutive months with an installed base of > 10,000. Perhaps no customers are reporting outages and the organization should apply for an exemption.

- This **advisory** against this measurement is asking the organization to evaluate if it is receiving outage data from every customer it is including in its installed base.

• **Note**, Advisory 23 applies if $NEO_{ep}=0$ and $NEOs > 10,000$ during each of the past 12 months

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DSR Advisory Details

Advisory # 24 Input value greater than 95% of maximum value expected

To prevent inadvertent typing errors or errors due to a misunderstanding of the measurement rules, most of the date input values have a maximum value set. Values higher than this value may not be input. These upper limits are initially set at a value with a large margin about the highest expected value to allow for growth. If the value the organization is reporting is within 5% of the limit, then there may be an error with it.

- This **advisory** against this measurement is asking the organization to verify the accuracy of the number it is reporting.

- **Note**, Advisory 24 applies to any reported value where this is an upper limit set within the system.



DSR Advisory Details

Advisory # 25 - Problem report frequency is less than the minimum expected

It is rare for an organization to have zero major problem reports in the month when the industry average number of problems for its deployed population is 20.

- This **advisory** against this measurement is asking the organization to evaluate if it is receiving problem reports from every customer it is including in its installed base and that it is correctly classifying those problem reports.

- **Note**, Advisory 25 applies if $NP2=0$ for the month and $NPRs \times NPR2 \text{ ind_avg} > 240$

Advisory # 26 - Problem report frequency for the past six months is less than the minimum expected

It is rare for an organization to have zero major problem reports in the last six months when the industry average number of problems for its deployed population is 1.7 per month.

- This **advisory** against this measurement is asking the organization to evaluate if it is receiving problem reports from every customer it is including in its installed base and that it is correctly classifying those problem reports.

- **Note**, Advisory 26 applies if $NP2=0$ for the last six months and $NPRs \times NPR2 \text{ ind_avg} > 20$



DSR Advisory Details

Advisory # 27 - Problem report frequency is less than the minimum expected

It is rare for an organization to have zero minor problem reports in the month when the industry average number of problems for its deployed population is 20.

- This **advisory** against this measurement is asking the organization to evaluate if it is receiving problem reports from every customer it is including in its installed base and that it is correctly classifying those problem reports.

- **Note**, Advisory 27 applies if $NP3=0$ for the month and $NPRs \times NPR3 \text{ ind_avg} > 240$

Advisory # 28 - Problem report frequency for the past six months is less than the minimum expected

It is rare for an organization to have zero minor problem reports in the last six months when the industry average number of problems for its deployed population is 1.7 per month.

- This **advisory** against this measurement is asking the organization to evaluate if it is receiving problem reports from every customer it is including in its installed base and that it is correctly classifying those problem reports.

- **Note**, Advisory 28 applies if $NP3=0$ for the last six months and $NPRs \times NPR3 \text{ ind_avg} > 20$



DSR Advisory Details

Advisory # 29 - Problem report frequency is less than the minimum expected

It is rare for an organization to have zero major software problem reports in the month when the industry average number of problems for its deployed population is 20.

- This **advisory** against this measurement is asking the organization to evaluate if it is receiving problem reports from every customer it is including in its installed base and that it is correctly classifying those problem reports.

• **Note**, Advisory 29 applies if $SP2=0$ for the month and $SPRs \times SPR2 \text{ ind_avg} > 240$

Advisory # 30 - Problem report frequency for the past six months is less than the minimum expected

It is rare for an organization to have zero major software problem reports in the last six months when the industry average number of problems for its deployed population is 1.7 per month.

- This **advisory** against this measurement is asking the organization to evaluate if it is receiving problem reports from every customer it is including in its installed base and that it is correctly classifying those problem reports.

• **Note**, Advisory 29 applies if $SP2=0$ for the last six months and $SPRs \times SPR2 \text{ ind_avg} > 20$



DSR Advisory Details

Advisory # 31 - Problem report frequency is less than the minimum expected

It is rare for an organization to have zero minor software problem reports in the month when the industry average number of problems for its deployed population is 20.

- This **advisory** against this measurement is asking the organization to evaluate if it is receiving problem reports from every customer it is including in its installed base and that it is correctly classifying those problem reports.

• **Note**, Advisory 31 applies if $SP3=0$ for the month and $SPRs \times SPR3 \text{ ind_avg} > 240$

Advisory # 32 - Problem report frequency for the past six months is less than the minimum expected

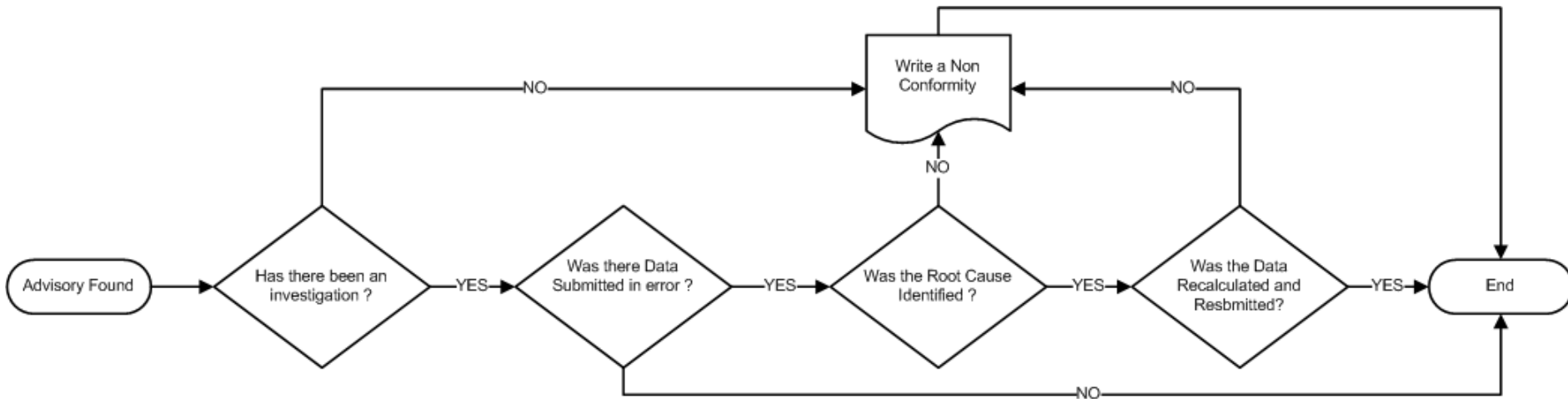
It is rare for an organization to have zero minor software problem reports in the last six months when the industry average number of problems for its deployed population is 1.7 per month.

- This **advisory** against this measurement is asking the organization to evaluate if it is receiving problem reports from every customer it is including in its installed base and that it is correctly classifying those problem reports.

• **Note**, Advisory 32 applies if $SP3=0$ for the last six months and $SPRs \times SPR3 \text{ ind_avg} > 20$



Assuring Data Integrity for flagged Measurements



Should an error in submission be found, the organization is obligated to review 24 months of data and resubmit it if necessary

Questions

CB Auditors who have questions should first contact the TL 9000 SME in their organization.

Further queries may be made through contacting the QuEST Forum Measurements SMEs by using the “Contact Us” button on the QuEST Forum web site, <http://questforum.org> or the TL 9000 web site, <http://tl9000.org>

Or via email at: contact@questforum.org

Please include: “MEASUREMENTS ADVISORY” in your subject line.

Please include your:

- e-mail address
- Name
- Phone
- And your question.

