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TL9000 Metrics Handbook-8.6.1

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Chapter 1

Introduction

The TL 9000 Metrics Handbook R5.7 for Product Category 8.6.1 defines a minimum set of performance measurements.

The purpose of Metrics Handbook for Product Category 8.6.1 is to define effective performance-based measurements to guide progress and evaluate results of quality management system implementation, drive continual improvement, enhance customer-supplier relationships, and leverage industry conformity assessment processes.

This Handbook identifies all the applicable Metrics for Product Category 8.6.1, their purpose, applicability, and establishes Metrics Calculation Rules customized as per requirements of CAPGEMINI organization.

1.1 Scope

Scope of applicability of this Metrics Handbook is limited to all the software product development activities carried out by CAPGEMINI organization under Product category 8.6.1 that includes development & maintenance of component software.

Scope of applicability of this Metrics Handbook is limited to all the software product development activities for global Information and Communications Technology (ICT)*** for Telecom industry carried out by CAPGEMINI organization under Product category 8.6.1 that includes development & maintenance of component software.

All the metrics (NPR, FRT, OFR, OTI and OTIP) is computed only for commercial releases*.

* - TL9000 Measurement Handbook R5.7 requirement applicable for all commercial releases (which includes Alpha, Beta, Pre QA and GA (General

Availability) releases). Please refer Release SDP for further details on release definition

□*** - *TL9000 Measurement Handbook requirement applicable for all those projects which are executed for global information and communications technology (ICT) for telecom industry. Please refer to the Appendix A for further details*

Chapter 2

Number Of Problem Report

2.1 Name

Number of Problem Reports

2.2 Identifier

NPR4

2.3 Metric

NPR4 = Np4 * NPRa / NPRs

Where, Np4 is number of problem reports in the reporting period,

NPRs are # of units shipped in one month,

And, NPRa is Annualization factor that is equal to 12 in our case

2.4 Description

This measurement quantifies total number of problems reports in the reporting month.

2.5 Purpose

This measurement is used to evaluate the number of Customer originated problem reports that are indicative of the quality of the products delivered during the operating life cycle of that product. This measurement is intended to stimulate ongoing improvements resulting in the reduction of the number of problem reports, associated costs and potential revenue losses.

2.6 Applicable

This metric is applicable to all the problems reported for the commercial release of the product.

2.7 Counting Rules

- Problem reports originated by customer only are counted.
- Problem reports where the reported problem cannot be duplicated during subsequent investigations are considered
- Multiple reports of the same occurrence of the same problem at the same location at the same time, are considered as one problem report
- Same fault has occurred either at a different customer location or at a different time, are considered as separate problem reports
- Multiple problems recorded on the same problem report are counted separately, unless in the customer's view, the customer due to a single failure experiences these problems.
- Problem reports are counted in the month they are received and only in the month they are received.
- Only for CAPGEMINI Products used without modifications at Customer Systems are included.
- Problem reports only on a General Availability Release of a product are counted.

2.8 Exclusions

- Problem reports that are information request (IR) or enhancements are excluded.
- Problem report related to use of the product in a manner not defined in specification of the product is excluded.
- Customer report of routine events such as expected maintenance or software upgrades is excluded.
- Problems on purely prototype products, such as release, which are not commercially available, are excluded from TL9000 Reporting.
- Problem Reports received from the indirect customers unless forwarded by the direct customer is not to be counted.
- Problem Reports for which there is a fix available at no cost and the customer has decided not to deploy the fix are excluded. It is a ‘fix’ provided by the Capgemini to all its customers as part of contractual warranty or business agreement without any cost.

2.9 Frequency

Monthly

2.10 Source

MOL – Matrix On Line tool helps in logging and tracking CSRs raised by the customers, product delivery and AMC / Warranty tracking.

2.11 Calculation

- The NPR measurements shall be calculated monthly.
- For NPR calculations, the data shall be extracted from the above identified data source for the total # of problems reported in a month according to its reporting date.
- Calculations are to be done by using excel sheet that requires as data input Defect No, Date of Reporting, Part No., Release No., Customer & Product name, # of Units Shipped.
- Np_4 represents # of Problems reported in a month identified by unique Defect No. in excel sheet.
- No. of units shipped serves as Normalization Unit that is calculated in excel sheet on the basis of # of units shipped in reporting month.
- **Rules for Zero Denominator Data**: In TL 9000 it is possible for the denominator to be zero when calculating any metrics. There are two different cases:
  - Both numerator and denominator are 0 – that is 0/0
  - Numerator is not zero but denominator is 0 – that is n/0

Measurement	Defined value		Comments
	0/0	n/0	
NPR4	No data	n/1	Product Category 7 &8

Application of the rules is as follows:

No data: Ignore the data in monthly and summary data calculations

n/1: Treat as if the monthly data submission denominator had been 1.

n/n: Treat as if the monthly data submission denominator had been n.

Example: Example of Zero Denominator rules

S. No.	3
Month	**Feb**
Year	**2014**
No. of Problems Reported during the Month **(Np4)**	10
Annualization Factor **(NPRa)**	12
No. of Contracted Items Delivered in reporting month **(NPRs)**	0
NPR4	**10*12/1 = 120***

* Applied n/1 rule

S. No.	2
Month	**Jan**
Year	**2014**
No. of Problems Reported during the Month **(Np4)**	0
Annualization Factor **(NPRa)**	12
No. of Contracted Items Delivered in reporting month **(NPRs)**	0
NPR4	**No data**

2.12 Examples

S. No.	1
Month	**Mar**
Year	**2014**
No. of Problems Reported during the Month **(Np4)**	10
Annualization Factor **(NPRa)**	12
No. of units shipped in reporting months**(NPRs)**	75
NPR4	**10 * 12 / 75 =1.6**

Chapter 3

Fix Response Time

3.1 Name

Fix Response Time

3.2 Identifier

FRT4

3.3 Metric

FRT4 (%) = 100 X (Fr4c / Fr4d)

Where, Fr4c equals number of problem reports closed on time

Fr4d equals number of problems due to be closed

3.4 Description

The problem report fix response time applies to the delivery of official / final fix in response to customer problem reports within due date as per the SLA agreed by the customer.

3.5 Purpose

Problem Report Fix Response Time (FRT) measures the organization's overall responsiveness to reported problems. The Problem Report Fix Response Time applies to the delivery of the official fix in response to customer problem reports.

3.6 Applicable

This metric is applicable to all the problems reported for the commercial release of the product.

3.7 Counting Rules

- Problem reports originated by customer only are counted.
- Only for CAPGEMINI Products used without modifications at Customer Systems are included.
- The start of the interval for calculating FRT shall be the date the problem is reported to the organization. FRT interval is calculated from the date the problem is reported to the date when official fix is provided. Should the problem report originator later reject the fix as incomplete or causing side effects, the problem report shall be re-classified as open. All intervening time shall be included in determining on-time problem closure.
- If with customer consent, the implementation of a fix is deferred, such as waiting for the next software update versus a patch, then the deferral interval is not included. This deferral may be to an agreed scheduled date when fix is to be delivered or simply to a specific new product release that will contain the fix.
- With customer approval, the time between the application of a temporary fix and the commitment date for a permanent fix may be excluded in the fix response time calculation. The customer must agree that the temporary fix meets their needs. Failure to provide an acceptable resolution with a permanent fix by the negotiated commitment date will result in the restoration of all the excluded time.
- Problem reports are counted only in the month they are due and not in the month they are fixed or closed.
- When there are No Problem Reports due to be closed in a particular reporting period, the FRT value is 100%

3.8 Exclusions

- A problem report put on hold by the customer may be excluded from the overall closure time. Records of such delays with specific start and stop dates will be maintained.
- If a problem report misses its due fixed date, and time when required by an SLA, it is not counted in FRT again - even if a new due date is negotiated.

- If the deployment of the fix is delayed or does not occur specifically at the customer's request and not because of problems within CAPGEMINI, the interval is defined as ending when the official fix is first made available for delivery. The delay interval will not be included in the FRT calculation.
- All exclusions of NPR Metric hold valid and applicable for FRT too.

3.9 Frequency

Monthly

3.10 Source

MOL – Matrix On Line tool helps in logging and tracking CSRs raised by the customers, product delivery and AMC / Warranty tracking.

3.11 Consideration

Due dates for providing the problem fix are decided on the basis of entitlements that states the contract type & SLA applicable. For example, general entitlement says that due date for providing the problem fix for "critical" problems is 3 Days, for "major" problems is 5 Days & for "minor" problems is 30 Days or next formal release.

3.12 Calculation

- The FRT measurements shall be calculated monthly by multiplying 100 by the number of problems due in a month that were fixed with in due date and dividing by the total # of problems due in that month.
- For FRT calculations, the data shall be extracted from the above identified data source for the no. of problems reported, reporting date, date of providing fix, hold duration (if any) and the entitlement applicable.
- Calculations are to be done by using an excel sheet that requires as data input a unique Defect No., Date of Reporting, Date of Providing Fix, Hold Duration, Entitlement, Due Date Release No., Customer & Product name.
- FR4c represents # of problems closed in a month within Due Date that were due for that month identified by unique Defect ID, Entitlement, Due Date and On Time Decision column in excel sheet.
- FR4d represents total # of problems that were due for that month identified by unique Defect ID, Entitlement and Due Date in excel sheet.
- **Rules for Zero Denominator Data**: In TL 9000 it is possible for the denominator to be zero when calculating any metrics. There are two different cases:
  - Both numerator and denominator are 0 – that is 0/0
  - Numerator is not zero but denominator is 0 – that is n/0

Measurement	Defined value	Comments

	0/0	n/0	
FRT4	100%	Not valid	

Application of the rules is as follows:

3.13 No valid: Failed for data submission Examples

S. No.	1
Month	**Mar**
Year	**2007**
No of Problems closed on time during the Month **(Fr4c)**	59
No of Problems due to be closed during the month **(Fr4d)**	97
FRT4 %	**60.82%**

S. No.	2
Month	**Jan**
Year	**2014**
No of Problems closed on time during the Month **(Fr4c)**	0
No of Problems due to be closed during the month **(Fr4d)**	0
FRT4 %	**100%**

Chapter 4

Overdue Problem Report Fix Responsiveness

4.1 Name

Overdue Problem Report Fix Responsiveness

4.2 Identifier

OFR4

4.3 Metric

OFR4 (%) = 100 X (Of4c / Of4d)

Where, Of4c equals Number of overdue problem reports closed

Of4d equals Total number of overdue problem reports.

4.4 Description

The overdue problem report fix response time measures the rate of closure of the problem reports that remain open (overdue) beyond the SLA allowed time.

4.5 Purpose

This measurement is used to quantify the responsiveness to overdue problem reports.

4.6 Applicable

This metric is applicable to all the problems reported for the commercial release of the product.

4.7 Counting Rules

- Problem reports originated by customer only are counted.
- Only for CAPGEMINI Products used without modifications at Customer Systems are included.
- Overdue problem reports are those that are open beyond the due threshold time defined as per the SLA.
- Open problem reports shall be counted as overdue in each month during which they are open and overdue including the month they are closed.
- In those cases where customer defers solution for an overdue problem, if the deferral date is missed for an Overdue Problem Report, the problem report is counted as overdue in all previously excluded months (*the OFR data is resubmitted for the quarter only*).
- When there are No Overdue Problem Reports due to be closed in a particular reporting period, the OFR value is 100%.

4.8 Exclusions

- Problem report related to use of the product in a manner not defined in specification of the product is excluded.
- Customer report of routine events such as expected maintenance or software upgrades is excluded.
- A customer-approved deferral of an overdue problem removes it from subsequent months until the month that marks the end of the deferral interval and then the entire counting rules apply again.
- All exclusions of NPR Metric hold valid and applicable for OFR too.

4.9 Frequency

Monthly

4.10 Source

MOL – Matrix On Line tool helps in logging and tracking CSRs raised by the customers, product delivery and AMC / Warranty tracking.

4.11 Considerations

Due dates for providing the problem fix are decided on the basis of entitlements that states the contract type & SLA applicable

4.12 Calculation

- The OFR measurements shall be calculated monthly by multiplying 100 by the # of problems overdue at the beginning of the month that were fixed with in that month and dividing by the total # of problems overdue at the beginning of the month.
- For OFR calculations, the data shall be extracted from the above identified data source for the no. of problems reported, reporting date, date of providing fix, hold duration (if any) and the entitlement applicable.
- Calculations are to be done by using an excel sheet that requires as data input a unique Defect No., Date of Reporting, Date of Providing Fix, Hold Duration, Entitlement, Due Date Release No., Customer & Product name.
- OF4c represents # of overdue problems closed in a month that were overdue at the beginning of that month identified by unique Defect ID, Entitlement, Due Date and Decision column about overdue problems in excel sheet.
- OF4d represents total # of problems that were overdue at the beginning of that month identified by unique Defect ID, Entitlement and Due Date in excel sheet.
- **Rules for Zero Denominator Data**: In TL 9000 it is possible for the denominator to be zero when calculating any metrics. There are two different cases:
  - Both numerator and denominator are 0 – that is 0/0
  - Numerator is not zero but denominator is 0 – that is n/0

Measurement	Defined value		Comments
	0/0	n/0	
OFR4	100%	Not valid	

Application of the rules is as follows:

- **No valid**: Failed for data submission

4.13 Examples

S. No.	1
Month	**May**
Year	**2005**
No of Overdue Problems fixed during the Month **(Of4c)**	4
Total No of Overdue Problems at the month beginning **(Of4d)**	5
OFR4 %	**80%**

S. No.	2
Month	**Jan**
Year	**2014**
No of Overdue Problems fixed during the Month **(Of4c)**	0
Total No of Overdue Problems at the month beginning **(Of4d)**	0
OFR4 %	**100%**

Chapter 5

On-Time Delivery

5.1 Name

On-Time Delivery

5.2 Identifier

OTI & OTIP

5.3 Metric

OTI % = 100 x (DIa / DId)

(On-Time Item Delivery)

Where, DIa is Number of items accepted on the CRD (Customer Request Date) during the month,

DId is Number of items for which the CRD (Customer Request Date) occurred during the month.

Note: CRD is the initial request date (as per SOW/Contract or any other verifiable source) or the revised delivery date on the basis of customer requested or approved date. Change to the CRD may not be initiated by the organization.]

OTIP % = 100 x (DIPa / DIPd)

(On-Time Item delivery to supplier promised date)

Where, DIPa is Number of items accepted on the SPD (Supplier Promised Date) during the month,

DIPd is Number of items for which the SPD (Supplier Promised Date) occurred during the month.

Note: SPD is the date the organization promises to deliver the product. SPD is the initial promise date provided to the customer by organization unless the customer initiates change to the SPD.]

5.4 Description

On-Time Delivery measures the timelines of delivery of products to customers.

5.5 Purpose

This measurement is used to evaluate the organization's on-time delivery performance to meet the customer's need for timely product delivery and to meet end-customer expectations. It is not intended to measure the organization's performance in meeting its commitment for the release of new designs. Additionally, measure the organization's performance to deliver the product to their Supplier Promised Date (SPD).

5.6 Applicable

This metric is applicable to item delivery done by product support team by CAPGEMINI.

5.7 Counting Rules

- Each delivery of item is counted as one unit of order.
- Acceptance criteria are as per the purchase order and/or contract terms and condition unless notified otherwise by the customer.
- Due dates and delivery dates are considered to be one 24 – hour period.
- For line item orders, the CRD is the customer requested date of shipment delivery on site.
- For line item orders, the SPD is the supplier promised date of shipment delivery on site.
- Compound orders designated by the customer for a single delivery, must be treated in aggregate. If one line item is late, then all line items shall be counted as late.

- Bulk order considered completed if all items committed to be delivered in the order are delivered within the timeframe. Each scheduled delivery date is treated as a separate line item.
- In Software Development, the customers typically accept early deliveries. Schedules and Deliverables are typically done in line with Customer needs & hence early deliveries are not issues.
- Early deliverables will be accepted by the customer based on a simple blanket verbal agreement, which may be documented by e-mail or a memorandum of understanding or other such mechanism

5.8 Exclusions

Orders for which the CRD is earlier than the date the order is received by the organization are excluded from the measurement.

5.9 Frequency

Monthly

5.10 Source

MOL – Matrix On Line tool helps in logging and tracking CSRs raised by the customers, product delivery and AMC / Warranty tracking.

PCMAS (Part Control Management System)**:** It is a Lotus Notes based application which takes care of Part No Requests and Part Release Notification.

5.11 Considerations

None

5.12 Calculation

- OTD is calculated on the basis of # of items that were accepted on the CRD divided by the total # of items that had CRD in that month. Additionally, basis of # of items that were accepted on the SPD divided by the total # of items that had SPD in that month
- For OTD calculations, the data shall be extracted from the above identified data source for the project name, contract/ purchase order, CRD / SPD, delivery date, acceptance date, quantity ordered & quantity delivered.
- Calculations are to be done by using an excel sheet that requires as data input a project name, contract/ purchase order, CRD / SPD, delivery date, acceptance date, quantity ordered, quantity delivered, CRD meeting decision column

- **Rules for Zero Denominator Data**: In TL 9000 it is possible for the denominator to be zero when calculating any metrics. There are two different cases:
  - Both numerator and denominator are 0 – that is 0/0
  - Numerator is not zero but denominator is 0 – that is n/0

Measurement	Defined value		Comments
	0/0	n/0	
OTS	No data	Not valid	

Application of the rules is as follows:

- **No data**: Ignore the data in monthly and summary data calculations
- **No valid**: Failed for data submission

5.13 Examples of OTI

- **DATA**

Purchase Order	CRD *(mm/dd)*	Line Item	Quantity Ordered	Split Order	Quantity Delivered	Date Delivered *(mm/dd)*	No. of On-Time Line Item CRDs Met	Note
E	03/10	1	9		9	03/10	1	
	03/13	2	7		7	03/15	0	
	03/19	3	10		10	03/19	1	
F	03/15	1	4		4	03/15	1	
	03/15	2	4	Yes	2	03/17	0	1
				Yes	3	03/20	0	1
G	02/20	1	6		6	03/20	NA	2
	02/22	2	8		8	03/22	NA	2
No. of Orders= 2	No. of item CRDs due in month Dld=5						On – time delivery of items (DIa) = 3	

- **CALCULATIONS**

S. No.	1
Month	**Mar**
Year	**2007**
No. of items delivered on time during the month **(DIa)**	3
No. of items that have CRD due in the month **(DId)**	5
OTI%	**60%**

NOTES:

1. Line item F2 was not on time for the CRD because only ½ of the items were delivered on the CRD.

2. Purchase Order line items G1 and G2 CRDs were not counted in the total of 5 for March as they had a February CRD.
3. Example for Zero denomination rule

S. No.	2
Month	**Jan**
Year	**2014**
No. of Deliverables delivered on time during the month **(DVa)**	0
No. of Deliverables that have CRD due in the month **(DVd)**	0
OTS%	**No data**

5.14 Examples of OTIP

- **DATA**

Purchase Order	**SPD** *(mm/dd)*	**Line Item**	**Quantity Ordered**	**Split Order**	**Quantity Delivered**	**Date Delivered** *(mm/dd)*	**No. of On-Time Line Item SPDs Met**	**Note**
H	05/10	1	9		9	03/10	1	
	05/13	2	2		2	03/13	1	
	05/19	3	5		5	03/19	1	
I	05/15	1	4		2	03/15	1	
	05/15	2	4	Yes	2	03/17	0	1
				Yes	3	03/20	0	1
J	04/20	1	6		6	03/20	NA	2
	04/22	2	8		8	03/22	NA	2
No. of Orders= 2	No. of item SPDs due in month DlPd=5						On – time delivery to Promise Date (DIPa) = 4	

- **CALCULATIONS**

S. No.	1
Month	**May**
Year	**2013**
No. of items delivered on time during the month **(DIPa)**	4
No. of items that have CRD due in the month **(DIPd)**	5
OTIP%	**80%**

NOTES:

1. Line item I2 was not on time for the SPD because only ½ of the items were delivered on the SPD.

2. Purchase Order line items J1 and J2 CRDs were not counted in the total of 5 for May as they had an April SPD.
3. Example for Zero denomination rule

S. No.	2
Month	**Jan**
Year	**2014**
No. of Deliverables delivered on time during the month **(DIPa)**	0
No. of Deliverables that have CRD due in the month **(DIPd)**	0
OTIP%	**No data**

4.

Appendix - A:

INFORMATION AND COMMUNICATIONS TECHNOLOGY (ICT)

TL9000 Measurement Handbook R5.7 requirement applicable for those projects which are executed for global information and communications technology (ICT) for Telecom industry.
For TL9000, ICT (information and communications technology - or technologies) is an umbrella term that includes any communication device or application, encompassing three sectors, Equipment Sector (Hardware - manufacture telecom products), Software and Services Sector (operators and other service providers including vendors for equipment and infrastructure).

[A.] Telecommunications Equipment Sector: Satellite and broadcast network equipment, wireless telecommunications equipment, Wireline telecommunications equipment and other telecommunications and computer networking equipment.
[B.] Telecommunications Services Sector: Telecom service providers, broadband service providers and intermediaries.

The telecommunications services sector can be divided into following categories:

- Wired Services (fixed telephone, broadband, and cable network, microwaves, and satellite link-ups & telegraph)
- Wireless Services (cellular mobile phone, paging, satellite, broadband communication, switching and transmission)
- Internet Services (All Internet service providers - ISPs)
- Resellers (transmission facilities provider, such as telephone lines or space on a satellite, from existing telecommunications networks, and then resell the service to other customers)
- Cable and Program Distribution (Direct broadcasting satellite (DBS) and pay television services transmit)
- Other Broadband Services (Internet Protocol television (IPTV), Voice over Internet Protocol (VoIP) and Internet Protocol virtual private network (IP VPN or VPN))

Note: Information and communications technology (ICT) Domain in TL9000 extending from service providers through ICT equipment manufacturers through the suppliers and contractors and subcontractors that provide electronic components and software components to those ICT equipment manufacturers.