

**Quality Excellence for Suppliers of  
Telecommunications Forum  
(QuEST Forum)**

**TL 9000  
Quality Management System  
Measurements Handbook  
SONE Examples**

## System Outage Network Element (SONE)

### 6.2 SONE Examples

#### 6.2.1 – Host End-Office System-Outage Reporting

As of June, 2006, Consider a population of four host end-office systems, product category 1.1h, consisting of 4 systems (**N**).

For this example the following outages occurred in June, 2006:

- 1) Site A experienced a 10-minute, Product Attributable, affecting all terminations
- 2) Site D experienced a 30-minute, Product Attributable, affecting all terminations
- 3) Site A experienced a 5-minute, Product Attributable, CCS outage (default weight 50%)
- 4) Site C experienced a 15-minute, Product Attributable, CCS outage (default weight 50%)
- 5) Site B experiences a 20-minute, Product Attributable, outages affecting 500 termination out of 2000 terminations

(Based on these outages measurement variables **T** = 2 and **P** = 3)

Table 6.2.1-1 summarizes the outage data for the current reporting month.

**Table 6.2.1-1 Total Outage Measurement Summary for Host End-Office Systems**

Outage Number	Fraction of NE Affected (f)	Outage Duration in minutes (td)	Weighted Time (f * td)
1	1	10	10.00
2	1	30	30.00
Totals			40.00

**Table 6.2.1-2 Partial Outage Measurement Summary for Host End-Office Systems**

Outage Number	Fraction of NE Affected (f)	Outage Duration in minutes (pd)	Weighted Time (f * pd)
3	0.50	5	2.50
4	0.50	15	7.50
5	0.25	20	5.00
Totals			15.00

Network Element Impact Calculations

The “Product Attributable” downtime calculation for the host systems is

$$TD = \sum_{i=1}^{T_m} td_{m,i}$$

$$TD = 40$$

$$PD = \sum_{i=1}^{P_m} pd_{m,i} f_{m,i}$$

$$PD = 15$$

$$NEO4 = 12 \times \frac{TD_m + PD_m}{N_m}$$

$$NEO4 = 12 \times \frac{55.00}{4}$$

$$NEO4 = 165.00 \text{ minutes/NE/year}$$

The “Product Attributable” outage frequency calculation for the host systems is

$$NEO3 = 12 \times \frac{T_m + P_m}{N_m}$$

$$NEO3 = 12 \times \frac{2 + 3}{4}$$

$$NEO3 = 15 \text{ events/NE/year}$$

These measurements translate to the performance of the network element in the system population. A network element will experience 15.00 outages totaling 165.00 minutes in a year based on performance in the current month.

The host system population consists of four systems, which is reported as NEOs in the SONE measurement. Since all the outages were product attributable, the customer attributable measurements (NEOec and NEOdc) are zero. The organization reports NEOdp as 55.00 and NEOep as 5 in the measurement submission.

**Table 6.2-8 Example SONE Data Table Report  
for June, 2006**

<b>Identifier</b>	<b>Value</b>
MeasurementID	SONE
NEOa	12
NEOs	4
NEOec	0
NEOdc	0
NEOep	5
NEOdp	55.00