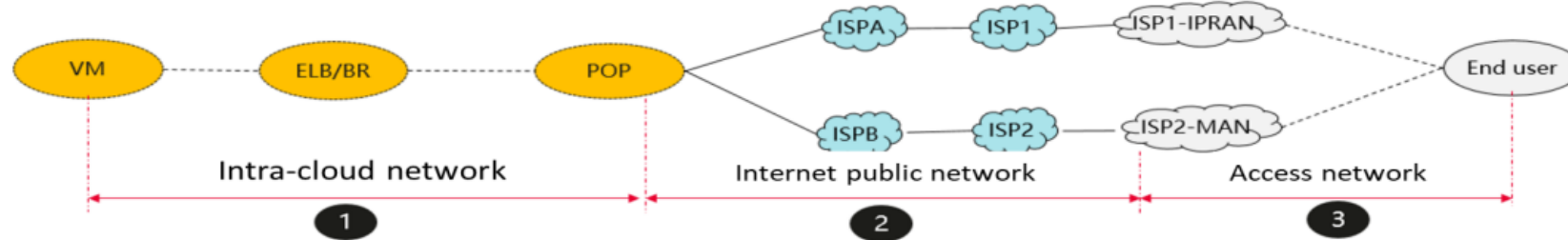


# Customer Experience Index for Evaluating Network Quality for Cloud Applications

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## ➤ Scenario:

Users access the cloud applications via three network segments:

public network (1) has the widest coverage in the entire process (2) high network complexity.

==> ✘ **Quality of public network** has great impact on cloud applications.

✘ It is **difficult** for cloud vendors to directly access application-level Key Quality Index (KQI) data.

➤ **Intuition:** deriving authentic customer experience from basic network metrics to facilitate network optimizations

➤ **Goal & Challenges:** A unified evaluating method of network experience for cloud application

(1) **No single KPI** can provide accurate reflection of the experience for diverse services

(2) **No unified evaluation method** for experience quality

➤ **Method:** Observation & Formulation

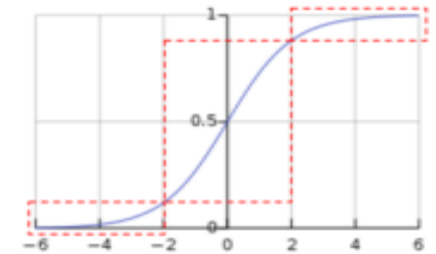
CEI -- comprehensive **formula incorporating latency + packet-loss rate + jitter** (adopting the **S-curve** method for experience assessment – it expresses **sensitive & smooth zones** as user experience)

$$CEI(x, y, z) = w_{lat} \cdot \frac{1 + e^{b_{lat}}}{1 + e^{a_{lat} \cdot x + b_{lat}}} + w_{los} \cdot \frac{1 + e^{b_{los}}}{1 + e^{a_{los} \cdot y + b_{los}}} + w_{jit} \cdot \frac{1 + e^{b_{jit}}}{1 + e^{a_{jit} \cdot z + b_{jit}}}$$

**Parameter a,b:** by fitting each KPI CEI curve based on a large amount of operational data

**Weights:** by adjusting its weight values (w1, w2, w3) according to various application categories

$$f(x) = \frac{1 + e^b}{1 + e^{a \cdot x + b}}$$



# Customer Experience Index(CEI) contribute with the existing IETF document [I-D.ietf-ippm-qoo].

**We are considering to contribute with the following two points:**

- a) QoO draft uses the network metrics measured on the application-oriented layers(4-7). We can add network-oriented metrics (layer-3) according to the CEI draft.
- b) The QoO metric indicates the probability of experience deterioration for target users including end users, carriers, and application developers. We can add the experience satisfaction of all users on all applications on the network according to the CEI draft.

# Thank you.

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