CDNI Capacity Insights Capability Advertisement Extensions

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Capacity Insights

☐ CDNI Capacity Insights Capability Advertisement Extensions

☐ draft-ryan-cdni-capacity-insights-extensions-01

Capacity Insights

What are the goals of the Capacity Interface?

☐ Provide framework for information exchange to facilitate traffic delegation decisions

☐ Establish limits that are specific to delegation relationship

☐ Define limits in unambiguous, mutually understood units

☐ Bidirectional communication between delegation participants

☐ Leverage CDNi as much as possible, extend where needed

Capacity Insights

- ☐ FCI.CapacityLimits
  - ☐ Specify the limit of traffic that should be delegated in units, such as Bits per Second, called limit-types
  - ☐ References a specific Telemetry source which outlines current usage of a particular limit-type
- ☐ FCI.Telemetry
  - ☐ Allows the advertisement of what types of Telemetry sources are supported
  - ☐ Initially scoped to generic Telemetry sources, but paves the way for a formal Telemetry interface integration
- ☐ MI.RequestedCapacityLimits

  - ☐ Provides a vehicle for the uCDN to ask the dCDN for an update to established Limits

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Capacity Insights – FCI.CapacityLimits

```json
{
  "capabilities": [
    ...,
    {
      "capability-type": "FCI.CapacityLimits"
      "capability-value": {
        "total-limits": [
          {
            "limit-type": "egress",
            "maximum-hard": 50000000000,
            "maximum-soft": 25000000000,
            "telemetry-source": {
              "id": "capacity_metrics_region1",
              "metric": "egress_5m"
            }
          }
        ],
        "host-limits": [
          {
            "host": "serviceA.cdn.example.com",
            "limits": [
              "limit-type": "egress",
              "maximum-hard": 20000000000,
              "maximum-soft": 10000000000,
              "telemetry-source": {
                "id": "capacity_metrics_region1",
                "metric": "egress_service2_5m"
              }
            ]
          }
        ]
      }
    },
    . . .
```

☐ Total-limits: limit for all traffic associated with a uCDN/dCDN relationship

☐ Host-limits: limit for traffic for a specific CDN-Domain (published host)

☐ Each limit is scoped to a footprint (as per the CDNi FCI specification)

☐ Each limit references a Telemetry source which provides data with the same scope as the defined limit (i.e Bits per Second for Host X within Footprint Y)

☐ GOAL: How much can you send, and how can you track how much you are sending

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Capacity Insights – FCI.Telemetry

```json
"capabilities": [
  {
    "capability-type": "FCI.Telemetry",
    "capability-value": {
      "sources": [
        {
          "id": "capacity_metrics_region1",
          "type": "generic",
          "metrics": [
            {
              "name": "egress_5m",
              "time-granularity": 300,
              "data-percentile": 50,
              "latency": 1500
            },
            {
              "name": "requests_5m",
            },
            ...
          ],
          "configuration": { ... optional ... }
        }
      ]
    }
  }
...
```

- Lists the supported Telemetry Sources which include an id, type and metrics

- Telemetry data is uniquely identified within a source by id and metrics.name

- FCI.CapacityLimits reference Telemetry sources by id and metrics.name

- Each metric outlines key characteristics of telemetry data such as data latency, granularity, etc..

- Currently type is limited to 'Generic' and is meant to allow for advertisement of ad-hoc/ preexisting data sources

- Types will eventually expand to include refence to a formal Telemetry interface

- While this is being defined within the Capacity specification, this is meant to provide a general way to advertise Telemetry data

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Capacity Insights – Polling Workflow
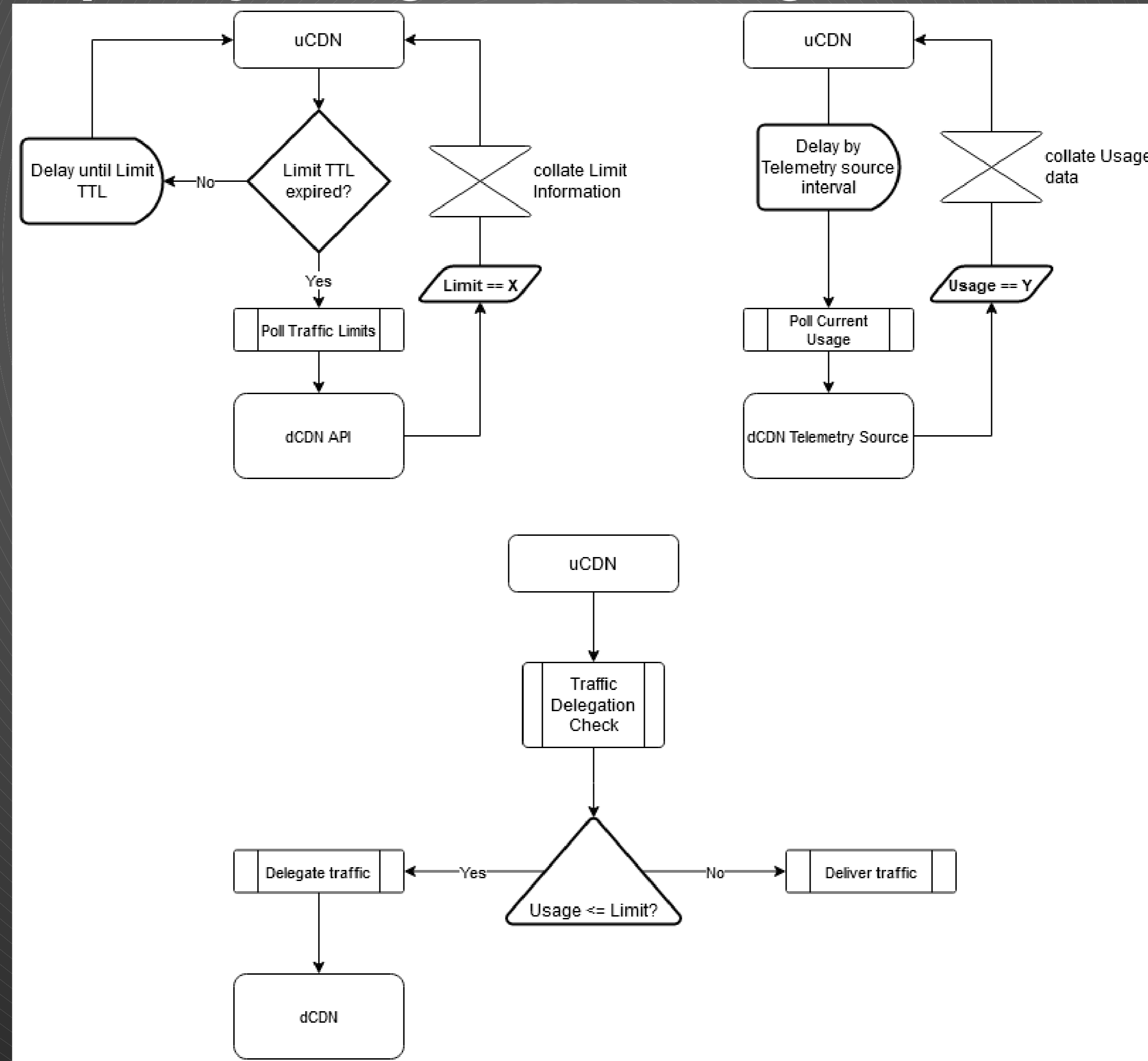
Capacity Insights – Incremental Update Workflow
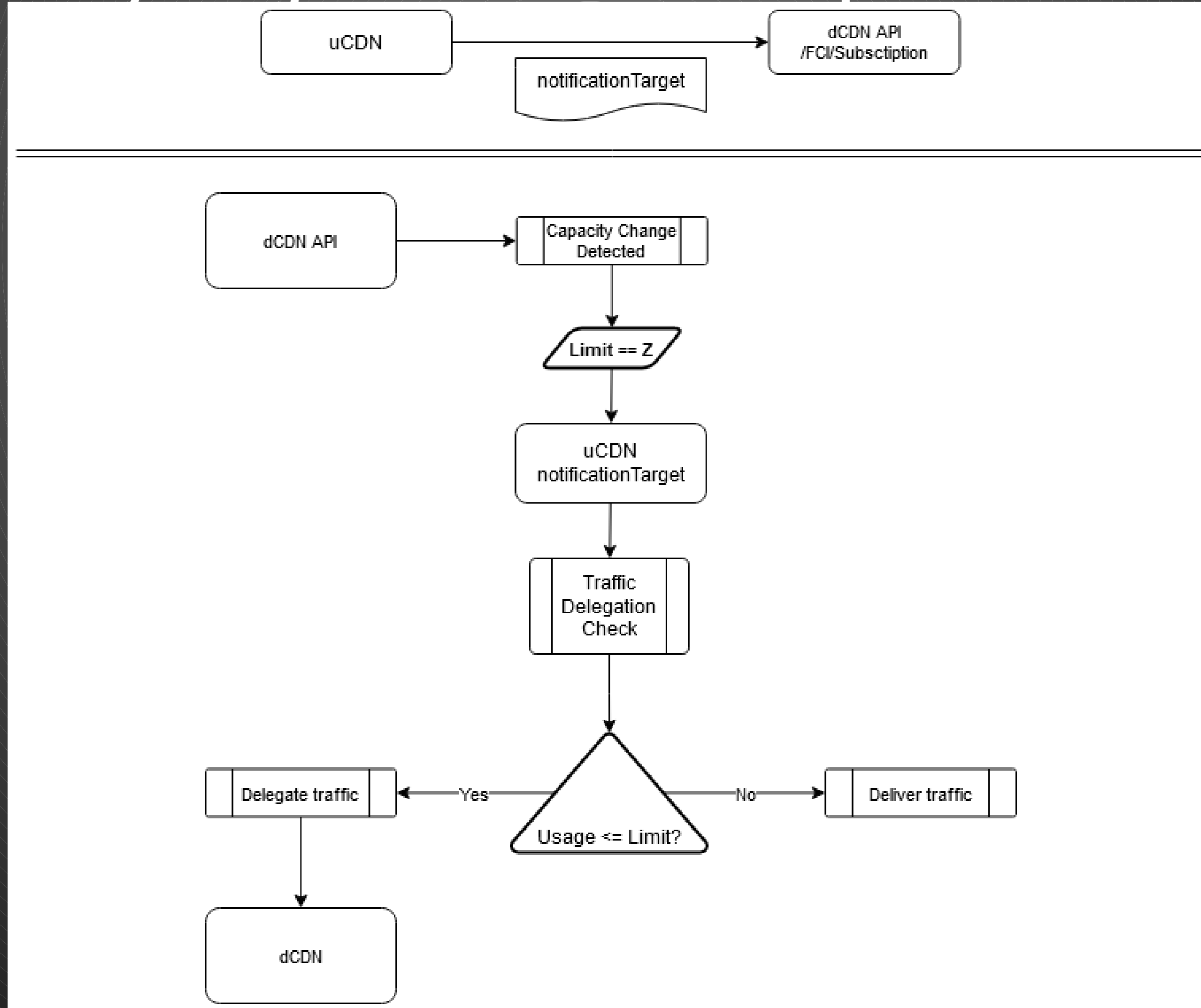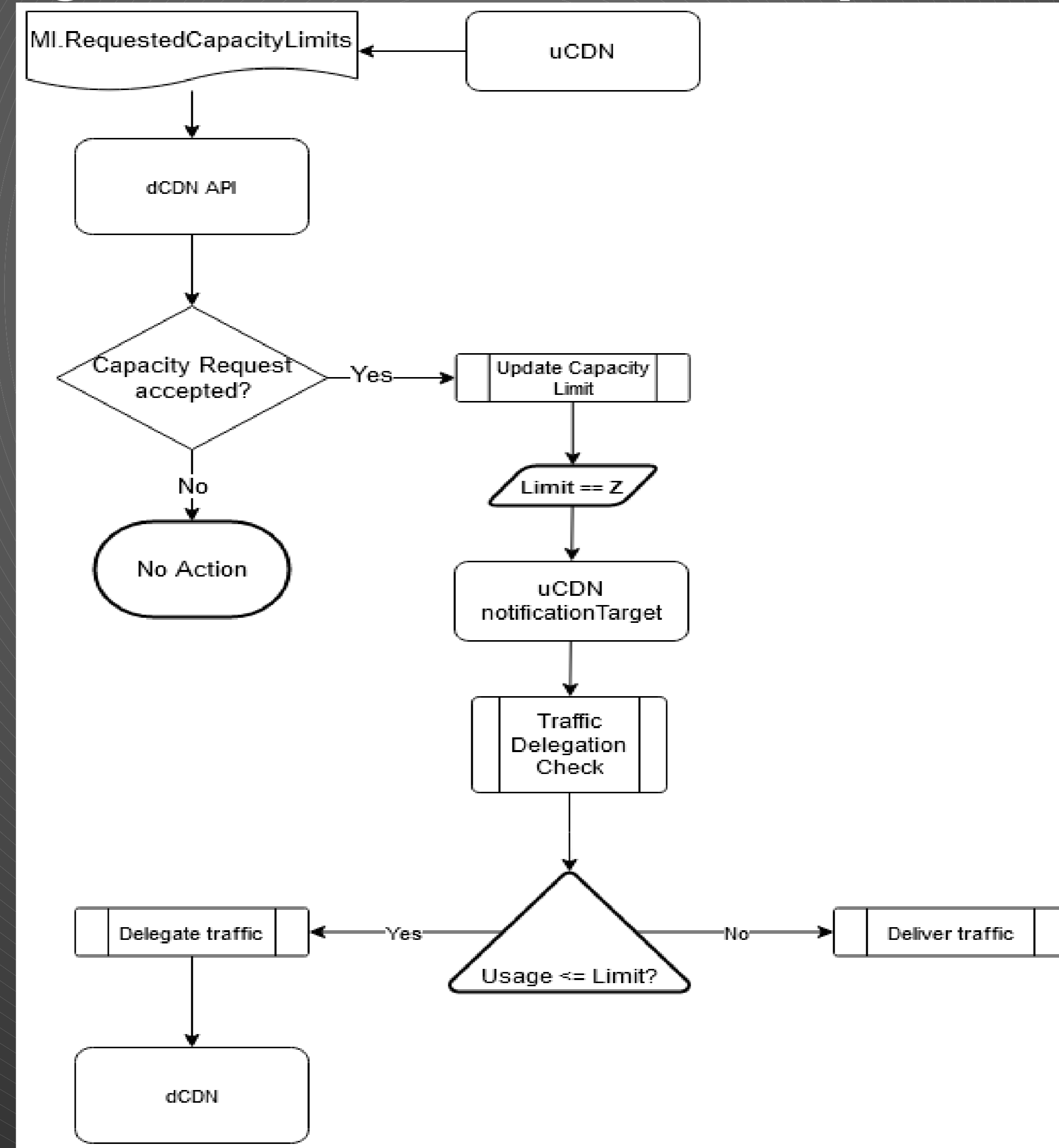
Capacity Insights – MI.RequestedCapacityLimits

```
{
  "host": "serviceA.cdn.example.com",
  "host-metadata": {
    "metadata": [
      ...,
      {
        "generic-metadata-type": "MI.RequestedCapacityLimits",
        "generic-metadata-value": {
          "requested-limits": [
            {
              "limit-type": "egress",
              "limit-value": 80000000000,
              "footprints": [{
                "footprint-type": "ipv4cidr",
                "footprint-value": ["192.0.2.0/24",
"198.51.100.0/24"]
              }]
            },
            {
              ...
            }
```

- ☐ Allows uCDN to ask dCDN to reconsider current CapacityLimit with suggested values
- ☐ Solicitations are specific to a CDN-Domain/Published host
- ☐ uCDN does a PUT to the dCDN Configuration endpoint
- ☐ dCDN considers request, and if it accepts sends an updated FCI.CapacityLimit to the uCDN
- ☐ If dCDN rejects, no action is taken

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Capacity Insights – Solicitation for Update Workflow

Thank you!

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