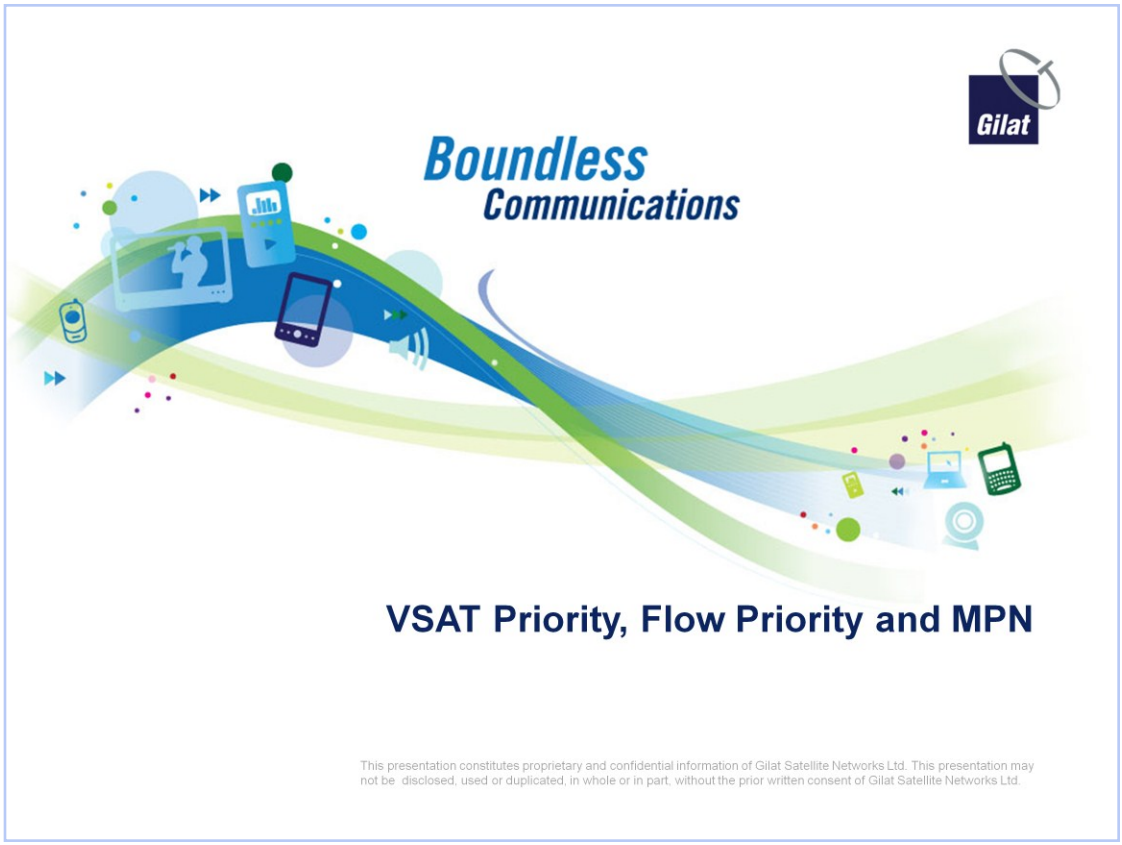
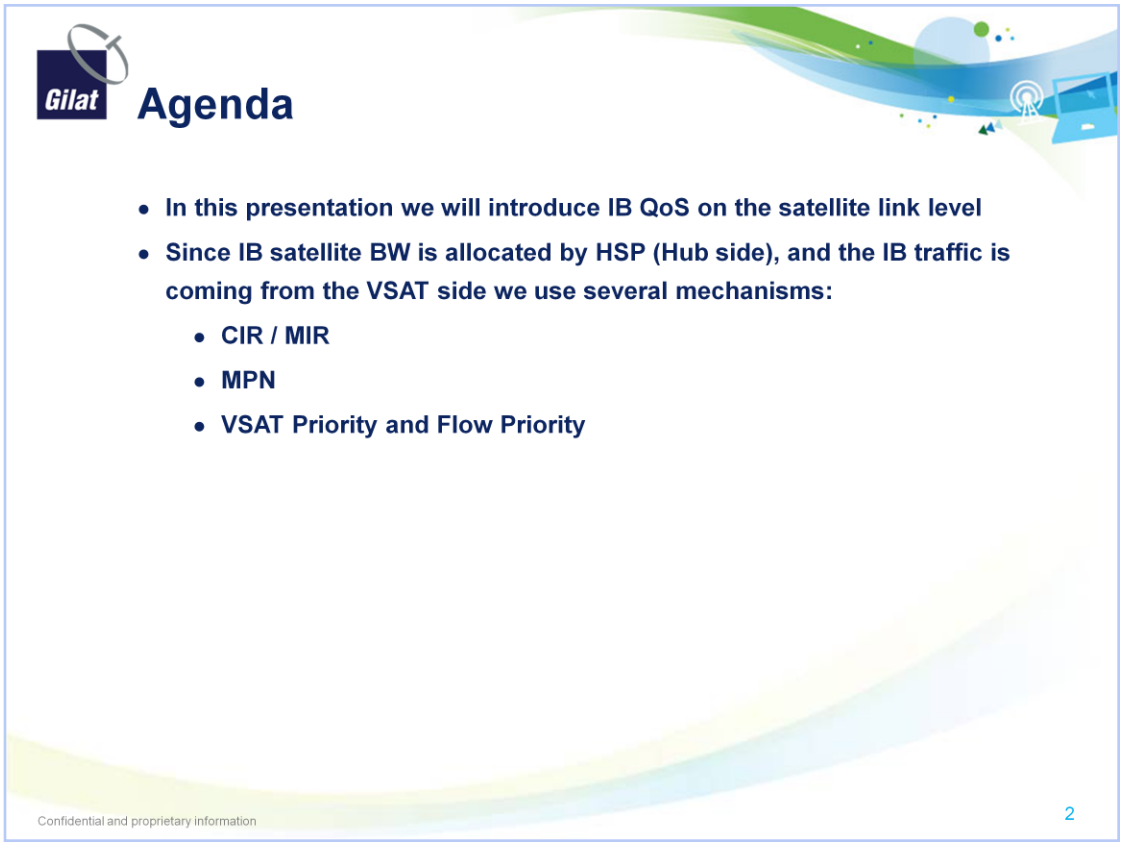
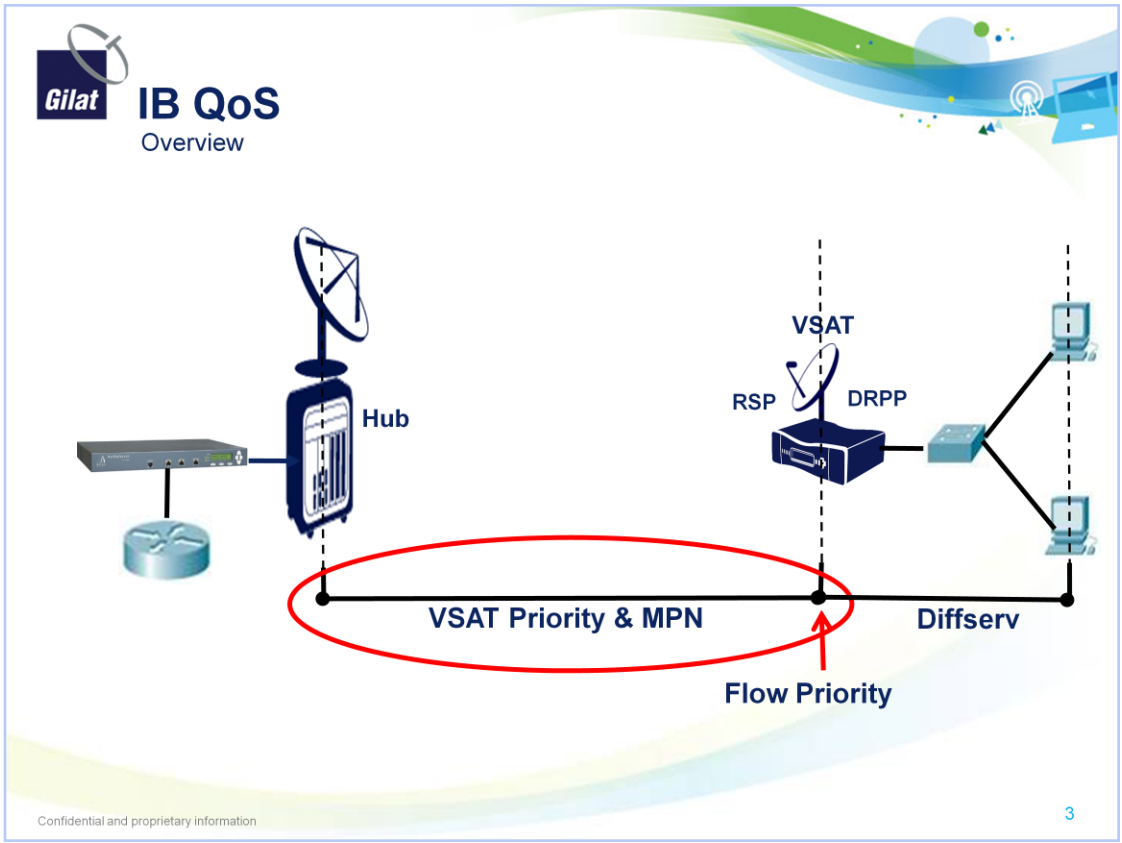




In the previous presentation we introduced the IB QoS preformed at the VSAT level, using classifiers and the Diffserv queues

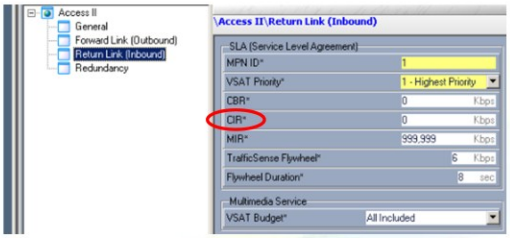


In the previous presentation we introduced the IB QoS preformed at the VSAT level, using classifiers and the Diffserv queues
In this presentation we will introduce IB QoS on the satellite link level

CIR Mechanism

Committed Information Rate

- The VSAT CIR is defined in the Access tab of the VSAT
- When the VSAT's data rate is below CIR, it will issue an Absolute capacity request to the HSP
- The HSP should always provide what is requested below CIR

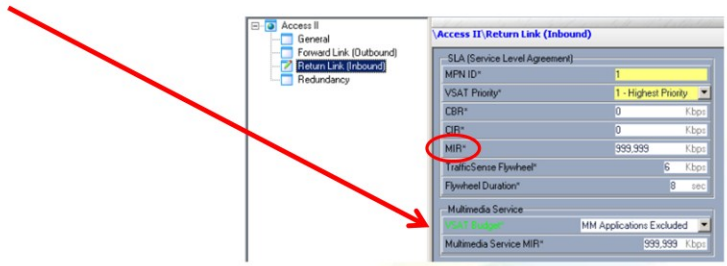


The CIR is often specified in the service contract (SLA), made between the user and the service provider.

MIR Mechanism

Maximum Information Rate

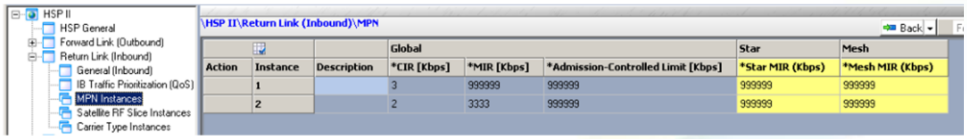
- **VSAT MIR is also configured in the VSAT Access tab**
- **The VSAT Access module (RSP) will never send capacity requests above MIR configuration**
- **Optionally, A separate MIR can be set for multimedia applications (VOIP, Abis etc.)**



Since multimedia applications (like VOIP and Abis) get the highest priority by default, they may require a separate MIR so as not to “starve” other applications

MPN Definitions

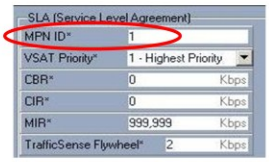
- **MPN - Managed Private Networks**
  - **MPN is a logical group of VSATs that shares a group bandwidth limitation**
- **For each MPN in the satellite link we need to define**
  - **Committed Information Rate (CIR)**
  - **Maximum Information Rate (MIR)**
    - If HSP has star/mesh separation, a separate MIR can be defined for each.
  - **Admission Controlled Limit (Limit for Multimedia type traffic)**



CIR, MIR and Admission-Controlled Limits are all set in Kbps (Kilobits per second)
CIR – The committed information rate per MPN. This field will be filled according to the SLA or contract signed by the client.
MIR – The maximum information rate per MPN. This field protects the service provider from heavy users which can consume all bandwidth.
Admission-Controlled Limit – this field is meant to limit the real-time application traffic, so it will not consume all the available bandwidth for this MPN.

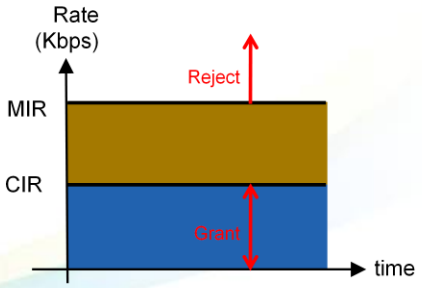
MPN Limitations

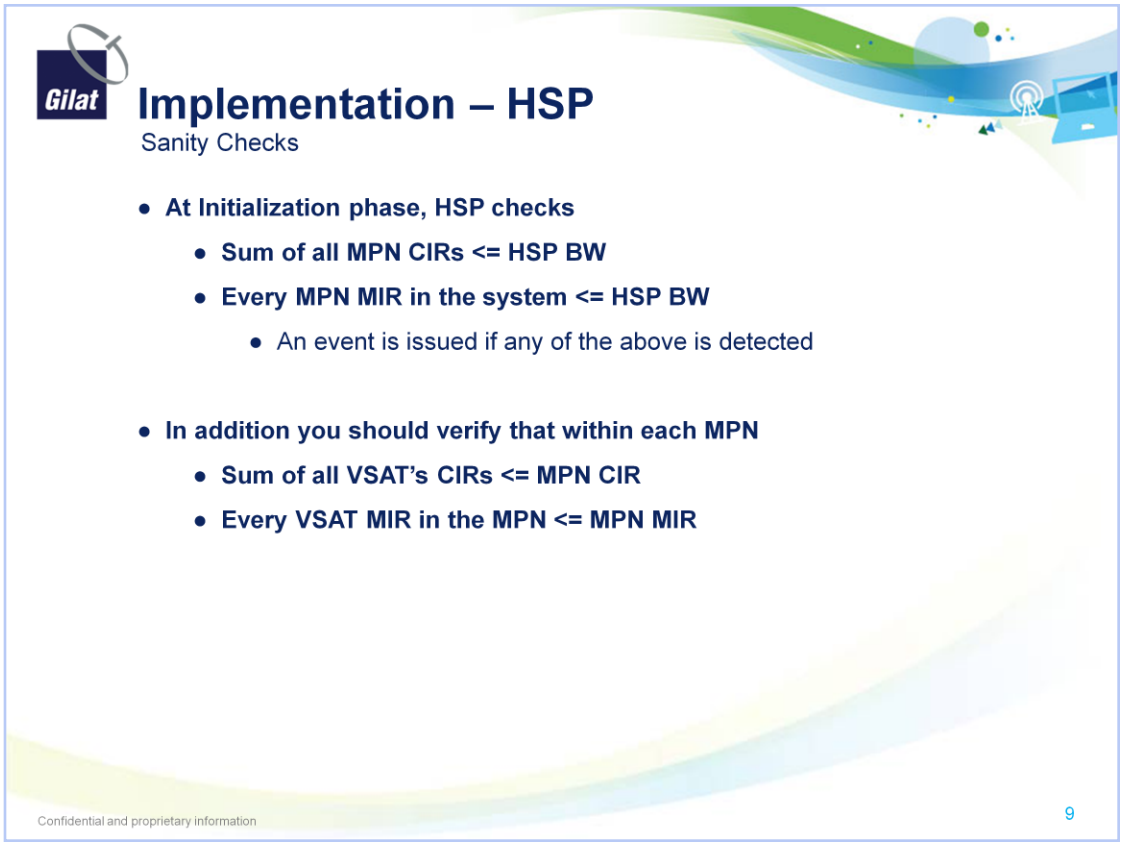
- MPN - Managed Private Networks
  - Each MPN should have a CIR and MIR based on the combined traffic of all VSATs in it
  - Up to 64 MPNs per HSP
  - Every VSAT must be assigned to one and only one MPN



MPN Mechanism

- The HSP measures each MPN current throughput
- The HSP grants VSATs their full request when their MPN throughput is below CIR
- The HSP grants part of the VSATs requests when the MPN throughput is above MPN CIR but below MPN MIR
- The HSP denies any capacity request for VSATs whose MPN exceeds its MIR





HSP initialization is not interrupted!

IB QoS - Priorities

- VSAT requests above CIR and below MIR are granted according to network load and priority
- There are two types of priorities in SEII IB QoS: Flow priority and VSAT priority
- Flow priority is the priority of traffic in a Diffserv queue at the VSAT (CS2, AF3 etc.). It is defined per Diffserv queue in the VSAT's data template
- VSAT priority is the priority of a specific VSAT. It is defined per VSAT

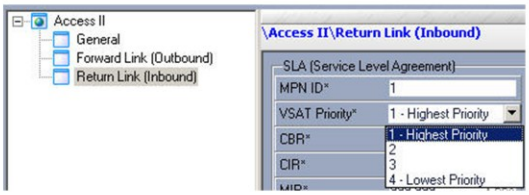
Flow Priority

- Is configured for each Diffserv queue. Located in the:
  - Data Template – Common VRs Parameters – CS1-CS7 traffic class descriptors instances (for CS queues)
  - Data Template – Common VRs Parameters – AF1-AF4 traffic class descriptors instances (for AF queues)
- Has 3 priority levels: High, Medium & Low

Each Capacity Request sent by the RSP to the HSP has the Flow Priority within it. The HSP will consider the Flow priority and the VSAT priority when replying to any Capacity request.

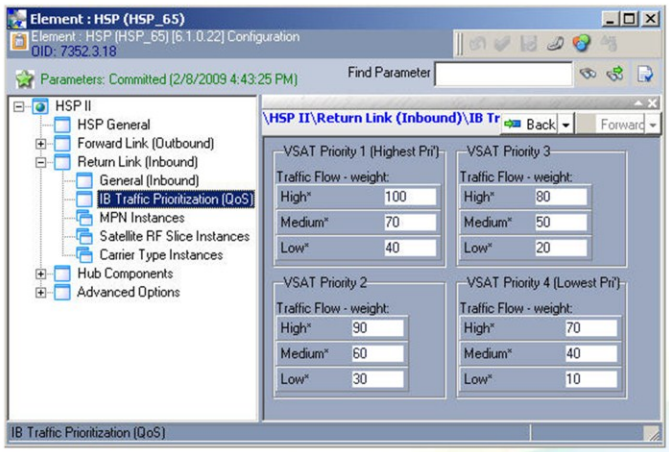
VSAT Priority - RSP

- Can be configured in the VSAT configuration - Access Tab – Return Link
- Has 4 priority levels: 1 – highest, 2, 3, 4 – lowest
- Upon registration to the HSP, the VSAT reports its priority level. The HSP keeps track of all VSATs and their priority

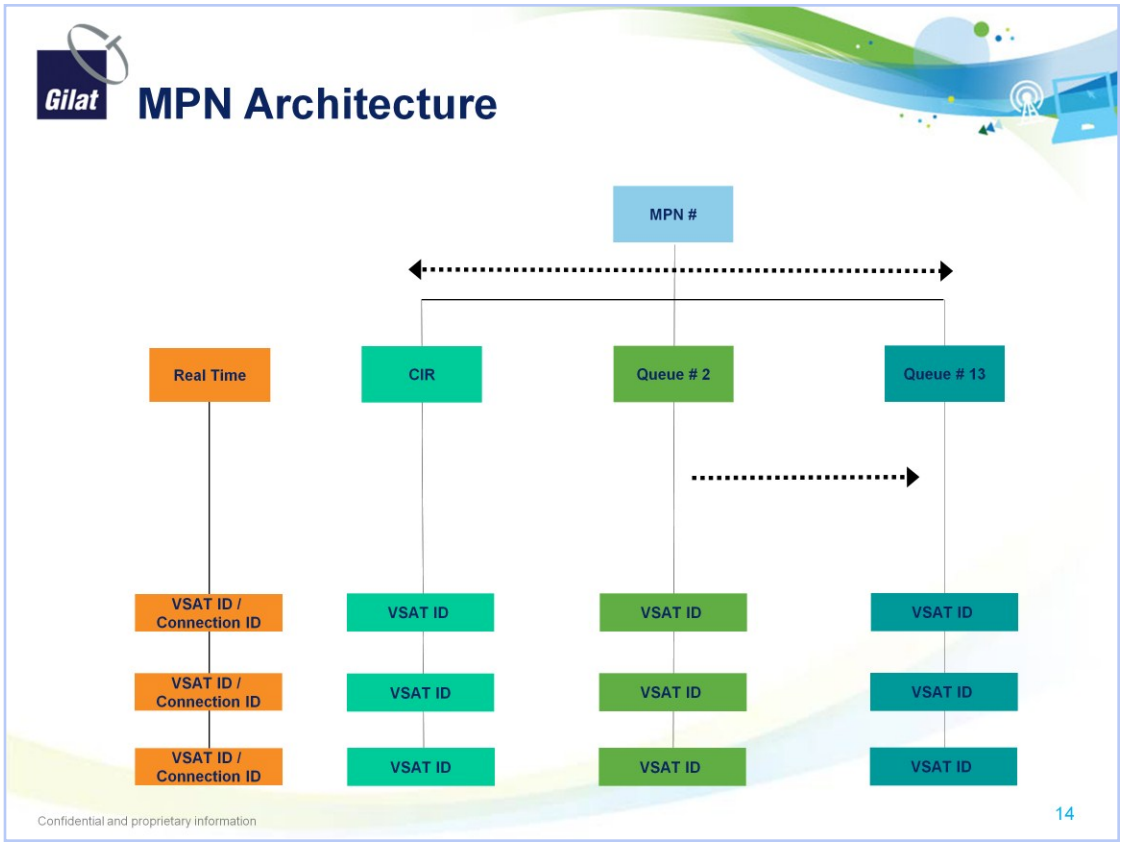


VSAT Priority - HSP

- For every allocation round, the HSP calculates the amount of bandwidth to allocate to each VSAT, according to the VSAT's priority and the flow priority of the request that came from the VSAT



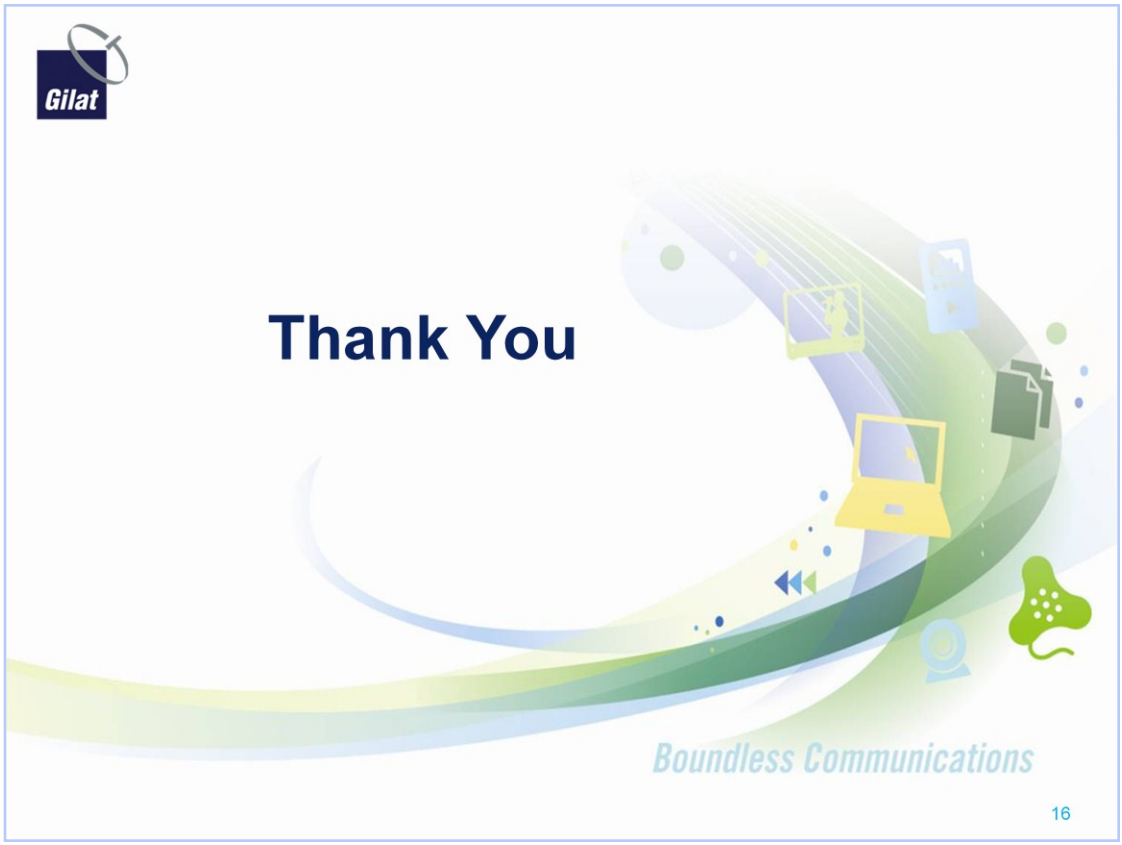
In the table above, there is a weight configuration for each VSAT priority and each Flow priority. 4 VSAT priorities and 3 flow priorities give us 12 possible combinations. The HSP will calculate the amount of bandwidth needed for each combination.



In the HSP IB QoS Architecture diagram we can see the HSP creates 13 queues for each and every MPN defined in the system:
1 queue for Absolute Capacity requests (below CIR)
12 queues, one for each of the possible combinations between VSAT & Flow priorities.

IB QoS Summary

- **Multimedia requests are sent first (according to limitations) and have highest priority**
- **Up to CIR, VSAT will send Absolute requests and receive the allocations**
- **Between CIR and MIR, network allocations will be made according to network load and priorities (VSAT and Flow priorities)**
- **CIR and MIR can be implemented on VSAT level and on MPN level.**


Gilat
Thank You
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