

TITLE: Effective Reverse Link Data Rate Control for 1xEV-DV -r2

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ABSTRACT : This contribution proposes the IAB concept for the effective data rate control for 1xEV-DV reverse link

RECOMMENDATION : Review, discuss, and adopt

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Purposes of Reverse Link Data Rate Control

- To provide performance enhancements and symmetric control with forward link
 - Effective bandwidth allocation is required
 - ✓ Based on grade of service or mobile station
 - Overshoot is not desirable
 - ✓ Fluctuation depth should be small
 - Full reverse link utilization is guaranteed
 - ✓ Based on the cell environment, quick saturation or conversion to maximum capacity should be achieved
- All Performance enhancements should be provided with minimum overhead or with minimum overhead

Existing control schemes for Reverse Link

- Common control schemes for Reverse Link Data Rate
 - Common information from the BS is sent to all MS in the cell
 - A small amount of overhead is required, but dynamic and individual reverse link data rate control can not be provided
 - 1xEV-DO Reverse MAC operation
 - ✓ 1 bit RAB(Up and Down Reverse Activity Bit) through Forward control channel
 - ◆ 1 bit per cell (common information for all mobile stations)
 - ✓ PV(Persistence Value) test
 - ◆ To increase or decrease the data rate, the MS performs the persistence test based on the probability predefined from the BS and decides whether the data rate to be increased or decreased
 - ◆ Dynamic and individual data rate control for each MSs are not possible
 - ◆ But, just 1 bit and PV are required to control RL- data rate

Existing control schemes for Reverse Link

- Dedicated Control schemes for Reverse Link Data Rate
 - Designated information from the BS is sent to each MS in
 - A large amount of overhead is required, but dynamic and reverse link data rate control can be provided
 - LGE and Airvana's proposals for 1xEV-DV
 - ✓ 2 bits RAB(Up, Down and Keep) through Forward dedicated channel
 - ◆ 2 * N bits per cell(where, N is the number of active mobiles in
 - ◆ Designated information for each mobile stations
 - ✓ PV(Persistence Value) test is not required
 - ◆ Dynamic and individual data rate control for each MSs are prov
 - ◆ But, extraordinary overheads are required to control RL- data ra

Proposed Data Rate Control of Reverse Link

- IAB(Increase Availability Bit) is proposed to provide effective reverse link data rate control
 - 1 bit indicator(IAB) to notify the status of the Mobile station
 - The MSs in the cell send an IAB, which is set to '0', to the station to request it's reverse link data rate up
 - A concept of IAB can be applicable for both common and dedicated control scheme for reverse link data rate
- And also, a concept of RAB proposed in common and dedicated control scheme is preserved
 - Only 1 bit IAB bit is added on the reverse link regardless of the reverse link data rate control scheme(common or dedicated)
- The functionalities defined in 1xEV-DO are also preserved
 - Persistence Value and RRL(Reverse Rate Limit) message
- MARDC(Mobile Assistant Reverse link Data rate Control)

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