

1 We would like to thank all the reviewers for their thoughtful and helpful comments. We address these comments for
2 each reviewer separately below.

3 **Response to R1:**

4 Thanks for your helpful suggestions and thoughtful read of the paper. Here is how we intend to incorporate them to
5 improve the writing:

- 6 • We agree with you that while the generality of our setup makes it possible to include all the applications
7 in one framework, our setup can still benefit from further clarifications. In fact, exactly for the reason you
8 mentioned, we wrote our analysis for the DRACC problem in separate parts and in the style of a running
9 example. Nevertheless, things can be clarified further, especially with the interpretations of the chasability
10 condition, and we intend to do so in the camera ready version if the paper is accepted (see also the second
11 bullet in our response to reviewer R3).
- 12 • Based on your suggestion, we will revise the sections presenting the applications and their encoding as DRACC
13 instances; we intend to add non-technical explanations to make the connections clearer.

14 **Response to R2:**

15 Thanks for your careful read and comments.

- 16 • Regarding your question on the bandit feedback setting, you are right: this setting is investigated for its own
17 benefit and does not affect the analysis of the DRACC problem.

18 **Response to R3:**

19 Thanks for your review and questions. Let us try to address them briefly:

- 20 • While chasability is an assumption in the context of Dd-MDP, we would like to emphasize that it is not an
21 assumption in the DRACC problem (and the applications derived from it), but rather a condition that this
22 problem satisfies — as we prove in Section 3. The DRACC problem is the main motivating application
23 behind our study, whereas the Dd-MDP setting is an abstraction that facilitates putting the different technical
24 ingredients in the right scope. We believe that this abstraction can potentially find other applications for which
25 the chasability condition is satisfied.
- 26 • In terms of the DRACC application, chasability means that the online algorithm can “simulate” a given pricing
27 policy, while incurring a small revenue loss, even if the online algorithm starts from a (coordinate-wise) smaller
28 inventory vector — this point will be clarified in the camera ready version if the paper is accepted. This
29 requires a careful choice of price vectors because once the inventory of a resource is exhausted, the algorithm
30 must post a unit price (which means that the resource cannot be purchased) — see the proofs of Theorems 3.4
31 and 3.6 for the technical details of how this is done.
- 32 • Prior work on online resource allocation was not able to achieve vanishing regret for settings as general as the
33 DRACC problem since it did not handle the statefulness aspect of the problem. The key novelty in our paper is
34 therefore introducing the Dd-MDP framework together with the chasability condition, showing that on the one
35 hand, it suffices to ensure vanishing regret, and on the other hand, it is satisfied by natural online stateful price
36 posting settings such as DRACC.

37 **Regarding the broader impact concerns (item 11 in the reviews):**

38 The NeurIPS 2020 FAQ for Authors document mentions that *In general, if a paper presents theoretical work without*
39 *any foreseeable impact in the society, authors can simply state “This work does not present any foreseeable societal*
40 *consequence”*. Given the theoretical nature of our paper, we simply intended to follow this guideline.