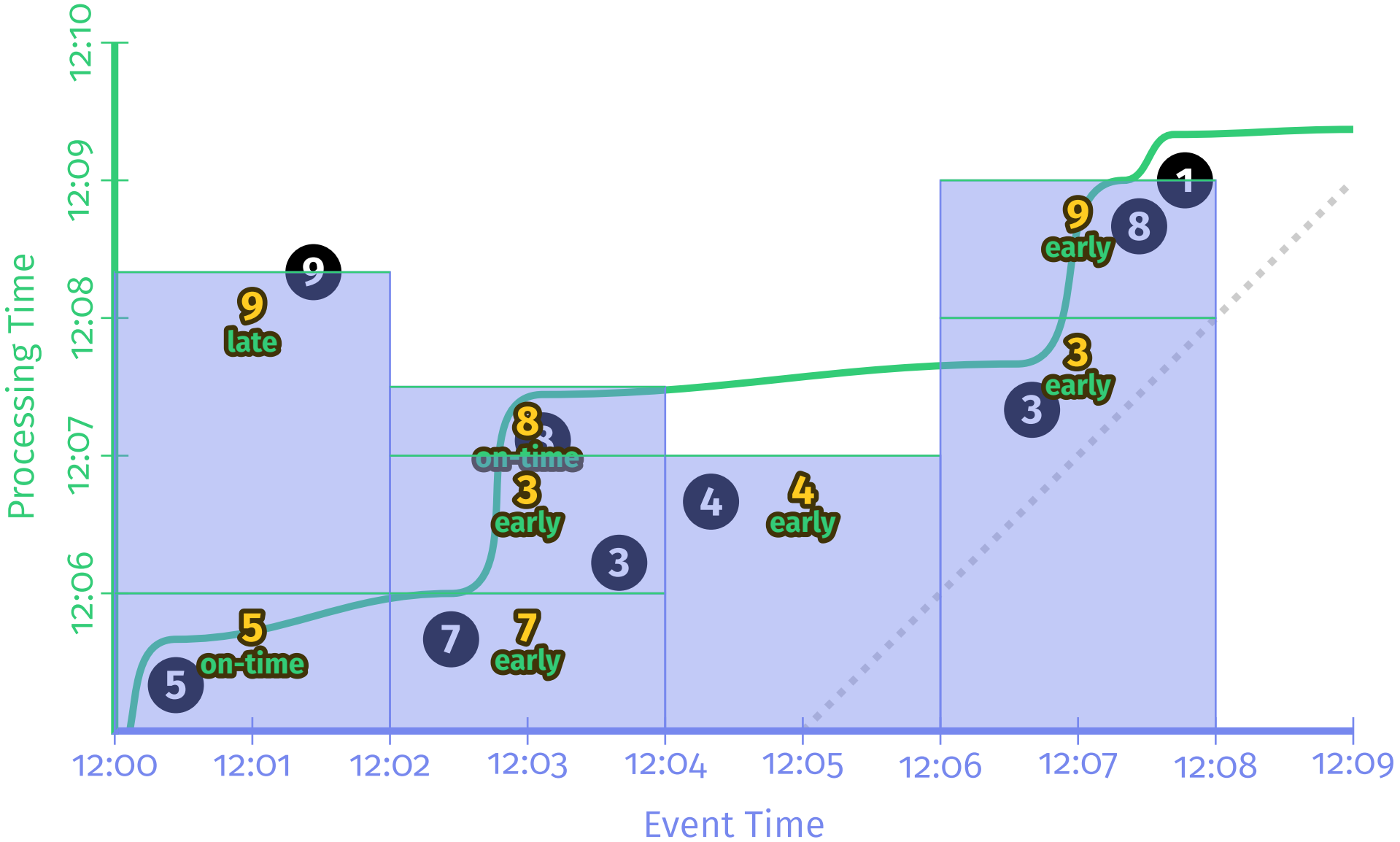
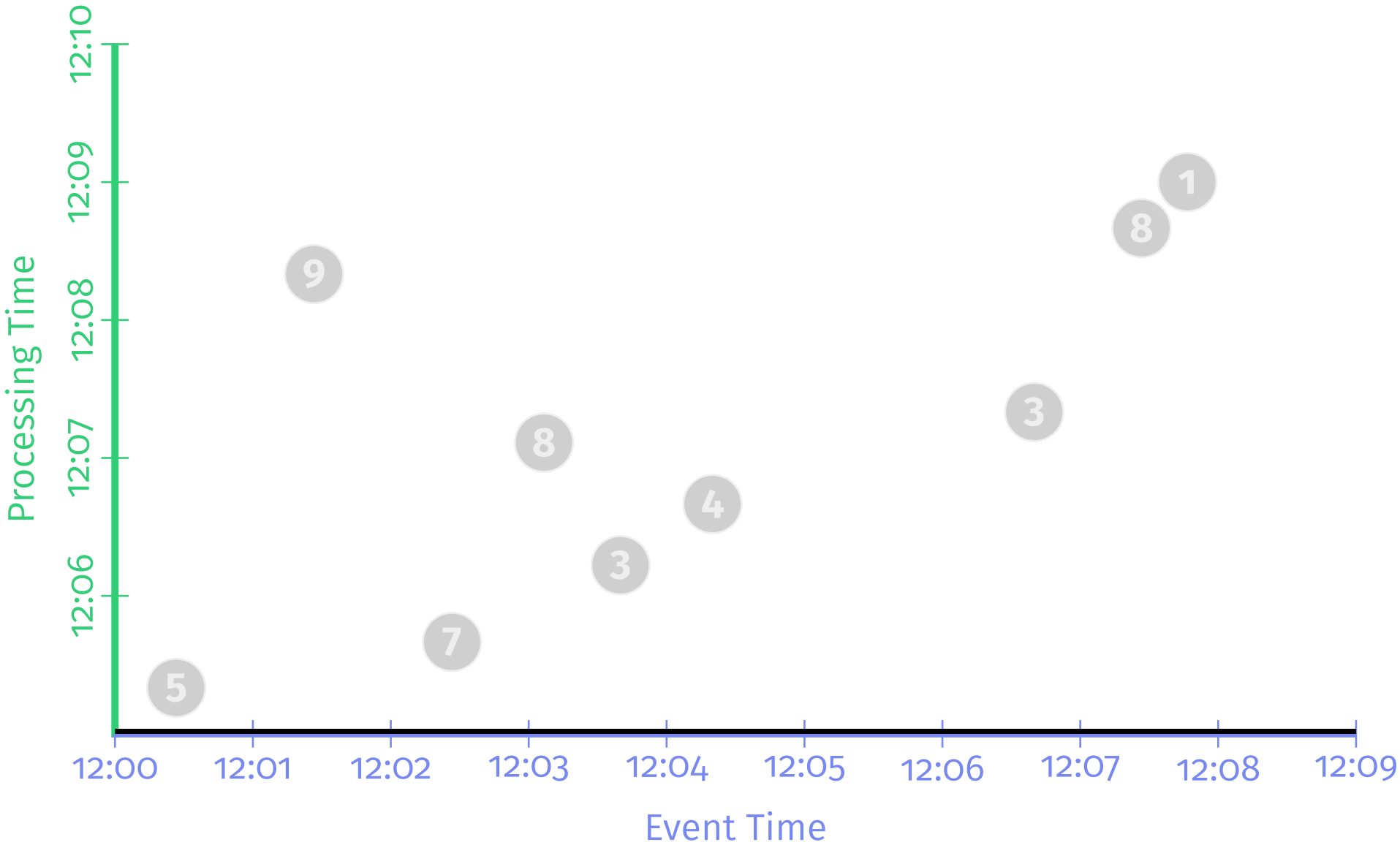
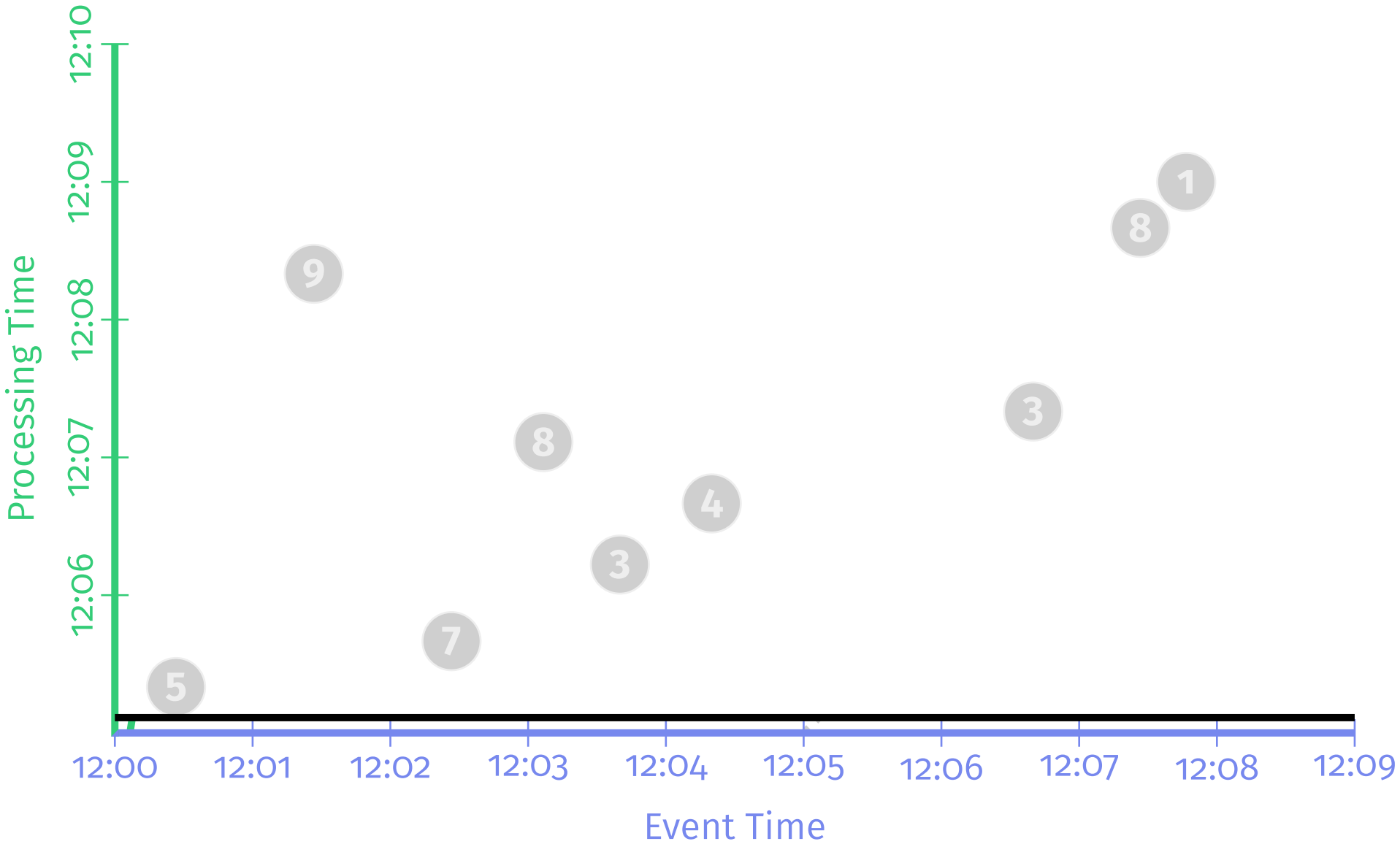
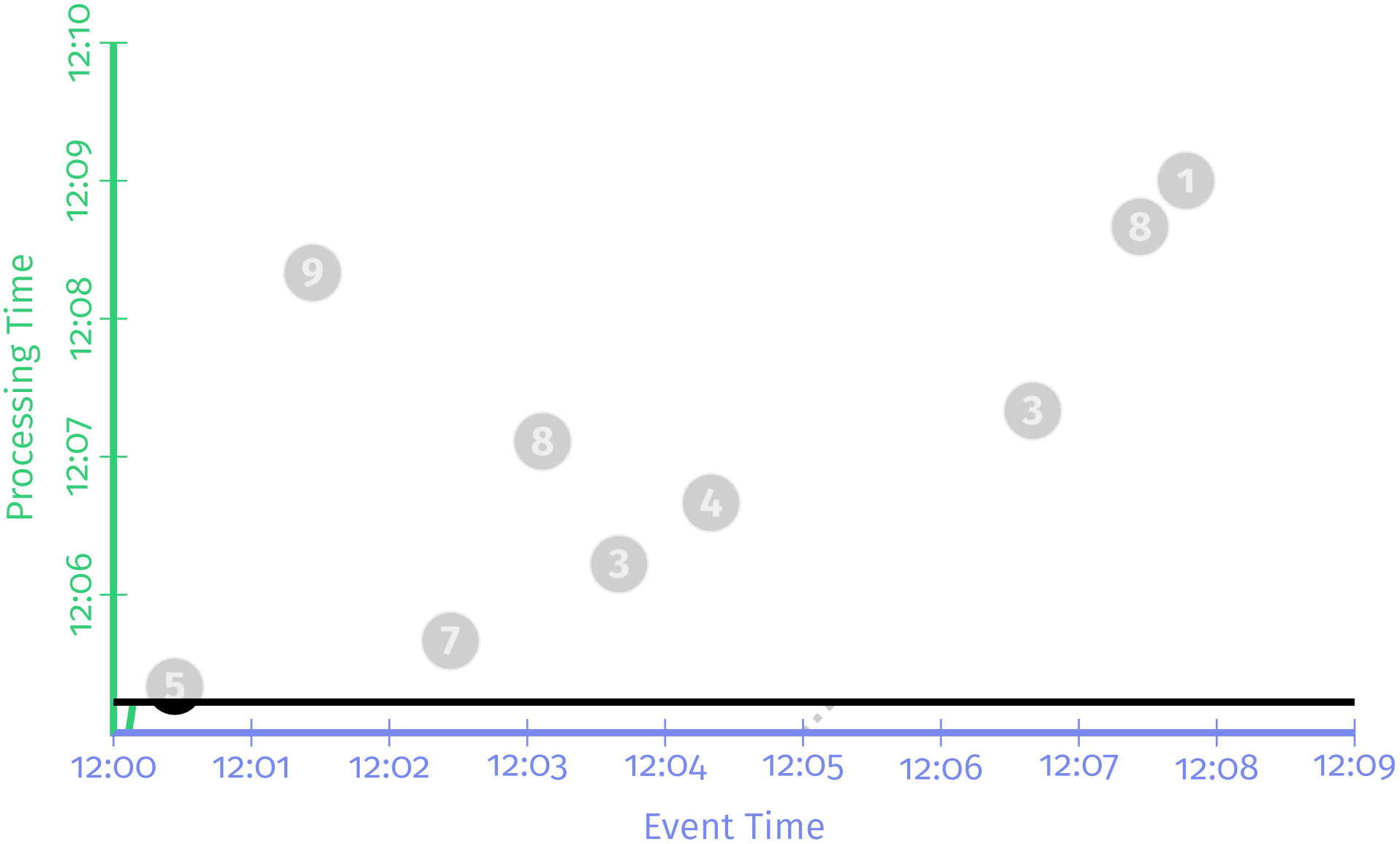
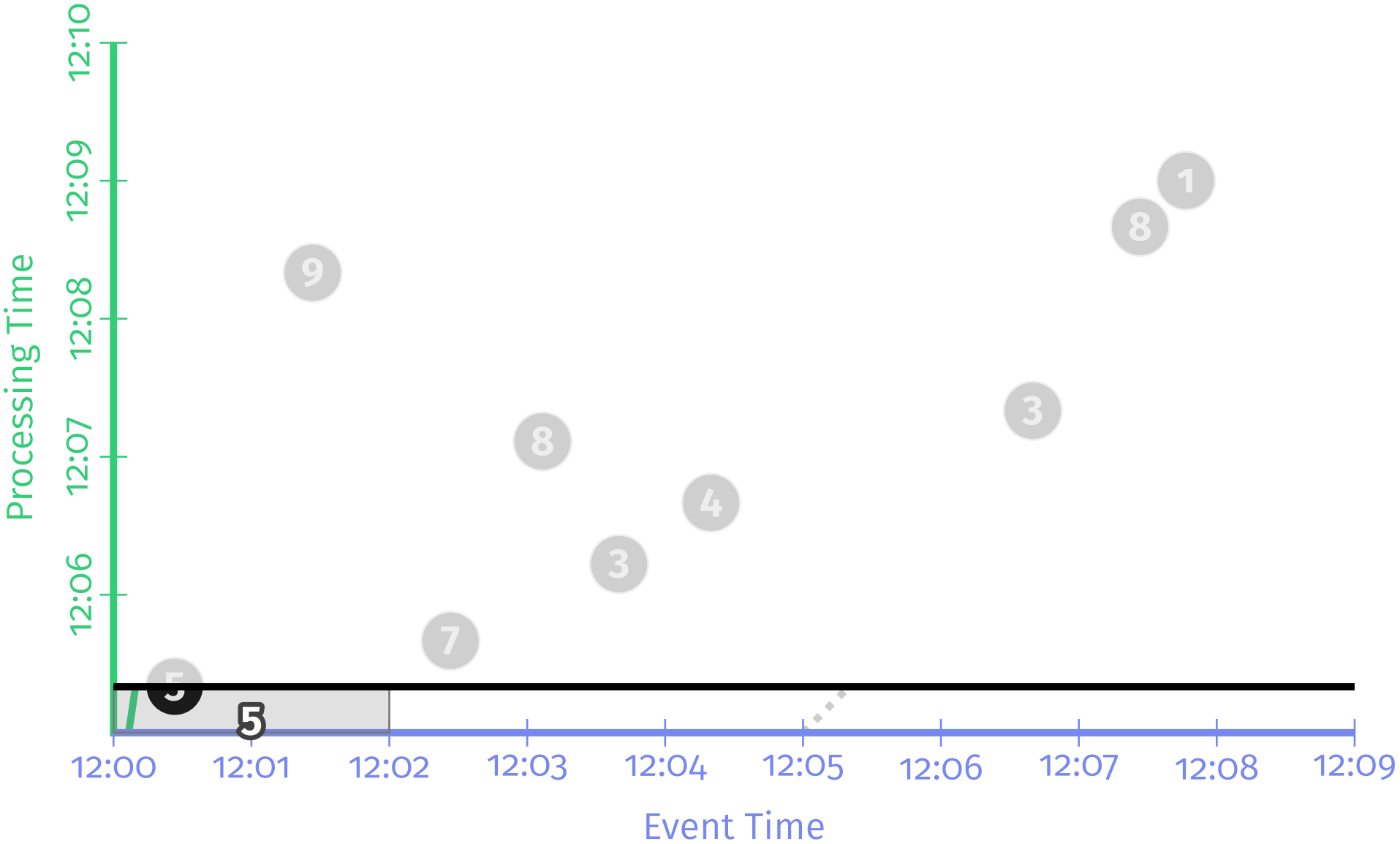
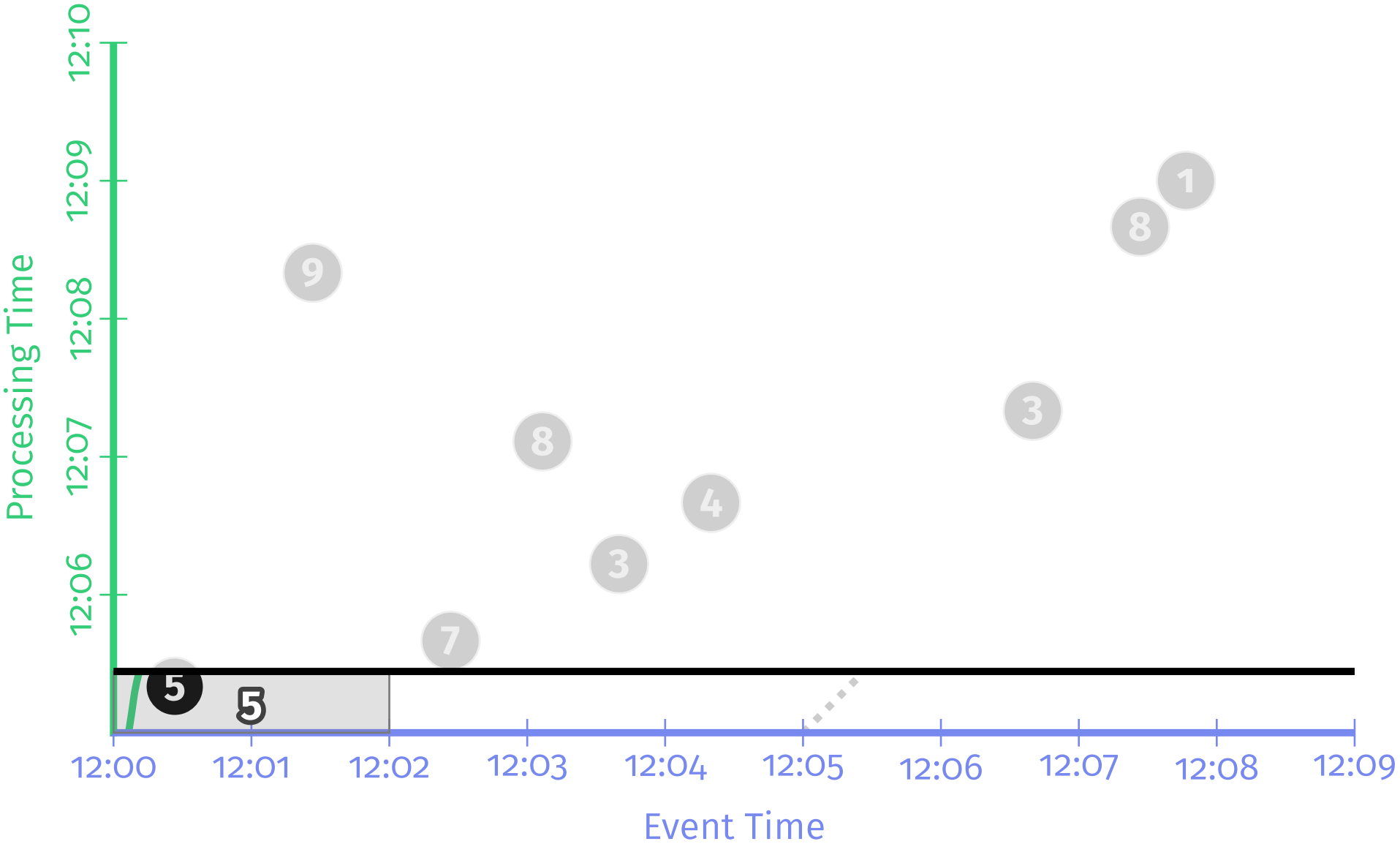

Processing Time
12:10
12:09
12:08
12:07
12:06
9
late
5
on-time
8
on-time
3
early
7
early
4
early
9
early
3
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

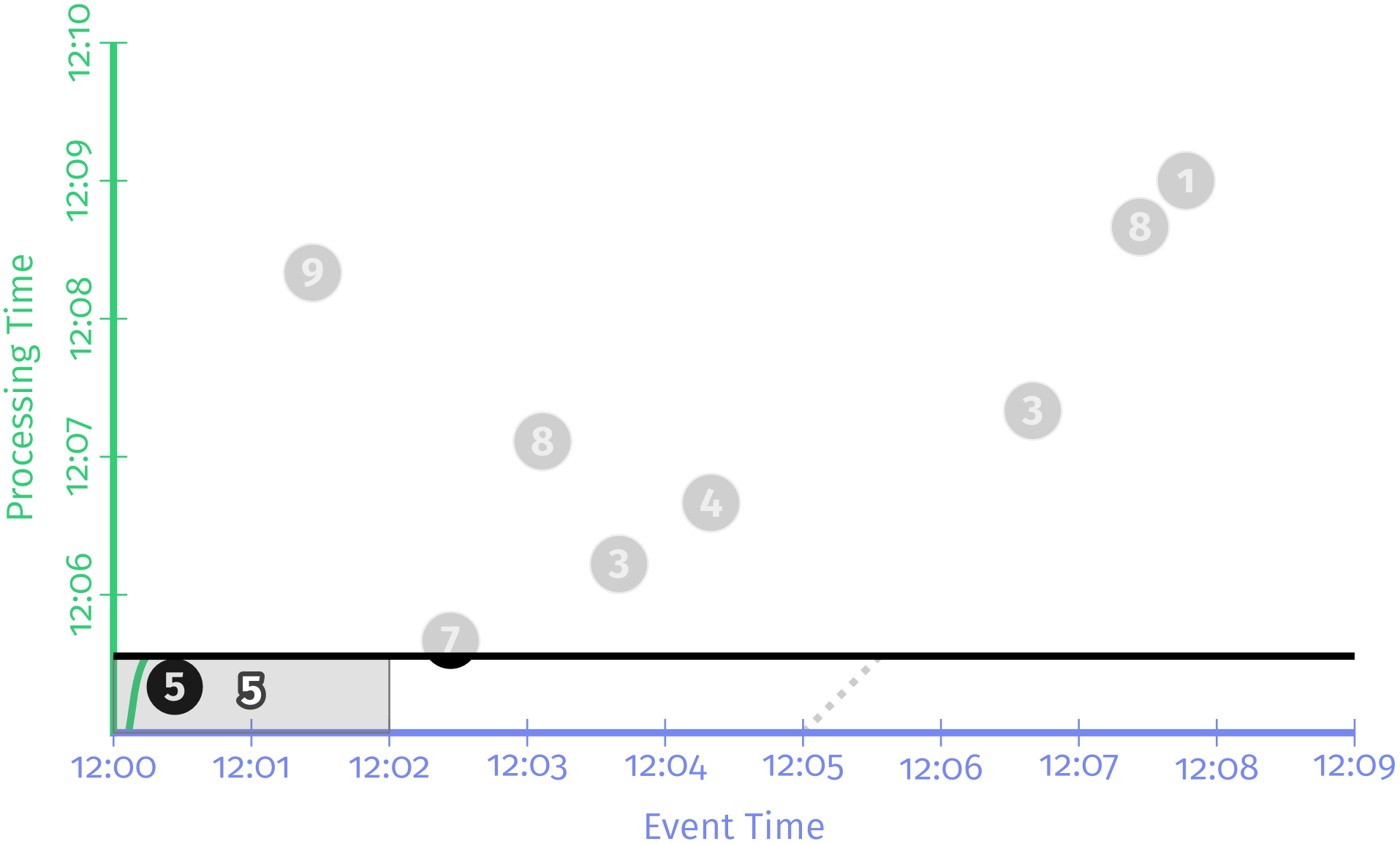

Processing Time
12:10
12:09
12:08
12:07
12:06
9
1
8
8
3
4
3
7
5
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

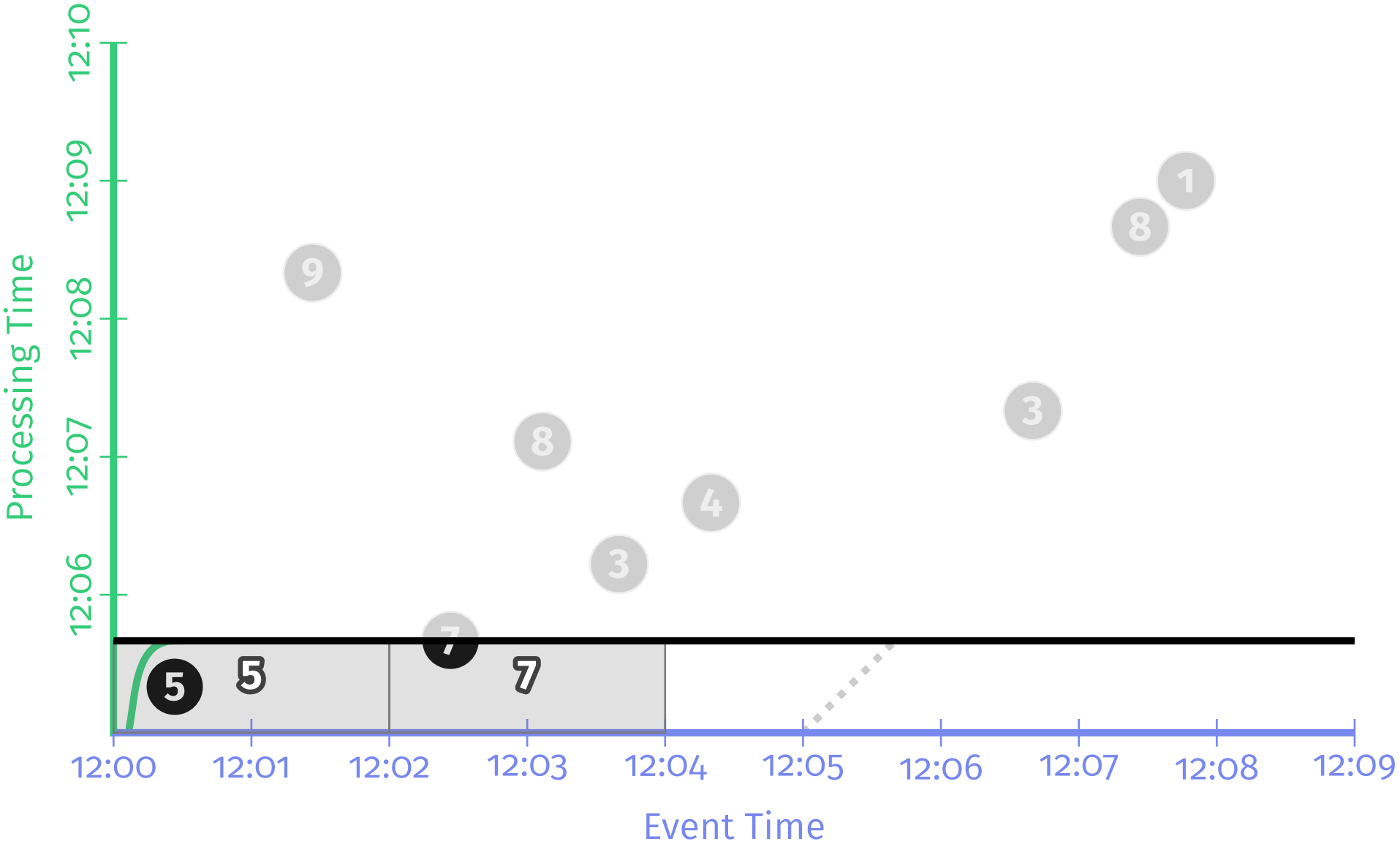

Processing Time
12:10
12:09
12:08
12:07
12:06
9
8
1
8
3
4
3
7
5
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

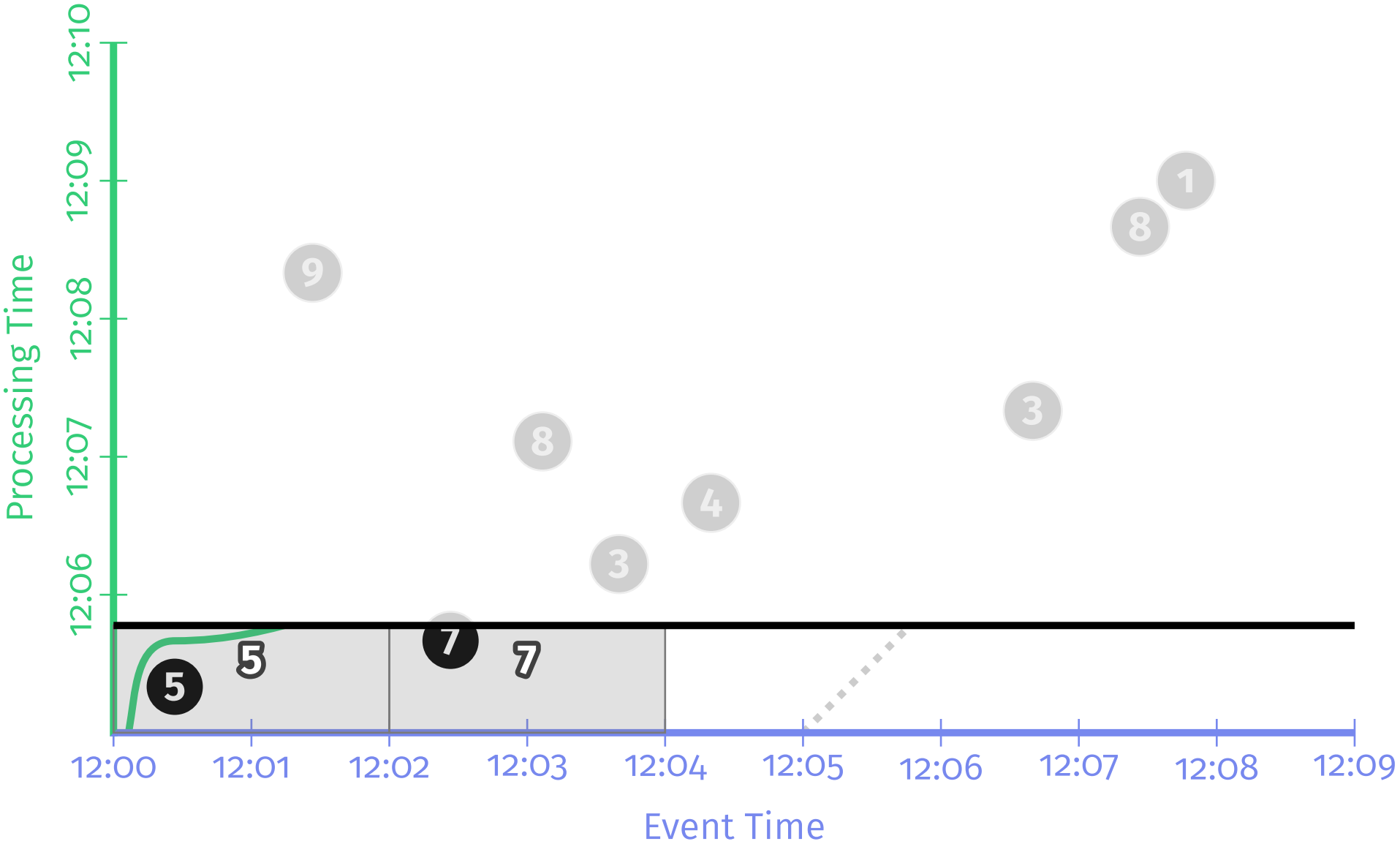

Processing Time
12:10
12:09
12:08
12:07
12:06
9
1
8
8
3
4
3
7
5
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

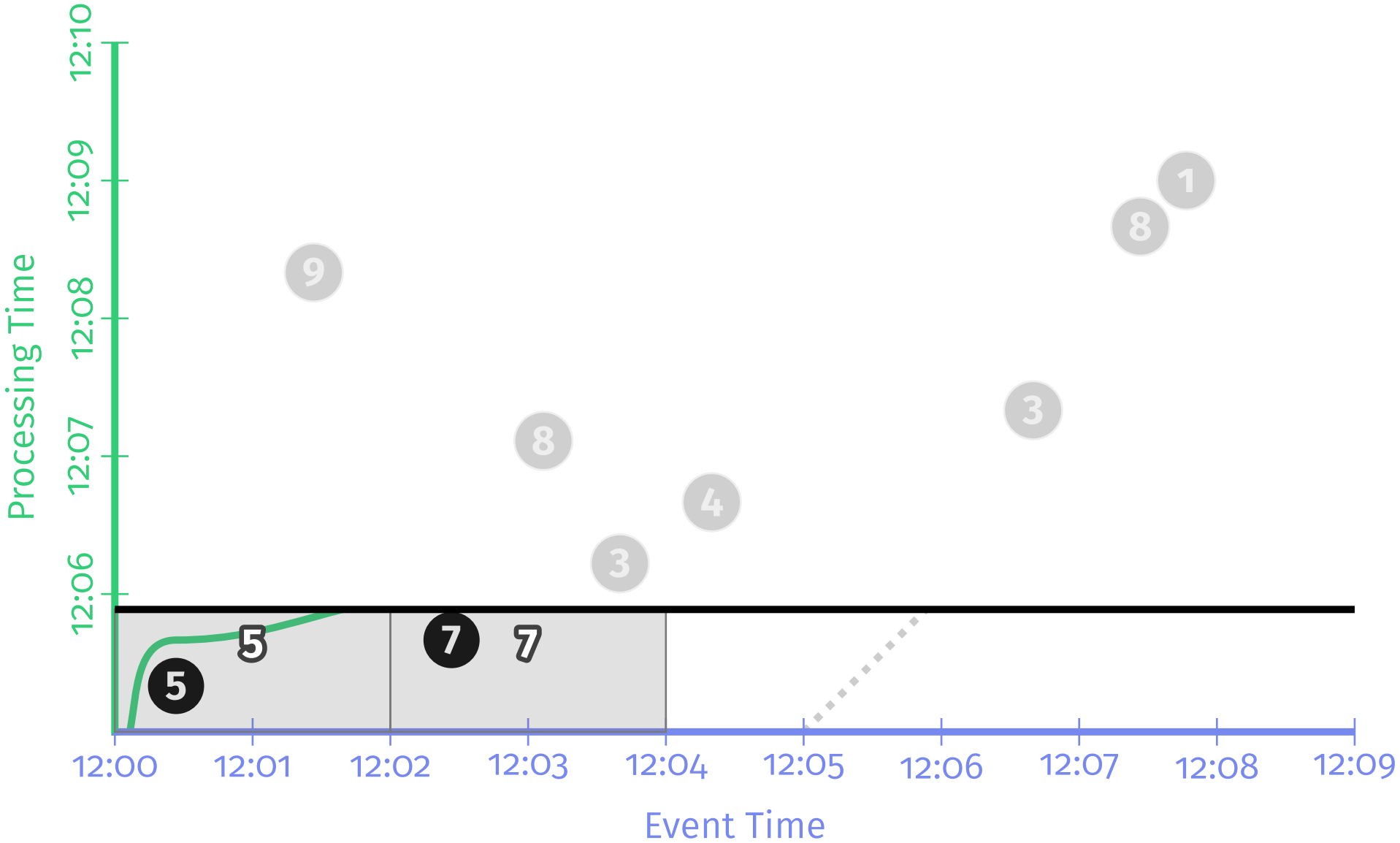

Processing Time
12:10
12:09
12:08
12:07
12:06
9
8
1
8
3
4
3
7
5
5
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

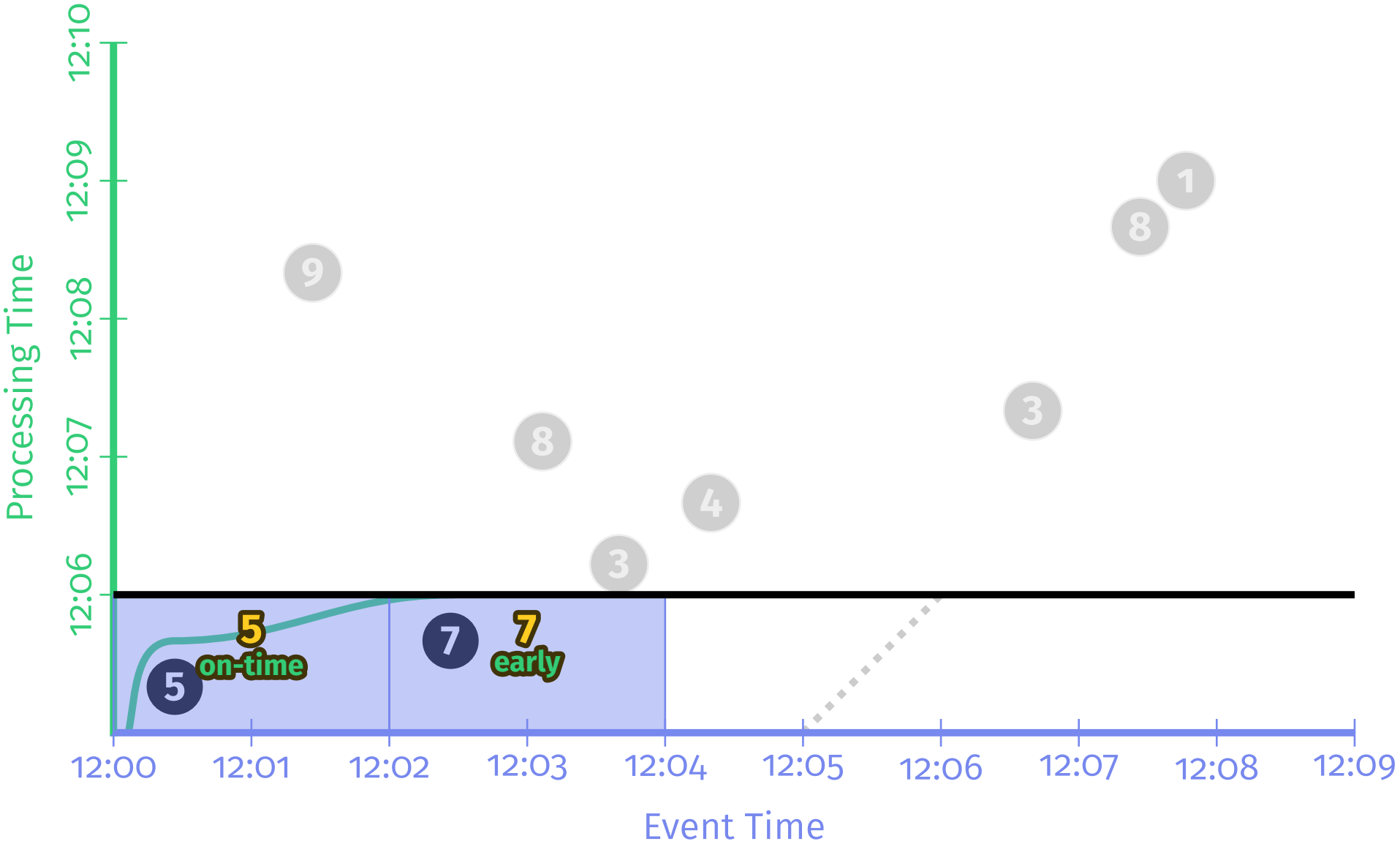

Processing Time
12:10
12:09
12:08
12:07
12:06
9
8
1
8
3
4
3
7
5
5
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

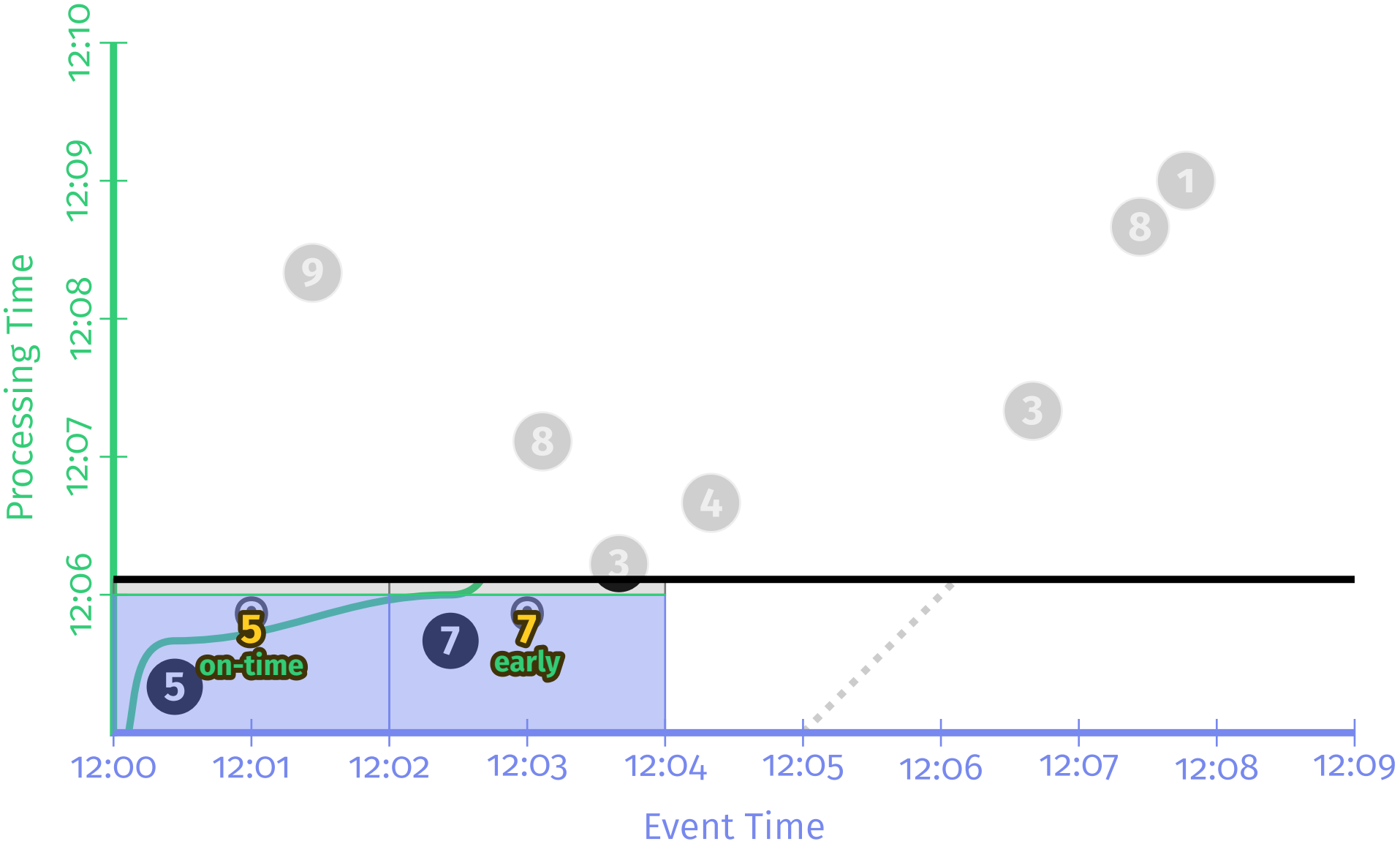

Processing Time
12:10
12:09
12:08
12:07
12:06
9
1
8
8
3
4
3
7
5
5
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

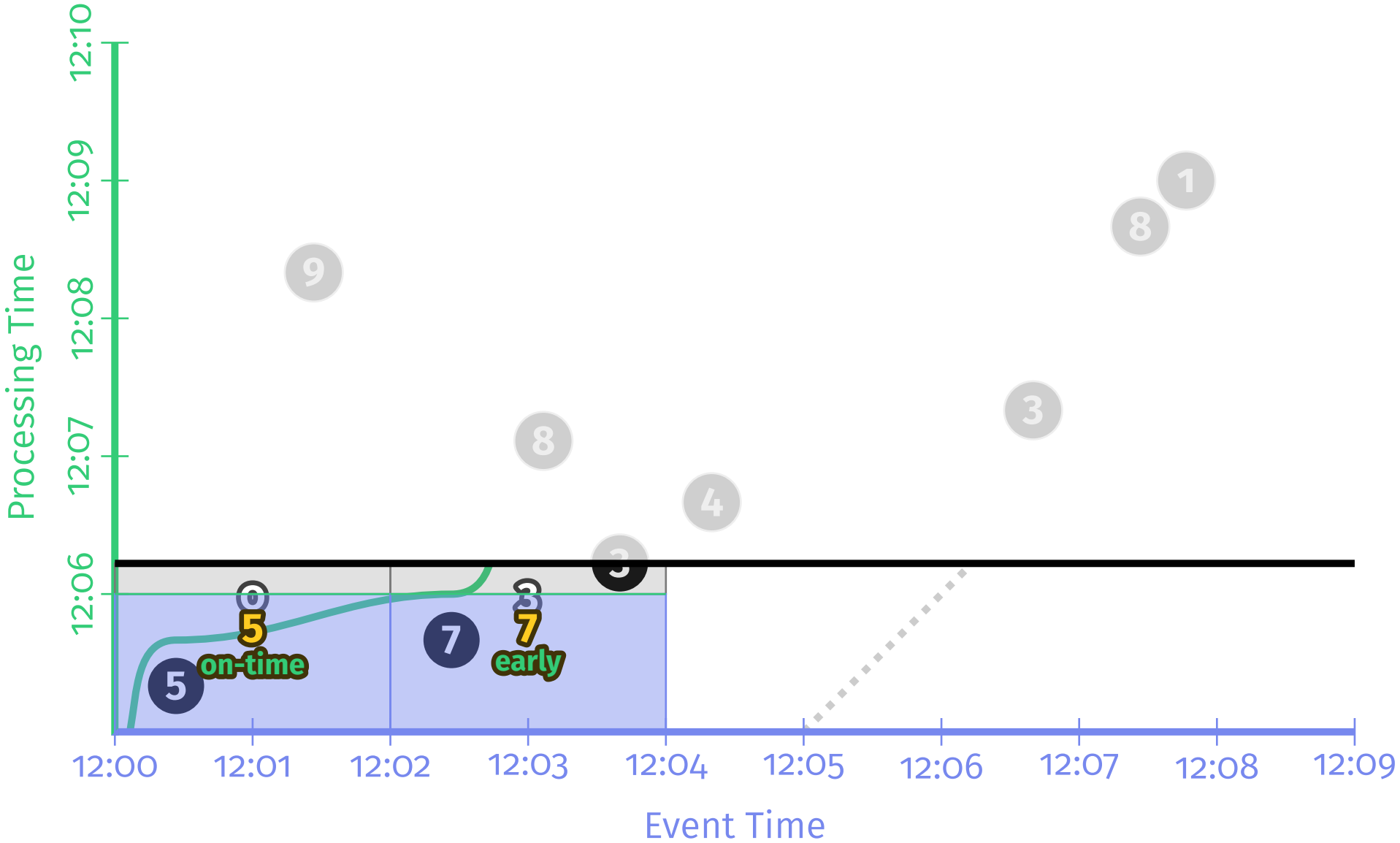

Processing Time
12:10
12:09
12:08
12:07
12:06
9
8
1
8
3
4
3
7
5
5
7
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

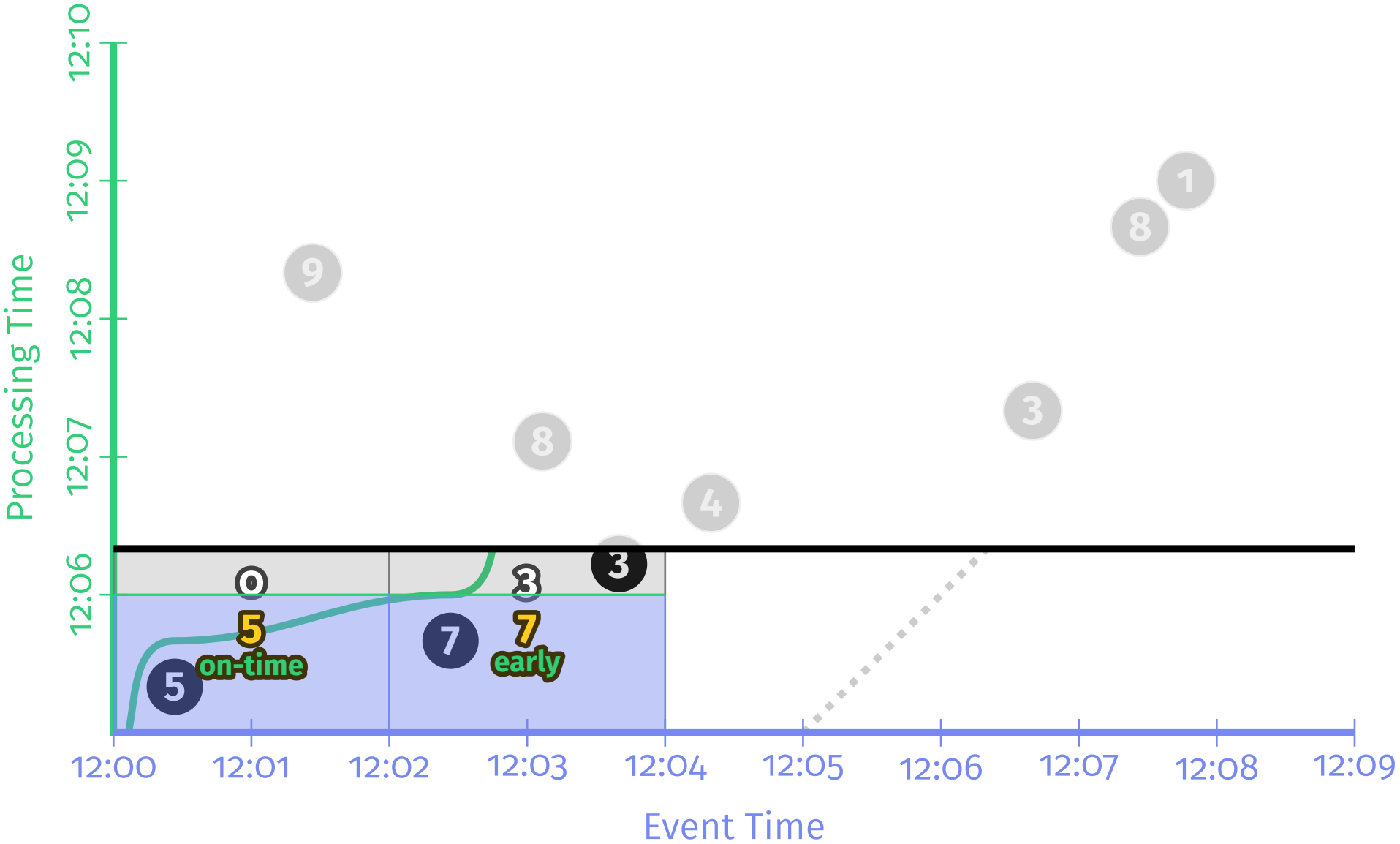

Processing Time
12:06
12:07
12:08
12:09
12:10
9
8
3
4
1
8
3
5
5
7
7
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

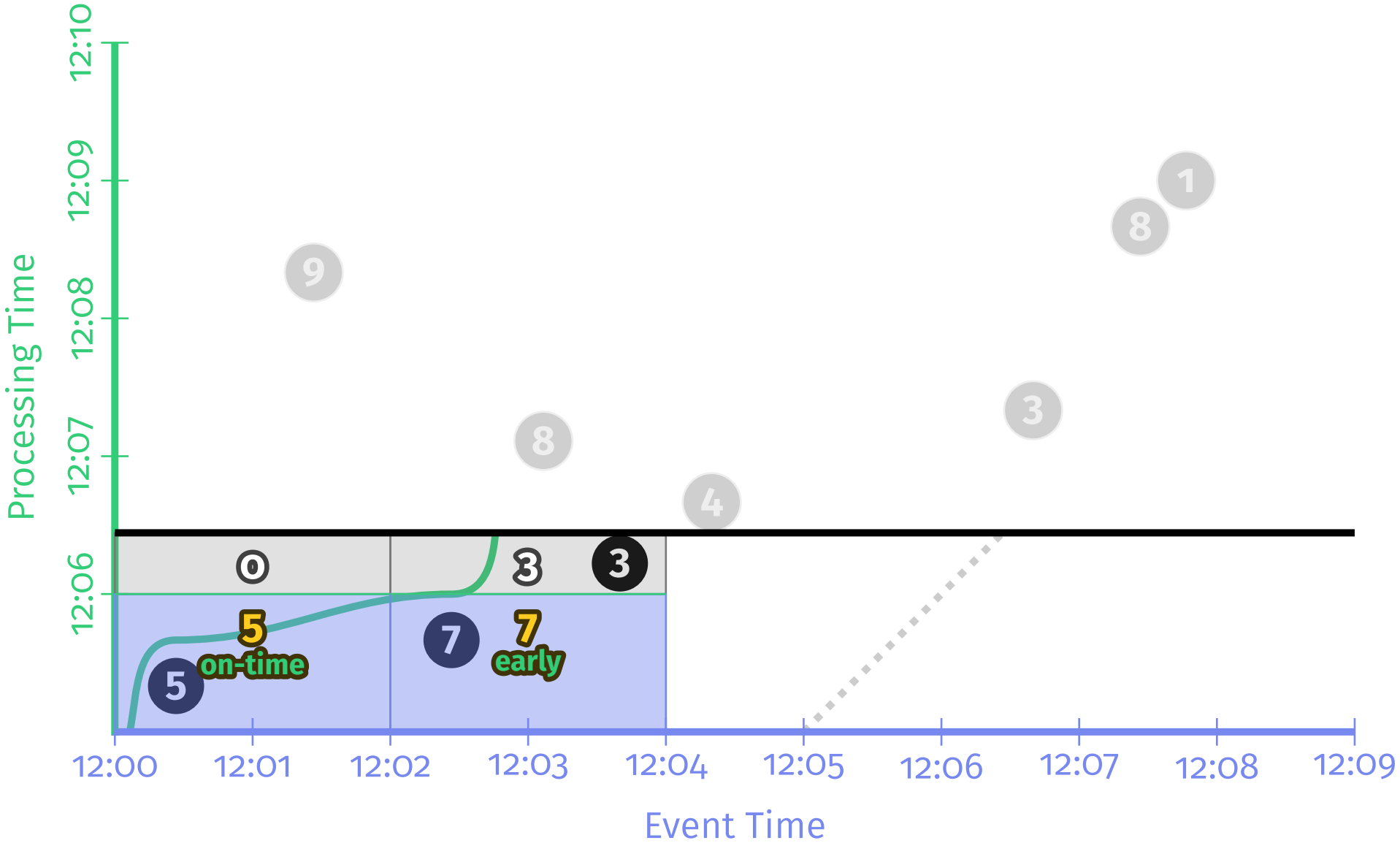

Processing Time
12:10
12:09
12:08
12:07
12:06
9
8
3
4
3
1
8
5
5
7
7
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

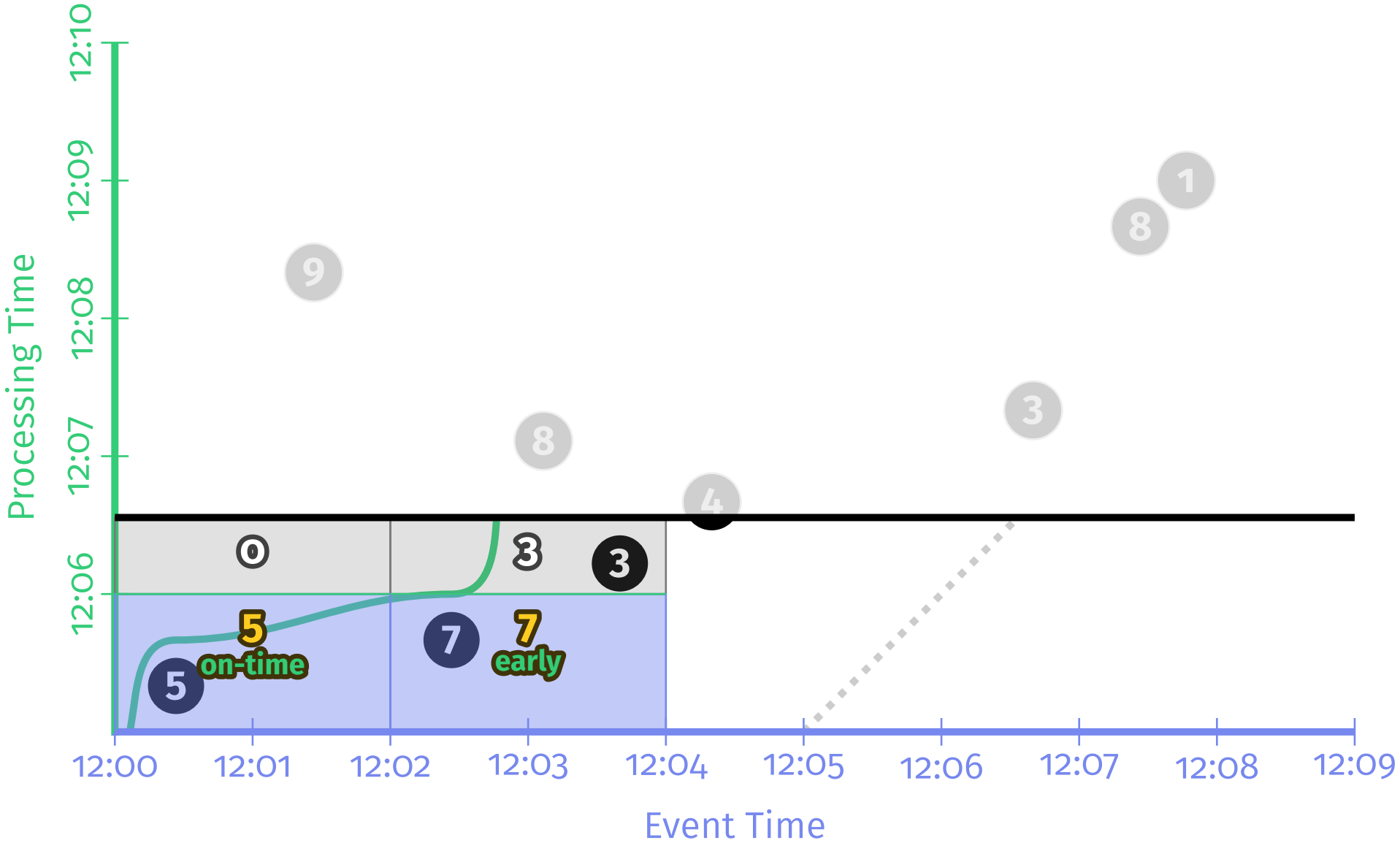

Processing Time
12:10
12:09
12:08
12:07
12:06
9
8
1
8
3
4
3
5
on-time
5
7
7
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

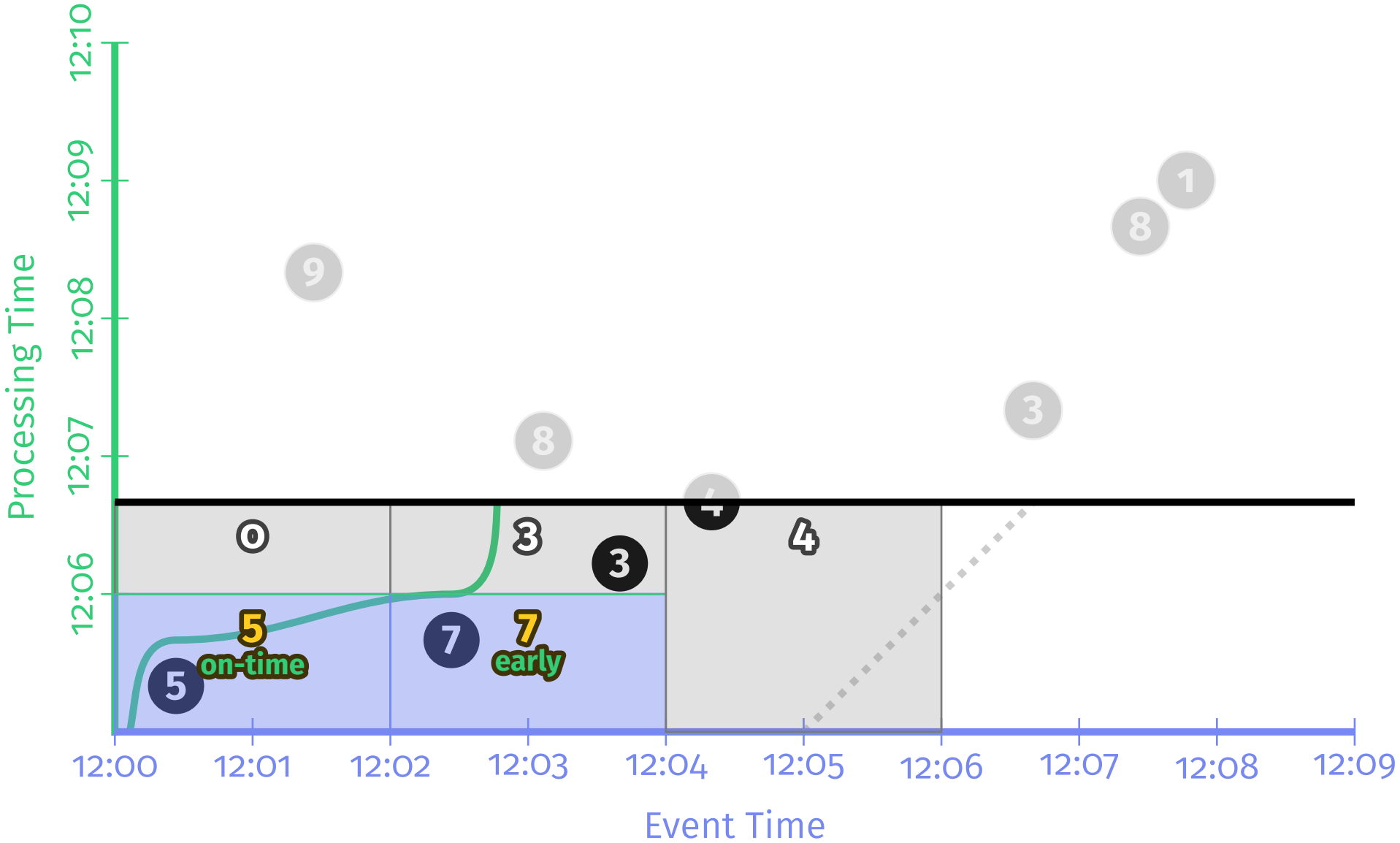

Processing Time
12:10
12:09
12:08
12:07
12:06
9
8
1
8
3
4
3
5
on-time
5
7
7
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

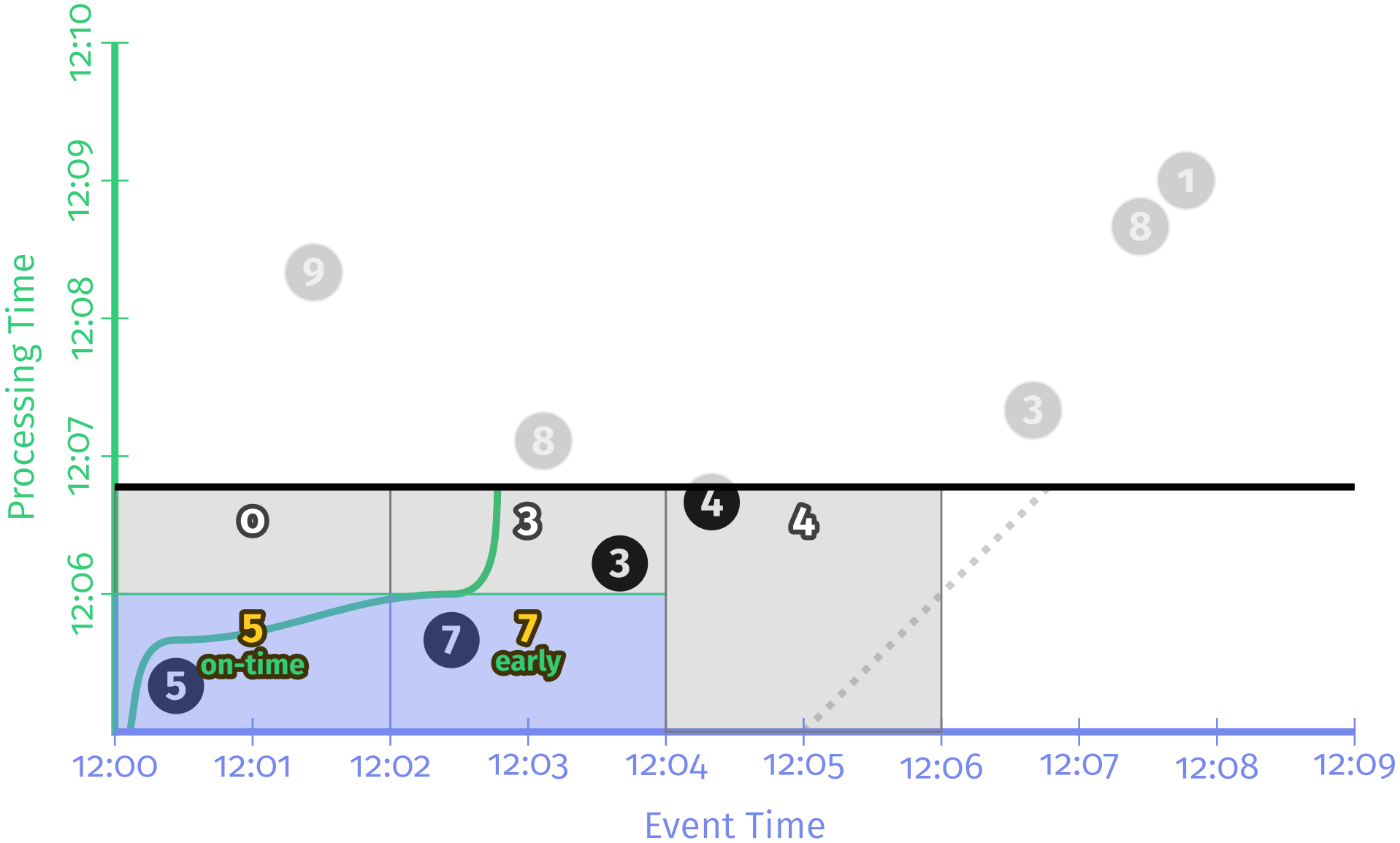

Processing Time
12:10
12:09
12:08
12:07
12:06
9
8
1
8
3
4
3
5
on-time
7
7
early
5
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

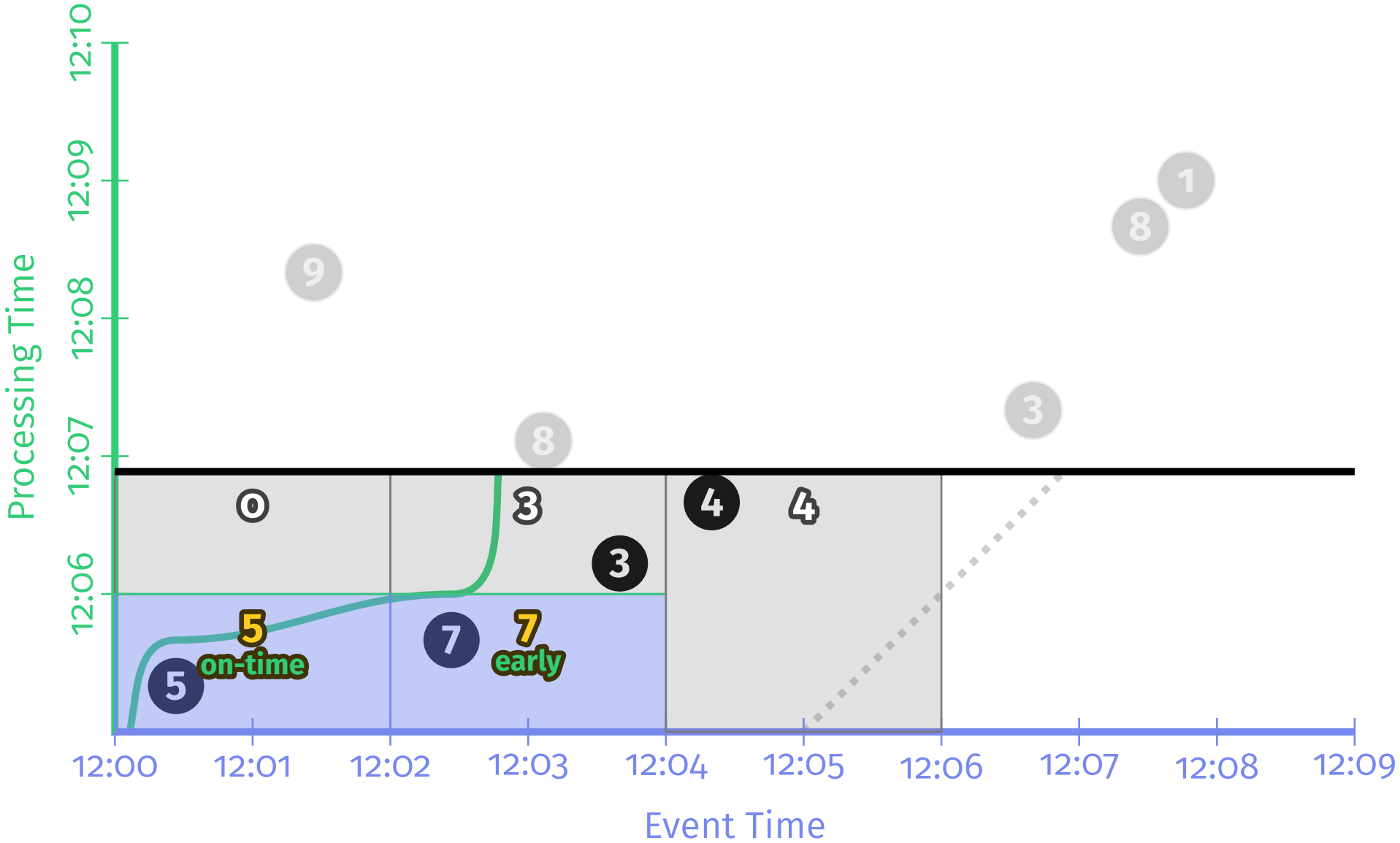

Processing Time
12:10
12:09
12:08
12:07
12:06
9
8
1
8
3
4
3
0
5
on-time
5
3
7
7
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

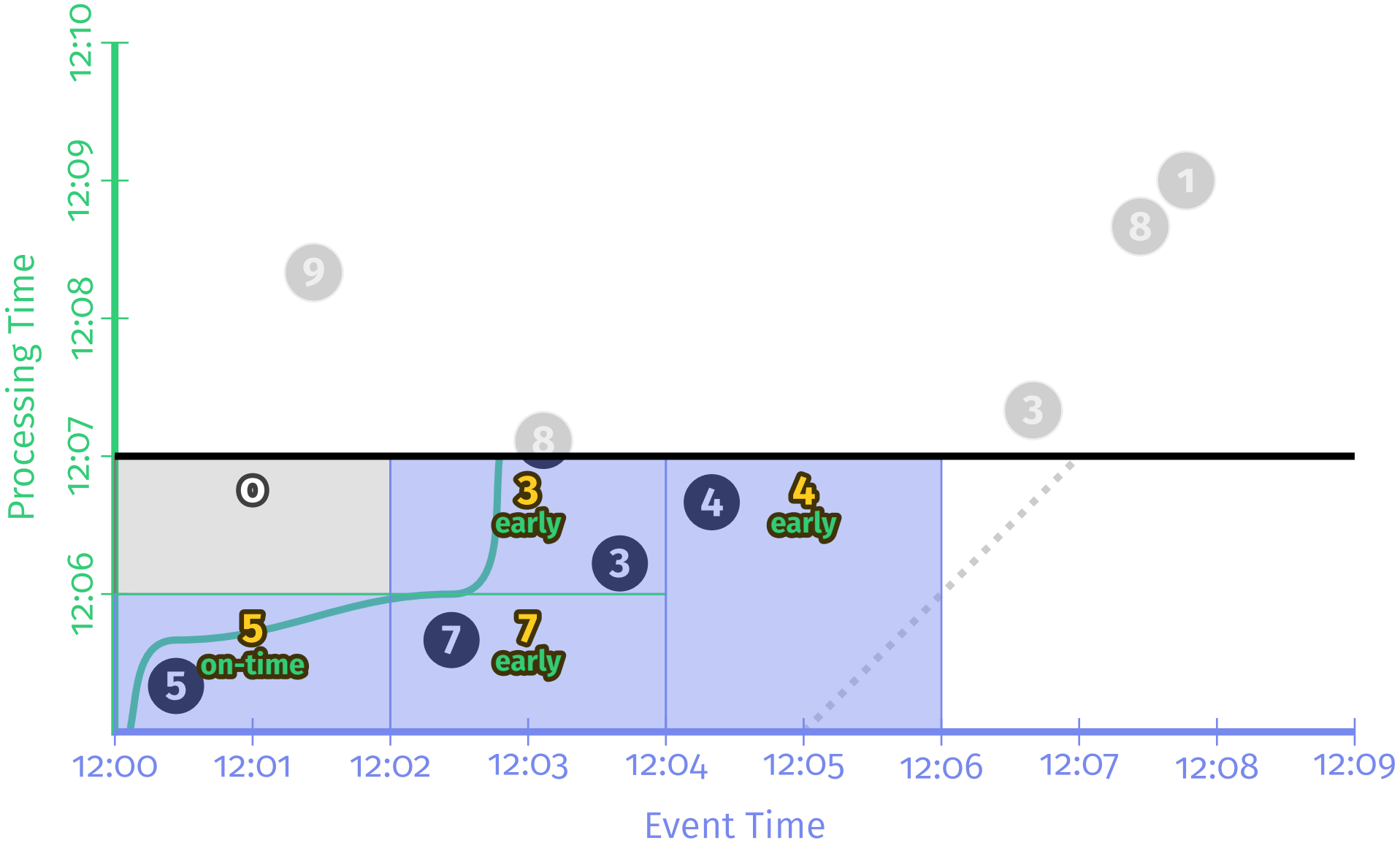

Processing Time
12:10
12:09
12:08
12:07
12:06
9
8
1
8
3
4
0
3
3
5
on-time
5
7
7
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

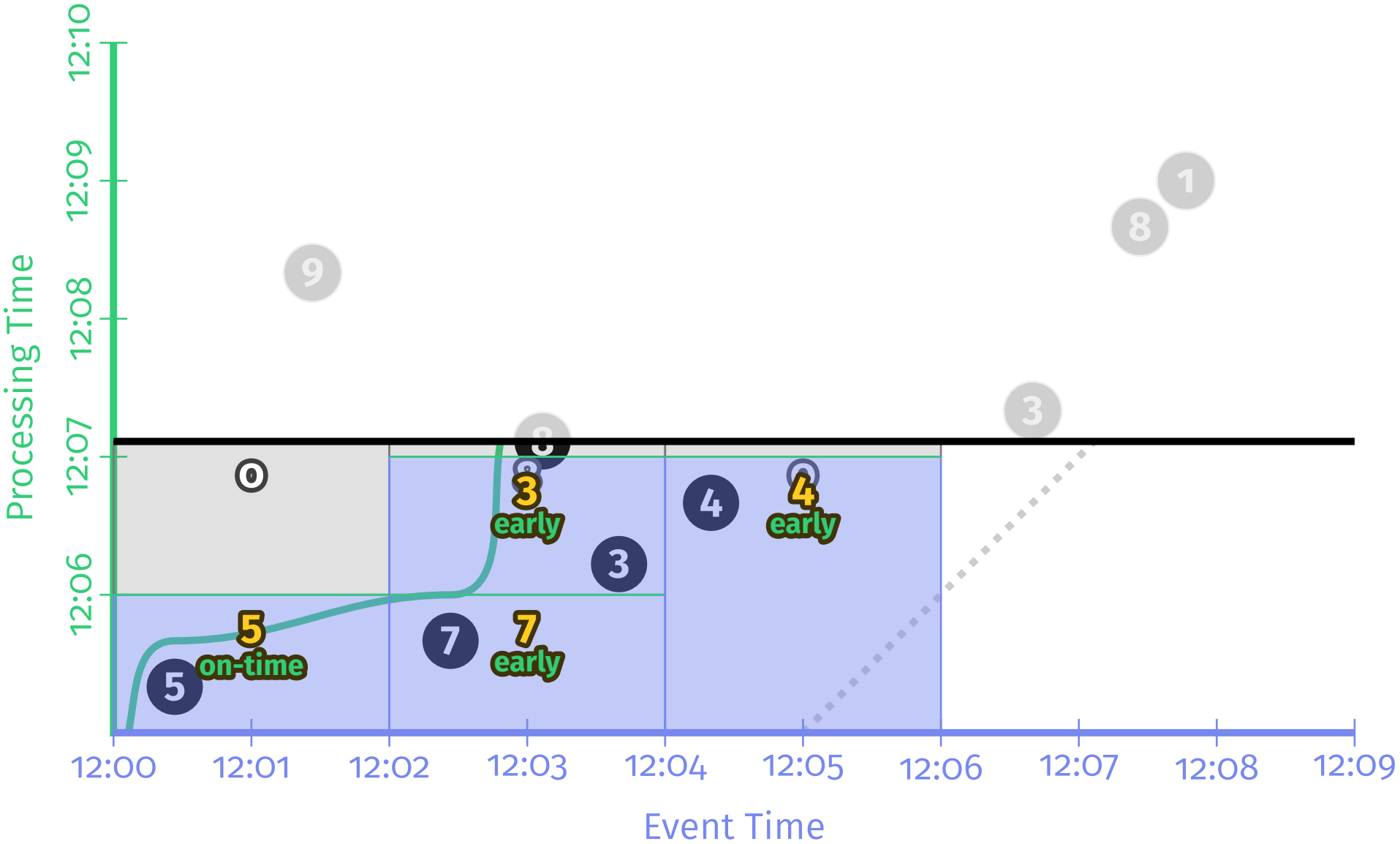

Processing Time
12:10
12:09
12:08
12:07
12:06
9
8
1
8
3
4
0
3
3
5
on-time
5
7
7
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

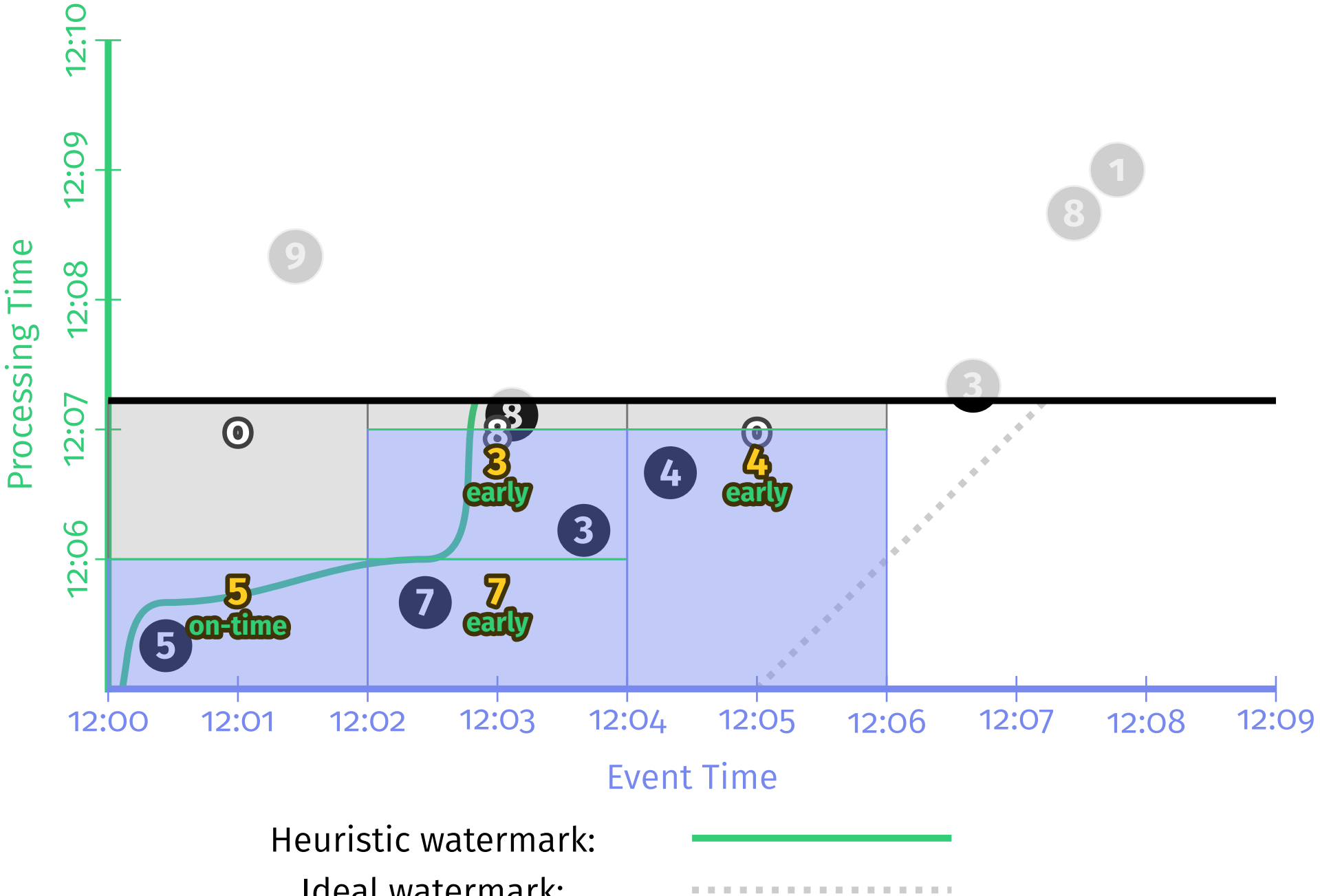

Processing Time
12:10
12:09
12:08
12:07
12:06
9
8
1
8
3
0
3
3
4
4
5
on-time
5
7
7
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:


Processing Time
12:10
12:09
12:08
12:07
12:06
9
8
1
8
3
0
3
3
4
4
5
on-time
5
7
7
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

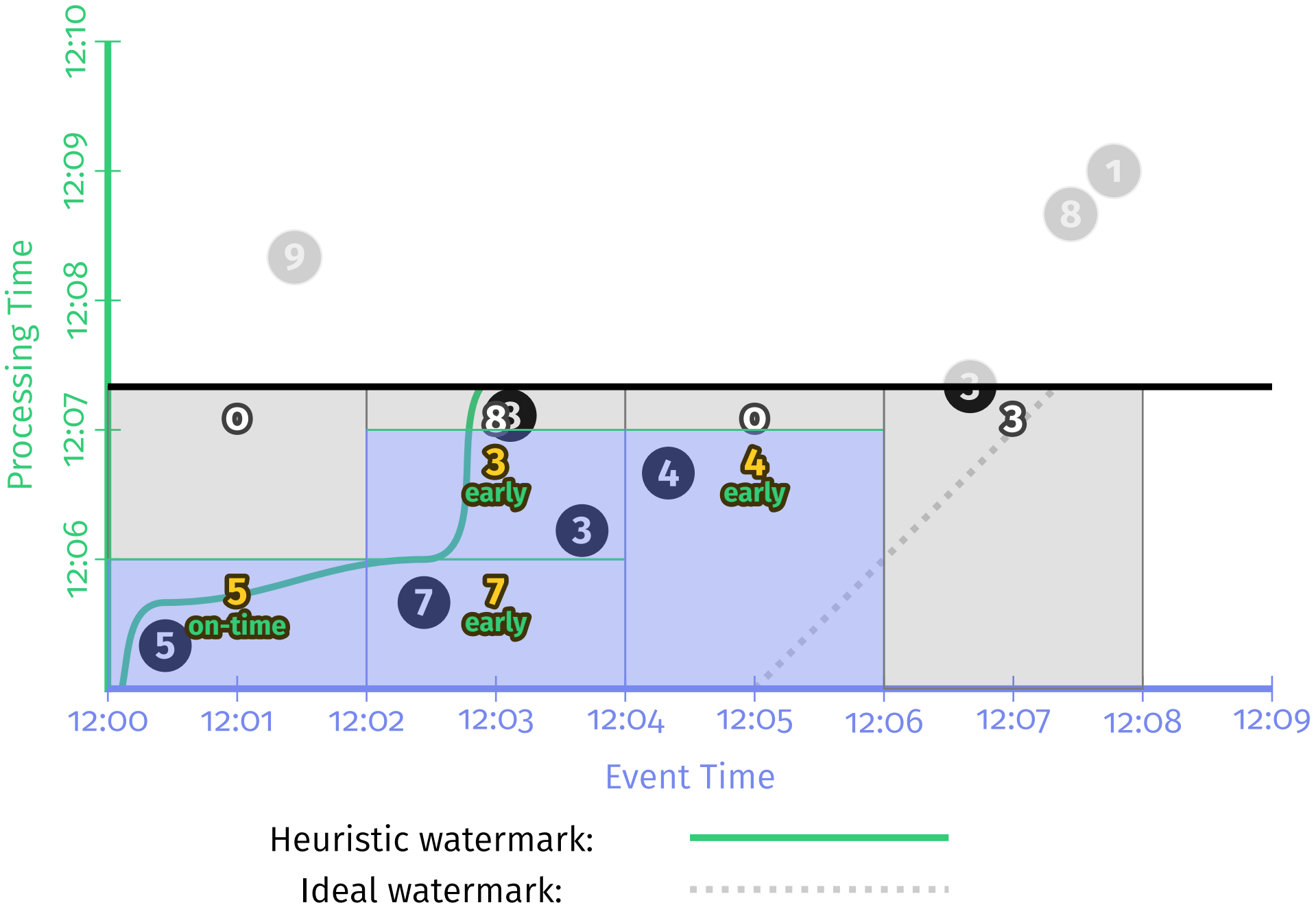

Processing Time
12:10
12:09
12:08
12:07
12:06
9
8
1
8
3
0
3
4
4
3
5
on-time
5
7
7
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:


Processing Time
12:10
12:09
12:08
12:07
12:06
9
8
1
8
3
0
3
early
4
4
early
3
5
on-time
5
7
7
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

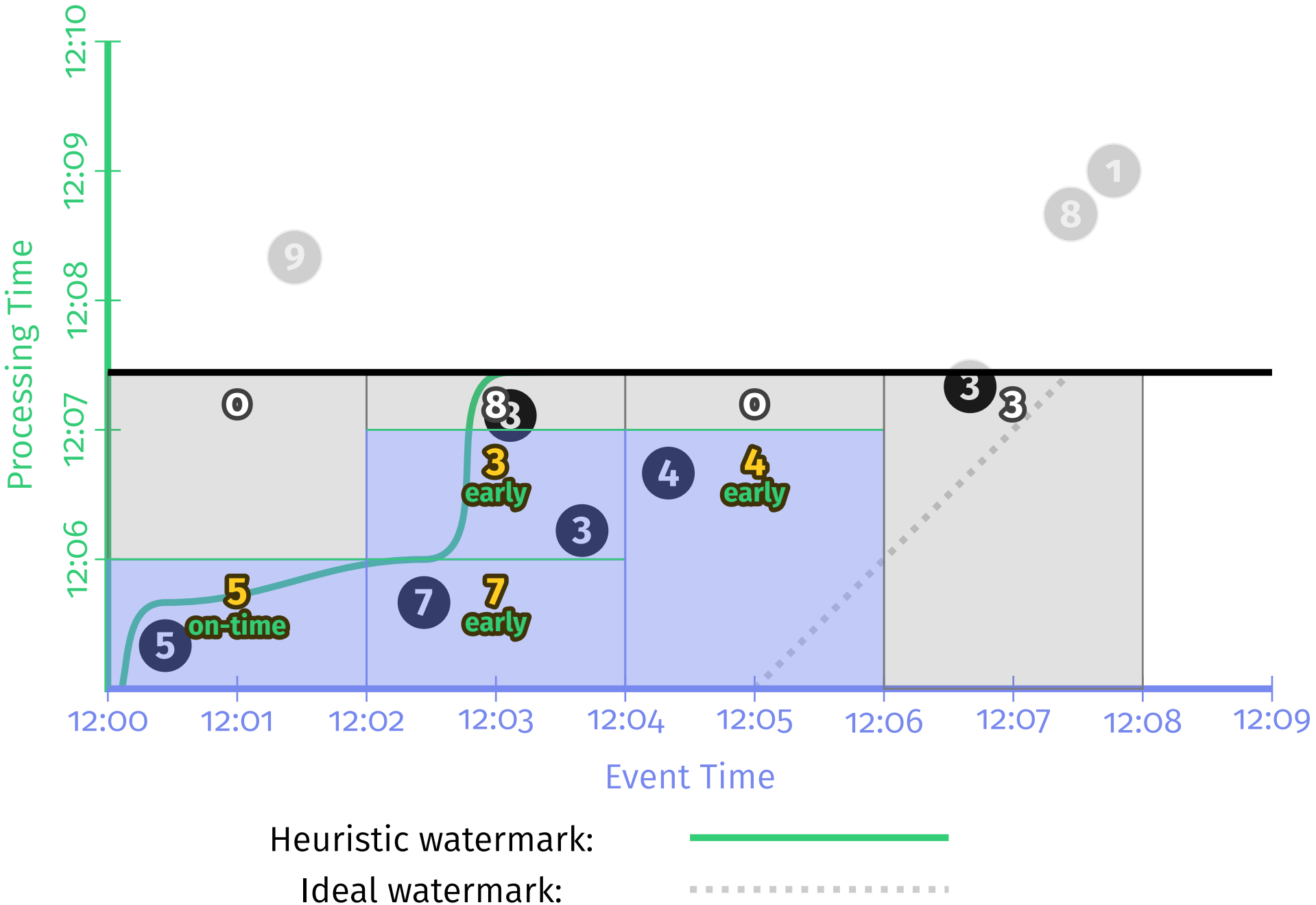

Processing Time
12:10
12:09
12:08
12:07
12:06
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
0
3
early
4
4
early
3
5
on-time
5
7
7
early
9
8
1
8
3
Heuristic watermark:
Ideal watermark:



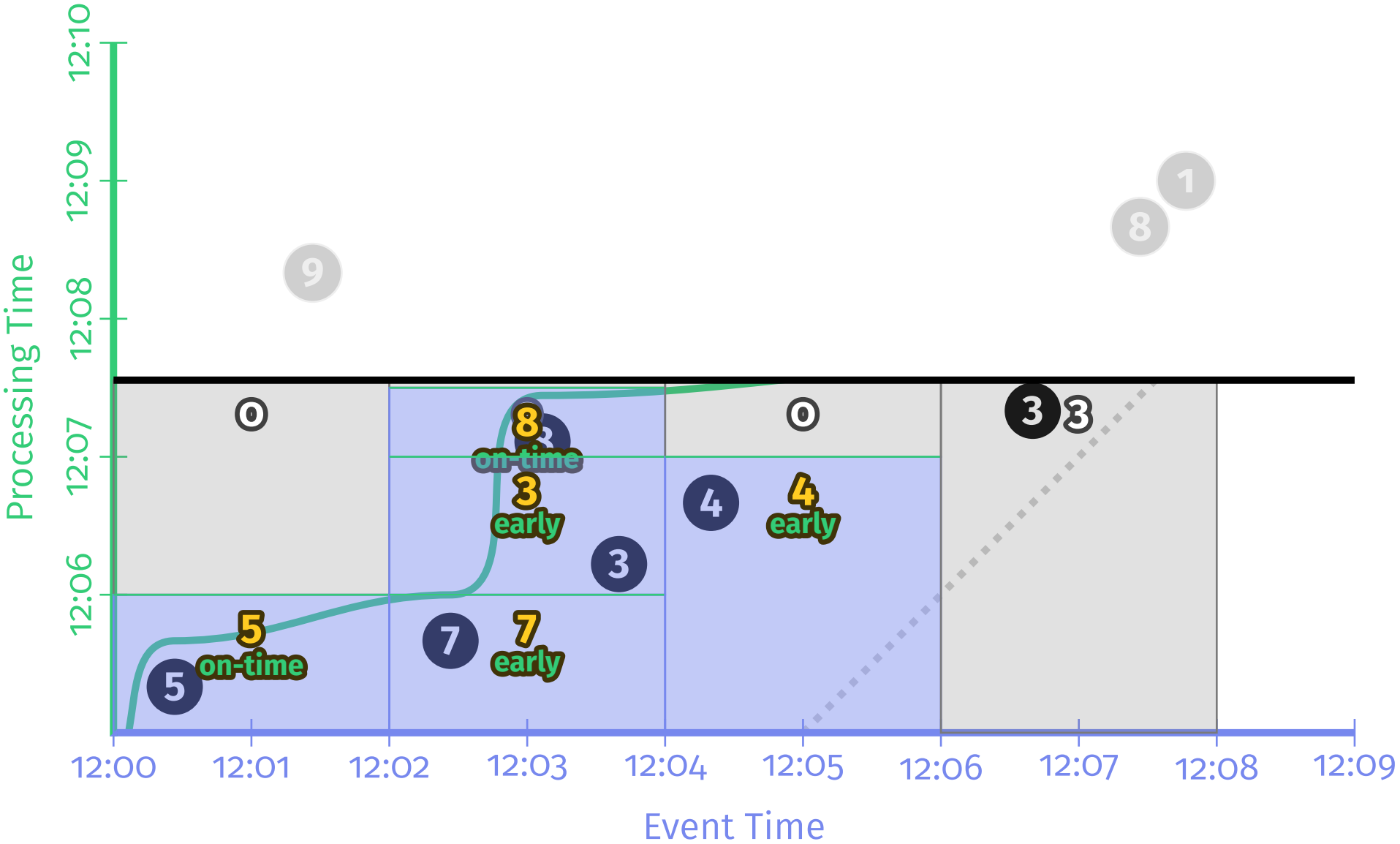
Processing Time
12:10
12:09
12:08
12:07
12:06
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
9
1
8
3
0
8
3
early
4
0
4
early
3
5
on-time
7
7
early
5
Heuristic watermark:
Ideal watermark:

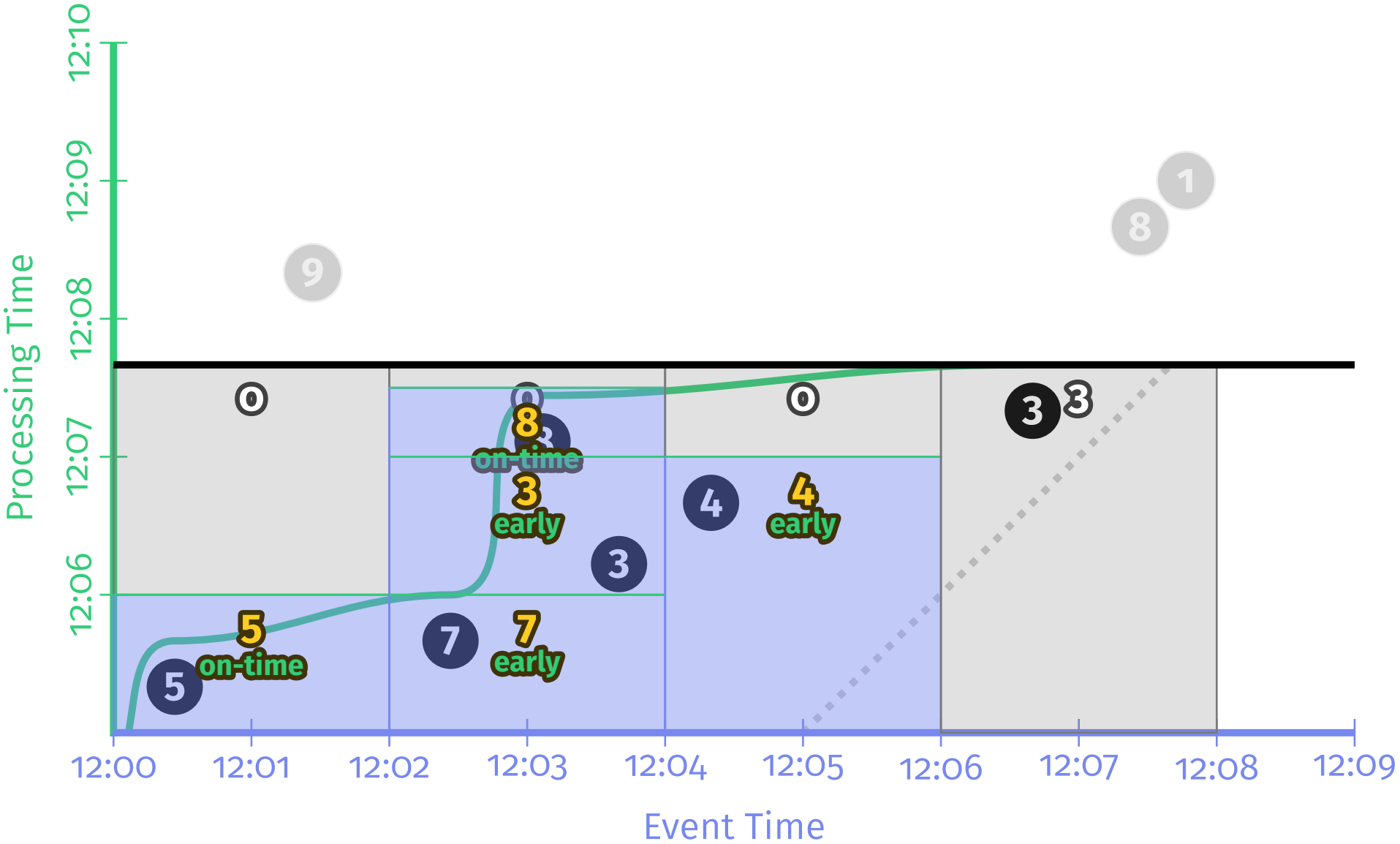


Processing Time
12:10
12:09
12:08
12:07
12:06
9
1
8
0
8
3
0
3
3
early
4
4
early
3
5
on-time
7
7
early
5
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

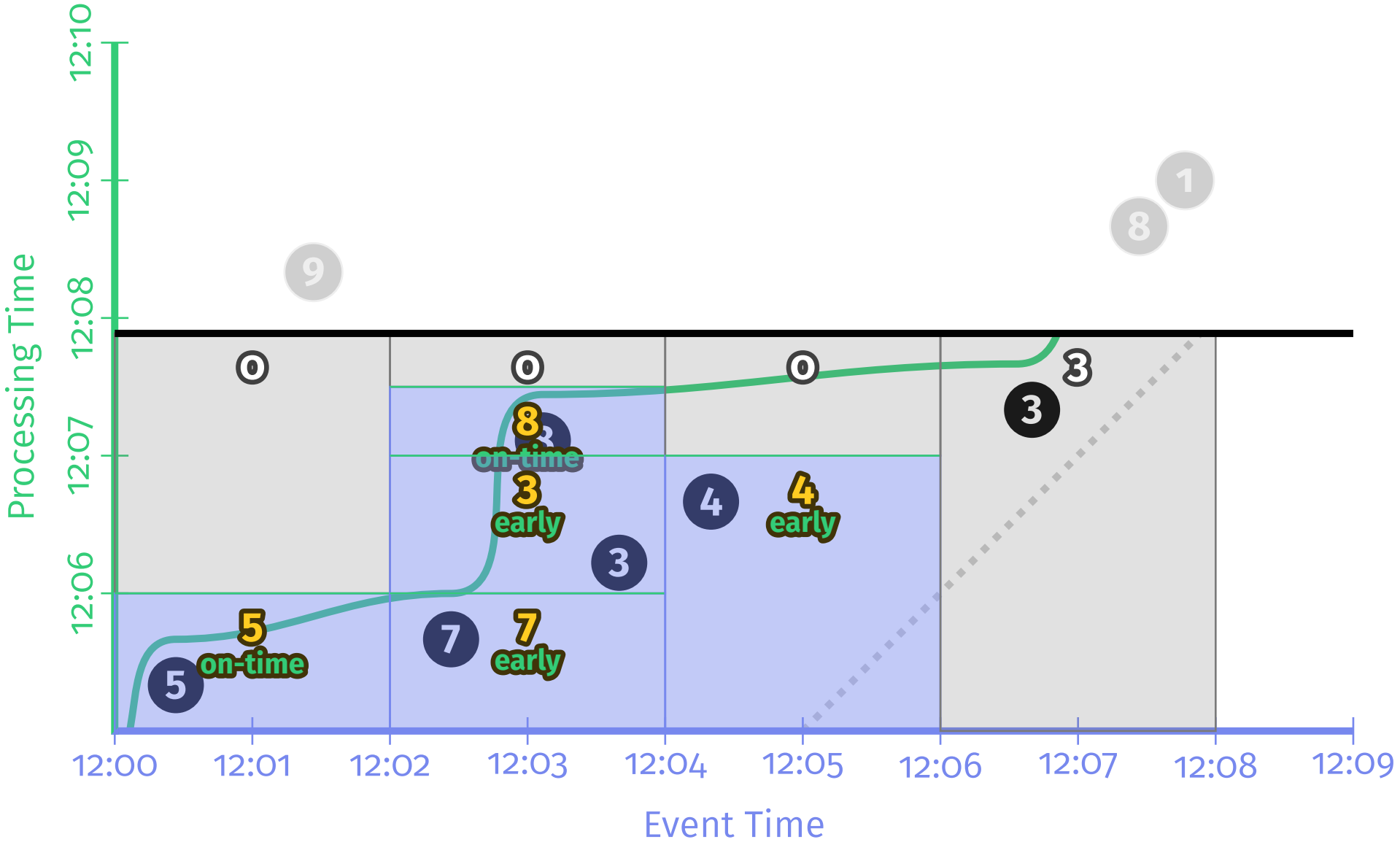


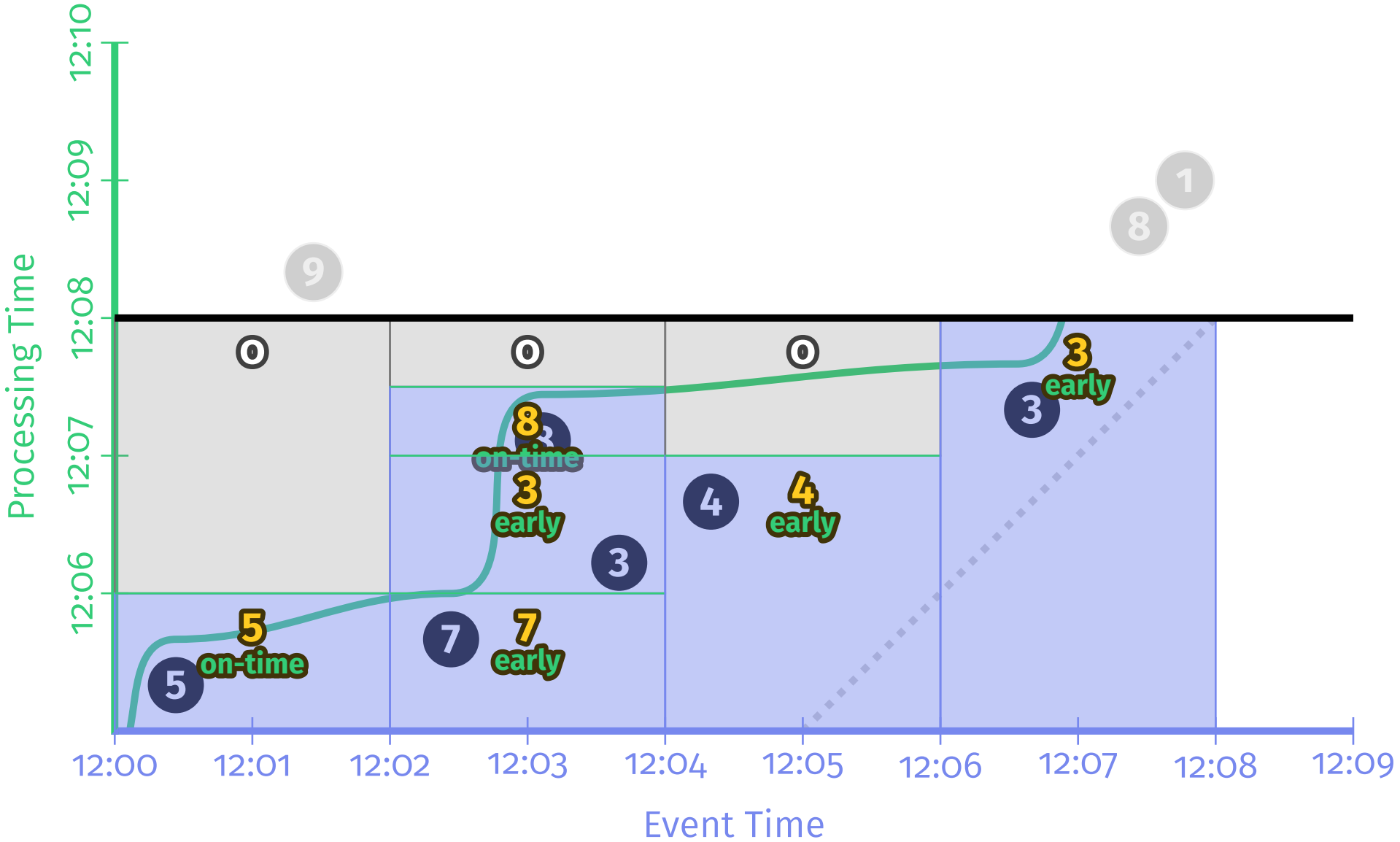
Processing Time
12:10
12:09
12:08
12:07
12:06
9
1
8
0
8
3
0
3
3
3
early
4
4
early
3
5
on-time
7
7
early
5
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

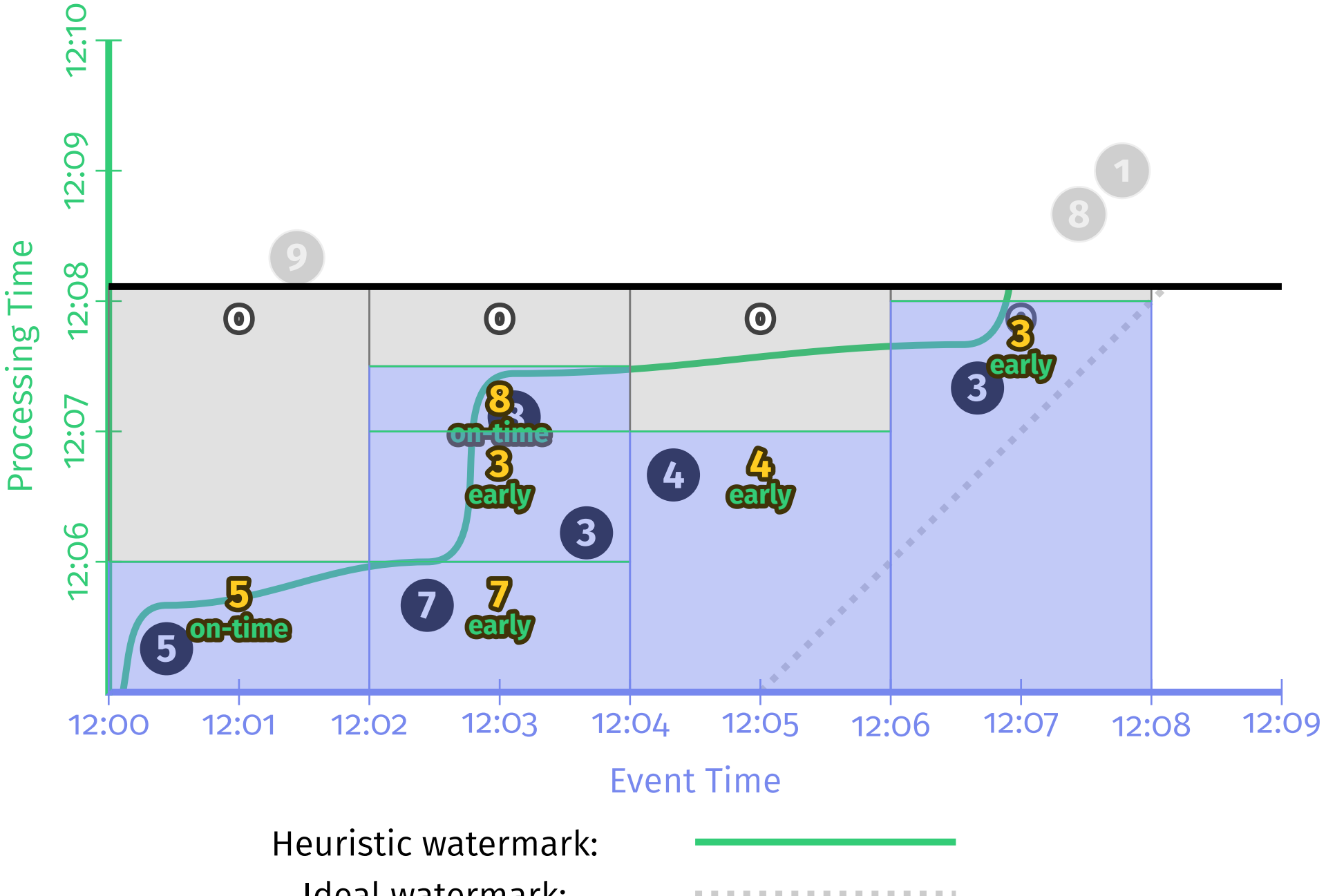

Processing Time
12:10
12:09
12:08
12:07
12:06
9
8
1
0
0
3
3
8
on-time
3
early
4
4
early
3
5
on-time
5
7
7
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

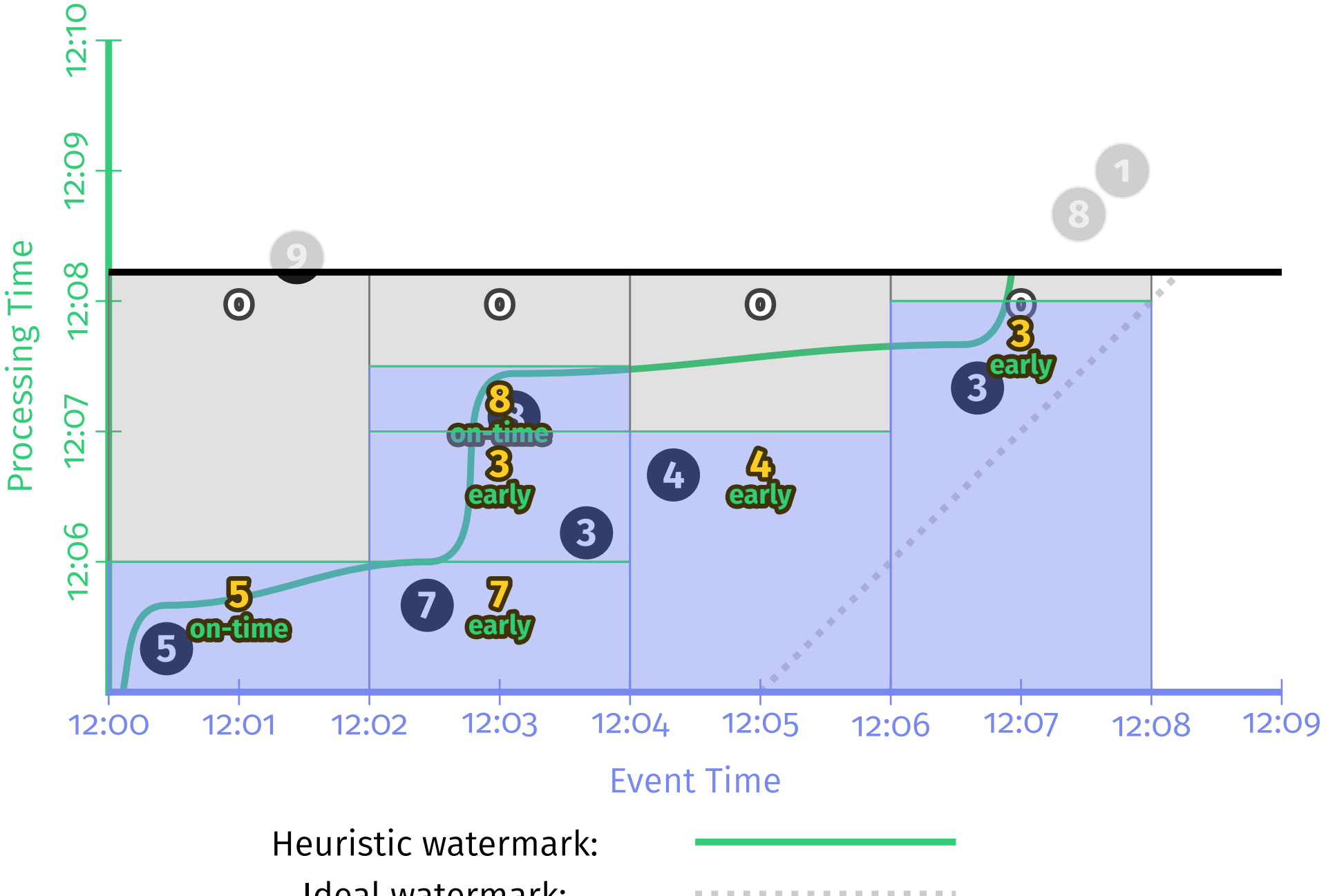

Processing Time
12:10
12:09
12:08
12:07
12:06
9
1
8
0
0
0
3
3
8
on-time
3
early
4
4
early
3
5
on-time
5
7
7
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

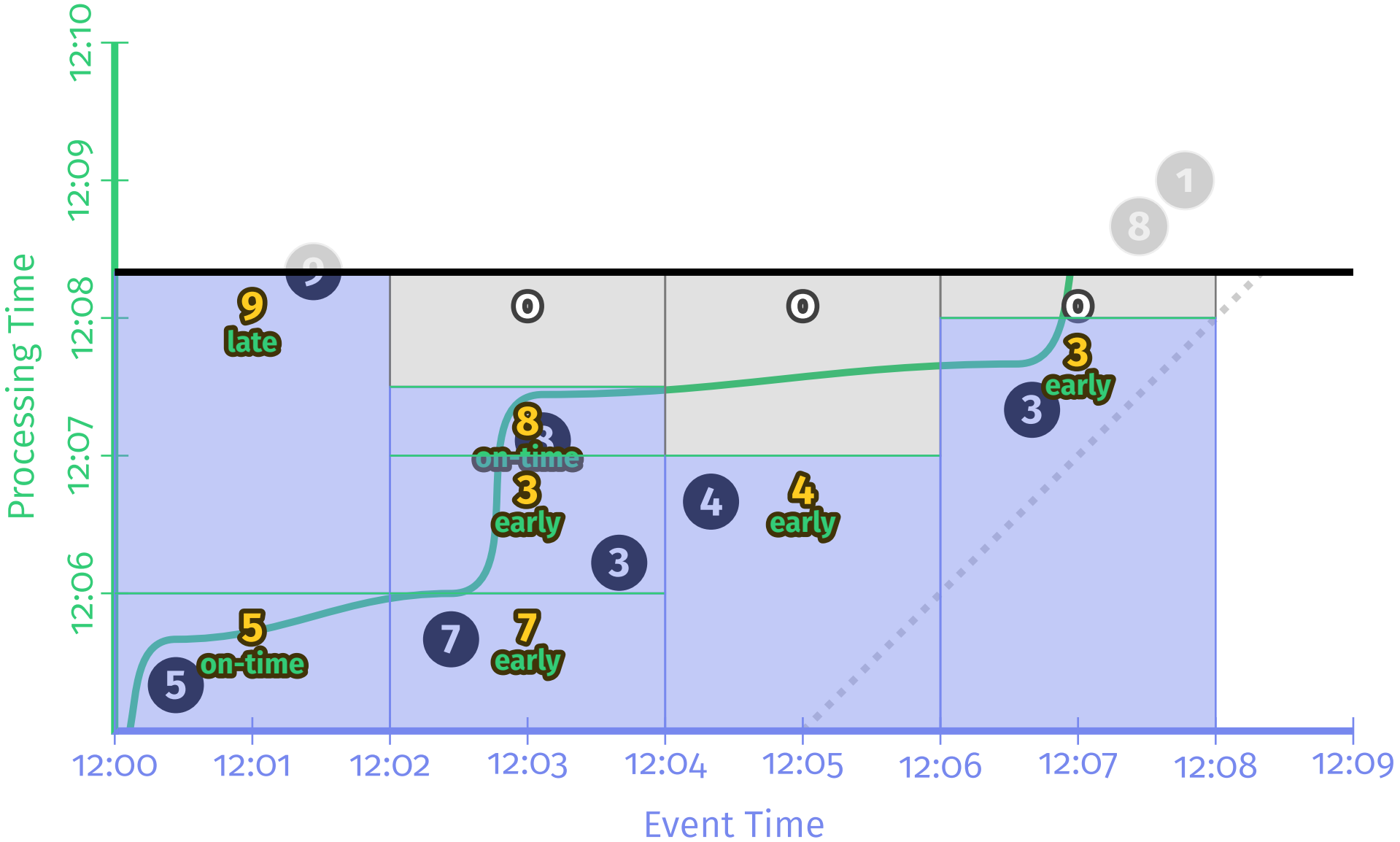
Processing Time
12:10
12:09
12:08
12:07
12:06
9
1
8
0
0
0
3
3
8
on-time
3
early
4
4
early
3
5
on-time
5
7
7
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

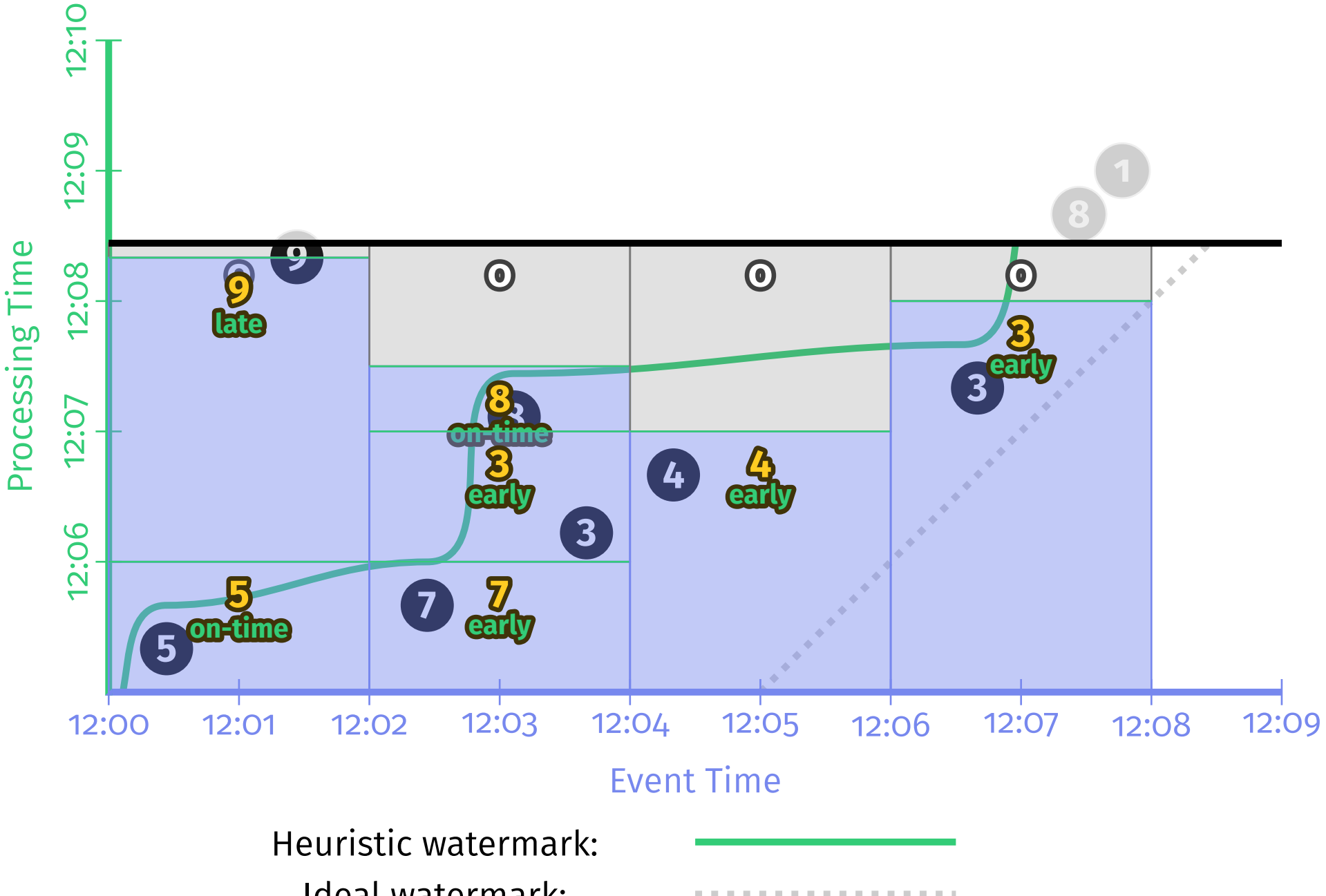

Processing Time
12:10
12:09
12:08
12:07
12:06
9
8
1
0
0
0
3
3
8
on-time
3
early
4
4
early
3
5
on-time
5
7
7
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

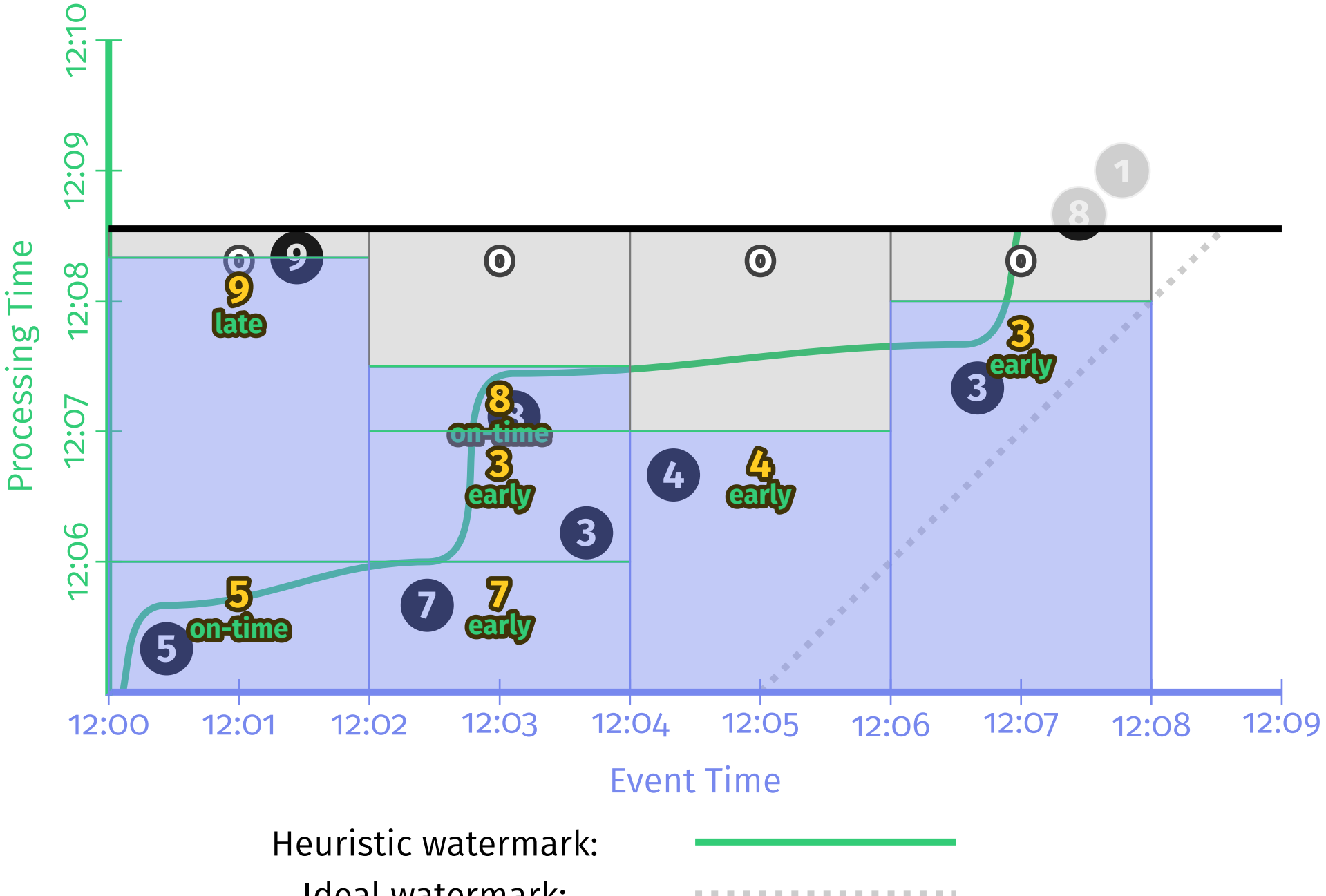

Processing Time
12:10
12:09
12:08
12:07
12:06
9
1
8
0
0
0
3
early
3
8
on-time
3
early
4
4
early
3
5
on-time
5
7
7
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:


Processing Time
12:10
12:09
12:08
12:07
12:06
9
8
1
0
0
0
3
early
3
8
on-time
3
early
4
4
early
3
5
on-time
5
7
7
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

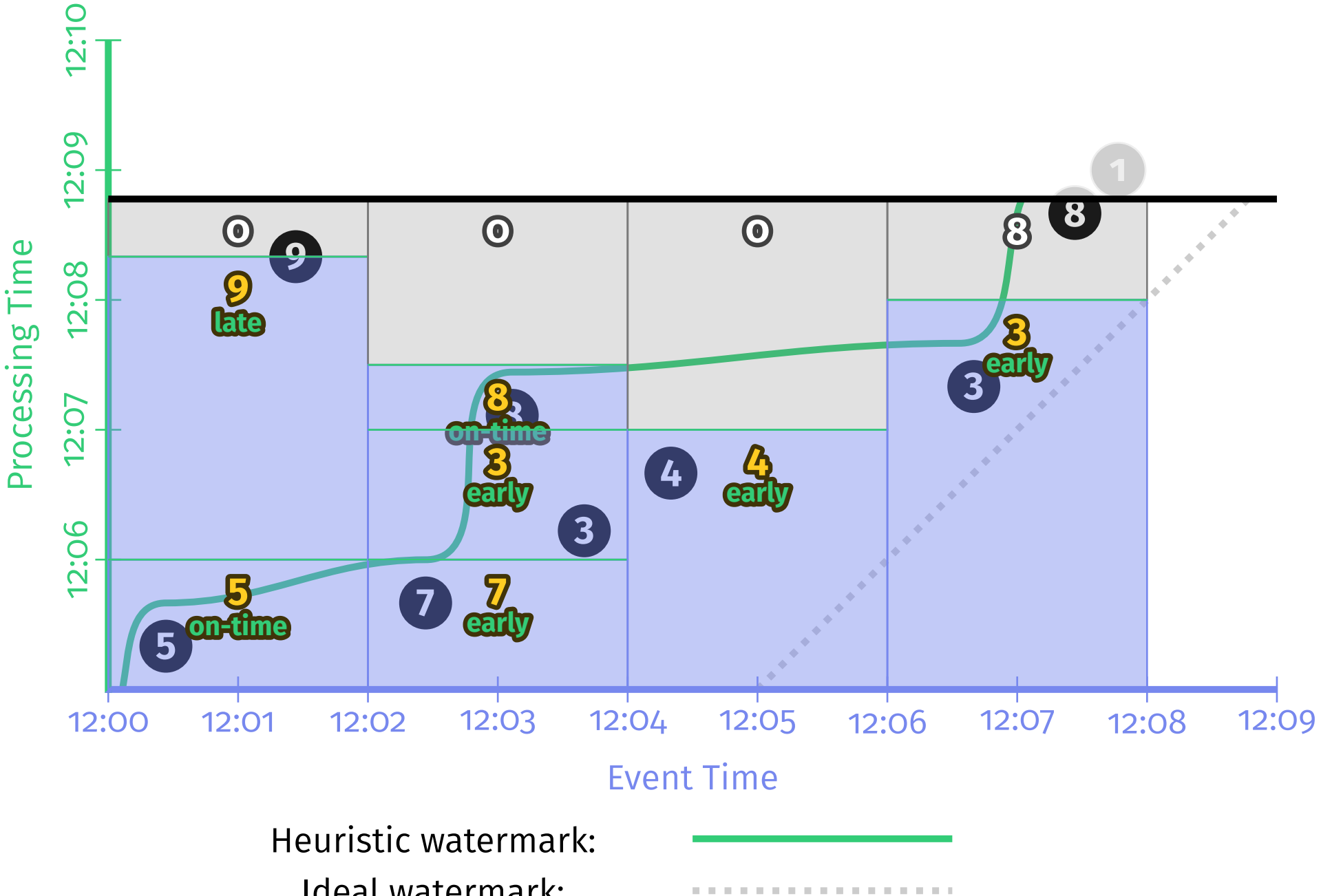

Processing Time
12:10
12:09
12:08
12:07
12:06
9
0
0
0
0
1
8
3
early
8
on-time
3
early
3
4
4
early
5
on-time
5
7
7
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

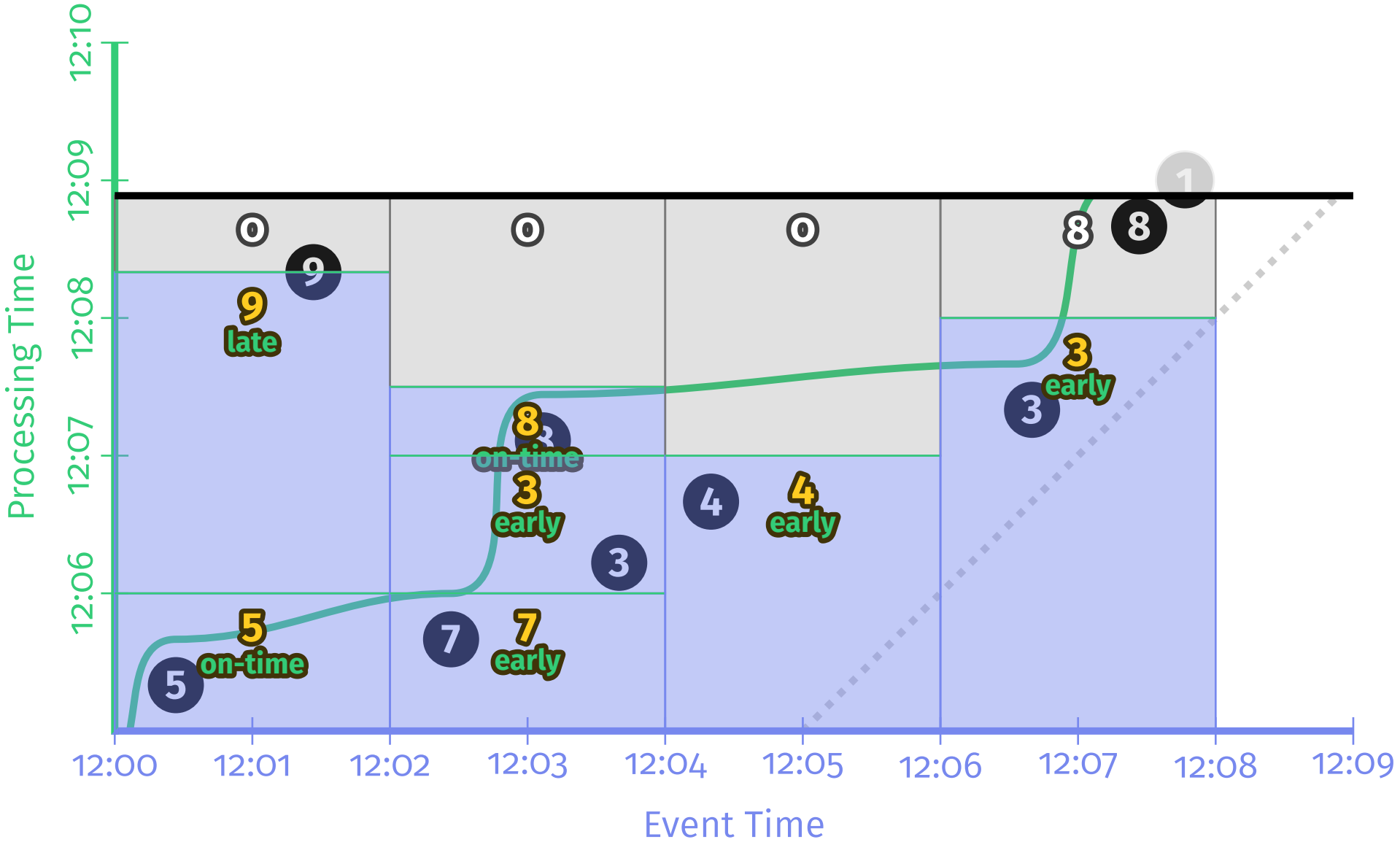

Processing Time
12:10
12:09
12:08
12:07
12:06
9
late
0
0
0
8
on-time
3
early
4
4
early
3
5
on-time
7
7
early
3
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

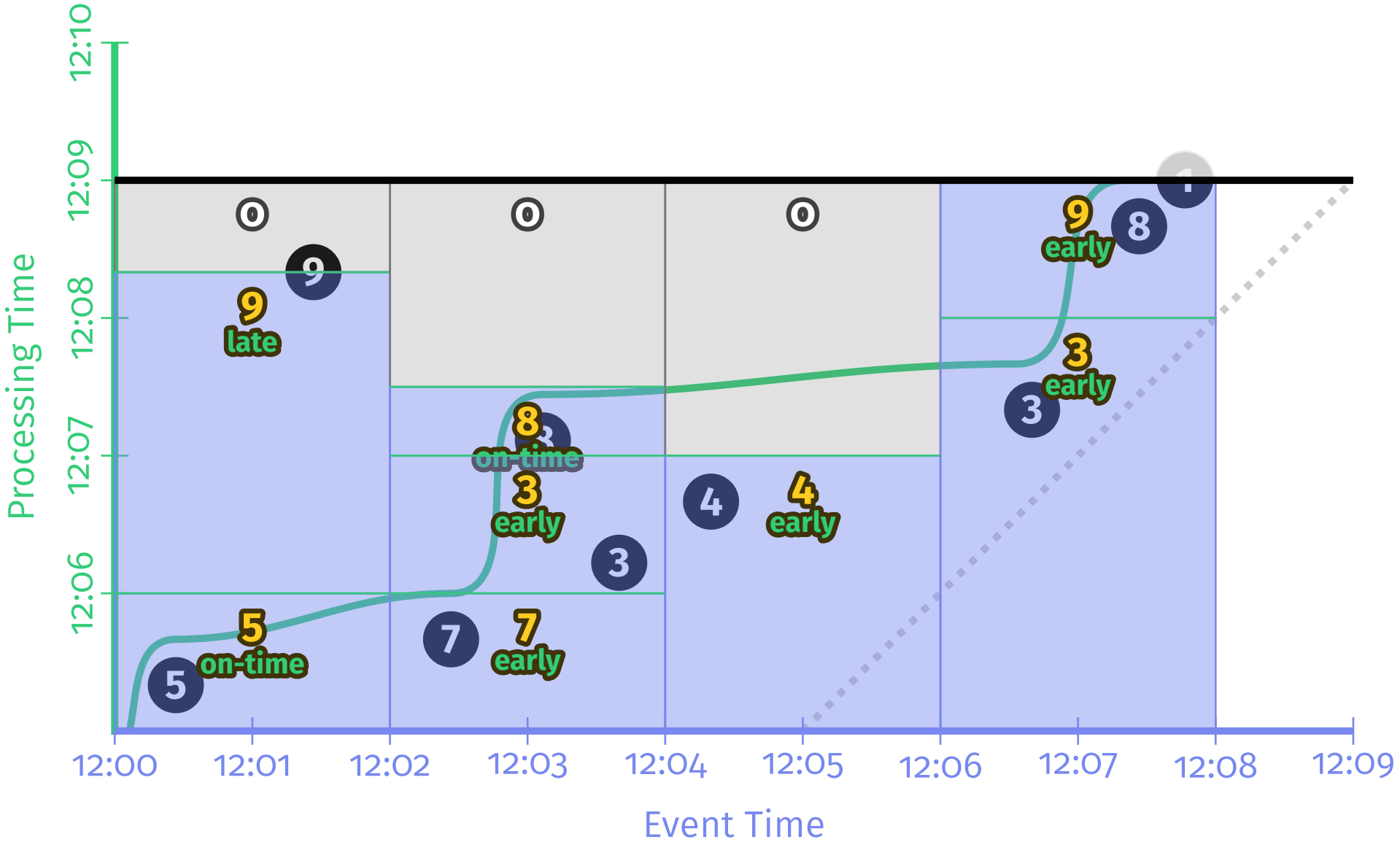

Processing Time
12:10
12:09
12:08
12:07
12:06
9
late
5
on-time
8
on-time
3
early
7
early
3
4
4
early
3
early
1
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

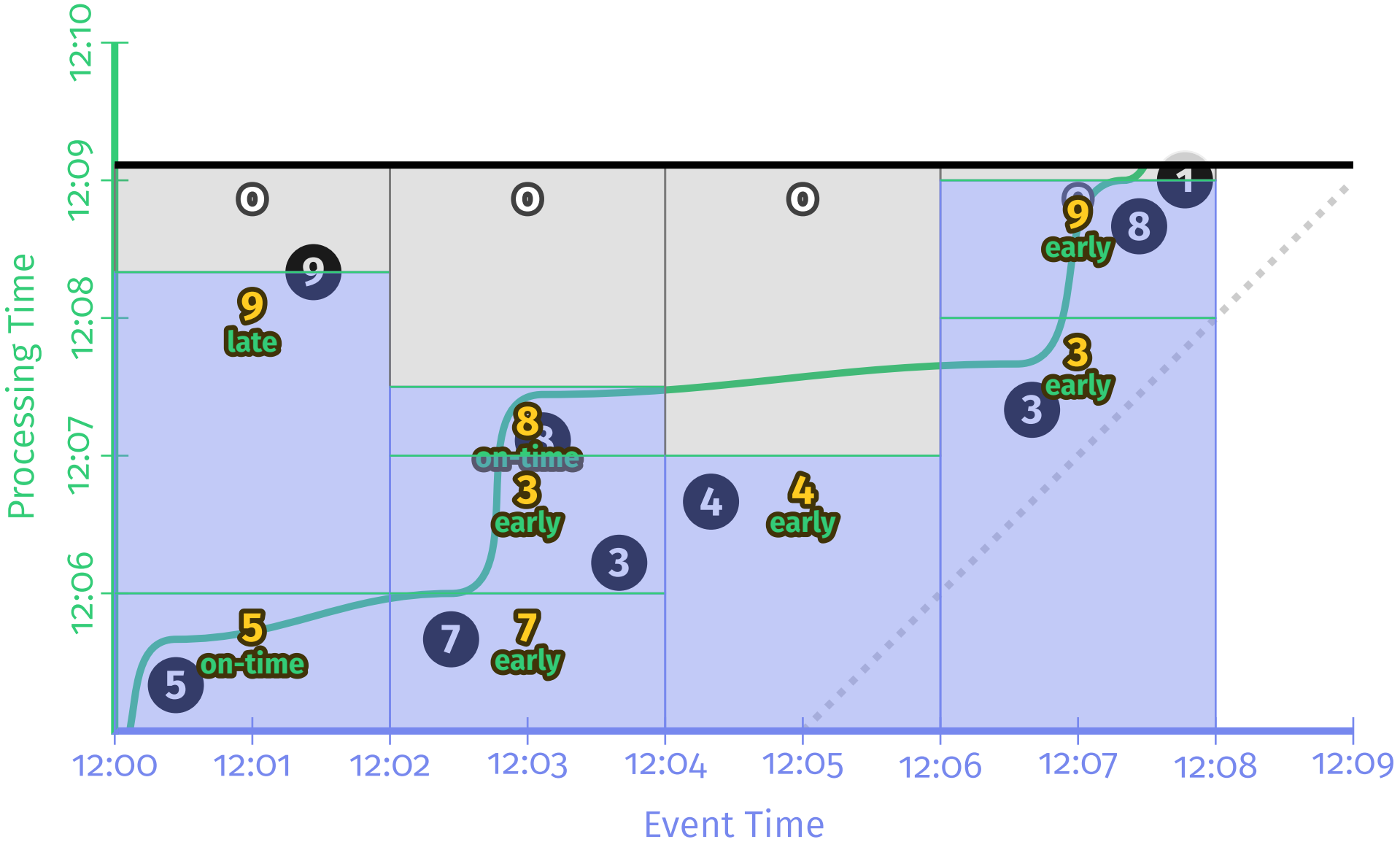

Processing Time
12:10
12:09
12:08
12:07
12:06
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
9
late
5
on-time
8
on-time
3
early
7
early
4
early
3
early
Heuristic watermark:
Ideal watermark:

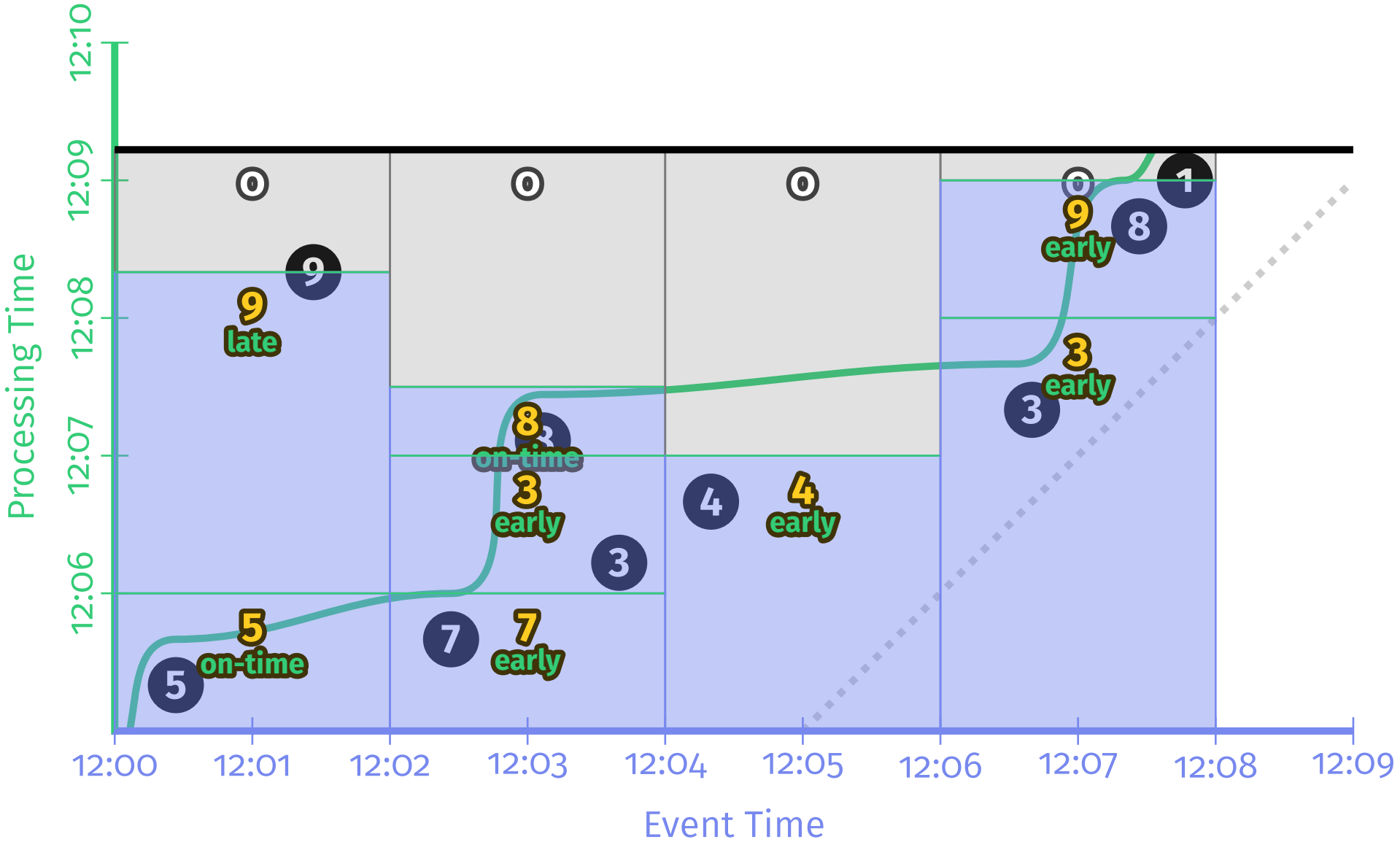
Processing Time
12:10
12:09
12:08
12:07
12:06
0
9
9
late
0
0
8
8
1
8
on-time
3
early
3
early
4
4
early
3
5
on-time
5
7
7
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

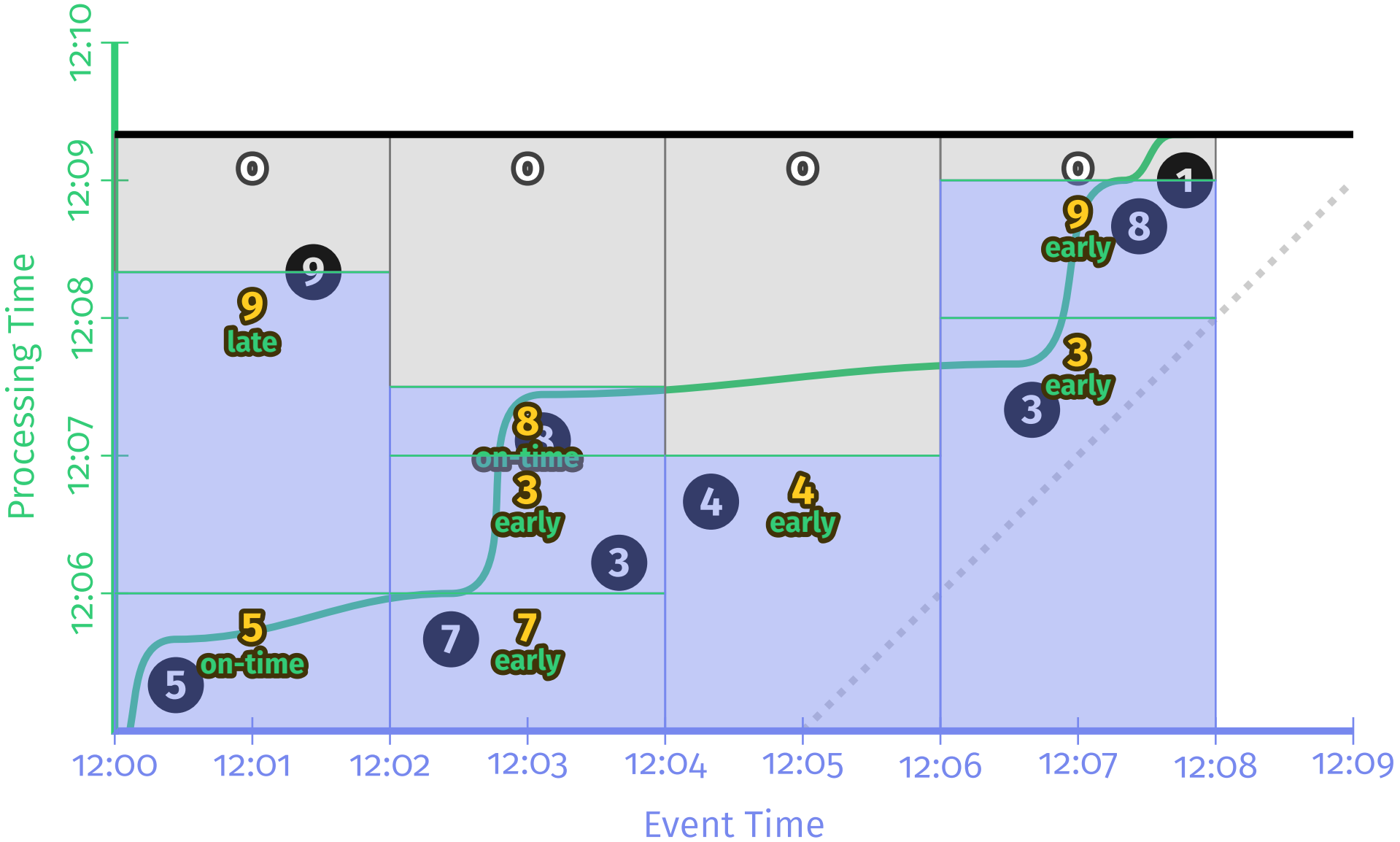

Processing Time
12:10
12:09
12:08
12:07
12:06
0
0
0
8
8
1
9
9
late
3
early
3
8
on-time
3
early
4
4
early
3
5
5
on-time
7
7
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

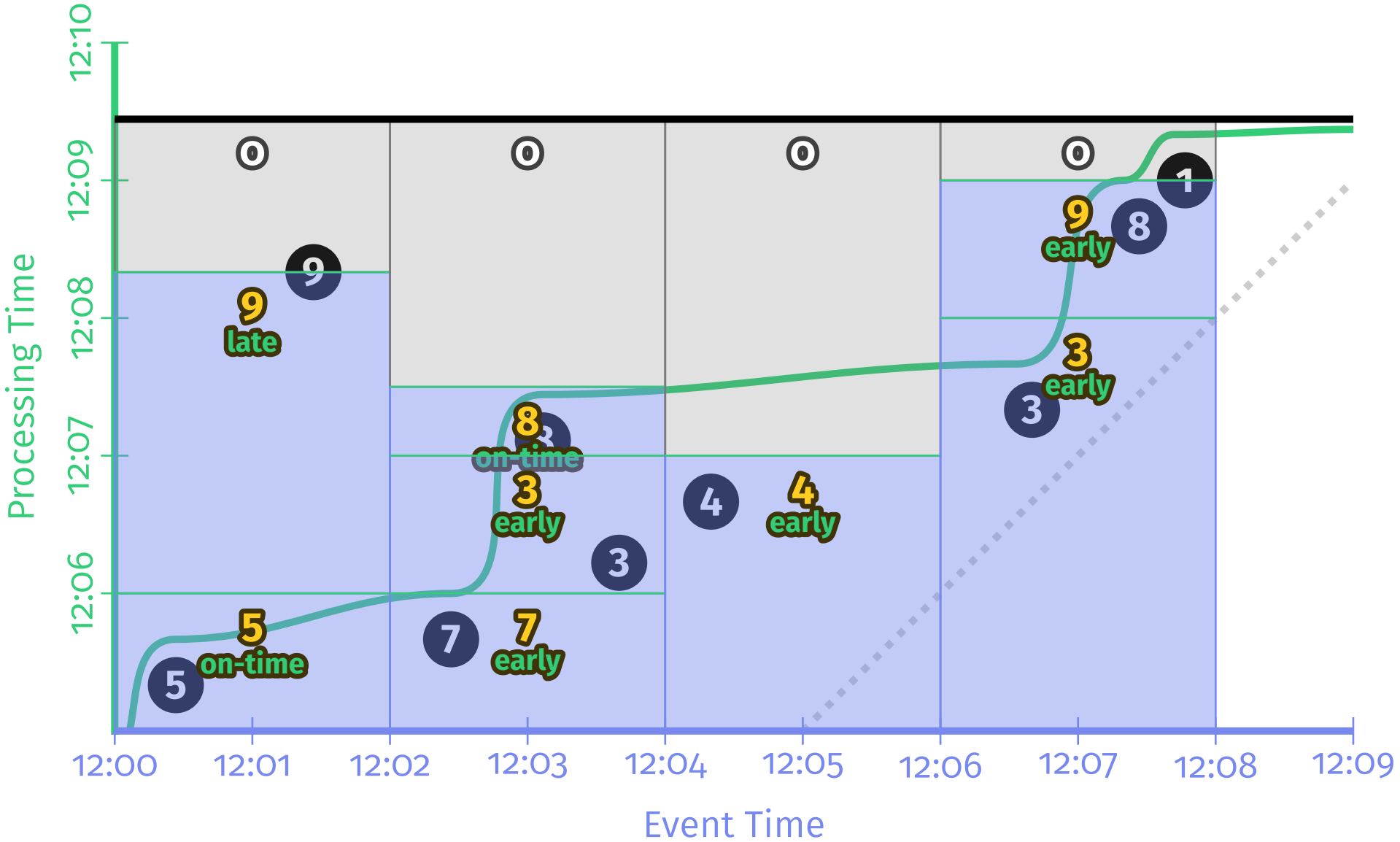

Processing Time
12:10
12:09
12:08
12:07
12:06
0
0
0
8
8
1
9
9
late
3
early
3
8
on-time
3
early
4
4
early
3
5
5
on-time
7
7
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

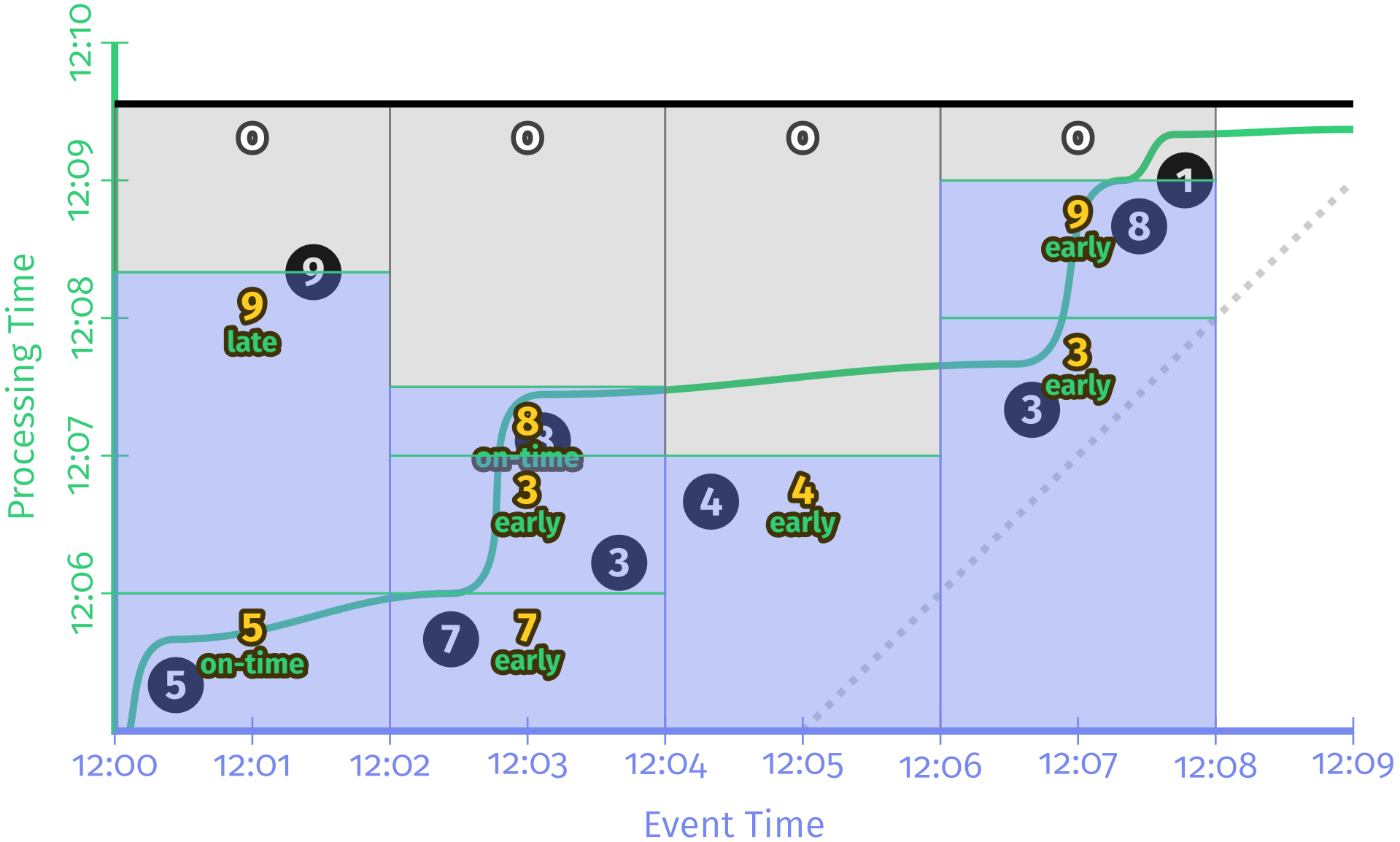

Processing Time
12:10
12:09
12:08
12:07
12:06
0
0
0
9
9
late
8
on-time
3
early
3
4
4
early
5
5
on-time
7
7
early
9
early
8
3
3
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

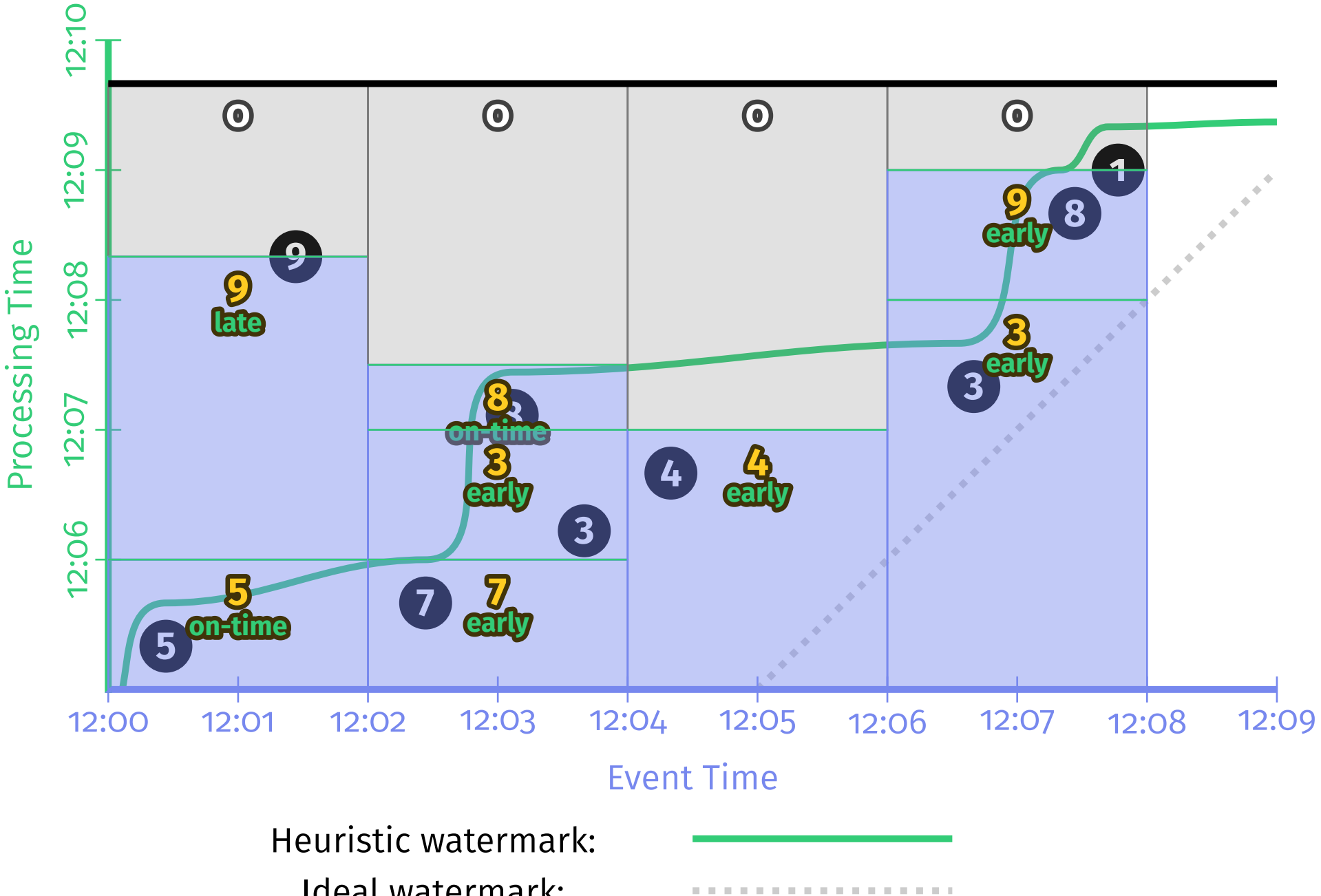

Processing Time
12:10
12:09
12:08
12:07
12:06
0
0
0
9
9
late
8
on-time
3
early
3
4
4
early
5
5
on-time
7
7
early
9
early
8
1
3
3
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

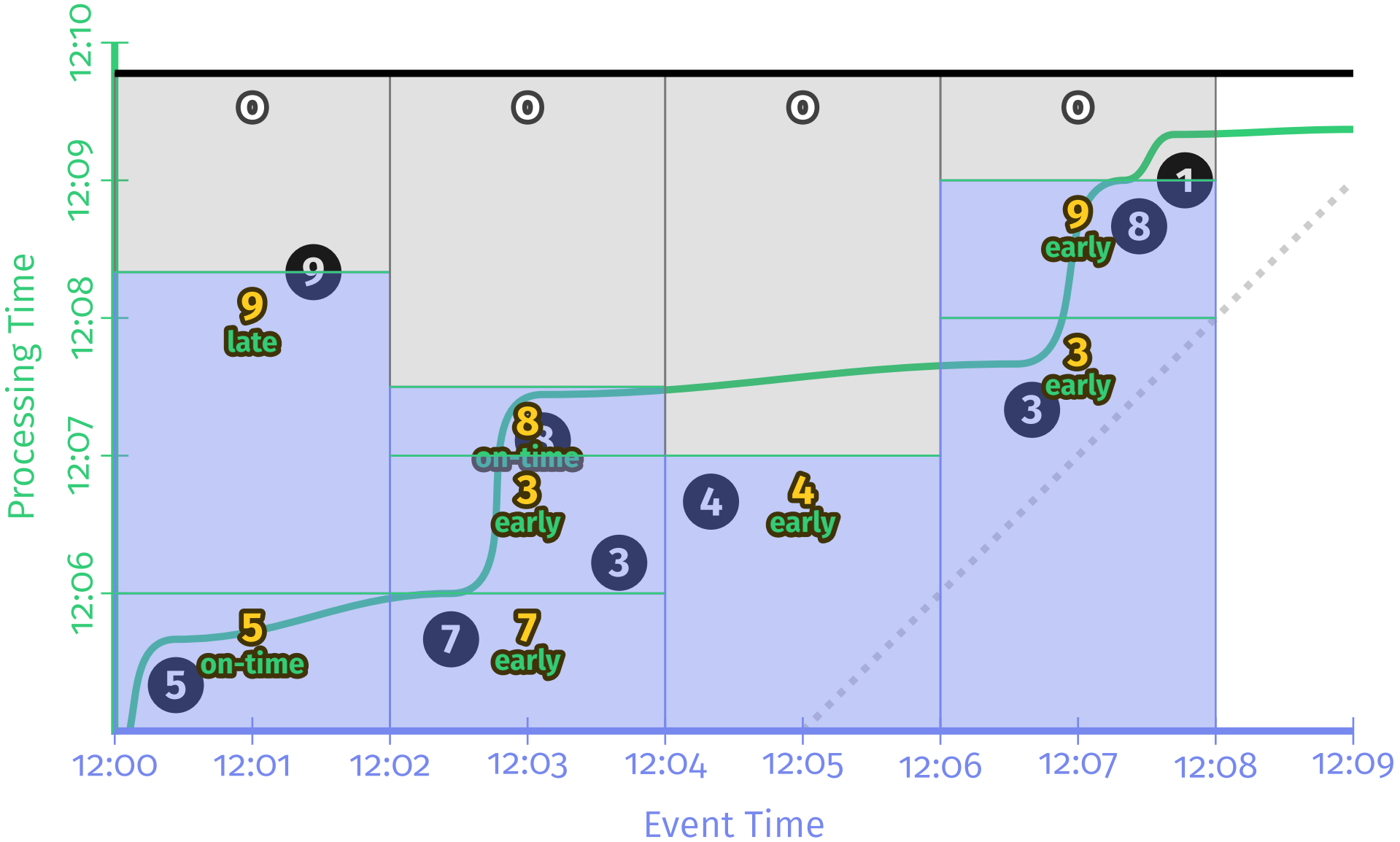

Processing Time
12:10
12:09
12:08
12:07
12:06
0
0
0
0
9
9
late
8
on-time
3
early
3
5
5
on-time
7
7
early
4
4
early
9
early
8
1
3
3
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

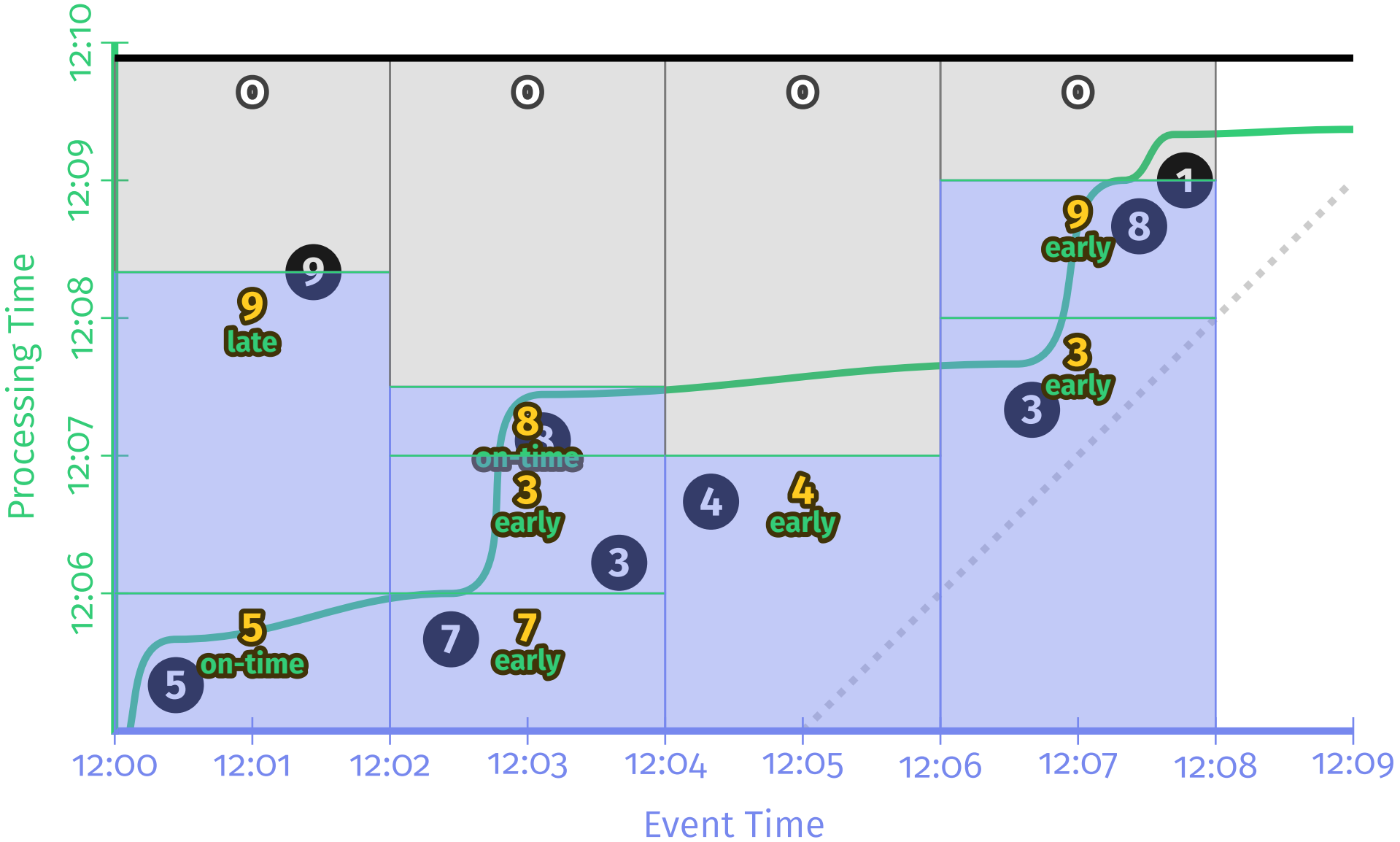

Processing Time
12:10
12:09
12:08
12:07
12:06
0
0
0
0
1
9
8
9
early
9
late
3
early
3
8
on-time
3
early
4
4
early
3
5
on-time
5
7
7
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

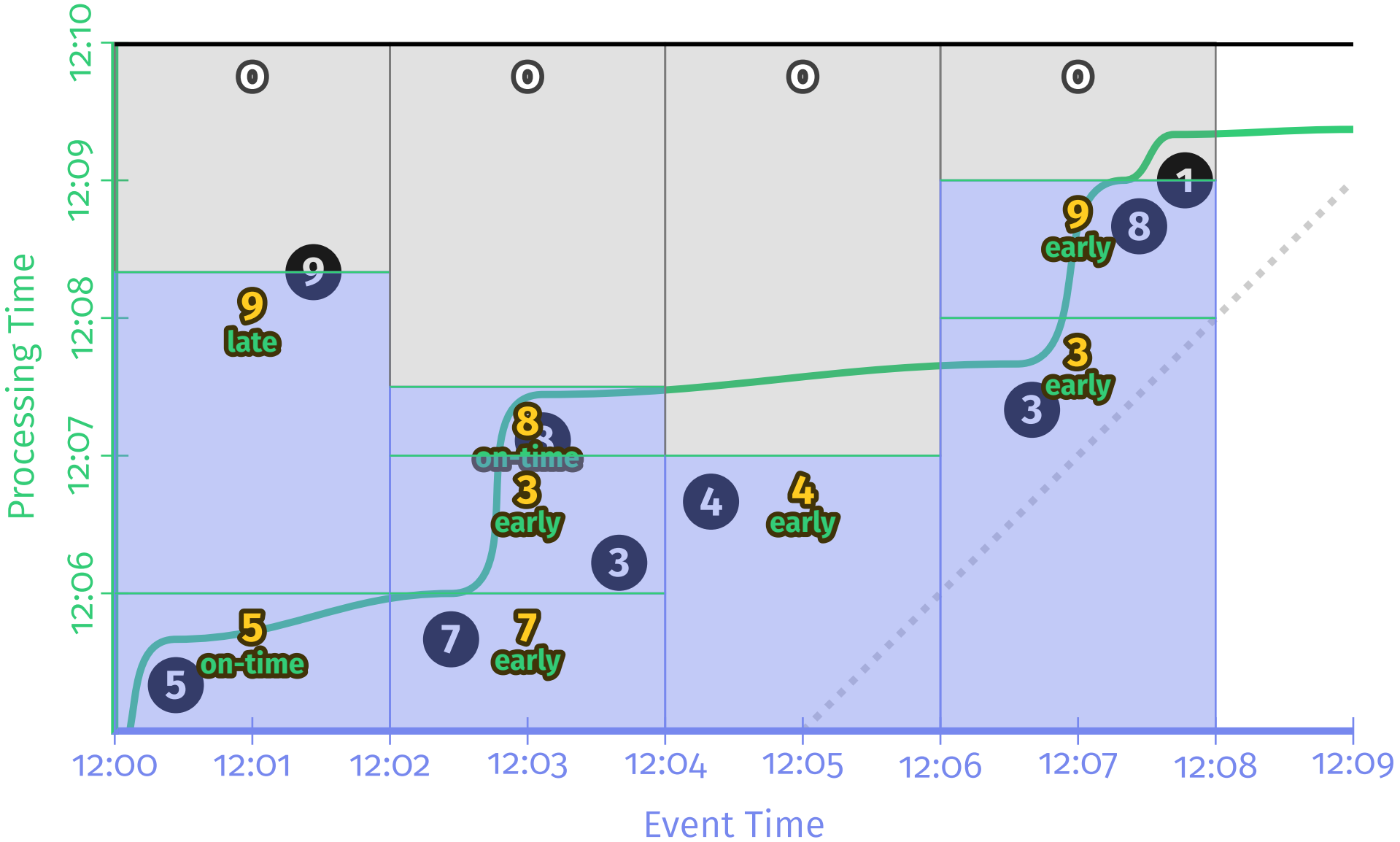

Processing Time
12:10
12:09
12:08
12:07
12:06
0
0
0
0
9
9
late
8
on-time
3
early
3
5
5
on-time
7
7
early
4
4
early
1
9
early
8
3
3
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

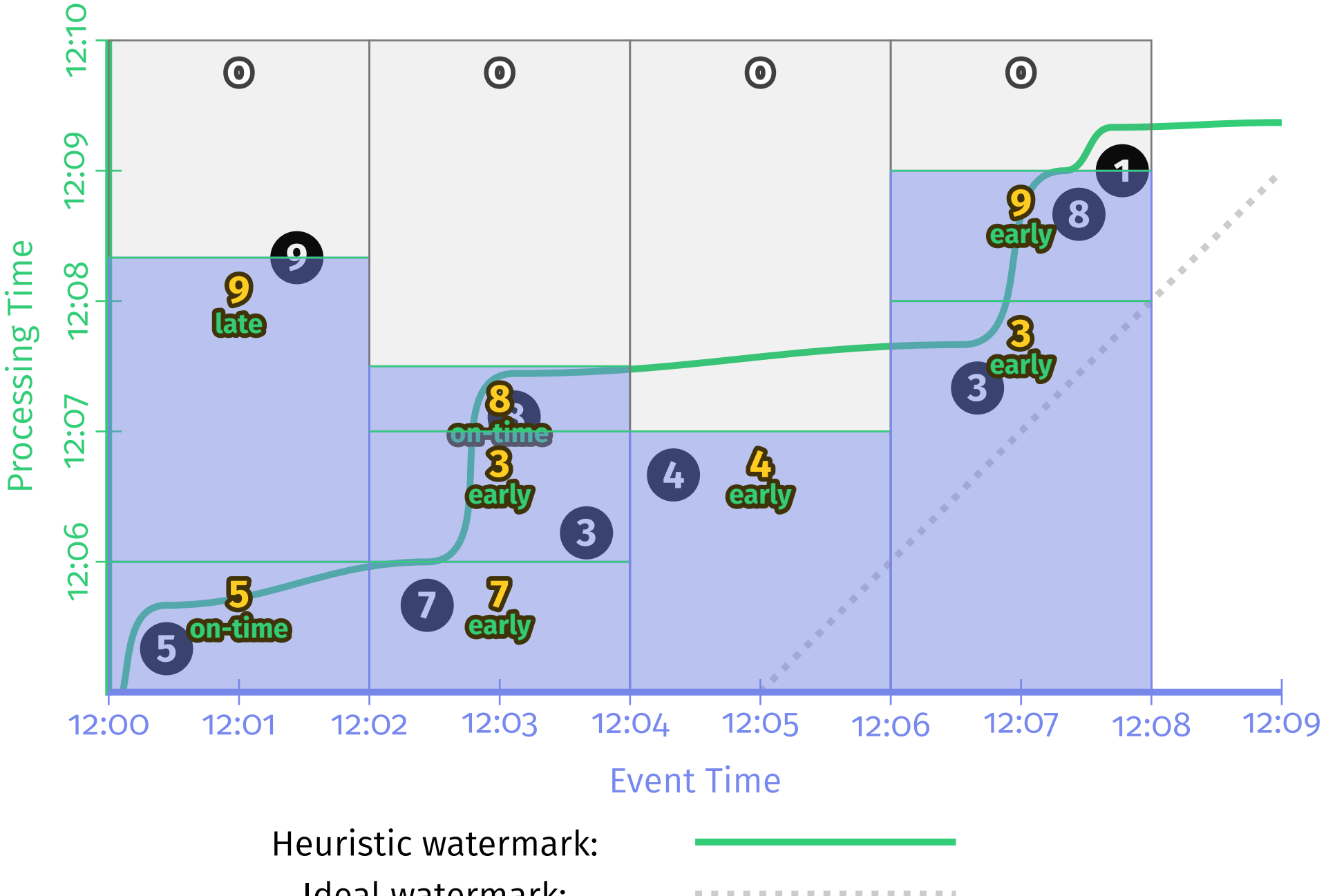

Processing Time
12:10
12:09
12:08
12:07
12:06
0
0
0
0
9
9
late
8
on-time
3
early
3
4
4
early
5
5
on-time
7
7
early
1
9
early
8
3
3
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

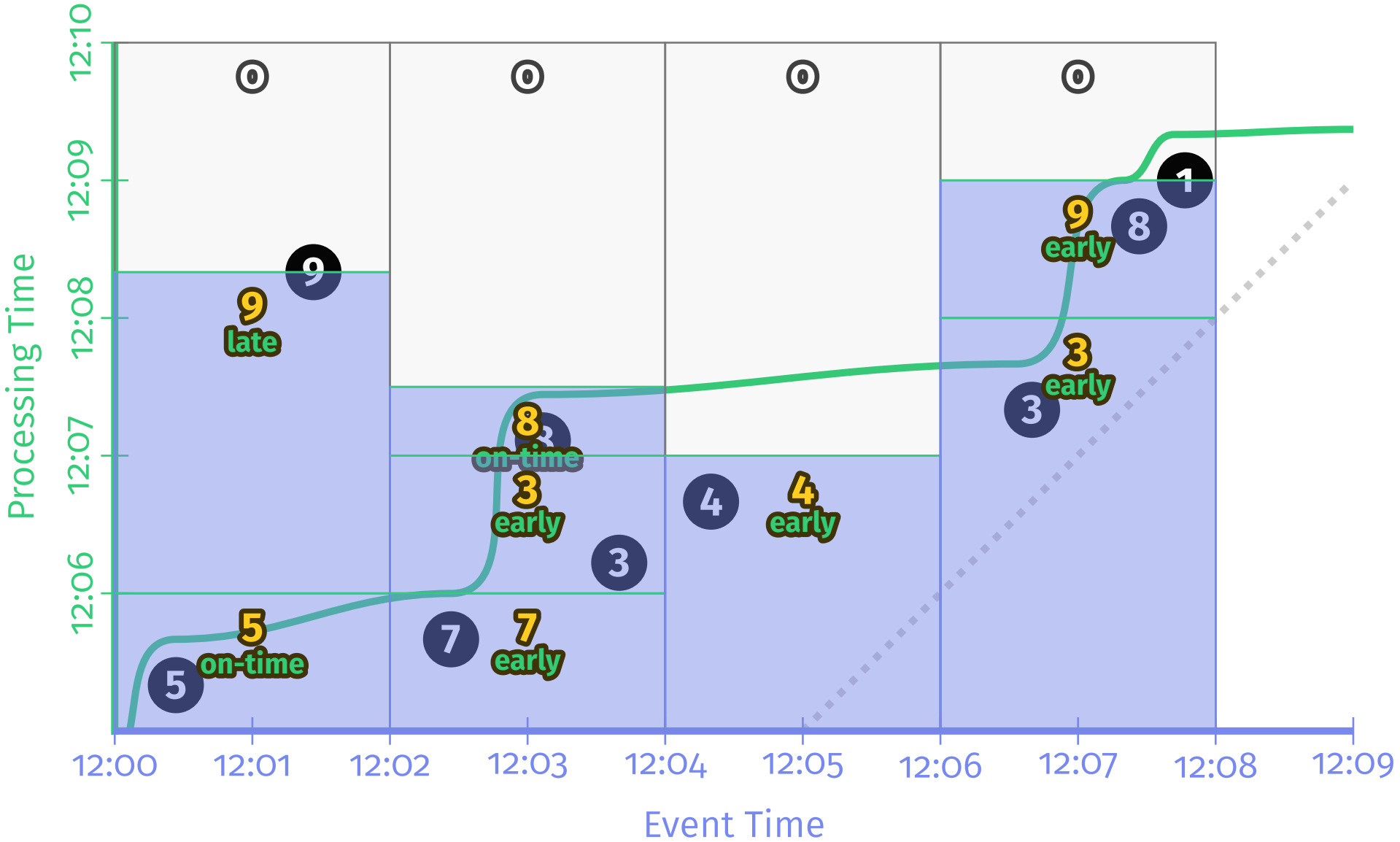

Processing Time
12:10
12:09
12:08
12:07
12:06
0
0
0
0
9
9
late
5
5
on-time
8
on-time
3
early
7
7
early
3
4
4
early
9
early
8
1
3
3
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

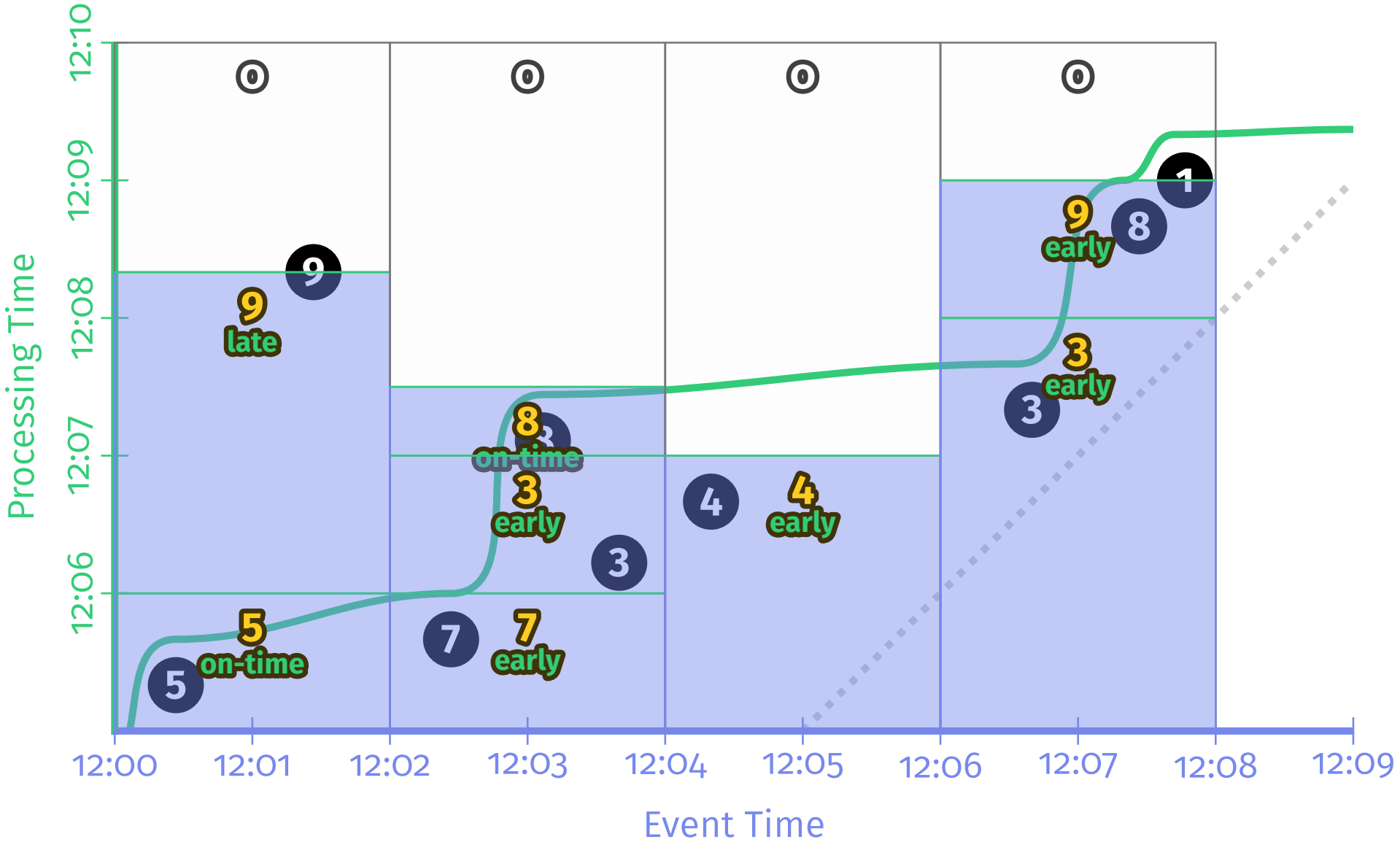

Processing Time
12:10
12:09
12:08
12:07
12:06
0
0
0
0
9
9
late
8
on-time
3
early
3
4
4
early
5
5
on-time
7
7
early
1
9
early
8
3
3
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

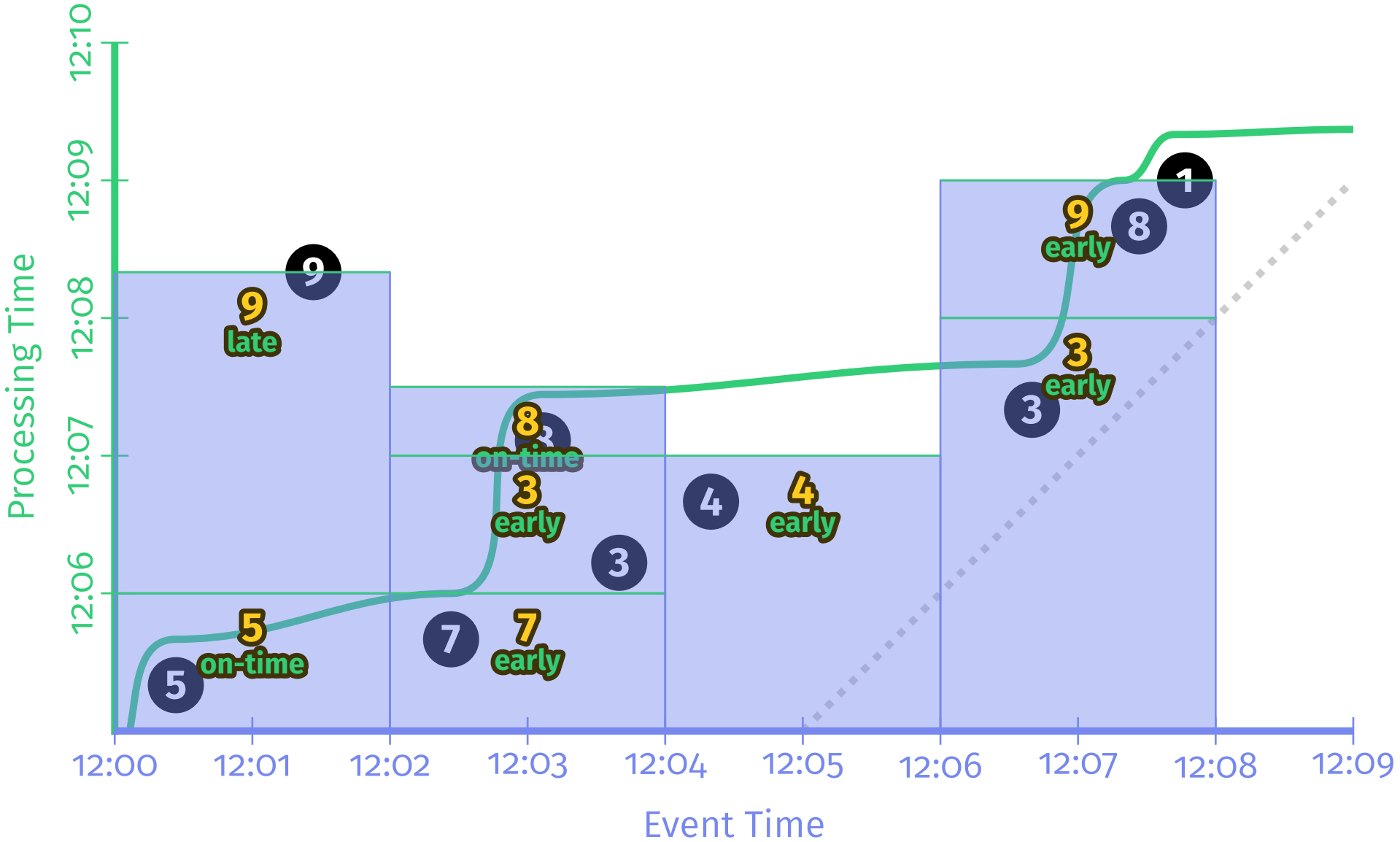

Processing Time
12:10
12:09
12:08
12:07
12:06
0
0
0
0
9
9
late
5
5
on-time
7
7
early
8
on-time
3
early
3
4
4
early
1
9
early
8
3
3
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

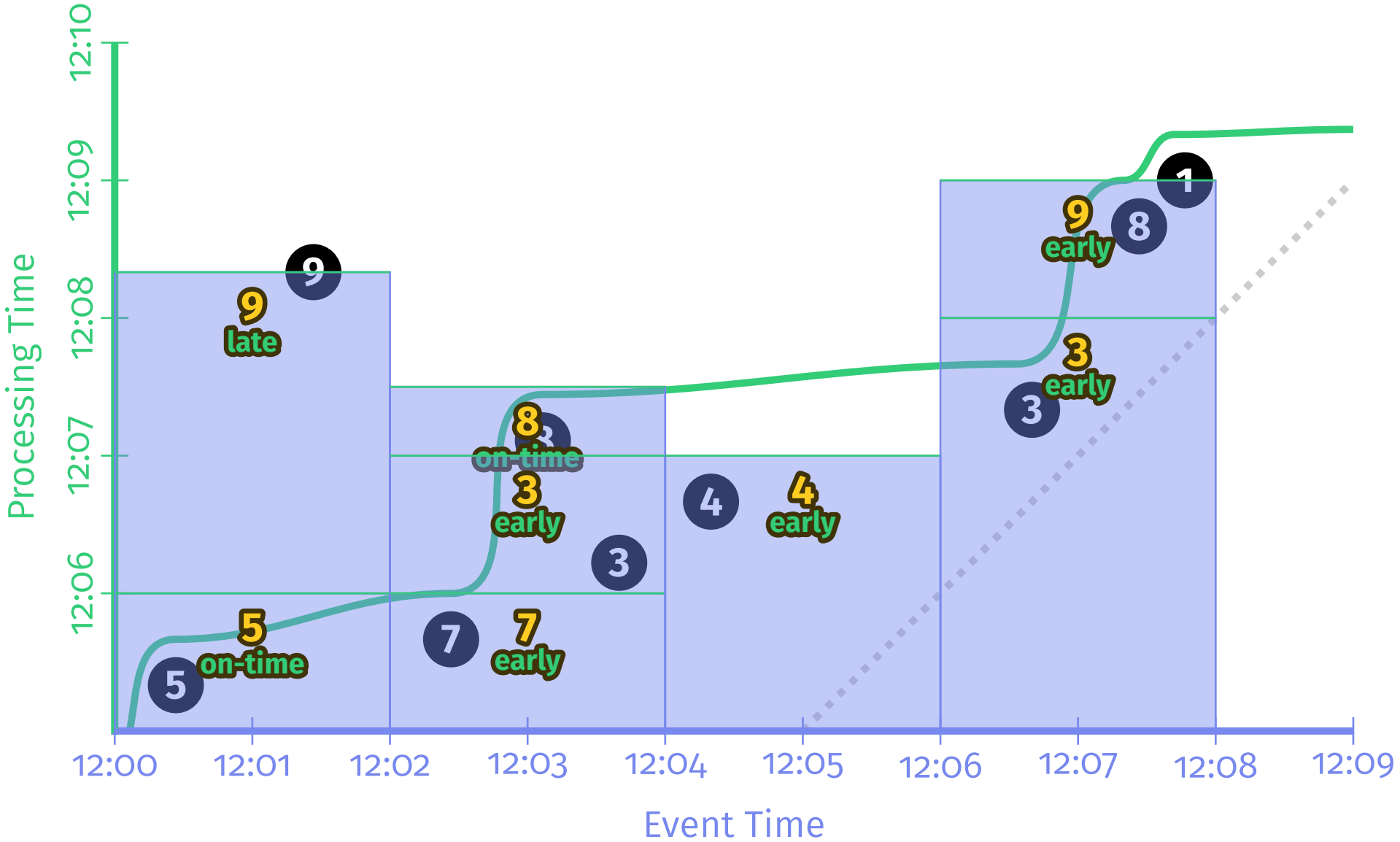

Processing Time
12:10
12:09
12:08
12:07
12:06
0
0
0
0
9
9
late
5
5
on-time
7
7
early
8
on-time
3
early
3
4
4
early
1
9
early
8
3
3
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

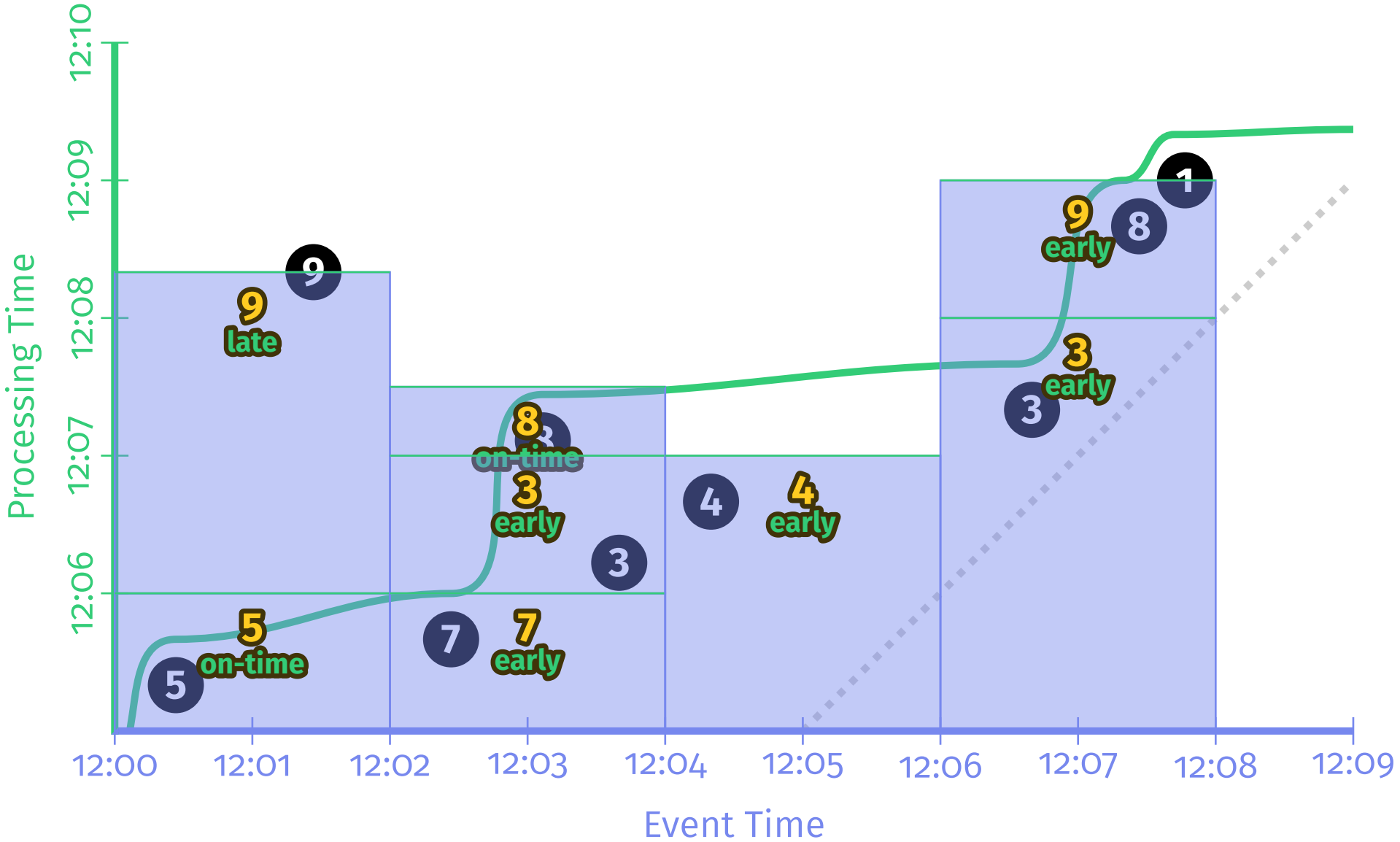

Processing Time
12:10
12:09
12:08
12:07
12:06
0
0
0
0
9
9
late
5
5
on-time
8
on-time
3
early
7
7
early
3
4
4
early
9
early
8
1
3
3
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

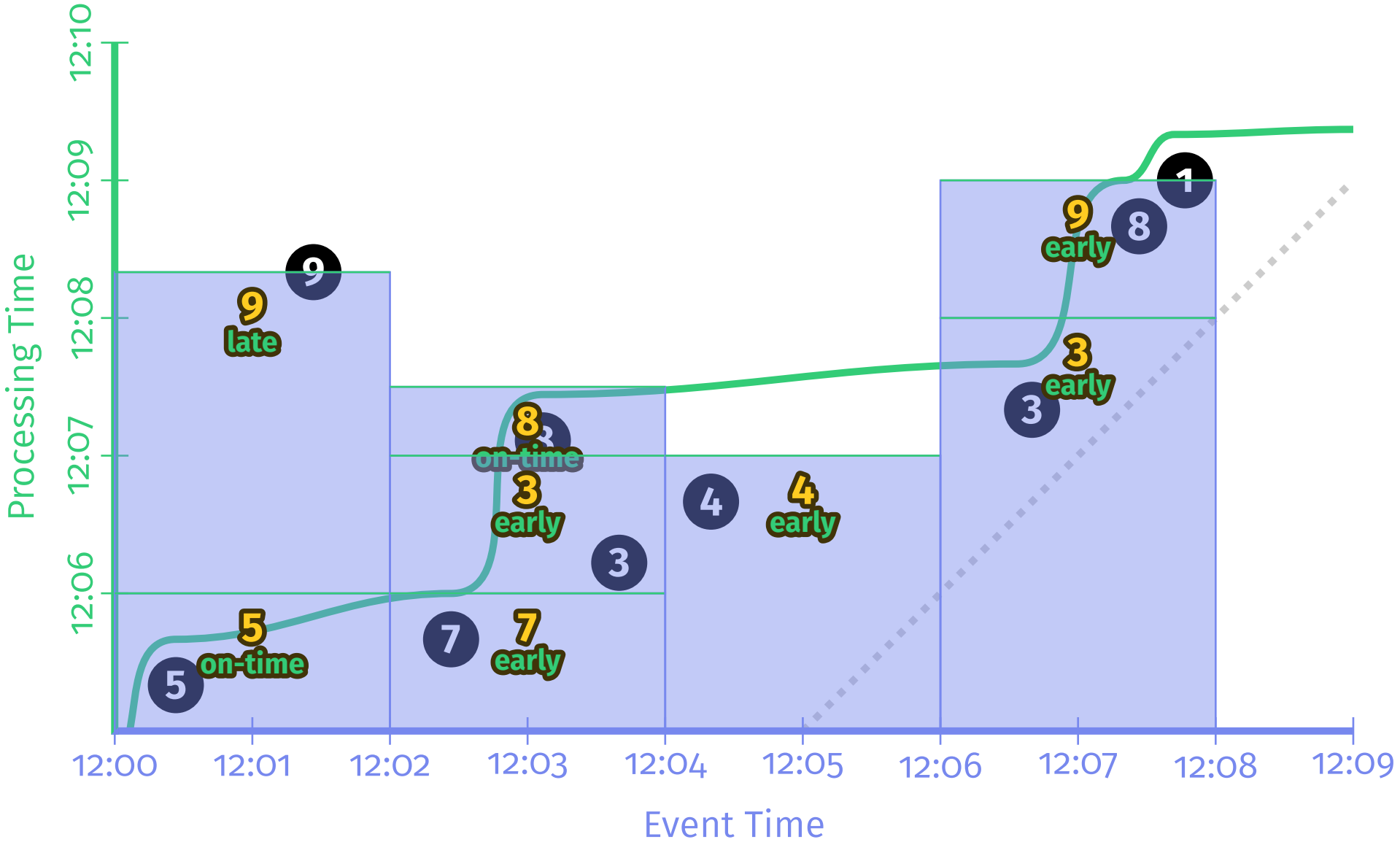

Processing Time
12:10
12:09
12:08
12:07
12:06
0
0
0
0
9
9
late
5
5
on-time
8
on-time
3
early
7
7
early
3
4
4
early
9
early
8
1
3
3
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

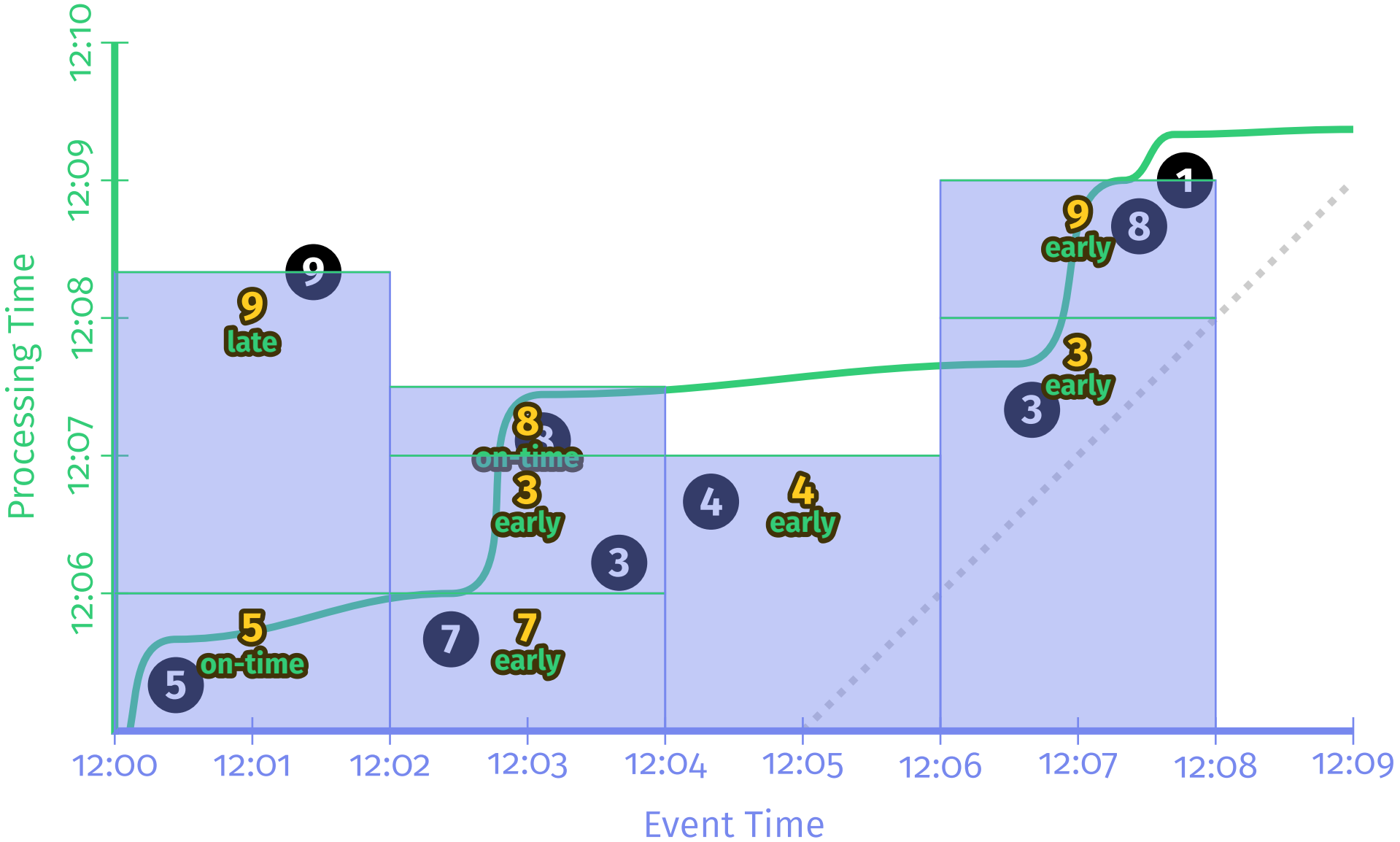

Processing Time
12:10
12:09
12:08
12:07
12:06
0
0
0
0
9
9
late
5
5
on-time
7
7
early
3
8
8
on-time
3
early
4
4
early
1
9
9
early
8
3
3
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

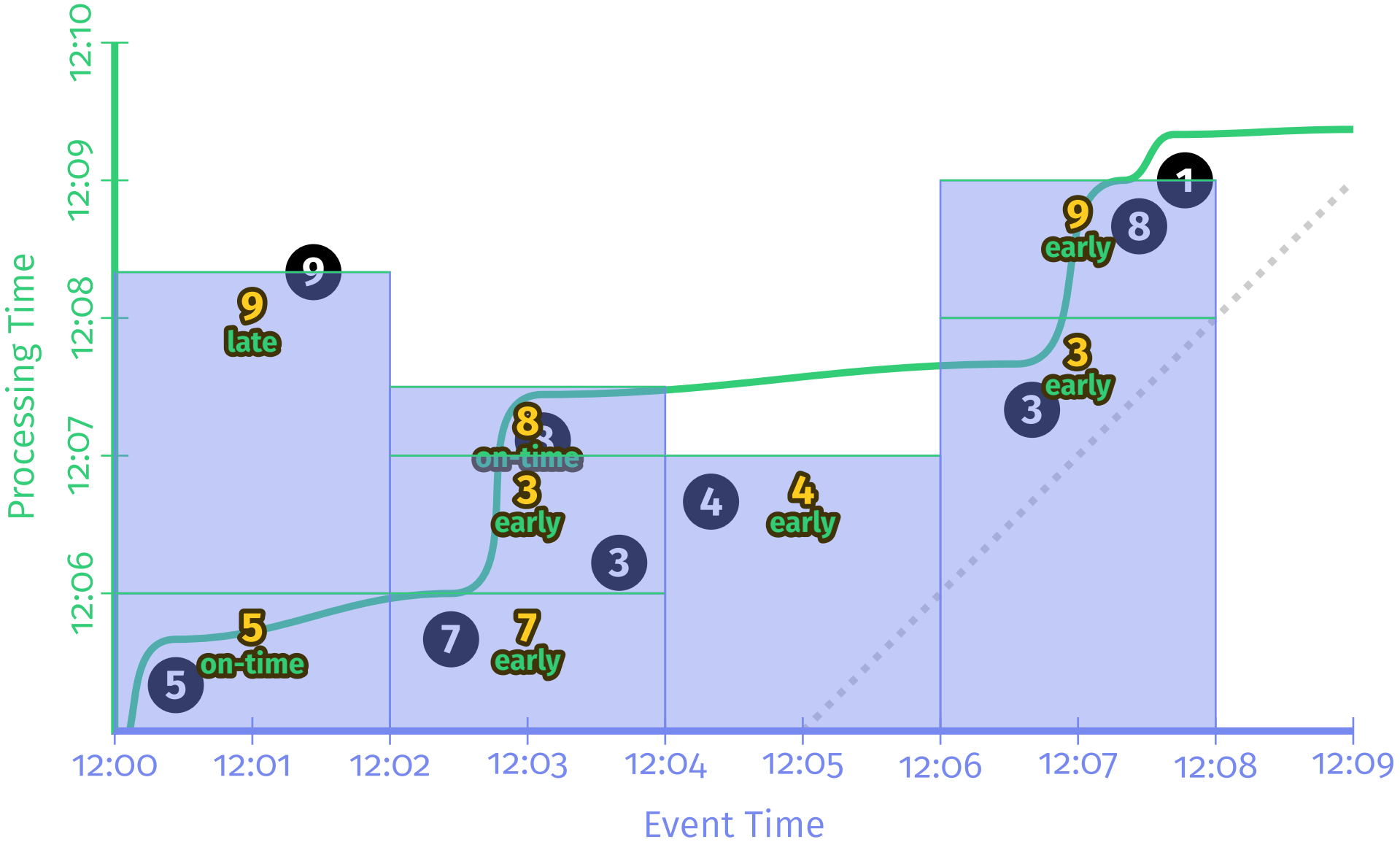

Processing Time
12:10
12:09
12:08
12:07
12:06
9
late
5
on-time
8
on-time
3
early
7
early
4
early
9
early
3
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

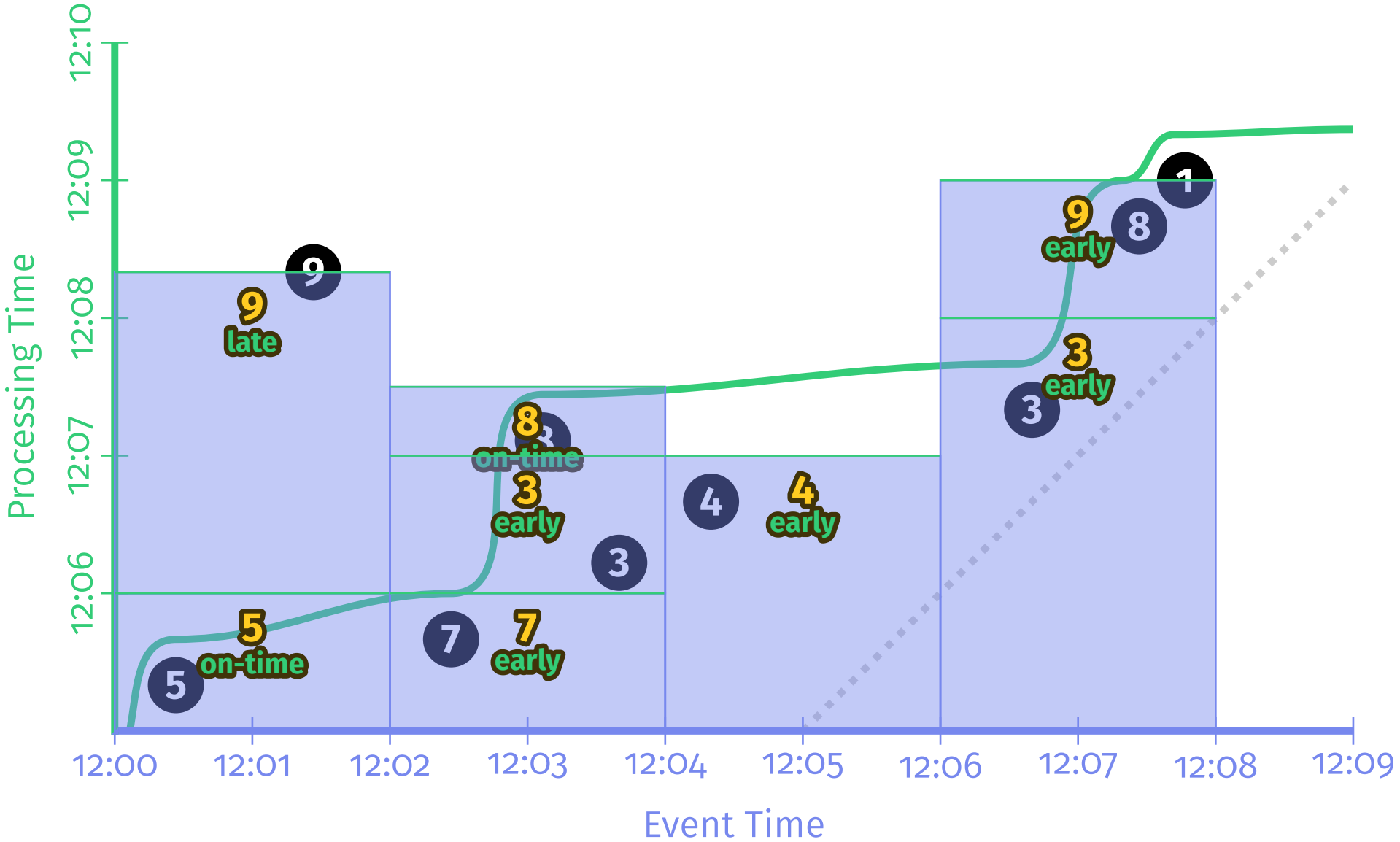

Processing Time
12:10
12:09
12:08
12:07
12:06
9
late
5
on-time
8
on-time
3
early
7
early
4
early
9
early
3
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

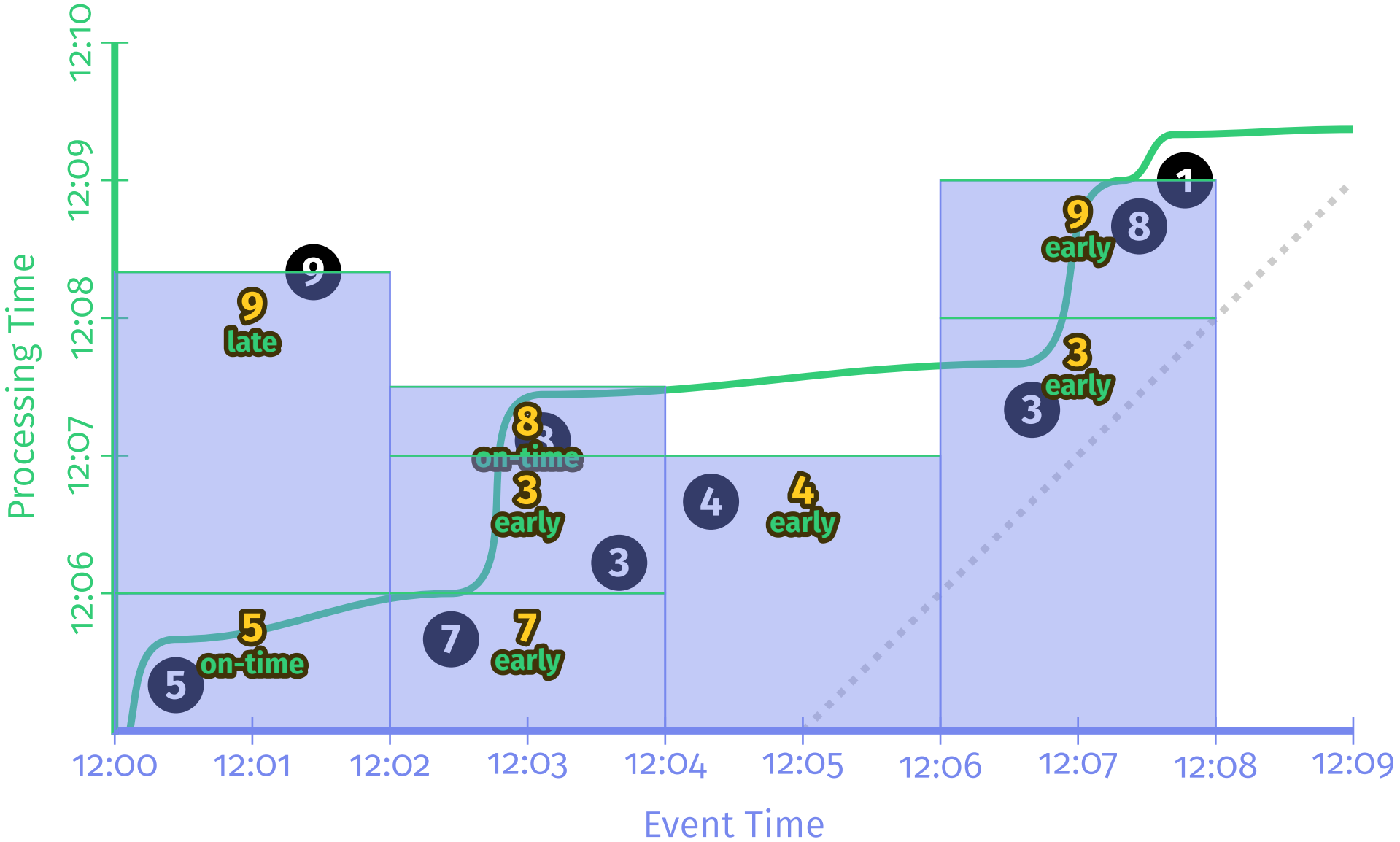

Processing Time
12:10
12:09
12:08
12:07
12:06
9
late
5
on-time
8
on-time
3
early
7
early
4
early
9
early
3
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

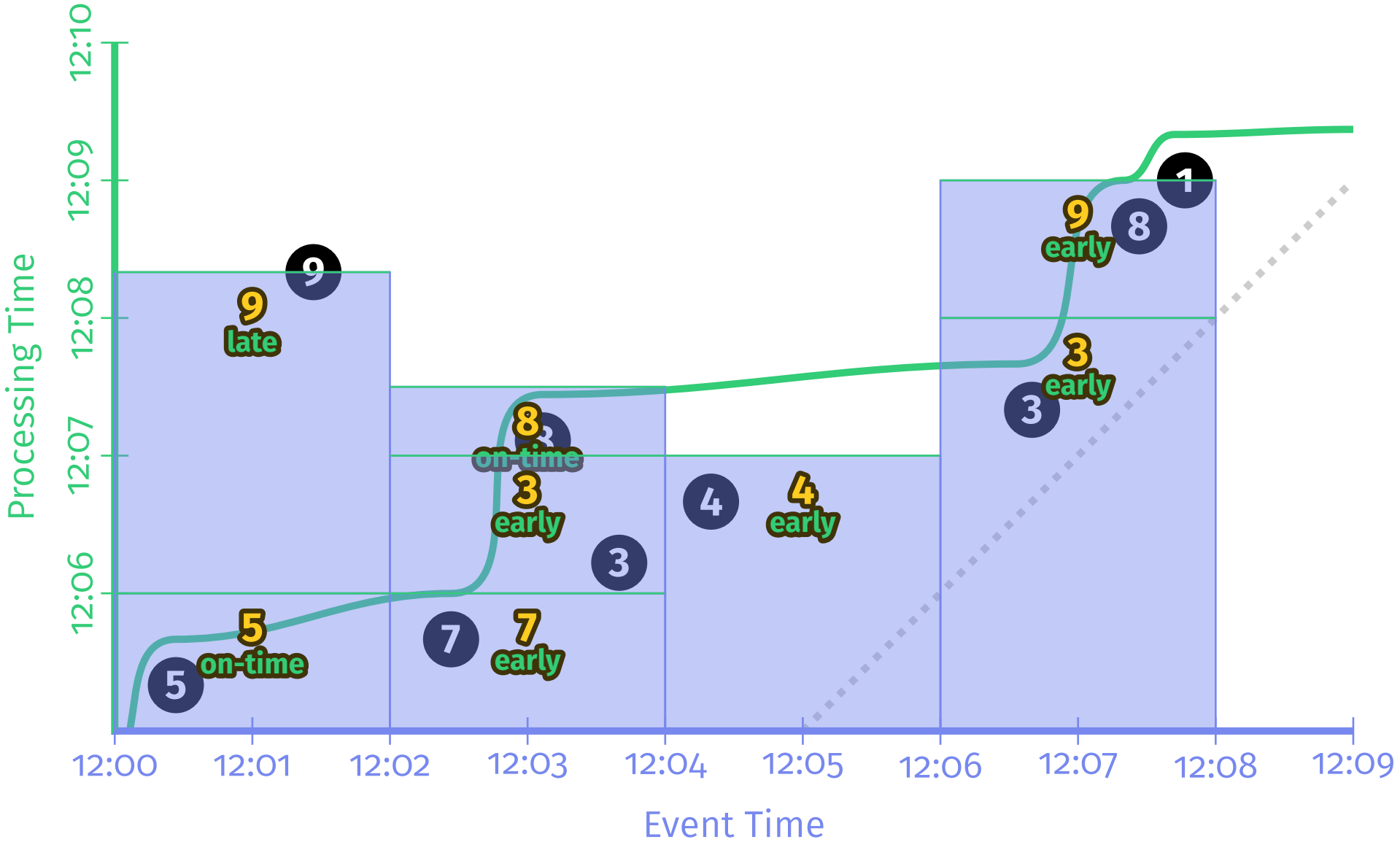

Processing Time
12:10
12:09
12:08
12:07
12:06
9
late
5
on-time
8
on-time
3
early
7
early
4
early
9
early
3
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

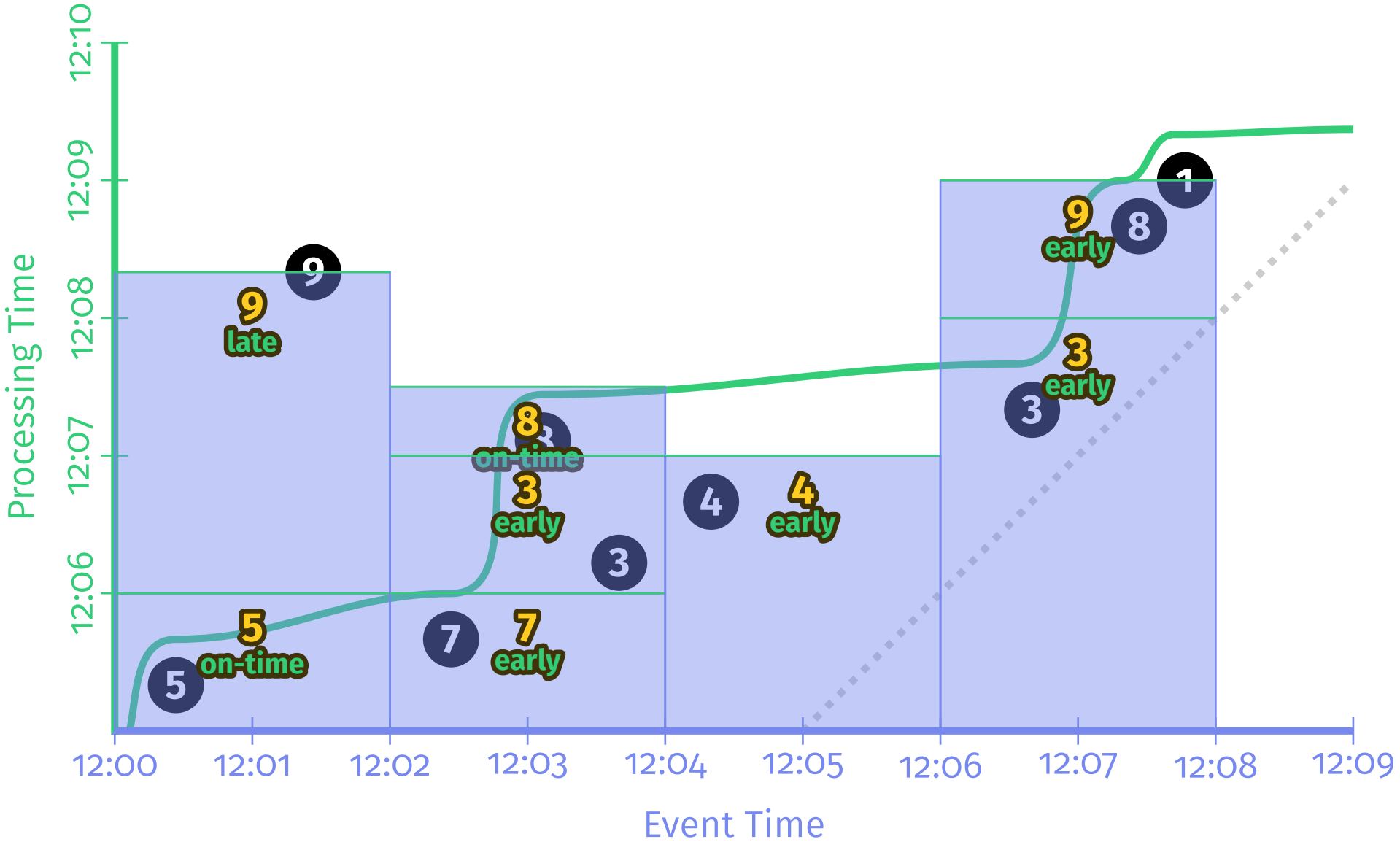

Processing Time
12:10
12:09
12:08
12:07
12:06
9
late
5
on-time
8
on-time
3
early
7
early
4
early
9
early
3
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

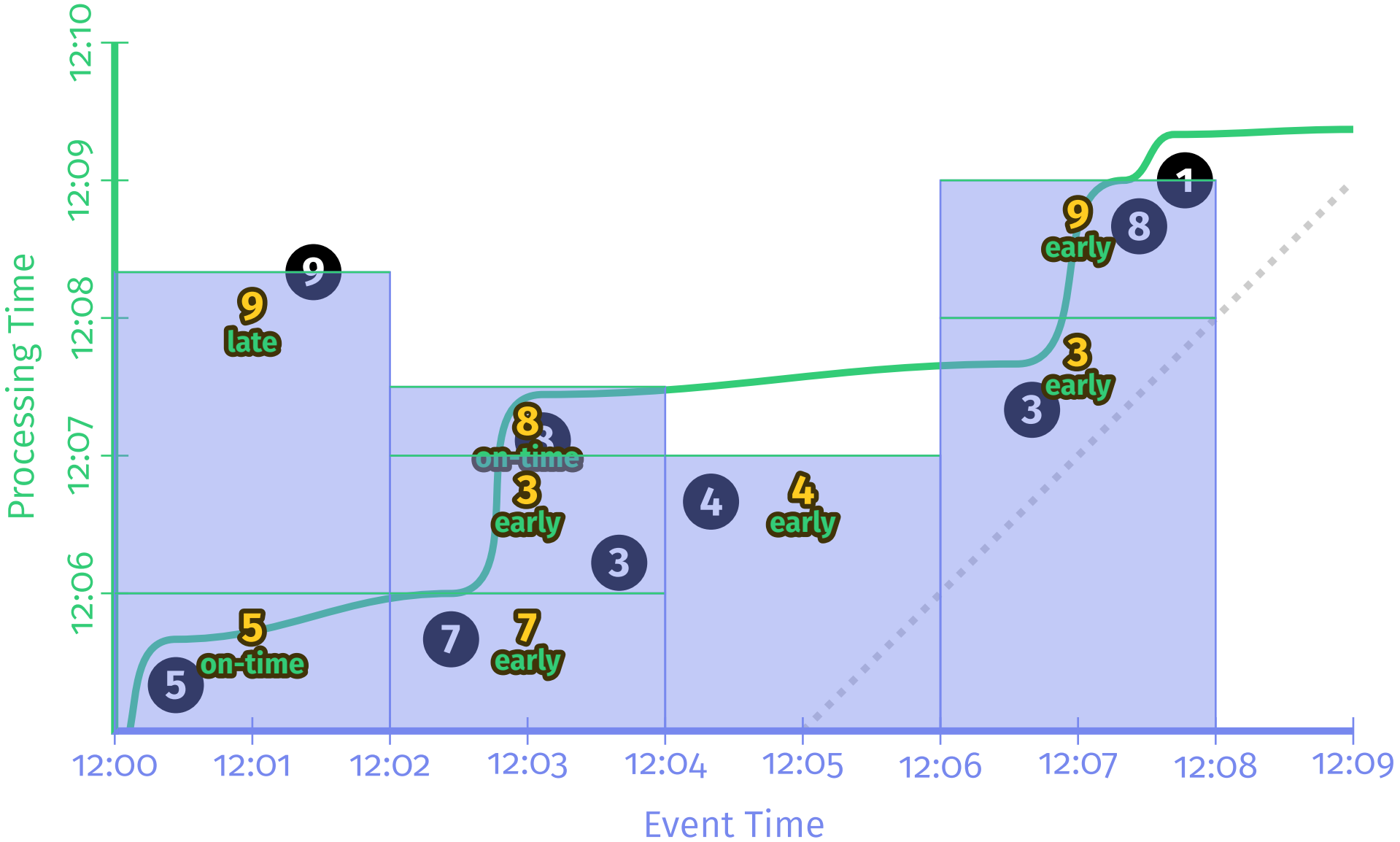

Processing Time
12:10
12:09
12:08
12:07
12:06
9
late
5
on-time
8
on-time
3
early
7
early
4
early
9
early
3
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

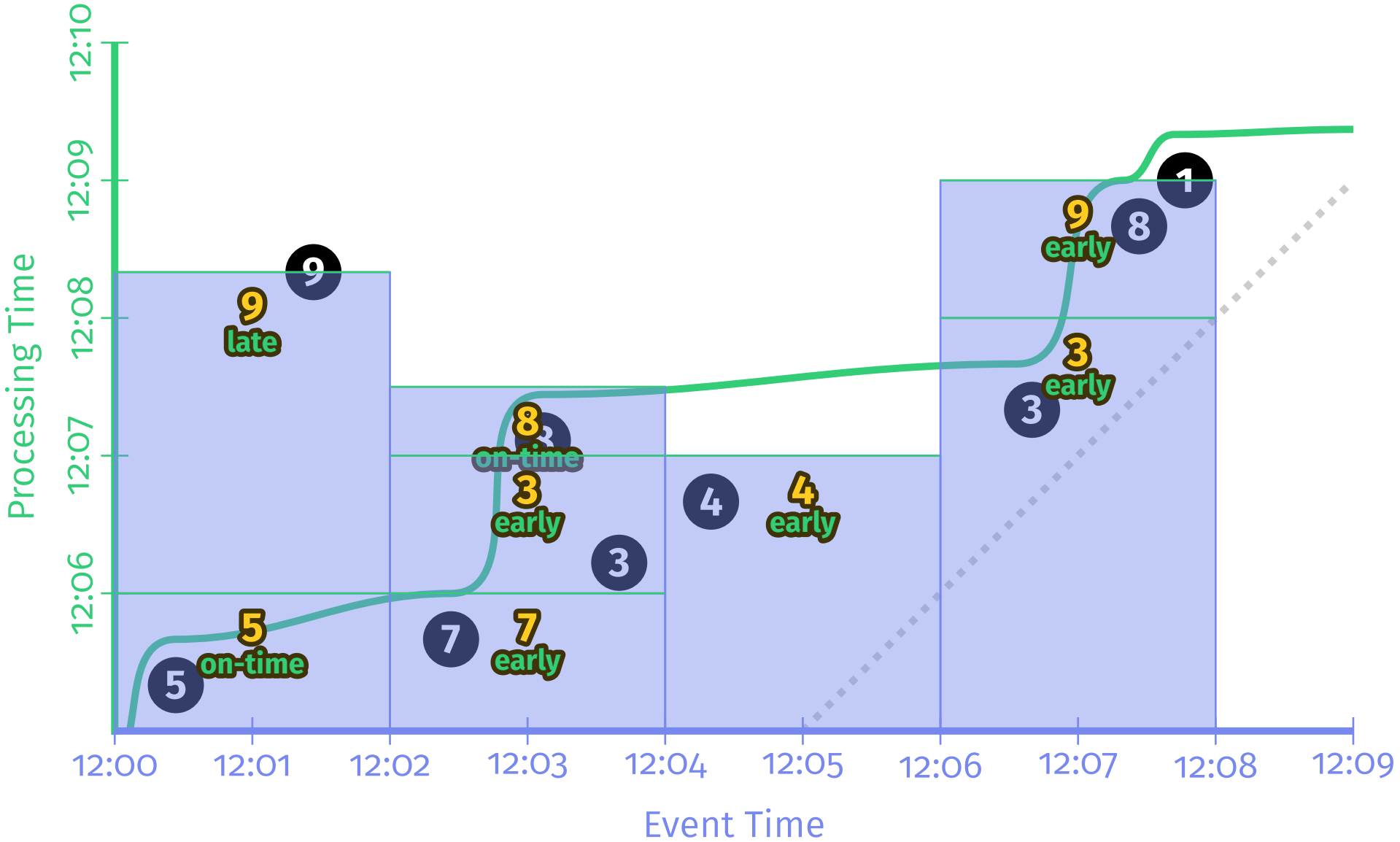

Processing Time
12:10
12:09
12:08
12:07
12:06
9
late
5
on-time
8
on-time
3
early
7
early
4
early
9
early
3
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

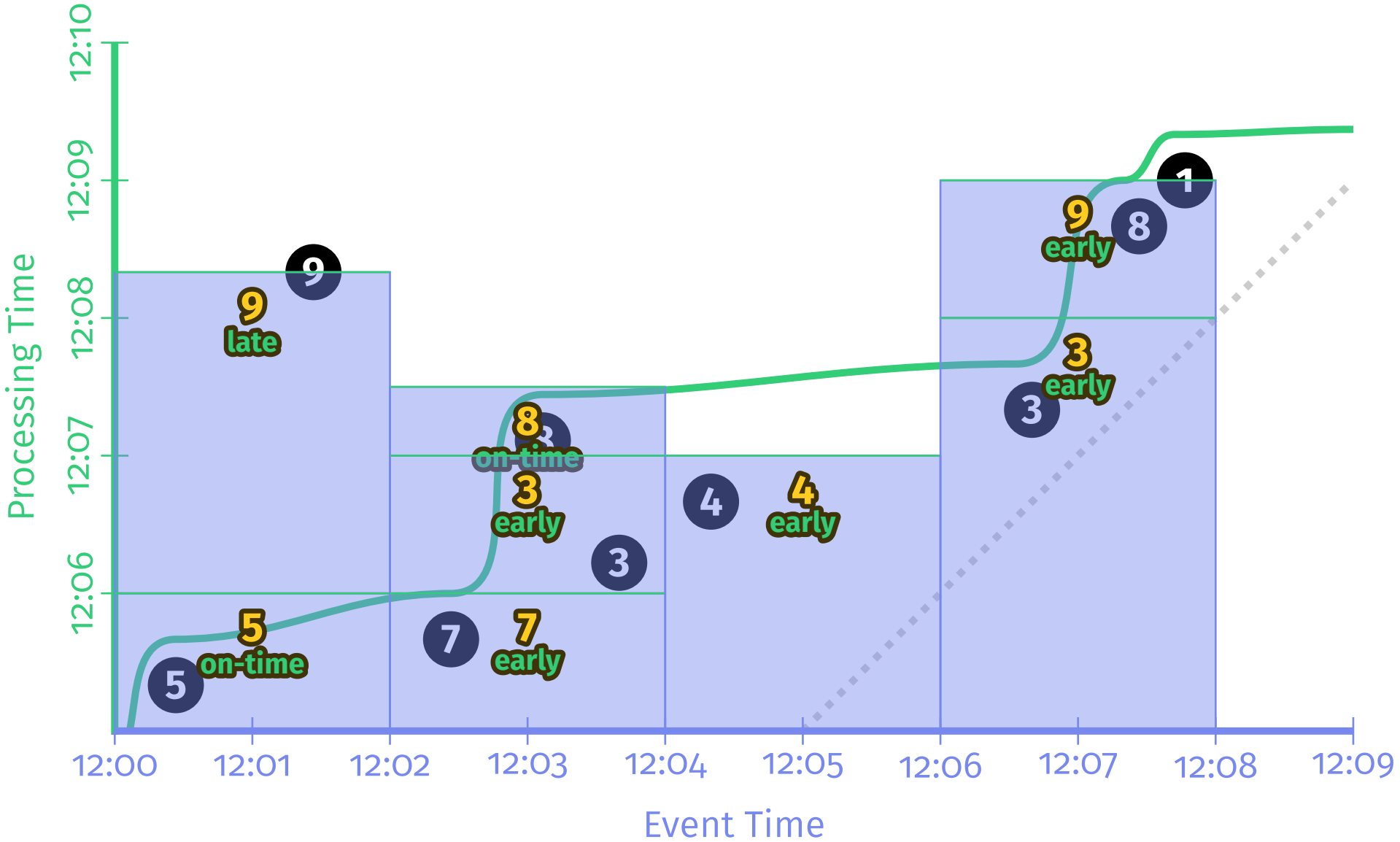

Processing Time
12:10
12:09
12:08
12:07
12:06
9
late
5
on-time
8
on-time
3
early
7
early
4
early
9
early
3
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

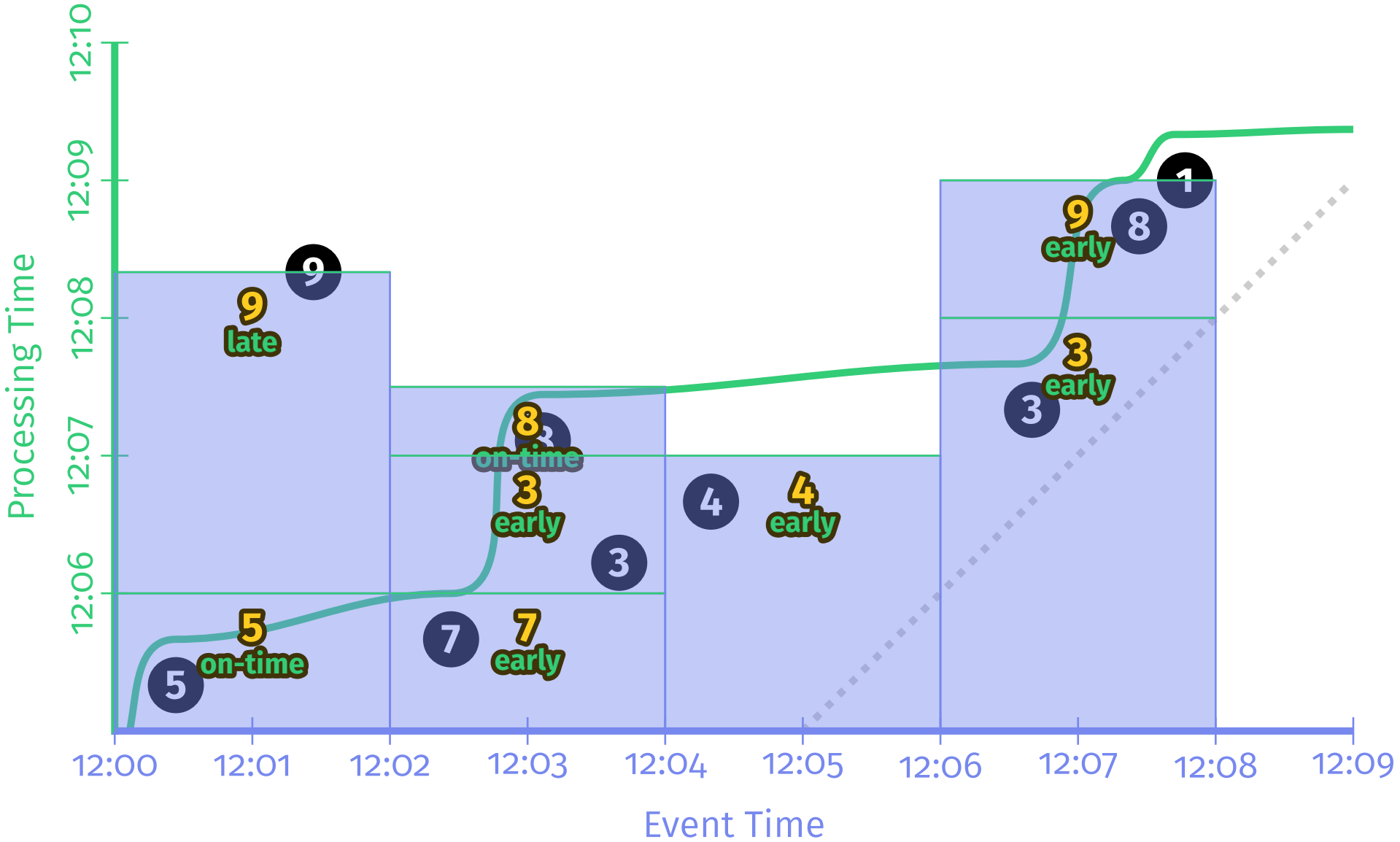

Processing Time
12:10
12:09
12:08
12:07
12:06
9
late
5
on-time
8
on-time
3
early
7
early
4
early
9
early
3
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

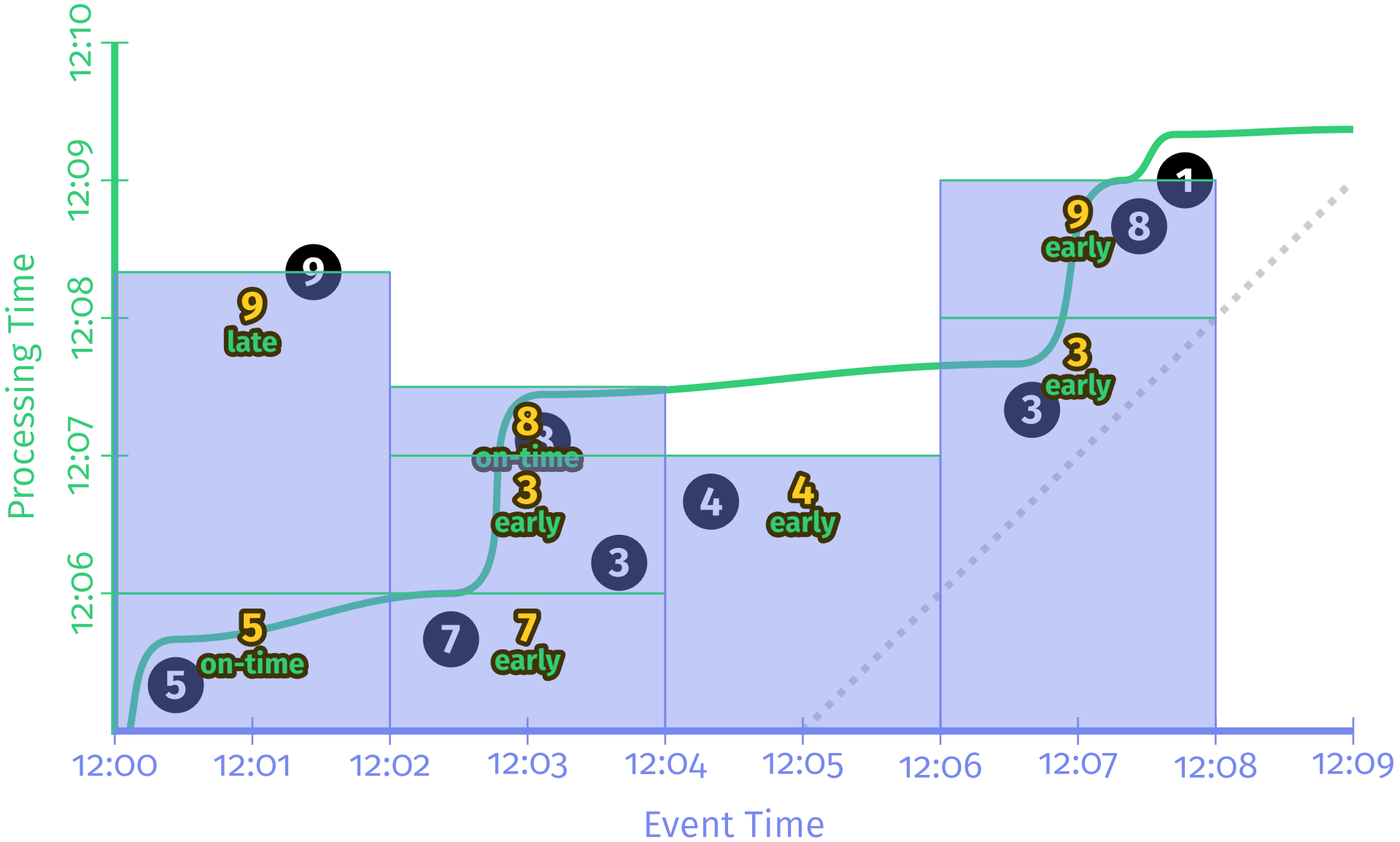

Processing Time
12:10
12:09
12:08
12:07
12:06
9
late
5
on-time
8
on-time
3
early
7
early
4
early
9
early
3
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

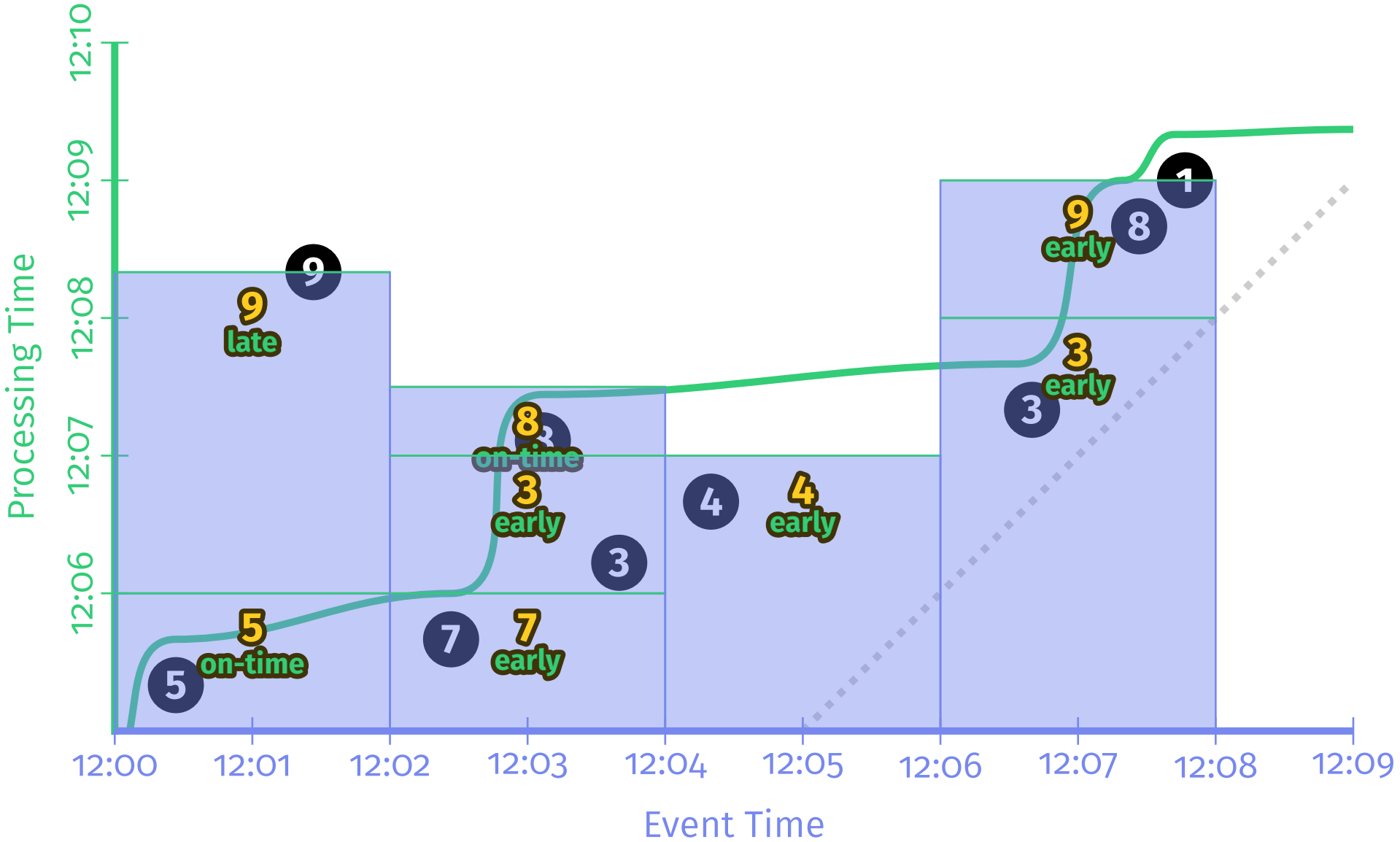

Processing Time
12:10
12:09
12:08
12:07
12:06
9
late
5
on-time
8
on-time
3
early
7
early
4
early
9
early
3
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

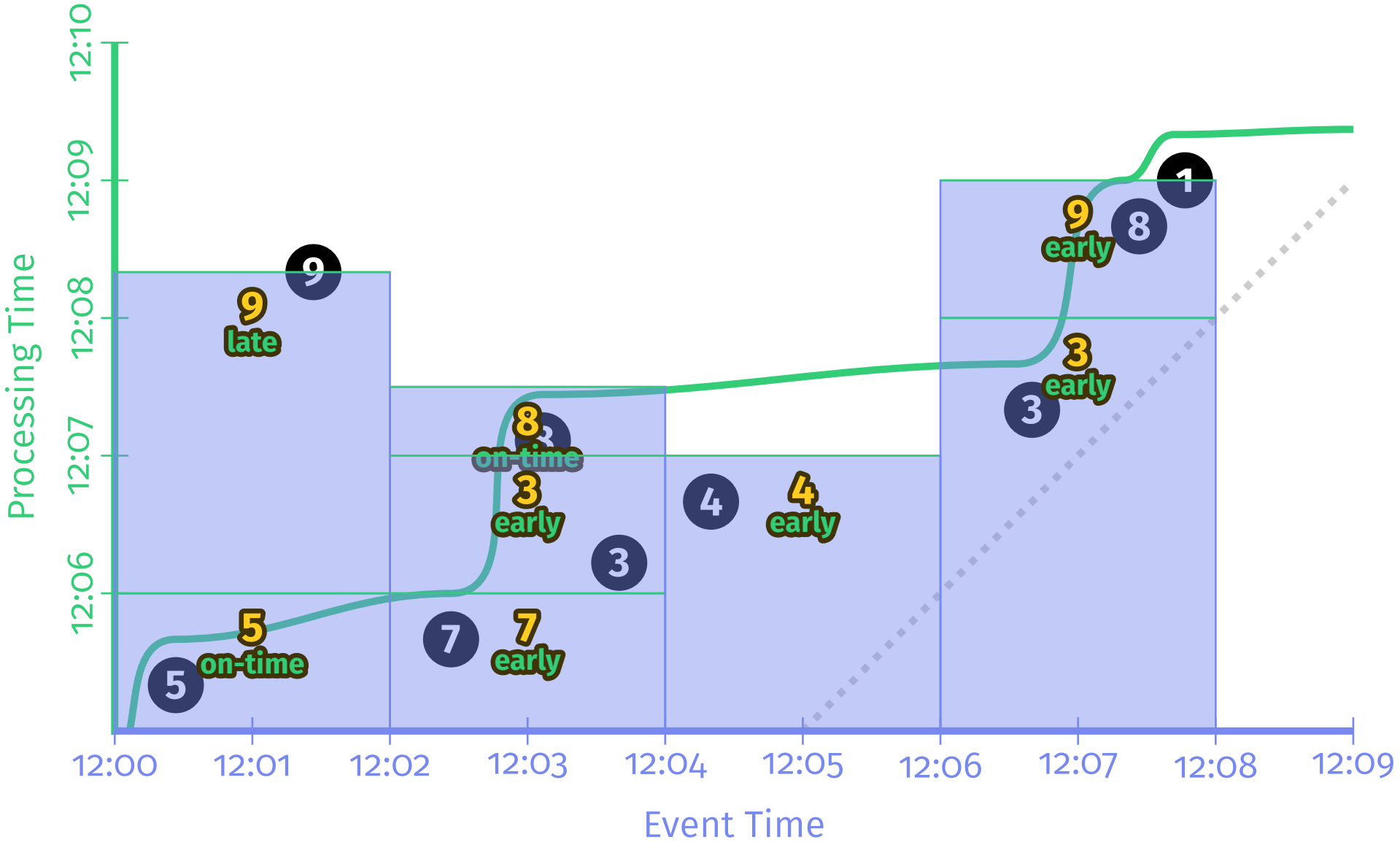

Processing Time
12:10
12:09
12:08
12:07
12:06
9
late
5
on-time
8
on-time
3
early
7
early
4
early
9
early
3
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

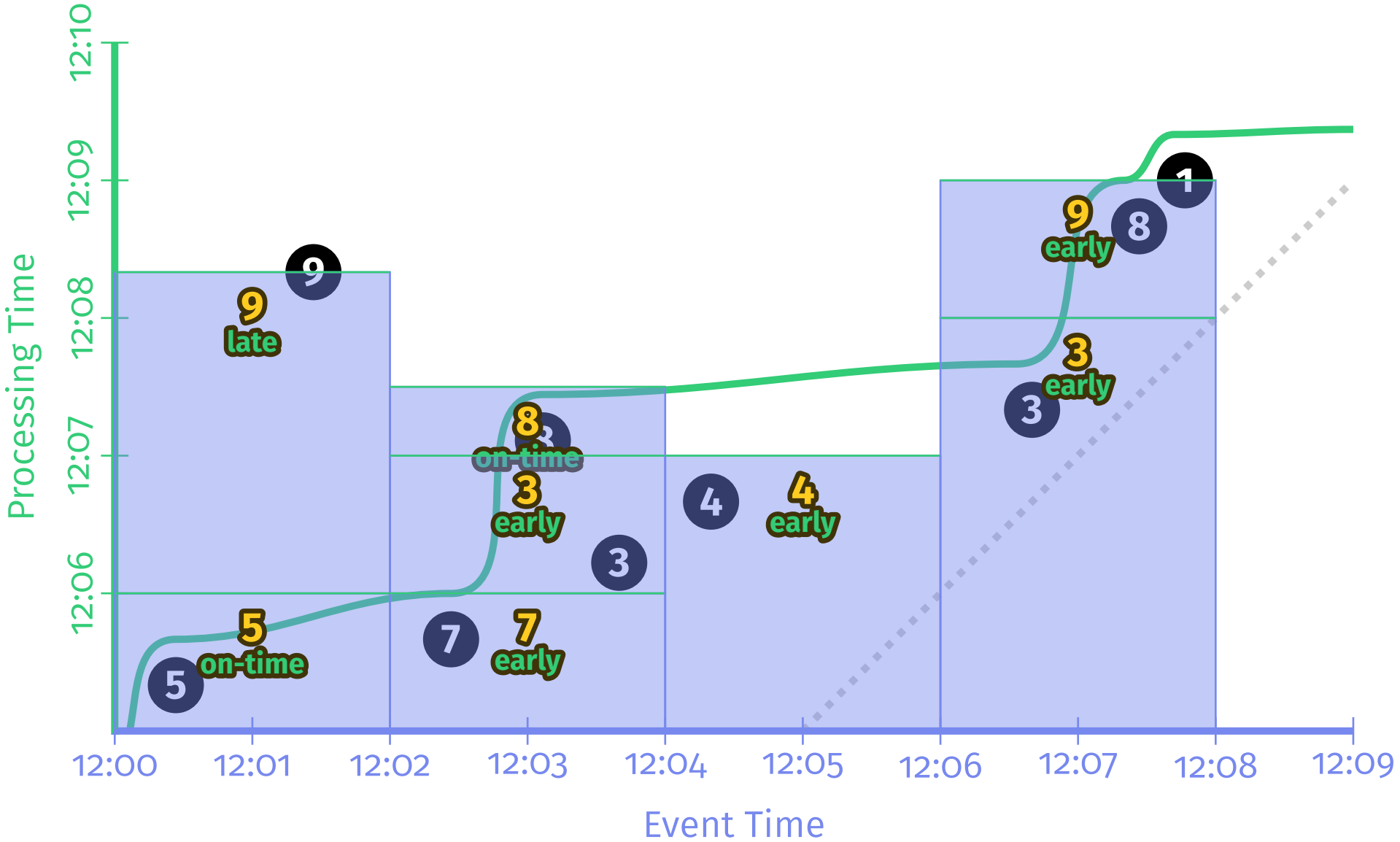

Processing Time
12:10
12:09
12:08
12:07
12:06
9
late
5
on-time
8
on-time
3
early
7
early
4
early
9
early
3
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:

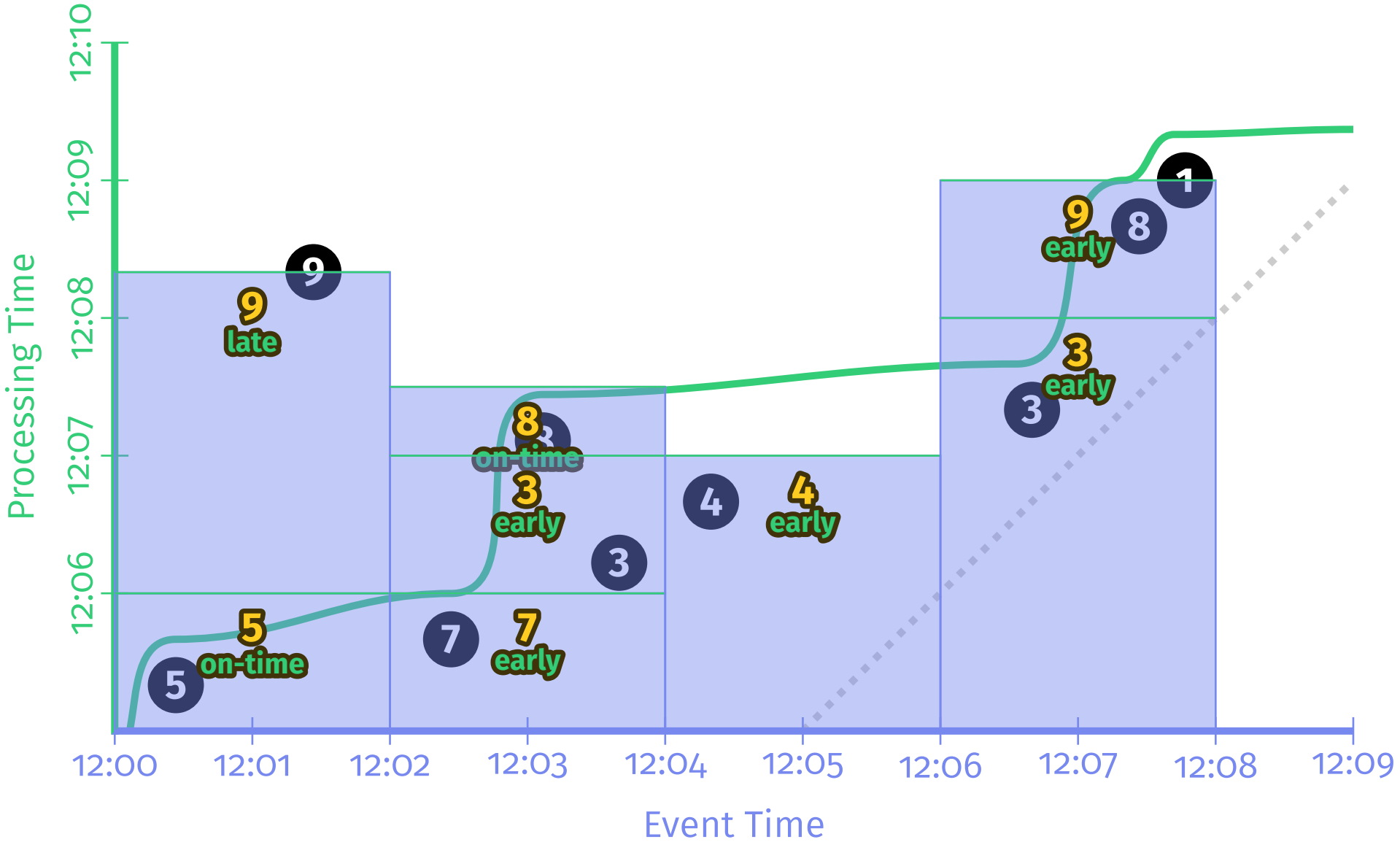

Processing Time
12:10
12:09
12:08
12:07
12:06
9
late
5
on-time
8
on-time
3
early
7
early
4
early
9
early
3
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:


Processing Time
12:10
12:09
12:08
12:07
12:06
9
late
5
on-time
8
on-time
3
early
7
early
4
early
9
early
3
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:


Processing Time
12:10
12:09
12:08
12:07
12:06
9
late
5
on-time
8
on-time
3
early
7
early
4
early
9
early
3
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:


Processing Time
12:10
12:09
12:08
12:07
12:06
9
late
5
on-time
8
on-time
3
early
7
early
4
early
9
early
3
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:


Processing Time
12:10
12:09
12:08
12:07
12:06
9
late
5
on-time
8
on-time
3
early
7
early
4
early
9
early
3
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark:


Processing Time
12:10
12:09
12:08
12:07
12:06
9
late
5
on-time
8
on-time
3
early
7
early
4
early
9
early
3
early
12:00
12:01
12:02
12:03
12:04
12:05
12:06
12:07
12:08
12:09
Event Time
Heuristic watermark:
Ideal watermark: