Multi-row Partitions

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Multi-row Partitions

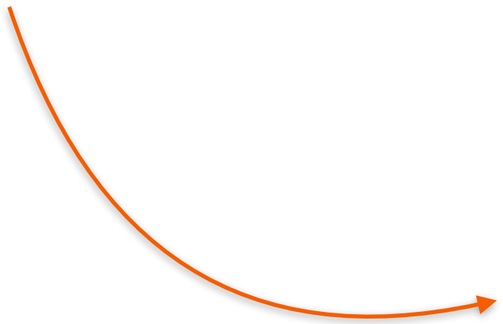
Composite Keys

Static Columns

Time Series Data

So Far…

```
CREATE TABLE courses (
  id varchar PRIMARY KEY
);
```



```
CREATE TABLE courses (
  id varchar,
  PRIMARY KEY (id)
);
```

Keys, Keys and More Keys!

```
PRIMARY KEY (id)

PRIMARY KEY (partition_key)

PRIMARY KEY (partition_key, clustering_key)
```

composite key

Composite Primary Keys

PRIMARY KEY (*p_key*, *c_key*)

PRIMARY KEY (*p_key*, c_key_1, … c_key_N)

Composite Primary Keys

PRIMARY KEY (*p_key*, *c_key*)

PRIMARY KEY (*p_key*, *c_key*$_1$, … *c_key*$_N$)

PRIMARY KEY ((*p_key*$_1$, … *p_key*$_N$), *c_key*$_1$, … *c_key*$_N$)

Composite Primary Keys

PRIMARY KEY (*p_key, c_key*)

PRIMARY KEY (*p_key*, c_key_1, … c_key_N)

PRIMARY KEY $\boxed{((p\_key_1, \ldots p\_key_N),}$ c_key_1, … c_key_N)

PRIMARY KEY ((p_key_1, … p_key_N))

Courses, Now with Modules!

Introduction to Node.js

In this course we provide an overview of Node.js, including writing asynchronous code with callbacks and streams, and modularizing your application with NPM and require(). We also look at built-in API's for building and scaling web applications as well as a few key third party modules.

by Paul O'Fallon

Table of contents

Expand all

Course content

- Table of contents
- Description
- Exercise files
- Assessment
- Discussion

More info

Level	Intermediate
Rating	★★★★½
Duration	2h 48m

Revisiting Our Courses Schema

```
CREATE TABLE courses (
  id varchar,
  name varchar,
  PRIMARY KEY (id)
);
```

```
CREATE TABLE courses (
  id varchar,
  name varchar,
  module_id int,
  module_name varchar,
  PRIMARY KEY (id, module_id)
);
```

Revisiting Our Courses Schema

Inserting

```
INSERT INTO courses (id, name, module_id, module_name)
VALUES (
  'node-intro','Introduction to Node.js', 1,
  'Getting Started with Node.js');

INSERT INTO courses (id, name, module_id, module_name)
VALUES (
  'node-intro','Introduction to Node.js', 2,
  'Node.js Background');
```

Revisiting Our Courses Schema

Selecting

```
SELECT * FROM courses WHERE id = 'node-intro';
```

← two rows

```
SELECT * FROM courses
WHERE id = 'node-intro' AND module_id = 1;
```

← one row

```
SELECT * FROM courses WHERE id = 'node-intro'
ORDER BY module_id DESC;
```

← two rows

Ordering By Clustering Key

id='node-intro'

module_id=1

name	Introduction to Node.js
module_name	Getting Started with Node.js

module_id=2

name	Introduction to Node.js
module_name	Node.js Background

Static Columns

```
CREATE TABLE courses (
  id varchar,
  name varchar STATIC,
  module_id int,
  module_name varchar,
  PRIMARY KEY (id, module_id)
);
```

Without Static Columns

id='node-intro'

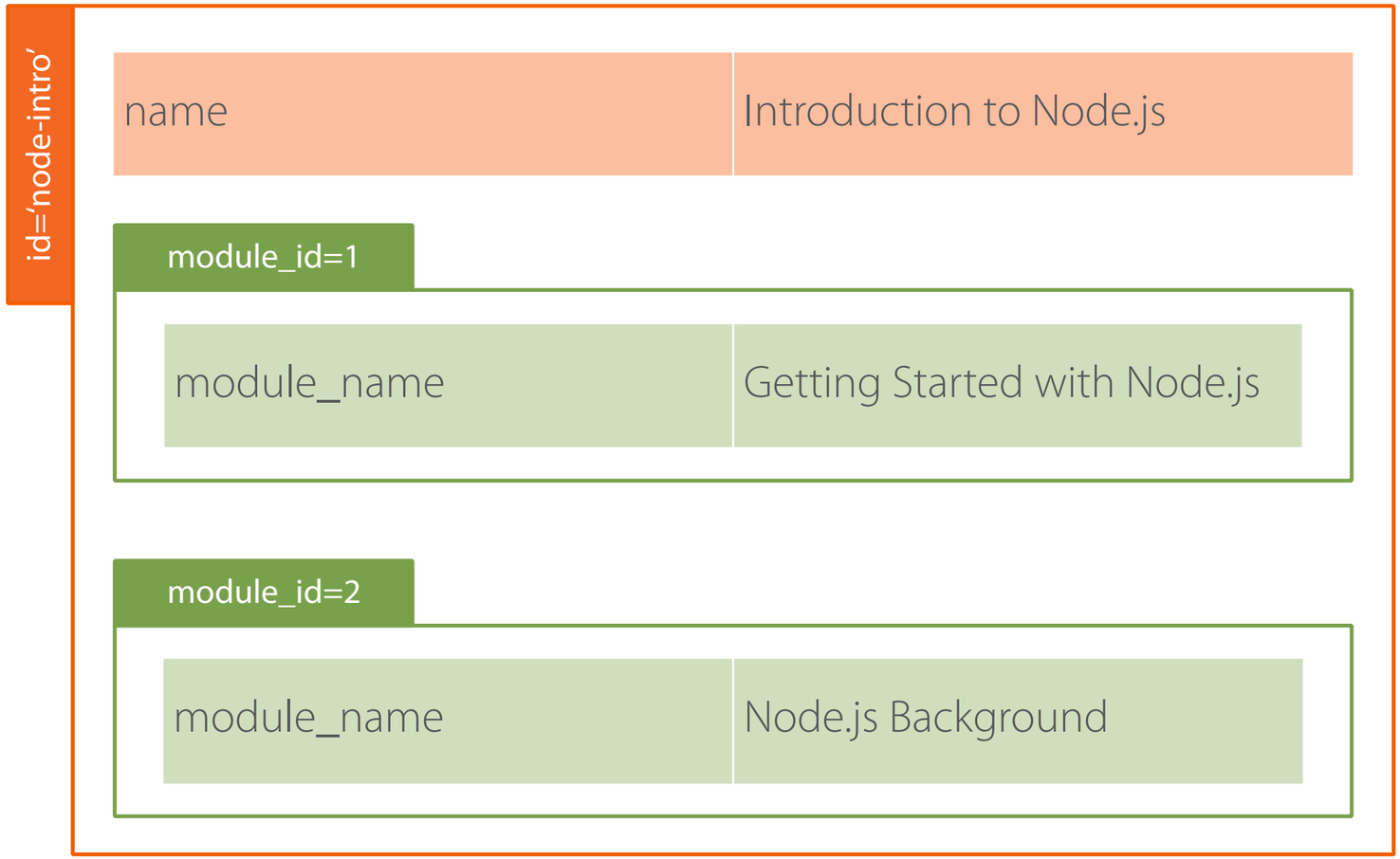
module_id=1

name	Introduction to Node.js
module_name	Getting Started with Node.js

module_id=2

name	Introduction to Node.js
module_name	Node.js Background

Static Columns



Adding Data with Static Columns

```
INSERT INTO courses (id, name)
VALUES ('node-intro','Introduction to Node.js');

INSERT INTO courses (id, module_id, module_name)
VALUES ('node-intro', 1, 'Getting Started with Node.js');

UPDATE courses
SET module_name='Node.js Background'
WHERE id='node-intro' AND module_id=2;
```

SELECT REMAINS THE SAME

Time Series Data

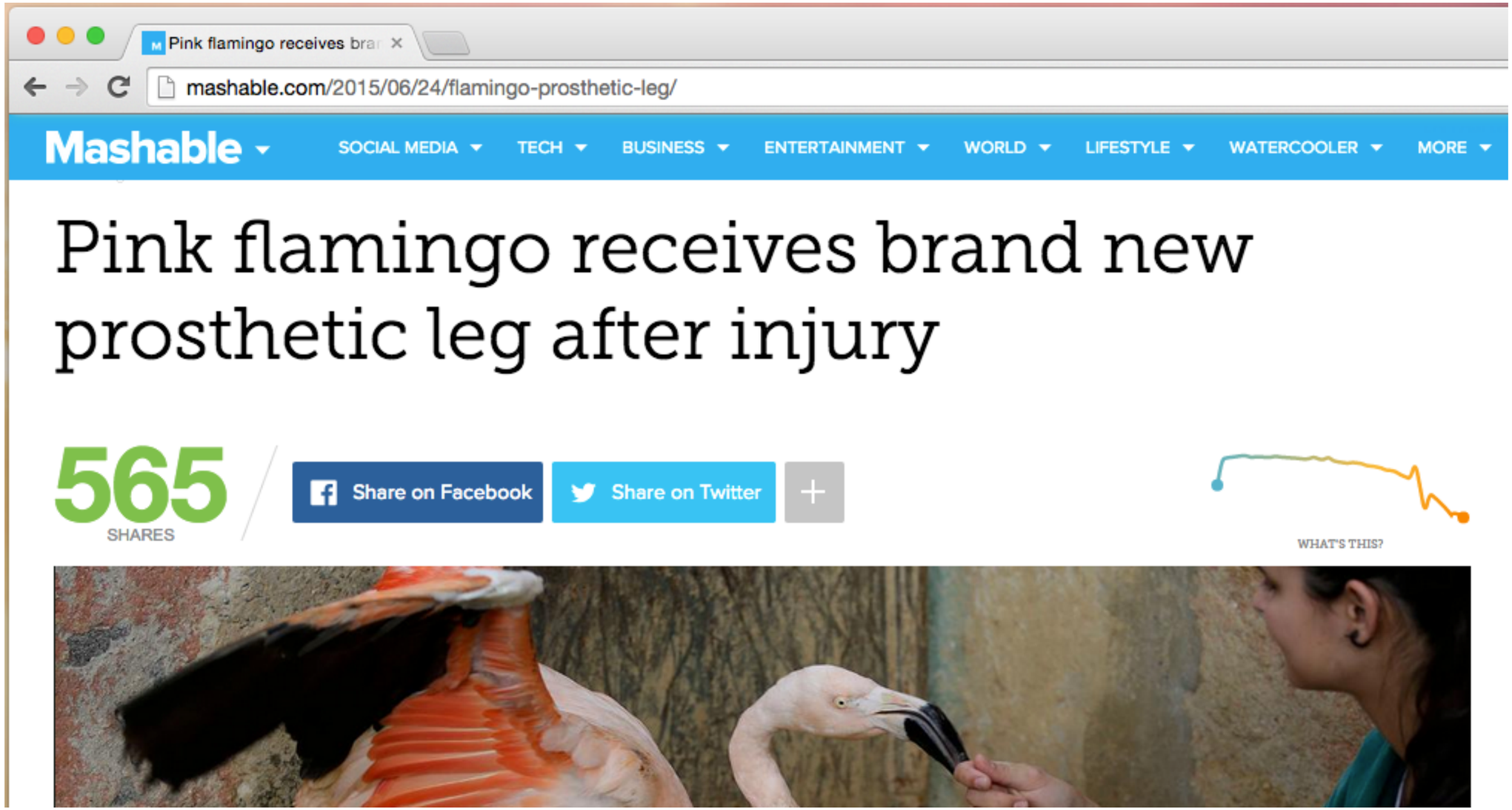
TimeUUID Data Type

45b94a50-12e5-11e5-9114-091830ac5256

Version 1 UUID comprised of:

- The number of 100 ns intervals since UUID epoch
- MAC address
- Clock sequence number to prevent duplicates

TimeUUID Use Case



TimeUUID Use Case

```
CREATE TABLE course_page_views (
    course_id text,
    view_id timeuuid,
    PRIMARY KEY (course_id, view_id)
) WITH CLUSTERING ORDER BY (view_id DESC);
```

TimeUUID Functions

now

```
INSERT INTO course_page_views (course_id, view_id)
VALUES ('node-intro', now());
```

dateOf / unixTimestampOf

```
SELECT course_id, dateOf(view_id)
FROM course_page_views WHERE course_id = 'node-intro';
```

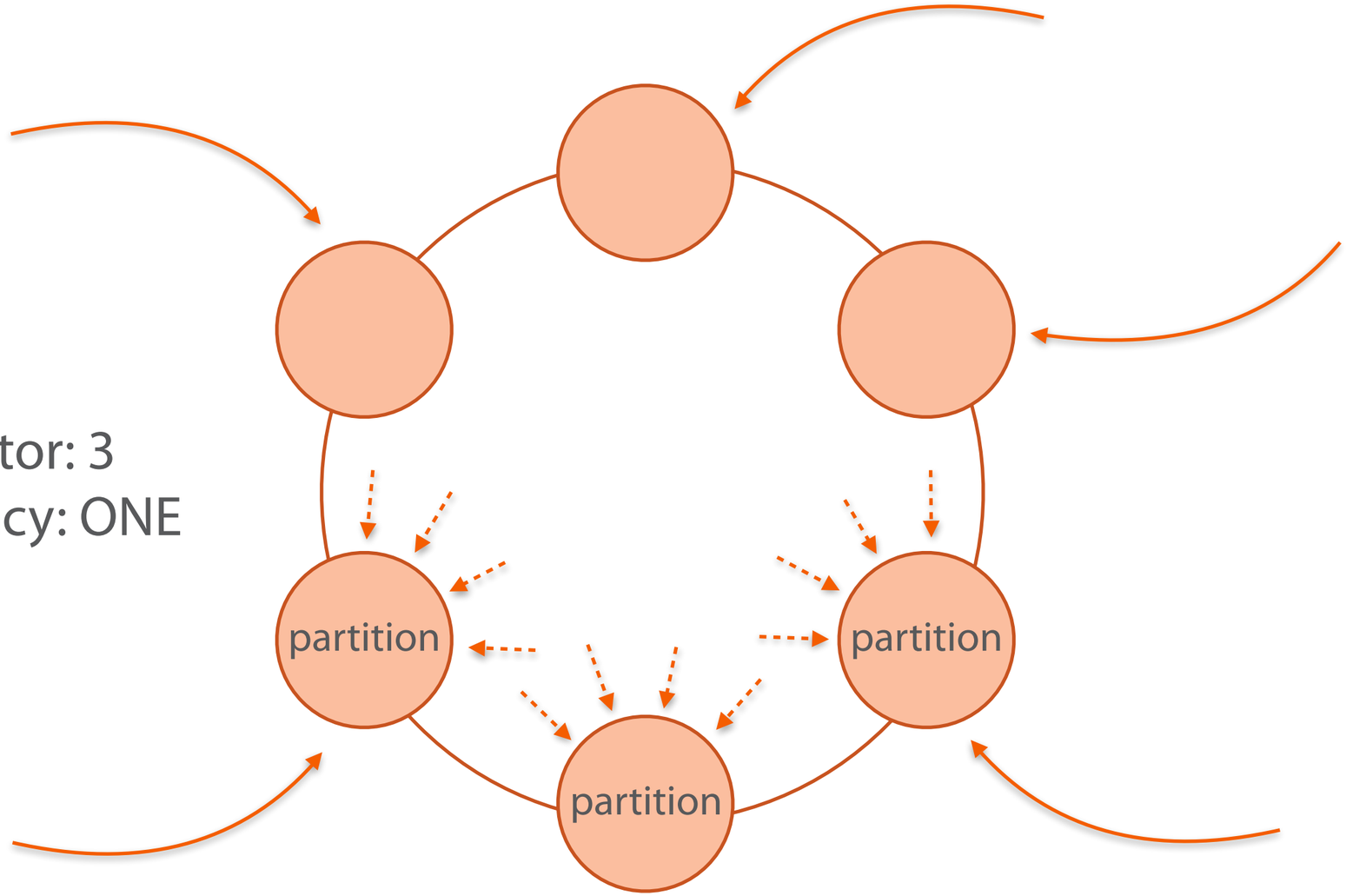
TimeUUID Functions

minTimeuuid / maxTimeuuid

```
SELECT dateOf(view_id)
FROM course_page_views
WHERE course_id = 'node-intro'
AND view_id >= maxTimeuuid('2015-01-01 00:00+0000')
AND view_id < minTimeuuid('2015-02-01 00:00+0000')
```

Storing Data with a Clustering Key

replication_factor: 3
write consistency: ONE

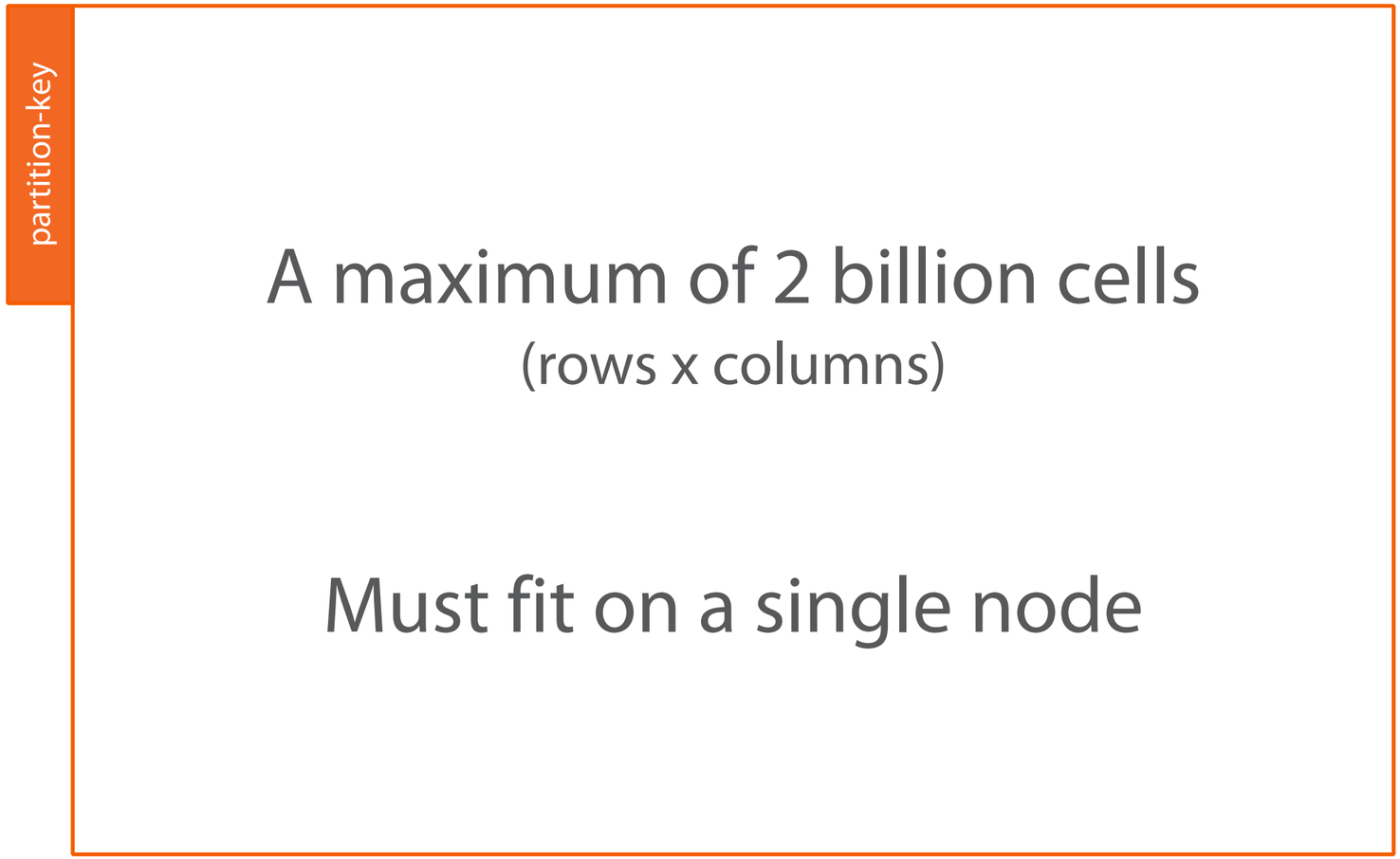


Storing Data with a Clustering Key

Storing Data with a Clustering Key

Storing Data with a Clustering Key

Bucketing Time Series Data



Bucketing Time Series Data

Bucketing Use Case

```
CREATE TABLE clickstream (
    year int,
    month int,
    click_id timeuuid,
    ip inet,
    url text,
    PRIMARY KEY ((year, month), click_id)
) WITH CLUSTERING ORDER BY (click_id DESC);
```

Inserting Bucketed Data

```
INSERT INTO clickstream
  (year, month, click_id, ip, url)
VALUES
  (2015, 6, now(), '98.203.153.64',
  'http://www.pluralsight.com');
```

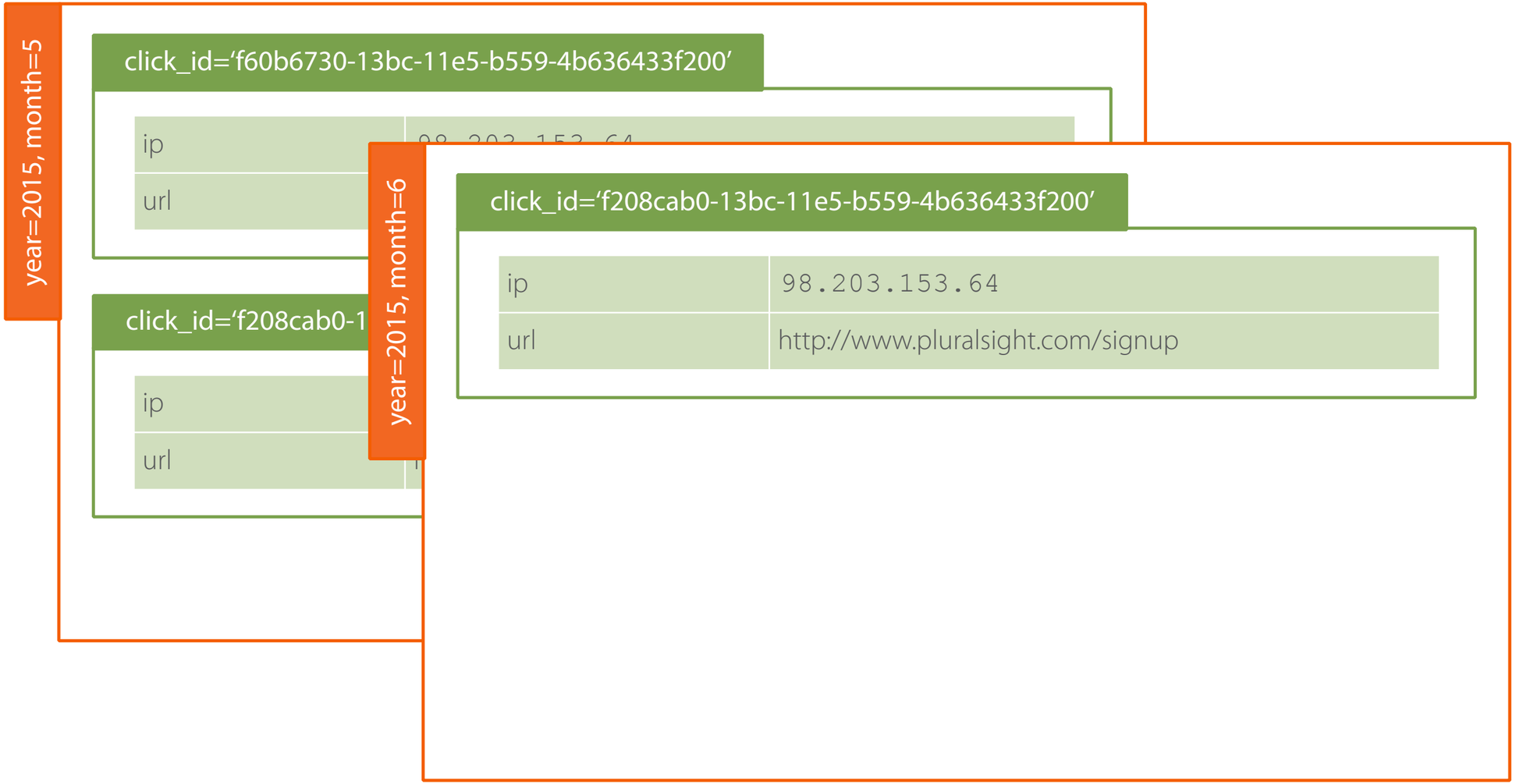
Inserting Bucketed Data

year=2015, month=5

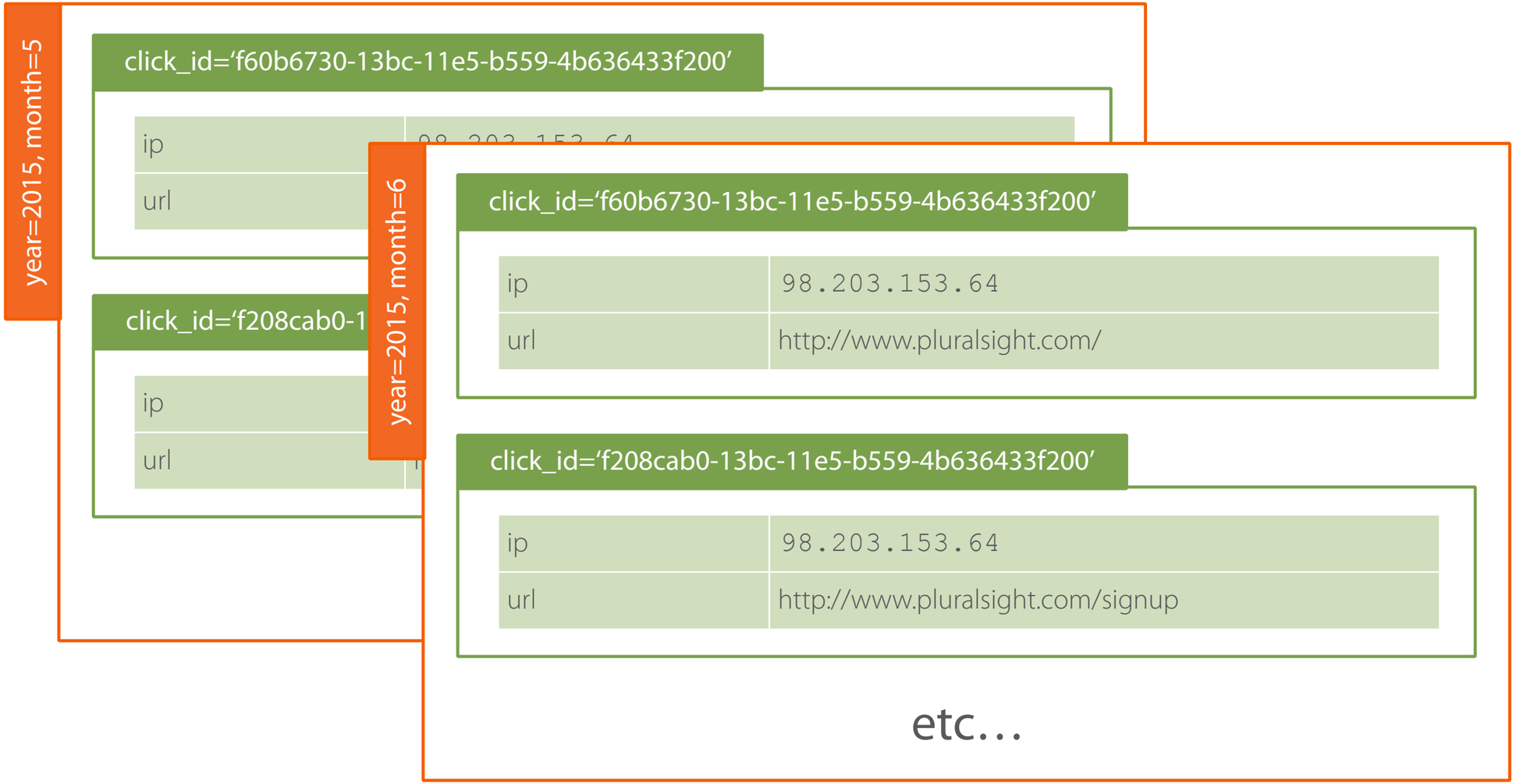
click_id='f208cab0-13bc-11e5-b559-4b636433f200'

ip	98.203.153.64
url	http://www.pluralsight.com/signup

Inserting Bucketed Data



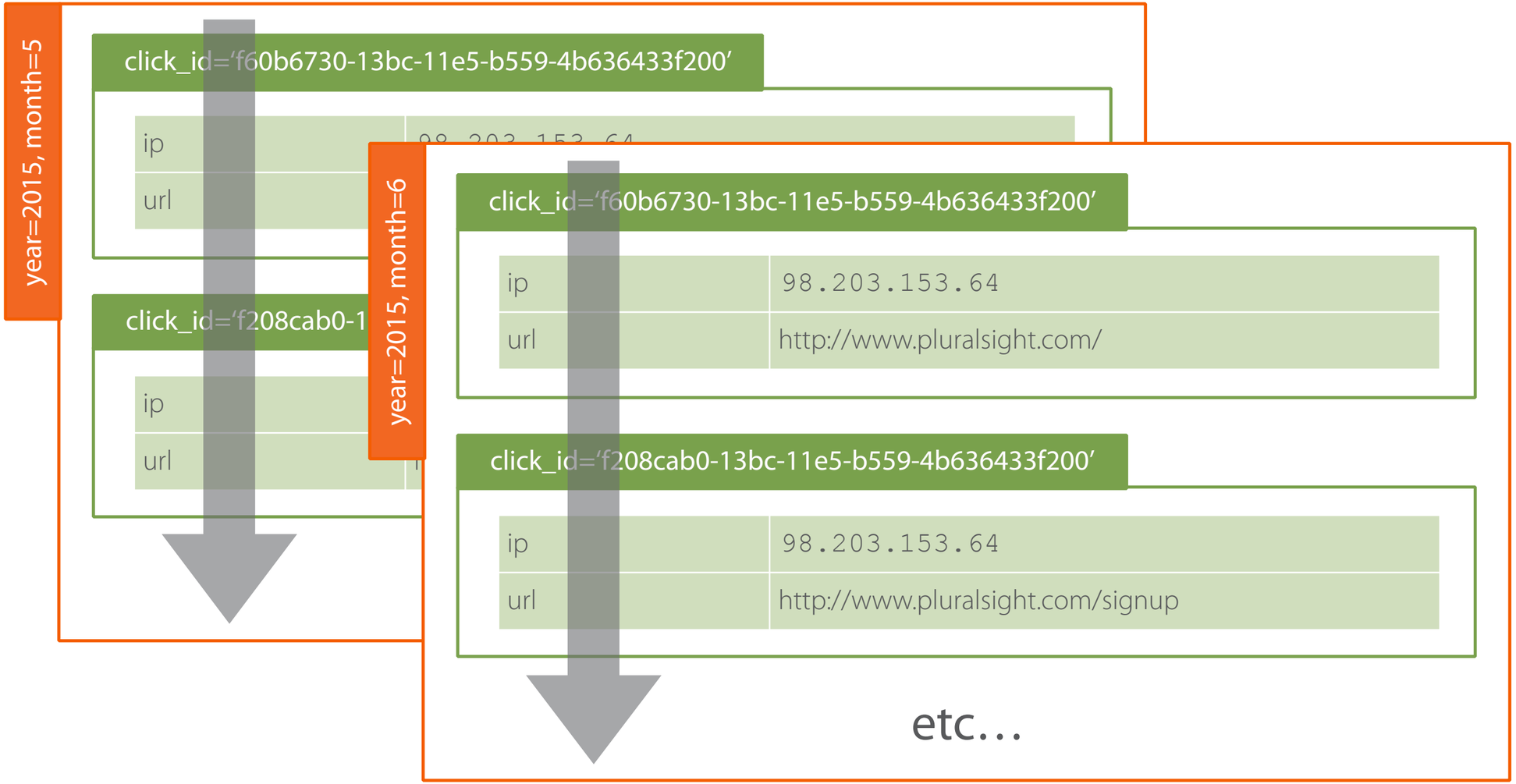
Inserting Bucketed Data



Selecting Bucketed Data

```
SELECT * FROM clickstream
WHERE year=2015 AND month IN (6, 5)
LIMIT 100;
```

Selecting Bucketed Data



Conclusion

- Clustering Keys and Composite Primary Keys
- Static Columns
- Time Series Data
- TimeUUID Data Type
- TTL vs. Bucketing