DNS Traffic Management and DNS data mining

Making Windows DNS Server Cloud Ready

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Windows DNS Server

- Widely deployed in enterprises
- Fair presence in the DNS resolver space
- Standards compliant and interoperable
- Secure and scalable

Needs of DNS server in cloud

- Policy based traffic management
- Audit and billing mechanism for DNS service
- The DNS data mine and analytics
- Security and High availability

Policy based Traffic Management

- DNS Policy is **Windows DNS Server** construct that allows DNS administrators to control the DNS Query processing in order to achieve :
  - Global Traffic Management,
  - Application Load Balancing,
  - Intelligent DNS responses based on communication protocol (IPV4 or V6) or transport protocol (UDP and TCP),
  - Applying tenant specific filters for black holing, parental control etc.
  - Split-Brain DNS Deployment

  … and much more

Anatomy of a policy

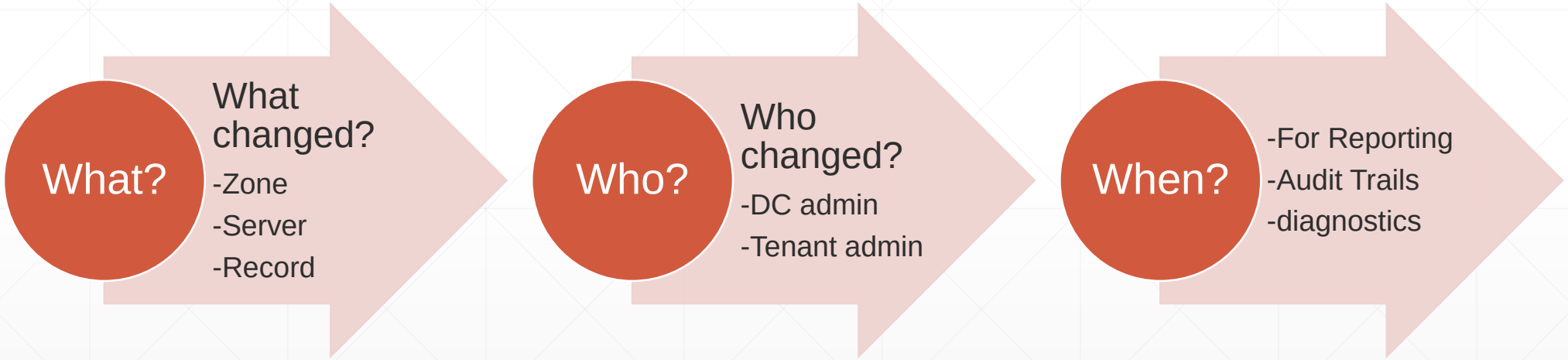
 Criteria	Any combination of Client Subnet, Server Interface IP, FQDN, Internet protocol (IPV4/V6), Transport Protocol (UDP/TCP), Time Of Day, Query Type
 Action	If policy matches what action to take : ALLOW, DENY, IGNORE
 Content	If Action is allow, what data to respond with and in what ratio.

Capabilities

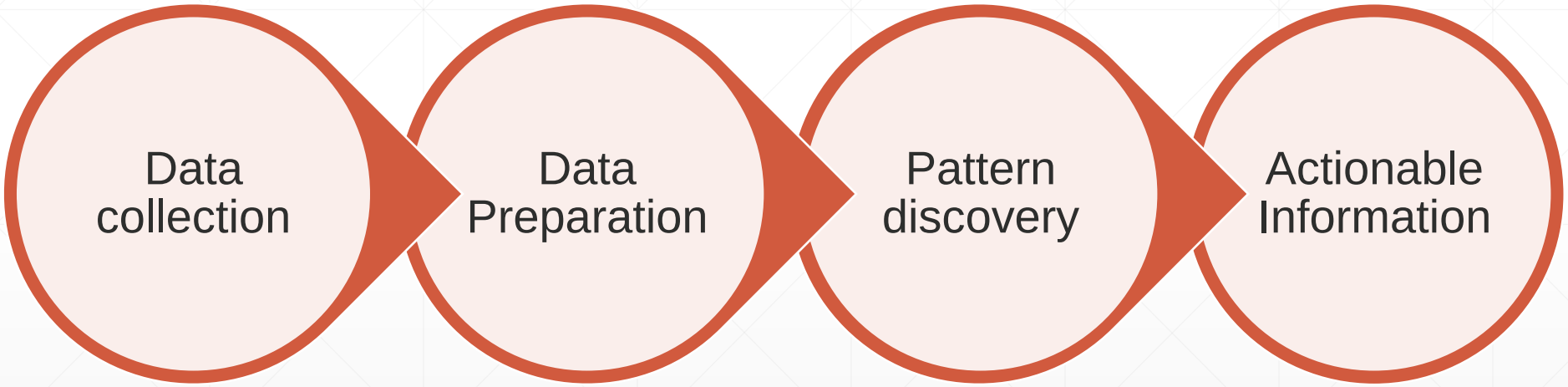
Traffic Management	Location aware responses
High Availability	Improve availability of critical applications by failover policies
Load Balancing	Application Load Balancing based on the performance of host

Time of day	Time of day based policies
Split Brain	Split Brain DNS
Filters	Black Hole and Filters

DNS Audit Trail



DNS Data mine



DNS Data mine : Data Collection

- Collect data from every DNS server
- Centralized system for collection
- Real time collection with minimal performance impact
- Kinds of Data collected:
  - All DNS transactions
    - Queries/responses
    - XFR
    - Dynamic updates
  - Server state
    - Health indicators
    - Performance counters

DNS Data mine : Data Preparation

- Cleaning the data
- Data transformation
  - Creating relational databases for different purposes
  - Related calculations – like amplification factor, frequency etc.
  - Collation of data across the server farm
  - Correlation of data
    - Across multiple servers
    - Between single user
    - Relationship with state of the server.
- Rolling over with knowledge transfer.

DNS Data mine: Pattern Discovery

- Domain name analysis,
- Amplification analysis
- User behaviour analysis
- Client subnet analysis
- Security analysis

DNS Data mine: Actionable Information

- User behaviour analytics
- Load model
- DDoS detection

Thank You