**Business Requirements Document (BRD): Ad Tech Fee Markup**

**Problem Statement**

The system currently calculates Ad Tech Fees at the vendor placement level based on placement types, but there is no markup applied. These fees are included in Insertion Orders (IOs) and Vouchers as raw amounts without adjustments. However, in the Reconciliation UI, the client billing process requires showing the marked-up amounts to include operational cost adjustments.

The lack of markup introduces the following challenges:

1. Misalignment between raw amounts in IOs/Vouchers and client-facing billed amounts.
2. Inconsistent billing calculations, as operational costs are not accounted for in Ad Tech Fees.
3. Limited flexibility to configure and apply markup settings based on specific client or placement needs.

To address this, a configurable markup mechanism for Ad Tech Fees must be introduced, ensuring accurate billing and operational alignment.

**Current Process**

1. **Placement Rate Card**:
   * Ad Tech Fees are calculated based on placement types (e.g., "Display," "Video"). The fee rules (e.g., $10 per 1,000 impressions) are predefined.
2. **Insertion Orders (IOs)**:
   * Separate IOs are created for each Ad Tech vendor, reflecting the raw (unmarked) Ad Tech Fees.
3. **Voucher Entry**:
   * Vouchers also display the raw (unmarked) Ad Tech Fees.
4. **Reconciliation UI**:
   * Users currently see the same raw amounts for both Voucher Amount and IO Amount, without any markup adjustments for client billing.

**Proposed Solution**

**1. Placement Rate Card Updates**

* Add a **Markup Percentage** field to define a positive percentage (e.g., 10%) for Ad Tech Fees.
* Add a **Gross vs. Net Basis** dropdown to determine how markup is applied:
  + **Net Basis**: Markup is calculated on the base Ad Tech Fee.
  + **Gross Basis**: Markup is calculated on the total fee, including the markup itself.

**2. Customer-Level Updates**

* Retrieve **Markup Percentage** and **Gross vs. Net Basis** dynamically from the stamped Placement Rate Card.
* Ensure all linked placements follow the settings defined in the associated Placement Rate Card.

**3. Level 3 (Activity/Plan Updates)**

* Default **Markup Percentage** and **Gross vs. Net Basis** settings from the customer’s Placement Rate Card.
* Allow **group-rule-based overrides** at the Activity/Plan level for flexibility.

**4. Insertion Orders (IOs)**

* The system creates separate IOs for each Ad Tech vendor based on the selected placement types.
* During IO creation:
  + **Markup is removed** from the IO amount, ensuring the IO reflects only the raw Ad Tech Fee.

**Example for Insertion Orders**:

* **Placement Type**: "Display"
  + **Ad Tech Fee Rule**: $5 per 1,000 impressions
  + **Impressions**: 20,000
  + **Base Fee**: $100 (20,000 ÷ 1,000 × $5)
  + Markup: 10%
  + **IO Amount**: $100 (markup excluded).

**5. Voucher Entry**

* Vouchers reflect the raw amount billed for Ad Tech Fees, consistent with IO amounts.
* Markup is not included in Voucher amounts to maintain clarity with vendors.

**Example for Voucher Entry**:

* **Placement Type**: "Video"
  + **Ad Tech Fee Rule**: $10 per 1,000 impressions
  + **Impressions**: 50,000
  + **Base Fee**: $500 (50,000 ÷ 1,000 × $10)
  + Markup: 20%
  + **Voucher Amount**: $500 (markup excluded).

**6. Reconciliation UI**

* The **Voucher Amount** and **IO Amount** columns in the Reconciliation UI display grossed-up amounts, which include the applied markup.
* This ensures accurate billing to clients and clarity for users.

**Example for Reconciliation UI**:

* **Placement Type**: "Display"
  + **Ad Tech Fee Rule**: $5 per 1,000 impressions
  + **Impressions**: 20,000
  + **Base Fee**: $100
  + Markup: 10% (Net Basis)
  + **Voucher Amount (Grossed-Up)**: $110 ($100 + $10)
  + **IO Amount (Grossed-Up)**: $110 ($100 + $10)

**Key Benefits**

1. **Accurate Billing**: The Reconciliation UI displays grossed-up amounts, ensuring client billing aligns with operational costs.
2. **Vendor Transparency**: Vendors only see the unmarked amounts in IOs and Vouchers, simplifying communication.
3. **Centralized Configuration**: Markup settings are managed centrally in the Placement Rate Card.
4. **Flexibility**: Group-rule-based overrides at the Activity/Plan level allow adjustments for specific client needs.
5. **Scalability**: The system supports multiple vendors and thousands of placements linked to a single media plan.

**Risks and Mitigation**

1. **Incorrect Markup Configuration**:
   * **Mitigation**: Validate inputs and provide tooltips for user guidance.
2. **Misalignment Between Records**:
   * **Mitigation**: Clearly display grossed-up amounts in the Reconciliation UI.
3. **Permission Mismanagement**:
   * **Mitigation**: Enforce group-based permissions for markup overrides.
4. **Performance Impact**:
   * **Mitigation**: Optimize calculations for large datasets in the Reconciliation UI.
5. **Historical Data Inconsistency**:
   * **Mitigation**: Apply changes only to new media plans, preserving historical data.

**Non-Functional Requirements**

1. **Performance**:
   * Reconciliation UI updates must occur within **2 seconds** for datasets up to **10,000 records**.
2. **Validation**:
   * Ensure only positive percentages are accepted for Markup Percentage.
3. **Data Integrity**:
   * Markup settings must not retroactively affect historical data.
4. **Usability**:
   * Provide tooltips and clear labels for markup-related fields.
5. **Maintainability**:
   * Ensure markup logic is modular for future enhancements.